TREVOR PAGLEN
SITES UNSEEN

Trevor Paglen blurs the lines between art, science, and investigative journalism to construct unfamiliar and at times unsettling ways to see and interpret the world around us. Paglen, who holds a Ph.D. in geography from the University of California at Berkeley, approaches his work with a scientist’s sense of inquiry. He employs a range of techniques and technologies to ask questions and probe for answers about surveillance, secrecy, privacy, and democracy. Paglen refers to his art-making as “experimental geography,” a hybrid discipline that uses ideas from the field of geography to extend our understanding of where and how we live.

Paglen was born in Camp Springs, Maryland, in 1974. A childhood spent on military bases made him familiar with and empathetic to its culture. Now based in Berlin, Germany, he has traveled the world over the past fifteen years collecting visual and material evidence of things we are not meant to see. *Trevor Paglen: Sites Unseen* surveys Paglen’s career and examines how he interrogates public records and spaces to create images, artifacts, and sculptural objects that reveal a covert world operating just out of view. Inspired by the history of American landscape photography, Paglen’s photographs explore the land, sea, sky, and heavens to show the physical infrastructure of secrecy, from classified military installations and spy satellites to communications cables and artificial intelligence (AI). His artifacts show the systems--logos, patches, and code names--that help maintain a cloak of invisibility. His sculptures act in opposition to what his images and artifacts expose, by offering alternative uses for military and intelligence technologies. With these objects, Paglen invites us to imagine a future in which “new forms of freedom and democracy can emerge.”
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Exhibition Programs

Artist Lecture with Trevor Paglen, June 20, 6:30 p.m.
Curator Gallery Talk with John Jacob, August 22, 5:30 p.m.
Kronos Quartet, October 25, 9 p.m.
Panel Discussion with Trevor Paglen, Kate Crawford, Wendy Chun, and Alvaro Bedoya, October 26, 6 p.m.

The curator for this exhibition is John P. Jacob, McEvoy Family Curator for Photography.
**Surveillance: Yesterday, Today, and Tomorrow**

*In a very real sense, O’Sullivan and the other photographers of the West were to the nineteenth century what reconnaissance satellites are to the late twentieth and twenty-first centuries.*

---Trevor Paglen, 2009

Timothy O’Sullivan documented the American West in the 1860s and 1870s. Paglen notes that O’Sullivan and other nineteenth-century photographers were among the nation’s earliest intelligence gatherers, charting the West for railroads and settlement. He often references O’Sullivan’s work and that of other nineteenth-century photographers as a way to show what is different in today’s landscape—namely, ubiquitous surveillance.

In *DMSP 5B/F4 From Pyramid Lake Indian Reservation*, Paglen captures the same horizon that Timothy O’Sullivan did in 1867. The spy satellite arcing above the lake in Paglen’s photograph was launched in 1973 to monitor weather patterns in the former Soviet Union and Cuba. By replicating O’Sullivan’s viewpoint, Paglen underscores the historical link between photography and surveillance.

The hanging *Prototype for a Nonfunctional Satellite* serves no intelligence-gathering function. Instead, it invites viewers to imagine gazing into a night sky where the machinery of surveillance is not looking back at us.

**The Landscape of Secrecy**

*If you’re going to build a secret airplane, you can’t do it in an invisible factory.*

---Trevor Paglen, 2012

In 2002 Trevor Paglen discovered a cache of U.S. Geological Survey aerial photographs with large areas of the landscape redacted. It was an epiphany. “Looking at those ‘black spaces,’” he said, “I wanted to know what was under those marks.” He researched and then visited the sites, asking the geographer’s question, “How is this space called secrecy produced?”

Secrecy, as Paglen understands it, is a system for organizing human activity whose goal is invisibility. Secrecy requires institutions that are not visibly part of everyday life but that sometimes intersect with it. For example, data may be invisible, but it requires machines for storage and retrieval as well as cables and satellites for transmission. Intelligence needs buildings for administration and creates a paper trail. Paglen investigates these intersections of secrecy with the visible world and documents them with his camera.

