8. The Charge of a Light Barricade: Optics and Ballistics in the Ambiguous Being of Screens

John Durham Peters

Abstract

John Durham Peters invites a rethinking of the optical and environmental duality of the screen by examining media practices that link projection to protection and showing to shielding. The ontological ambiguity of the screen—at once a site for the representation of a world and a real element embedded in the world—enables one to think of media as a key part of what Peters calls ‘infrastructures of being’. Outlining the historical convergences between cultural practices of targeting and visualizing in Western history, Peters weaves together a rich and unexpected set of voices from the onset of the ‘atomic age’—from James Joyce and Vladimir Nabokov to Harold Edgerton and Norbert Wiener—illuminating the connection of detonation to image-making across photographic, filmic, televisual, and celestial screens.

Keywords: Photography, Atomic Bomb, Television, Infrastructure, Literature

SCREEN (NOUN): 1F. ‘Any thin extended surface set up to intercept shot in gunnery trials.’ SCREEN (VERB): 1A. ‘TRANS. To shelter or protect with or as with a screen, from heat, wind, light, missiles, or the like.’—*Oxford English Dictionary*

The ontological ambiguity of screens

When we see, do we see the world or images of the world? Do our eyes give us direct access to reality, or do they construct pictures by means of which

we navigate it? The long history of disputes about the theory of vision could be boiled down to the question of whether sight is immediate or mediated. Certainly in everyday practice, almost everyone votes for the former view. We trust intuitively that our eyes deliver the world to us. The trees, houses, windows, books, and people I see feel like they are simply there and not like neurologically processed artefacts of a narrow band of the optical spectrum. George Santayana wrote of our ‘animal faith’ in the senses, and Edmund Husserl called our everyday immunity to scepticism about them ‘the natural attitude’. The suspension of disbelief may be a practical prerequisite for living, but it does not take much philosophical exertion to reactivate it. Optical illusions, blind spots, floaters, and after-images intrude on the idyll of immediate vision. You can rub your eyes and behold colourful light shows that come from nowhere but the eyes themselves, and you can get even more spectacular results from hallucinogenic drugs. If you stare directly at a star, you can make it disappear; if you stare directly at the sun, you will see it everywhere you look for a long time thereafter. If you spin yourself around and around, the world will keep spinning when you stop. Many are the ways of detaching sight from the world. Thus eyes become media—as always, with biases and specific channel characteristics. Betting that reality is unproblematically given by the senses is a gamble that usually pays off, but it is also an evolutionarily fruitful inurement to fabrications and an overconfidence in the reliability of our instruments.

I start by rehearsing these well-known and elementary observations to make a point about the deep stakes of the concept of *screen*. Its double heritage as both environmental and visual, as explicated in the introduction to this volume, usefully intervenes in the long history of meditations on how we see. As the editors write, a screen can be ‘a filter, a divide, a shelter, or a means of camouflage’. The optical view sets us up to view screens as surfaces for stagecraft and illusion—at times perhaps wonderful but never fully real. This view is barely two centuries old. The much older environmental view takes screens as things in the world in their own right—as defensive ploys, parries, blinds, barriers, or sieves. The genealogy of screens bequeaths us, in other words, both a suspicious and an ontological view of screens, a conflict between a dualistic and monistic metaphysics—a face-off, say, between team Adorno and team Deleuze. This tension also informs the long history of debates about the nature of photography, specifically about whether it is the documentary pencil of nature or a kind of natural magic for stunts and tricks.

There *are* good reasons for dualistic suspicion. The negation of that which is immediately before our eyes is the first principle of cognition. Ever since

Moses's proscription on graven images and Plato's attack on idols, at least, expurgating illusions has been an essential ethical and intellectual task. The civilizational heights of philosophy, religion, and science owe much to the spurning of surfaces.

Modernity also has an all too well-known history of suspicion toward the visual. Johannes Kepler, in founding the retinal theory of vision, understood the eye as a *camera obscura* (a term he probably coined) and helped launch the seventeenth-century scepticism about the data of the senses. (As an astronomer, he needed to sort out the play of light on the eyes at night).¹ Galileo worried that his telescope was deceiving his eyes, and Descartes much more radically asked if everything he saw and heard could be an elaborate simulation by some malign *Matrix*-style demon. Locke thought we had no access to the world except through 'ideas', and soon Berkeley gave up on tying such ideas to any external reality whatsoever. Leibniz's cosmos was composed of monads—little images of the world, which happened to lack windows. Modern epistemology was founded as a thoroughgoing critique of direct sight in favour of an analysis of the elaborate mechanics by which pictures are brought before the mind. In a slightly different key, iconoclasm fuelled political reforms from the Calvinist image-storms of the sixteenth century through Milton to the French Revolution. From Kant through Marx and Freud through Adorno and beyond, much intellectual and political energy has been spent on the dialectical unmasking of illusion's intertwinement with the world. Such worries were baked into the cultural reception of optical media such as the magic lantern, the phantasmagoria, photography, and film, and attacks on images remain the ostinato of modern visual culture—often with ample justification, given the alluvion of ballyhoo that covers the globe.

But in tearing off masks, we should stop short of tearing off faces. Some appearances are real things. With productive ambiguity, the environmental concept of *screen* blurs the real and the fabricated, the natural and the technical, the objective and the retinal. In this way, the environmental concept is a kind of corrective to the corrosiveness of the hermeneutics of suspicion. What if screens were a part of—not apart from—the world? What if we took screens as not merely presenting appearances but as performing genuine operations on and with what we pleadingly call reality? Could the world itself be a screen? How might we think of nature's image-inscription surfaces and light sources? The sun writes on the earth's biosphere, hydrosphere, lithosphere, and atmosphere in various ways. (I leave to the side the question

1 Lindberg, pp. 178-208.

whether a screen is definitionally a fully erasable surface or one that, like Freud's *Wunderblock*, leaves behind traces of its various projections.) Deserts, clouds, seas, and forests index both lightfall and albedo—the reflectivity of the earth's surface, which is a key factor in global warming. Chlorophyll is a kind of slow photographic medium, as indeed some bioartists have shown, and the history of temperature and climate is written into tree rings and stone. The earth and sky are screens for light. The universe, if you like, screens its history in the redshifts of the light emanating from distant celestial objects. Screens, in this ample conception, are ubiquitous not only as technical interfaces but also in the natural world. The retina is a peculiar kind of screen, and, like the sky, it has a special vaulted curvature that is the condition of possibility for all seeing. Is the retina a projection surface for pictures or a participant in the being of what it sees? It is hard to say, and that is precisely the point.

In preparing this essay, I have acutely felt the blessing and curse of too many ancestors. (I sometimes thought that I had confused two letters—scream, not screen—as I've torn my hair out.) The head spins with examples of interesting screens. I thought of architectural screens in Japanese or Arab culture, such as those that figure so beautifully in some of Henri Matisse's paintings. (Figure 8.4) I thought of the cloud of the Pentateuch—which both shows and hides the divine presence, both indicating YHWH's nearness and shielding him from the profane gaze of the people—and of the ancient Greek *skēnē*, which is the ancestor of our word 'scene' but originally meant 'tent'. The *skēnē* was both a stage for theatrical spectacles and a shelter from the elements, thus uniting the twinned faces of the screen concept: projection and protection. I thought of so-called screen-savers, those abstract kinetic images designed to preserve one's computer monitor as a genuine *tabula rasa* devoid of any traces of its habitual pictures.

This ontological expansion of the screen obviously fits the digital *Zeitgeist*. Screens show up at the gas pump, in classrooms, airports, doctors' offices, and on our persons. In a historical moment when our quotidian lives and natural habitats alike are governed by networked flows of data, it is both urgent and interesting to consider media as actors in the world and not merely as traffickers in simulacra, phantasms, and second-rate copies (with proper dialectical provisos, of course). The weather, the economy, the sea are all natural-technical hybrids. So is the public sphere, whose nature is sensitive to rapid alteration by tweets, rumours, and filter bubbles. (Seeing media as ontological is, of course, not always a happy thought.) The reclaiming of a natural dimension for the screen concept helps us to liberate images and other mediated forms from the cage of representation in which they

8.1: At the time this photo was made, smoke billowed 20,000 feet above Hiroshima while smoke from the burst of the first atomic bomb had spread over 10,000 feet on the target at the base of the rising column. (Photo: Bob Caron), Source National Archives and Records Administration.

have been crammed, allowing them to become participants in the world, or even in being itself, for good and ill. The question about media and reality is less one of true and fake than of good and evil. A reality cannot be false; it simply is. But it can be bad. Politics, ethics, and aesthetics rather than know-it-all epistemology should be the leading disciplines for media theory, and I take the ontological ambiguity of the screen concept as one push in the broader intellectual direction of understanding media as infrastructures

of being, with all the troubles that follow. Screens are preeminent sites for foregrounding the work that media do in the world.

A telling recent example for joining *screen's* dual senses of projection or protection is the airport security checkpoint, as brilliantly analyzed by Lisa Parks. She sees such screening as a quasi-cinematic apparatus into which billions of dollars have been poured since 2001. Sites of poorly paid, stressful, and dangerous labour, checkpoints are a 'state-led exercise in hand-eye coordination'.² Take off your shoes, says the TSA as if speaking to Moses, for this is holy ground: here passengers undergo a public, state-mandated striptease. The monitoring of bodies combines remote-sensing and close-sensing, imaging and touch, in a kind of two-step flow. If a trigger is set off, then you undergo a pat-down by a member of the same sex (here the state enforces the gender binary, just as it enforces the privilege of whiteness). The monitoring of luggage is done by way of an optical screen, which serves as a 'gothic cousin to the television commercial', 'a spectral slide show of 21st-century consumerism' as goods parade across it in constant infomercial without price tags.³ Airport security is a kind of weapons system whose putative aim is to detect concealed weapons. Here, screening is both an authoritative inspection of populations (as in a 'cancer screening') and a plethora of visual technologies.