Importantly, Paglen does not expose secrets; instead he shows the apparatus of secrecy. “Rather than trying to find out what’s actually going on behind closed doors,” he said, “I’m trying to take a long hard look at the door itself.” His photographs visualize the vast landscape of secrecy that extends from the ocean floor to geosynchronous orbit.
**KEYHOLE IMPROVED CRYSTAL From Glacier Point (Optical Reconnaissance Satellite; USA 186), 2008**
C-print
Private Collection

**KEYHOLE IMPROVED CRYSTAL From Glacier Point (Optical Reconnaissance Satellite; USA 186)** references Ansel Adams (1902–1984), who photographed the site in 1947. Adams photographed Yosemite as a metaphor of nature. In Paglen’s photograph, the night sky is clear but has been made ominous by its revelation. Its subject is a still-classified reconnaissance satellite that was exposed in a leaked congressional budget report of the National Intelligence Program.

**Time Study (Predator; Indian Springs, NV), 2010**
gold-toned albumen prints
Collection of Nion McEvoy

In **Time Study (Predator; Indian Springs, NV)**, Paglen references Edweard Muybridge (1830–1904). Like Timothy O’Sullivan and Ansel Adams, Muybridge photographed the American West before embarking on the time and motion studies referred to here. Paglen’s work raises questions about the neutrality of technologically mediated vision. For Muybridge, that technology was the camera; for Paglen, it is the drone. In **Time Study**, Paglen asks us to consider the advent of machine vision as embodied by the drone, and its potential for both protection and harm.

**Dead Military Satellite (DMSP 5D-F11) Near the Disk of the Moon, 2010**
C-print
Collection of Joseph and Debbie Goldyne

Paglen references the nineteenth century, when, due to the limited light sensitivity of early photographic materials, the moon was both a difficult and a fascinating subject for photographers. His aim was not to capture the moon itself, but a radar imaging satellite visible against the lunar surface.

**Code Names of the Surveillance State, 2015**
three-channel HD video installation on three TV monitors, looped, no sound
Collection Lannan Foundation

For this video Paglen collected more than 4,000 code names from the Snowden files, making visible the scope of their revelations without exposing their secrets. In **Code Names of the Surveillance State**, Paglen asks, “In an age of pervasive government and corporate surveillance, how can citizens exercise their freedom?”

**Cable Landing Sites and Underwater Cables**

_We are not moving toward a surveillance state; we live in the heart of one._

---Trevor Paglen, 2013

Following the 2013 leak of classified files by National Security Agency (NSA) consultant Edward Snowden, Paglen created two bodies of work that examine the terrain of large-scale intelligence gathering. The photographs in **Cable Landing Sites and Undersea Cables** show the physical infrastructure of the Internet—undersea cables, cable landing sites, switching facilities, and data centers. “The Internet was supposed to be the greatest tool of global communications and means of sharing knowledge in human history,” Paglen said. “But it has also become the most effective instrument of mass surveillance and potentially one of the greatest instruments of totalitarianism in the history of the world.”
In the *Cable Landing Sites* series, Paglen poses the question, “What does the Internet look like?” Each work is a diptych composed of one photograph and a nautical chart. The photographs show shorelines where undersea communications cables land and may be easily tapped. The charts, produced by the National Oceanic and Atmospheric Administration for marine navigation, indicate the locations of the cables. Paglen has affixed documents from Snowden and other sources. For *Undersea Cables*, Paglen located and photographed submarine Internet pipes using GPS and nautical charts. These photographs verify Snowden’s evidence to the extent legally possible by showing what was hidden in the *Cable Landing Sites* diptychs.