Optics and ballistics

The ancient link of optics and ballistics is yet another way that screens are ontologically ambiguous. The reality of a projectile is obvious in a way that that of a picture is not. Theories of vision starting from Aristotle understood the eye as a ballistic screen, capturing 'species' (essences) radiating off of objects. Indeed, it seems to be Thomas Aquinas's rather sheepish translation of a passage about vision from Aristotle's *De Anima* that gave us the media concept—a third term, a middle place, a *medius locus* (which is the origin of the term *milieu*) that connects eye and object. There was no middle term, no exact equivalent in Greek. For Thomas, a medium was a stop-gap accounting for the action at a distance between target and vision.⁴ In the atomist psychology of Epicurus and Lucretius, every material object broadcasts superfine corpuscular emissions that, upon striking the human sense organs, cause sensations. For Lucretius, everything threw off images,

2 Parks, p. 186.

3 Ibid., p. 194.

4 Hagen, pp. 13–29.

traces, films—*simulacra* or *membranae*—in the same way that ‘wood throws off smoke and fire heat’, cicadas molt their shells, calves shed their caul, or a snake sheds its skin.⁵ Here, images are not shadows of real things, an ontologically suspicious doubling; they are bits of reality physically partaken of by the eyes. Unsurprisingly, the term that perhaps best embodies the doubleness of the screen concept is ‘film’. In older uses, ‘film’ as a noun could mean a thin sheet, tissue, or membrane, as in Lucretius; as a verb, ‘to film’ could mean to cover with a layer. Cinema inherits a much longer history of understanding vision as a physical, even projectile event, and of images as physical entities (cf. the comical ‘or the like’ in the epigraph to this essay, which makes missiles and light equally into projectiles).

The art of ballistics, ancient and modern, played a central role in scientific instrumentation and measurement as well as technical invention. Humans may be the only species that can throw, and we seem deeply fascinated with throwing: ‘The parabolic ballista is ours alone.’⁶ Media theorist Friedrich Kittler dwelled with martial delight on the ancient tie between acoustics (the lyre) and archery (the bow) as well as the role that the cannon played in early modern science. He was also fascinated by how Renaissance perspective involved what he called the ‘*Bewaffnung des Auges*’, or weaponization of the eye. His case in point was Albrecht Dürer’s 1527 treatise on the construction of fortresses, which gives us ‘perspective from a ballistic perspective’. The sight lines for fortresses tied the straight lines of linear perspective to the parabolas of bullets. To see was to shoot.⁷ This correlation extends to the French and Spanish verbs meaning to fence, *escrimer* and *esgrimir*, which, like the English ‘skirmish’, are cognate to the Dutch *scherm*, German *Schirm*, or Swedish *skärm*, all of which mean screen or shield. Here, optical media meet swordplay!

War is a regular theme in media theory, and perhaps one reason is the readiness with which war makes problems ontologically specific; the battlefield may be socially constructed, but its reality is obvious to everyone on it. In warfare, there is no sign without *Sein*. In war (as in love), the sign is the thing itself. To signal is not a neutral act: it is to risk blowing your cover. Every message sent potentially discloses your location to the enemy. (Chechen warlords were killed by Russian intelligence agents tracking their cell phones.) Ancient catapults launched balls inscribed with imprecations; soldiers have long christened bullets after their intended targets; and an

5 Lucretius, 4: 54–61. On Balzac’s reception of such ideas, see Krauss, 1978.

6 Ridley, C4.

7 Kittler, 2002, p. 65; See also Bousquet, 2018.

image of Rita Hayworth may have adorned (much to her distress) one of the bombs dropped on Japan. Cybernetics, the meta-science developed by Norbert Wiener out of his research on anti-aircraft artillery during World War II, turns on the insight that signals are not simply signs; they are weapons, that is, reality-rearranging vectors. Perhaps the young John Langshaw Austin, later famous as the author of *How to Do Things with Words*, first discovered performativity while overseeing British reconnaissance for Operation Overlord, i.e. the D-Day invasion of Normandy in 1944. The battle command is not just a statement about the world; it is a speech act on which life and death hang. For good or ill, war is a destination for those interested in a return to ontology.

The fireball

The atomic bomb was a screen technology. The cityscapes of Hiroshima and Nagasaki famously served as photographic screens: the bomb's heat and radiation left its mark on walls, buildings, and bodies as an exposed image. The cities were made into perverse photographic laboratories for skiagraphy or shadow-writing. For the vaporized bodies, as Akira Mizuta Lippit remarks, no image was 'left but their negatives'.⁸ It is a well-known, gruesome, and perhaps exaggerated fact that images of people and objects—so-called 'nuclear shadows'—were written onto walls by the flash of the bomb. (The bomb did burn clothing patterns onto people's skins.) Thomas Pynchon wrote perhaps too graphically that the victims' bodies became 'a fine-vapor deposit of fat-cracklings wrinkled into the fused rubble'.⁹ In 1945, Bazin wrote of the ontology of the photographic image, and there could be no clearer example of an image ambiguously suffused with real presence than a nuclear shadow. (Bazin's essay could have been called 'the oncology of the photographic image'.¹⁰) Paul Virilio and Kittler both compare the bomb dropped on Hiroshima to a camera with a very fast shutter-speed, i.e. one fifteen millionth of a second or 67 nanoseconds. Kittler sees this ultra-rapid-fire flash photography as the inaugural act of cinema that operates according to computer processing speeds.¹¹ The bomb is the origin of digital media in this as in many other ways.

8 Lippit, pp. 81, 93-95, 109, passim.

9 Quoted in Kittler, 1999, p. 261.

10 A pun I owe to Antonio Somaini.

11 Virilio, p. 81; Kittler, 1999, p. 261.

At first it was only the bomb, and not the camera, that could operate at such speeds. The first aerial pictures of the blast over Hiroshima were taken by George Caron, the tail-gunner of the *Enola Gay*, with a borrowed camera. (The plane with all the photographic equipment that was supposed to document the attack got off course and missed the rendezvous.) Caron's photo, now canonical, is a grainy black and white image of a column of cloud, leaning slightly off the vertical, topped by a separate crown-shaped puff. (Figure 8.1) No sign of the instant disappearance of 80,000 people is to be found in the abstraction of this extreme long shot. Mushroom cloud pictures like this one, which was published in *Life Magazine* two weeks after the assault, remain the iconic image of the nuclear age.

In a brilliant and also slightly terrifying recent article, Ned O'Gorman and Kevin Hamilton argue that the nuclear fireball is actually the more characteristic image.¹² The mushroom cloud can be seen with the naked eyes, but not the thermonuclear fireball itself, at least not in any detail. The fireball of a hydrogen bomb simply explodes too fast, and though filmable with a traditional 24-frame-per-second camera, the complex physical reactions that are of deep interest to scientists elude traditional photographic techniques.

Enter Harold Edgerton, the MIT professor of electrical engineering already famous for his mid-1930s photographs of a milk-drop splashing on a surface. (Figure 8.2) O'Gorman and Hamilton show that his interest in split-second photography emerged in the late 1920s and 1930s as he studied the engineering problem of synchronization among machines. Stroboscopic techniques allowed him to observe and document rapid events that would otherwise elude vision. With two of his former students, Edgerton formed a company called EG&G (Edgerton, Germeshausen, and Grier) that specialized in high-speed images of nuclear explosions, or 'firing and timing'. EG&G was a major defence contractor for the U.S. military during World War II and the Cold War. The company took an aerial photograph of Normandy on 5 June 1944, which revealed a profound lack of preparation by German troops for what was to come the next day. None of the Germans seem to have noticed an uncanny flash in the sky that night—from a camera mounted in the bay of an airplane where a bomb normally would go.¹³ This substitution of camera and bomb also took place in the case of Fat Man, the bomb dropped on Nagasaki. Edgerton's company contributed in developing the bomb's

12 See O'Gorman and Hamilton, 2016.

13 The logistical media history of D-Day is at least threefold: the intelligence reports overseen by Austin; the aerial photography overseen by Edgerton; and the weather forecast, one of the most important in history, overseen by a team of American, British, and Norwegian meteorologists.

8.2: Harold E. Edgerton (1903–1990), *Milk-Drop Coronet Splash*, 1936. © 2010 MIT. Courtesy of MIT Museum.

detonation mechanism. The workers at Raytheon who built it were kept in the dark about its ultimate purpose and were told it was an ‘advanced version of equipment for night aerial photography’.¹⁴ That description was, in a way, technically correct. As O’Gorman and Hamilton note, ‘Over Normandy a camera occupied the bay of a bomber, [and] over Nagasaki a plutonium core

14 O’Gorman and Hamilton, p. 193.

8.3: Harold E. Edgerton (1903–1990), *Atomic bomb explosion at the Nevada Proving Grounds*, photographed for the Atomic Energy Commission; before 1952. The first microseconds of an atomic explosion captured in a 1/100,000,000-of-a-second exposure, taken from seven miles away with a lens ten feet long. © 2010 MIT. Courtesy of MIT Museum.

occupied the place of a circuit normally reserved for a camera flash'.¹⁵ In the history of photography, the synchronization of light flash and shutter opening was always a challenge. The discovery of EG&G was to use the very same micro-timing mechanisms for both detonation and shutter. EG&G made literal the identity of flash and photograph.