**NSA-Tapped Fiber Optic Cable Landing Site, Mastic Beach, New York, United States**, 2015
C-print and mixed media on navigational chart
Kadist Art Foundation
For NSA-Tapped Fiber Optic Cable Landing Site, Mastic Beach, New York, United States, Paglen photographed a major “choke point” where four communications cables come ashore in Long Island, New York. The swimmers and sunbathers draw attention to the fact that the cables are submerged and hidden from view. Documents collaged onto the nautical chart identify what the swimmers and sunbathers cannot see and what the photograph cannot show. One identifies a landing station that supplies power to the cables and conducts data collection. Another lists cables tapped by the NSA, the names of cooperating telecommunications companies, and code names for their operations.

**Research Material for Cable Landing Sites and Undersea Cables Series**
After researching declassified documents and images, Paglen used the material shown here to identify, locate, and photograph government-tapped communications cables. These items helped Paglen corroborate the files leaked in 2013 by Edward Snowden. Besides documents, Paglen also gathered the emblems and ephemera of related covert operations, including patches, challenge coins, a beer stein of the United States Cyber Command, and a model of USS Jimmy Carter. The submarine is reputed to be able to tap cables on the sea floor.

**Color Study (Mule Creek State Prison, Ione, CA)**, 2016
pigment print
Collection of Bill and Charmion Hearn
In the *Color Study* series, Paglen interprets the light emitted from two California state prison facilities as a symbol of the power they wield. The photographs refer to Paglen’s long-standing interest in prison activism. More than ten years ago, he posed as a criminology student to gain entry to Pelican Bay State Prison, wearing a suit wired for audio and video recording. What his recordings captured was silence—“the silence of both ‘business as usual’ and total domination,” he wrote. Paglen believes that, as a space designed to limit human freedom, prison is a metaphor for the operations of power and surveillance omnipresent in contemporary society.

**Symbology, Volume II**, 2009
fabric patches
Collection of Mike Wilkins and Sheila Duignan
For *Symbology, Volumes I–II*, Paglen collected the wearable emblems of covert operations. Only insiders know the meanings of these patches, but their symbols provide clues. In contrast to his photographs, which point to the physical space of secrecy, Paglen compiles patches to investigate the social space of secrecy. The patches represent one facet of the complex system of symbols and insignia used to identify covert programs.
Limit Telephotography

How do I point to, engage with, and represent something that I don’t quite understand?

---Trevor Paglen, 2011

Paglen made his first visit to the outskirts of Area 51, a classified U.S. Air Force base in Nevada, in 2003. He was concerned that locating covert activities in remote environs produces spaces of legal unaccountability; out of sight, out of mind. Over the next few years he led expeditions to classified bases in the Nevada and California deserts and took photographs of them from lawful positions in the terrain. The resulting images, made using high-powered lenses, offer fuzzy evidence of something barely visible, something open to question.

The Limit Telephotography series begins with the classified Gold Coast Terminal at McCarran Airport, captured from a hotel window in Las Vegas one mile away. Easily legible, these pictures show so-called Janet flights in which classified aircraft shuttle workers to and from remote bases. The outlines of hangars and control towers are clearly discernable in Paglen’s photographs of the Tonopah Test Range, seen from eighteen to twenty miles away. Groom Lake, the site of Area 51, is visible only at night through its lights. Near the end of the sequence, Paglen took two photographs of Chemical and Biological Weapons Proving Ground; Dugway, UT from a distance of forty-two miles. Here his lenses reach their limits. He describes their blurs and shimmers as “image collapse,” prompting us to ask, “What am I looking at? What knowledge can be gleaned from an unintelligible image of an unseeable place?”