To document hydrogen bombs, EG&G had to find a way to slow the reaction, or rather the camera, down to microseconds (millionths of seconds). In the early 1950s, EG&G developed so-called Rapatronic (*rapid action electronic*) cameras for taking microsecond images of nuclear reactions. Taking pictures of bombs poses unique problems; for one thing, the camera has to be able to withstand the radiation and exposure of a blast over 100 times the intensity of the sun's surface. Here, as with the A-bomb, light is not just an invisible hand tracing images in pixie dust but a grotesquely palpable physical event. ('Screen' is also a term for a shield against radiation.) The details of the camera go beyond our concern here: EG&G's key discovery was that to make images of thermonuclear blasts, the camera must participate in the detonation. Camera and bomb were bound by a single 'firing, timing and exposing' mechanism. It was impossible to tell where the bomb ceased and the picture began.

The resultant microsecond images, like Edgerton's earlier photos of milk drops landing on flat surfaces or later pictures of bullets whooshing through apples, were profoundly unnatural and unlike any that human eyes had ever seen before. Forget Walter Benjamin's tenth of a second or Eadweard Muybridge's horses as a standard for how photography blows apart time—these images isolated millionths of seconds. EG&G's fireball images, captured by slicing time at intervals impossible for the eye, are uncanny and terrifying. Fiery icicles drip from irradiated bone-like balls. The images have the grayscale tones of X-ray films and show toothy baby monsters rearing menacingly on two legs, teratomas, bulbous cauliflowers, mutant navel oranges, aliens, insects, skulls—Rorschach tests for the nuclear age. (Figure 8.3) The work of EG&G provides a radical perspective on the ontology of the photographic image.¹⁶

¹⁵ Ibid., p. 194.

¹⁶ We might also consider the film leader countdown as a convergent staging of detonation and pictures, with its radar-like clock-sweep, its NASA-like countdown to blastoff. Bruce Conner exploits this link in *A Movie* (1958).

8.4: Henri Matisse (1869–1954), *L'Ecran Mauresque* (*The Moorish Screen*), 1921. Oil on canvas, 91.9 x 74.3 cm. © 2018 Succession H. Matisse / Artists Rights Society (ARS), New York.

Television as war machine

Television and the bomb were arguably the two main mass media of the postwar era. Both were massive delivery systems, often developed by the same people and institutions, involved similar physical processes and existential worries, similar large-scale capital investment and blankets of fallout.¹⁷ As Kittler flatly declares, 'television is a civilian side-effect of an extensive military electronics'.¹⁸ TV was, hands down, the most important screen of the decades following 1945 and was always deeply connected to radar, radiation, anti-aircraft fire, and weather forecasting, as visionaries as diverse as Paul Virilio, Friedrich Kittler, Joyce Nelson, and Tex Avery have observed in their various ways.¹⁹

James Joyce portrayed the ballistic dimension of television in *Finnegans Wake* (1939), in a passage beloved by Marshall McLuhan:

In the heliotropical noughttime following a fade of transformed Tuff and, pending its viseversion, a metenergetic reglow of beaming Batt, the bairdboard bombardment screen, if tastefully taught guranium satin, tends to teleframe and step up to the charge of a light barricade. Down the photoslope in syncopanc pulses, with the bitts bugtwug their teffs, the missledhropes, glitteraglatteaglutt, borne by their carnier walve. Spraygun rakes and splits them from a double focus, grenadite, damnyite, alextronite, nichilite: and the scanning firespot of the sgunners traverses the rutilanced illustred sunksundered lines.²⁰

I cannot do this passage justice, but I do not think a better account of television's operation as an optical gunnery machine has ever been given. The heliotropic night-time/nought-time tube, with its viseversion (vice versa) of interlacing video, glowing with beams, will teleframe a light barricade—the screen named after TV inventor John Logie Baird, if it is properly tuned. The broadcast sprays bitts between the teffs at the mis-siled/misled tropes/hopes/anthropes in one of the *Wake's* 'thunderwords', glitteraglatteaglutt, which could refer to the crackling, static-y sound or the sparkling snow of the image, the glut of glitter borne by carrier wave

17 See Nelson, p. 12.

18 Kittler, 2002, p. 290.

19 Avery's animated short of 1953, 'The T.V. of Tomorrow', brilliantly shows the TV set multifariously as a military and domestic apparatus.

20 Joyce, p. 349.

or carny-valve. The electron spraygun bombards the tube with a scanning firespot traversing the 'sunksundered lines'. Such a treasury of potential media-theoretic vocabulary! Joyce has lent quantum physics terms such as 'quark'; perhaps his 'bitt' should retroactively be awarded the honour of coining the digital 'bit'. If we wanted a good name for screens in their doublings as projection and protection, my nominee would be 'the charge of a light barricade'.