Blue #3 (Chelsea), 2016

C-print
Courtesy of the artist and Metro Pictures, New York

The source for Blue #3 (Chelsea) is a courtroom artist’s drawing from the trial of Chelsea Manning, a U.S. Army intelligence analyst and whistle-blower, who in 2010 leaked classified documents. She was convicted in 2013 of espionage and theft and sentenced to thirty-five years in prison. Paglen photographed the drawing hundreds of times using a microscopic lens, then stitched the images into one large abstraction of color washes and wispy paper fibers. By looking deeply, Paglen metaphorically liberated Manning from the image. In January 2017, her sentence was commuted, and she was released four months later.

Symbology

One of the ironies of classified military and intelligence programs is that they often have insignia and logos attached to them.

---Trevor Paglen, 2010

Some aspects of secrecy are more readily shown in language or objects than by photographs. For these, Paglen sometimes uses declassified documents in his artworks. Seventeen Letters From the Deep State is a collection of messages from the U.S. Department of State authorizing acts of “extraordinary rendition.” All are signed “Terry Hogan.” The name, Paglen explains, is a “sterile identity,” a fictional credential used for covert operations. For Code Names: Classified Military and Intelligence Programs, Paglen searched online databases and filed Freedom of Information Act requests to compile nicknames that intelligence agencies use to publicly designate otherwise classified operations. These works use secrecy’s opaque language and bureaucratic objects. They carry meaning for insiders, though not for the general public. Together with his photographs, for Paglen, they symbolize the limits of what may be lawfully shown of the spaces of secrecy while also suggesting that the investigation does not end there.
Cryptology (National Security Agency), 2018
high temp epoxy
Courtesy of the artist and Altman Siegel, San Francisco
The Challenge Coin series derives from tokens that are awarded to participants of classified operations. Paglen reproduces the tokens but also adds to or otherwise alters them. Having studied the vocabulary and grammar of the secret world, in these works he attempts to speak the language of classification, and in doing so resists the culture of secrecy.

89 Landscapes, 2015
two-channel color video projection, sound, 24 minutes
Courtesy of the artist and Metro Pictures, New York
For the video 89 Landscapes, Paglen compiled eighty-nine short films of land-based intelligence facilities around the globe. Paglen originally shot these scenes for Citizenfour, Laura Poitras’s documentary about Edward Snowden. The bucolic scenery belies the ubiquity of surveillance and the institutions that support it.

The Fence (Lake Kickapoo, Texas), 2010
C-print
Amon Carter Museum of American Art, Fort Worth, Texas,
Purchase with funds provided by Finis Welch, Jeanne Gulner, and Kenneth E. Rees
“The Fence” is the colloquial name for a powerful radar system that until 2013 surrounded the United States and extended far into space. This electromagnetic border was designed as an early warning system for ballistic missile attacks. Radar is normally invisible because it is transmitted below the visible light range, so Paglen made this photograph using a radio telescope optimized for its frequency.

Image Operations, 2018
HD video projection, sound, 24 minutes
Courtesy of the artist; Metro Pictures, New York; Altman Siegel, San Francisco
Image Operations is a video of four musicians performing Debussy’s String Quartet in G Minor, op. 10. As the performance proceeds, the perspective slowly changes from that of a camera to an array of computer vision systems “interpreting” what the camera is seeing. At first, we see the action through simple face detection software. Later we watch the performers through algorithms used in self-driving cars, guided missiles, drones, and powerful artificial intelligence systems that estimate age, gender, and the emotional states of the performers. Examining the “styles” of seeing these different systems use, Paglen questions the power structure reflected in their training sets and acknowledges that the underlying assumptions are far from neutral.

Machine Vision
What are artificial intelligence systems actually seeing when they see the world?
---Trevor Paglen, 2017

The advent of digital pictures marked the transition from human-seeable to machine-readable images. Electronic images are merely data to be processed by computer programs. For example, human eyes cannot see a .jpg file without a web browser or photography editing tool to “translate” the data. Because we rely on such tools for so many aspects of life, surveillance—whether by government, corporate, or other interests—has moved to our most intimate spaces—desktop computers, tablets, mobile phones. In addition, artificial intelligence (AI) now routinely categorizes and analyzes machine-generated images. The development of automated seeing systems—such as those in facial recognition
and self-driving cars---concerns Paglen. What is radical about this moment, he wrote, is that most images are now made by machines for other machines. Increasingly AIs carry out operations without any human “seer” or human intervention. Such systems challenge our understanding of what images are and what they do.

With his Machine Vision works, Paglen raises questions of humanity. What does it mean that “seeing” no longer requires a human “seer”? If images are a defining characteristic of human history and culture, will machine images redefine humanity? Or will images become its epitaph?

“Goldfish,” Linear Classifier, ImageNet Dataset, 2016
dye sublimation print
Collection of Alex Lakatos and Kelly Riser Lakatos
“Goldfish,” Linear Classifier, ImageNet Dataset is an abstract work of unworldly beauty. “Linear Classifier” in the title describes how it was made. Multiple software layers classify all images tagged “goldfish” within a training set of many thousands of images. Then a computer-generated image of a goldfish is translated for human eyes. Artificial intelligence says these images match their training sets of thousands of pictures, even though we would hardly recognize them.

It Began As a Military Experiment, 2017
set of ten pigment prints
Collection of Rory and John Maxon Ackerly
It Began As a Military Experiment compiles ten portraits from a pioneering facial-recognition database of the Defense Advance Research Agency. Today sophisticated facial recognition technologies calculate a unique “barcode” for each individual, which can serve many purposes. Facebook uses facial recognition to auto tag friends and family in pictures. But similar kinds of databases could allow authorities to identify all protesters at antigovernment rallies, for example, or companies to identify users of a particular product.

Adversarially Evolved Hallucinations
Adversarially Evolved Hallucinations may best be understood as “impossible images.” Here, Paglen developed his own taxonomies from literature, psychoanalysis, political economy, and poetry. An artificial intelligence (AI) was trained to recognize different types of portents, or omens. Images whose metadata were tagged with labels such as rainbow, black cat, or eclipse then became the training set. Once it had ingested a sufficient number of training images to recognize portents, a second AI was used to “paint” that subject. “Together,” Paglen said, “the AIs have evolved an image that is entirely synthetic and has no referent in reality, but that the pair of AIs believe are examples of things they’ve been trained to see.”

Paglen describes these images as hallucinations because they have no relation to light, vision, memory, narrative, or any of the traditional components of human image making. As in “Goldfish,” the titles explain how each was made. In these impossible images, plant, animal, and human figures appear to emerge and mutate within a primordial data ooze, the dream world of the AI.
**Shoshone Falls, Hough Transform; Haar**, 2017
silver gelatin print
Collection of Rory and John Maxon Ackerly
Paglen photographed the same location—Shoshone Falls—that Timothy O’Sullivan did in 1874. O’Sullivan served as photographer for the Wheeler Survey of territories west of the 100th meridian—then called a “Reconnaissance of the American West.” Paglen’s photograph explores today’s high-tech reconnaissance by artificial intelligence or machine vision. *Shoshone Falls, Hough Transform; Haar* is a close-up of the falls, overlaid with strokes and lines indicating what two different computer vision algorithms “see” in it. One artificial intelligence surveyed the image for underlying lines, a technique used in self-driving cars and robotics. Another found shapes in the waterfall that it believed to be faces.

**Trinity Cube**, 2017
irradiated glass from the Fukushima Exclusion Zone and Trinitite
Courtesy of the artist and Metro Pictures, New York
*Trinity Cube*’s distressed surface suggests the dark history encoded in its materials. Paglen built it using two kinds of glass. The outer layer was collected from the Fukushima exclusion zone—the radioactive site of the 2011 disaster at the Fukushima Daiichi nuclear power plant. The inner core is Trinitite, also called Alamagordo glass because it was created at the Trinity test site in Alamagordo, New Mexico, in 1945, when the first atomic bomb was tested. The object displayed here is an artist’s proof. The original *Trinity Cube* was placed back inside the Fukushima exclusion zone, along with other works in a “museum” made up of four evacuated houses. The exhibition will be viewable by the public only when the exclusion zone is deemed safe to open, at an unspecified future date. Here an object made for a future audience asks contemporary viewers to reflect on the catastrophes of recent history.