Another brilliant literary treatment comes from 'Pale Fire,' the poem-within-the-book in Vladimir Nabokov's novel *Pale Fire* (1962). The narrator, John Shade, addresses his wife Vanessa at the end of an evening of television, turned nervously on while they wait for their forlorn daughter out on a date:

Eleven struck. You sighed. "Well, I'm afraid
There's nothing else of interest." You played
Network roulette: the dial turned and trk'ed.
Commercials were beheaded. Faces flicked.
An open mouth in mid-song was struck out.
An imbecile with sideburns was about
To use his gun, but you were much too quick.
A jovial Negro raised his trumpet. Trk.
Your ruby ring made life and laid the law.
Oh, switch it off! And as life snapped we saw
A pinhead light dwindle and die in black
Infinity. [...] ²¹

Note the harsh judgment day of the viewer's hand, executioner of images, like a cowboy too quick on the draw to let someone else shoot or a guillotiner mutilating faces. The sovereign dial or ruby ring, making life and law by the sheer caprice of the roulette wheel, is a kind of weapon, beheading commercials, cutting people down in mid-sentence, fencing with the screen.²² Note the late-night boredom, the 'nought-time', scanning between channels in expectation of something about to take place. (Figure 8.5) When the tube is finally turned off, its light dies cosmically like a vortex in a bathtub drain in black infinity—a vivid image for anyone who

²¹ Nabokov, pp. 49-50.

²² One of the early TV remote control devices, the Zenith Flash-Matic, was advertised as putting a weapon in housewives' hands that they could shoot at the set to control volume (see Fig. 8.5). As in Shade's poem, the gender polarity of weaponry is reversed when war technology is domesticated.

remembers what happened to the image on the screen when television sets were shut off in the 1950s and 1960s. In the poem, this all happens right before a police car pulls up at midnight, lights flashing, bringing news of their daughter's Ophelia-like death. Nabokov describes the juxtaposition of boredom and disaster, the uneasy but eager scanning of the horizon that Stanley Cavell thinks forms the existential fact of television. TV viewers, like decommissioned radar readers, watch for approaching threats, seeking drama or meaning amid the repetitive tedium. As a system that mobilizes entire populations to monitor and scan air-borne signals sent from afar, television incorporates the Bomb and the Holocaust as unassimilable experiences but does so in an overwhelmingly banal register that can occasionally erupt into something much more urgent. It is this mix of waiting for the coming catastrophe and escaping numbly into fantasy, of on-edge vigilance and opiate boredom, that makes television the true child of the postwar era. It also shows why television is a more cosmic medium than cinema and thus also generally more boring: it has to pull its content from the sky.

Perhaps the least interesting thing about postwar TV was the programs. These were the meat the burglar gives to the guard dog so he can get about his genuine business. The medium's existential profile appeared on its edges when it was turned off, being turned on or off, being listened to but not watched, when the horizontal and the vertical were being tweaked, when the snow between the stations showed up or the antenna didn't pull in the signal. The opening sequence of *The Outer Limits* from 1963 immortalized the creepy effect of messing with the screen:

There is nothing wrong with your television set. Do not attempt to adjust the picture. We are controlling transmission. If we wish to make it louder, we will bring up the volume. If we wish to make it softer, we will tune it to a whisper. We will control the horizontal. We will control the vertical. We can roll the image, make it flutter. We can change the focus to a soft blur or sharpen it to crystal clarity. For the next hour, sit quietly and we will control all that you see and hear.

(Unfortunately, this uncanny discipline did not apply to the commercials.)²³ The children in *Poltergeist* (1982) discover the 'TV people' in the middle

23 Alien possession via broadcast irregularities would later become a topic in Parliament Funkadelic's album *Mothership Connection* (1975), which is also all about The Bomb.

YOU HAVE TO SEE IT TO BELIEVE IT!

FLASH-MATIC TUNING

BY ZENITH

ONLY ZENITH HAS IT!

A flash of magic light from across the room
(no wires, no cords) turns set on, off, or changes
channels...and you remain in your easy chair!

**YOU CAN ALSO SHUT OFF LONG,
ANNOYING COMMERCIALS
WHILE PICTURE REMAINS ON SCREEN!**

With a beam of magic light
the Zenith "Flash Matic"
works TV miracles!
Absolutely harmless to humans!

Here is a truly amazing new television development—and only Zenith has it! Just think! Without budging from your easy chair you can turn your new Zenith Flash-Matic set on, off, or change channels. You can even shut off annoying commercials while the picture remains on the screen. Just a flash of light does it. There are no wires or cords. This is not an accessory. It is a built-in part of several new 1956 Zenith television receivers. Stop at your Zenith dealer's soon. Zenith-quality television begins as low as \$149.95.*

If it's new...it's from Zenith!
YOU HAVE TO SEE IT TO BELIEVE IT

*Manufacturer's suggested retail price. Slightly higher in Far West and South.

ZENITH
The royalty of TELEVISION and radio
Backed by 36 years of leadership
in electronics exclusively
ALAN MACKAY OF PINK HILLING AGENT
Zenith Radio Corporation, Chicago 26, Ill.

8.5: Advertisement for Zenith Flash-Matic Tuning, first wireless remote-control device for television sets, c.1955.

of the night after all the regular channels have signed off. Insomnia calls forth the spirits.

Literary examples could be multiplied. Thomas Pynchon's novella *The Crying of Lot 49* (1965) opens with protagonist Oedipa Maas returning home one afternoon to find herself being 'stared at by the greenish dead eye of the TV Tube'.²⁴ The postwar TV set was a commanding presence, rearranging subjects and objects around it, even when it was turned off. Soon, when Oedipa and a new friend are making love in a hotel, an old war movie plays on TV, offering comic commentary: 'From the other room came a slow, deep crescendo of naval bombardment, machine-gun, howitzer, and small-arms fire, screams and chopped-off prayers of dying infantry'.²⁵ In Harry Mulisch's *The Discovery of Heaven* (1992), probably the most important postwar novel written in Dutch, a character turns on a TV set without turning on the house lights and 'the reflection of the image flickered through the room as if constant small explosions were going off'.²⁶ We have all seen this effect: a room lit up by a TV set that we cannot see can look like a flashing war theatre.

24 Pynchon, p. 1.

25 Ibid., p. 25.

26 Mulisch, p. 580.

Perhaps the most famous literary example is the opening line of William Gibson's *Neuromancer* (1984): 'The sky above the port was the colour of television, tuned to a dead channel.' Gibson exploits the environmental-meteorological metaphor of 'snow' for the video noise that possesses a TV channel when there is no signal. The deadpan bit of the line is that such a channel has no colour at all, just a jumpy fuzz of black and white. Video noise, as it is called, is sensitive to cosmic flux and the solar wind. In the United States it is called 'snow', in Sweden 'war of the ants' (*myrornas krig*), and in Hungarian 'ant soccer' (*hangyafoci*). Something must be happening in there—In 'Pale Fire', when the TV is first turned on, 'The screen/In its blank broth evolved a lifelike blur', it is like the primordial ooze bringing forth life for the first time.²⁷ Viewers still search screens for emerging patterns of life and death.

Whether the *Götterdämmerung* of the ants or the 'technical difficulties' of some atmospheric disturbance, the television screen without a clear picture has rich significance. (Yet again, the medium is the message!) A blank screen can mark the censorship of something not showable, death, an ending, or someone closing their eyes. (For Microsoft-hosted computers, the 'blue screen of death' signified total system failure.) In heist movies, the screens of surveillance or security monitors turn to snow when they are hacked or hijacked. In disaster films, the world will end after a global montage of TV reporters against a backdrop of notable landmarks (the Eiffel Tower, the pyramids at Giza) shows the TV screens, one by one, turning to snow. Snow belongs to a family of 'ominous visual glitches'.²⁸ Signal degradation is a sure trope of the world being profoundly out of joint. During a bad telephone connection, we say 'you are breaking up', not differentiating the person and their signal. The loss of radio contact in World War II could mean technical difficulties or death ambiguously, as in Randall Jarrell's poem 'A Front' in which a returning bomber, on finding the airbase shrouded with dense fog, disappears from the radio band. There is little that is quite as existentially rich as a TV screen filled with nothing but snow or a radio crackling with the staticky music of the spheres.

No wonder that the central theological, strategic, metaphysical, and epistemological question of the age came down to reading the significance of a fuzzy screen. Was 'jam', as Norbert Wiener called it, the product of a malevolent demon trying to interfere with our equipment or the random flux of cosmic stochastics? Was it an adversary messing with us or just God playing dice with the universe? World War II and Cold War cryptography led

27 Nabokov, p. 47.

28 'Ominous Visual Glitch', *TVTropes.com*, <http://tvtropes.org/pmwiki/pmwiki.php/Main/OminousVisualGlitch> (accessed 2018).

Wiener to the deepest questions in the philosophy of science and religion.²⁹ The fog of war makes the reading of the signal a matter of life and death, and this jumpy hermeneutic burden remained part of the infrastructural unconscious of television screens in the postwar era.

Back to the sky

Snow falls from the sky. TV was an aerial medium, both dependent on the 'air' to carry its signals and the great mouthpiece for the atmosphere's main human manifestation, the weather. TV screens belong to the same family as radar screens, which watch for projectiles such as aircraft and larger formations such as weather fronts. The sky has always been the screen of screens. It is full of clouds, lightning, winds, comets, portents, omens, and *mirabilia*. Epic poets such as Virgil and Milton conjured the sky as a battlefield of the celestial hosts. Chinese emperors ruled by its mandate. In many cultures, new stars mark the birth and death of souls. In Shakespeare's *Hamlet*, the guards atop the castle at Elsinore, still stunned by the apparition of a ghost, while away the night discussing atmospheric omens. Ronald Reagan's 'Strategic Defence Initiative' envisioned a shield or celestial screen against nuclear warheads that was both cinematic and military, as captured in its lasting nickname 'Star Wars'.³⁰

Most curiously, the sky is both a protective shield and a space for spectatorship. At night, the sky admits starlight, but by day the celestial canopy blocks out visible light from deep space. Without the enveloping atmosphere, we would wilt at once before the solar wind, and Earth would be a desert like Mars, where any atmosphere has been blown away and all oxygen is tied up in the rusty red lithosphere. Earth's sky is a cosmic shield as well as a cosmic cinema. The sky at day is McLuhan's 'light on' (which he associated with movies) and at night 'light through' (which he associated with television). If we are looking for what Francesco Casetti calls 'a cinema that manifests itself in the broad daylight', no better example could be found than the sky.³¹ The sky is our ultimate environment and 'the ultimate art gallery above' (Emerson); it is both ontological and optical, usually indistinguishably so. The celestial vault—like its twin, our retinas—hovers between being and illusion, just like everything else.

29 Wiener, pp. 35-6, 93-4, Chapter 11, *passim*.

30 See Packer, 2013; Huhtamo, 2010.

31 Casetti, p. 207.

Works Cited

- Bousquet, Antoine. *The Eye of War: Military Perception from the Telescope to the Drone*. Minneapolis: University of Minnesota Press, 2018.
- Casetti, Francesco. *The Lumière Galaxy: Seven Keywords for the Cinema to Come*. New York: Columbia University Press, 2015.
- Hagen, Wolfgang. 'Metaxu: Eine historiosemantische Fussnote zum Medienbegriff.' In *Was ist ein Medium?*, edited by Stefan Münker and Alexander Roesler, pp. 13-29. Frankfurt: Suhrkamp, 2008.
- Huhtamo, Erkki. 'The Sky Is (Not) the Limit: Envisioning the Ultimate Public Media Display.' *Journal of Visual Culture* 8, no. 3 (2010): 329-348.
- Joyce, James. *Finnegan's Wake*. New York: Penguin Books, 1999.
- Kittler, Friedrich. *Gramophone, Film, Typewriter*. Translated by Geoffrey Winthrop-Young and Michael Wutz. Palo Alto: Stanford University Press, 1999.
- . *Optische Medien*. Berlin: Merve, 2002.
- . 'Lightning and Series—Event and Thunder.' Translated by Geoffrey Winthrop-Young. *Theory, Culture, and Society* 23, no. 7-8 (2006): 63-74.
- Krauss, Rosalind. 'Tracing Nadar.' *October* 5 (1978): 29-47.
- Lindberg, David C. *Theories of Vision from Al-Kindi to Kepler*. Chicago: University of Chicago Press, 1976.
- Lippit, Akira Mizuta. *Atomic Light (Shadow Optics)*. Minneapolis: University of Minnesota Press, 2005.
- Lucretius, *De rerum natura* (On the Nature of Things), translated by W. H. D. Rouse, revised by Martin F. Smith. Cambridge: Harvard University Press, 1992.
- Mulisch, Harry. *De ontdekking van de hemel*. Amsterdam: De Bezige Bij, 1992.
- Nelson, Joyce. *The Perfect Machine: TV in the Nuclear Age*. Toronto: Between-the-Lines Press, 1987.
- Nabokov, Vladimir. *Pale Fire*. New York: Vintage International, 1989.
- O'Gorman, Ned and Kevin Hamilton. 'EG&G and the Deep Media of Timing, Firing, and Exposing.' *Journal of War & Cultural Studies* 9, no. 2 (2016): 182-201.
- Packer, Jeremy. 'Screens in the sky: SAGE, surveillance, and the automation of perceptual, mnemonic, and epistemological labor.' *Social Semiotics* 23, no. 2 (2013): 173-195.
- Parks, Lisa. 'Points of Departure: The Culture of US Airport Screening.' *Journal of Visual Culture* 6, no. 2 (2007): 183-200.
- Pynchon, Thomas. *The Crying of Lot 49*. New York: Harper Perennial, 1999.
- Ridley, Matt. 'Tracing Those Angry Birds to the Dawn of Man.' *Wall Street Journal*, 15-16 January 2011, C4.
- TV Tropes. 'Ominous Visual Glitch.' Last updated June 23, 2018. <http://tvtropes.org/pmwiki/pmwiki.php/Main/OminousVisualGlitch>

Virilio, Paul. *War and Cinema: The Logistics of Perception*. Translated by Patrick Camiller. London: Verso, 1989.

Wiener, Norbert. *The Human Use of Human Beings: Cybernetics and Society*. Boston: Houghton Mifflin, 1954.

About the Author

John Durham Peters is the María Rosa Menocal Professor of English and Professor of Film and Media Studies at Yale University. His first book was *Speaking into the Air: A History of the Idea of Communication* (1999). His most recent publication, *The Marvelous Clouds: Toward a Philosophy of Elemental Media* (2015) is a re-synthesis of concepts of media and culture, ranging from planetary motion to bone evolution and calendrical design. His new book, *Promiscuous Knowledge: Information, Image, and Other Truth Games in History*, co-authored with the late Kenneth Cmiel, will be published in 2020.