**The Last Pictures**
*What, if anything, does it mean, that the spacecraft we build are undoubtedly humankind’s longest-lasting material legacy? Perhaps it means nothing. Or perhaps the idea of meaning itself breaks down in the vastness of time.*

---Trevor Paglen, 2012

*The Last Pictures* series invites us to imagine a future when humans no longer exist and all that remains of civilization is a ring of dead satellites orbiting the Earth. As with all his work, Paglen began this project with a question. Could we use the spacecraft circling our planet to tell a story about the former inhabitants of Earth—the people who made the machines—and what became of them? This multipart installation documents Paglen’s effort to answer that question. The installation includes a matrix of one hundred images, an archival disc, and a timeline, as well as documents related to art, philosophy, religion, and space.

The centerpiece of the installation is the matrix of one hundred images, which Paglen spent years selecting with the help of scientists, artists, and philosophers. The images range in subject from an electron micrograph of a Martian meteorite to cloned Texas Longhorns. They illustrate the myriad calamities of life on Earth, both man-made events and natural disasters, and show humanity buffeted by violence. Together, the images convey an impression of uncertainty and anxiety about our present moment and our future.
**Timeline of Earth History**, 2012  
adhesive wall material  
Courtesy of the artist  
Paglen’s *Timeline of Earth History* is a fanciful record of the planet that begins with “Dead Earth (-5 Billion Years)” and ends with “Dead Earth III (+5 Billion Years).” Zero-time---this historical moment—is identified as the “Moment of Space Artifacts.” Although the timeline omits explicit reference to humanity, it makes clear that the spacecraft orbiting the planet are its lasting achievement.

**Artifacts (Anasazi Cliff Dwellings, Canyon de Chelly, Spacecraft in Perpetual Geosynchronous Orbit, 35,786 km Above Equator)**, 2010  
C-prints  
Collection of John B. Roy II  
The left panel of *Artifacts---Anasazi Cliff Dwellings, Canyon de Chelly---*revisits an ancient native site photographed by Timothy O’Sullivan in 1873 and by Ansel Adams in 1942. For the right panel, *Spacecraft in Perpetual Geosynchronous Orbit, 35,786 km Above Equator*, Paglen photographed defunct spacecraft orbiting Earth like man-made rings of Saturn. He combined the two to frame the question, “What will our cultural artifacts look like to future discoverers?” The artist suggests that our most persistent artifacts will be spacecraft in geosynchronous orbit, which will remain there indefinitely, outlasting our own civilization and any means of being understood by some distant, future discoverer.

**The Last Pictures/EchoStar XVI Launch and Preliminary Orbit**, 2012  
C-prints  
UBS Art Collection  
*The Last Pictures/EchoStar XVI Launch and Preliminary Orbit* shows the moment when the *Gold Artifact* was launched with an EchoStar communications satellite from the Baikonur Cosmodrome in Kazakhstan. It now resides in geosynchronous orbit with Earth, guaranteeing that *The Last Pictures* will be preserved there in perpetuity.

**The Tower of Babel**, 2012  
digitally retouched C-print  
Collection of Arthur Fleischer Jr. and Susan Fleischer  
The Tower of Babel is a biblical story explaining why the world’s peoples speak different languages. As told in Genesis, following the Great Flood a united humanity speaking a single language came to the land of Shinar, where they agreed to build a city and a tower tall enough to reach heaven. Observing the construction with contempt, God scattered them throughout the world and gave them different languages. Paglen’s photograph shows a painting of the same title made by Pieter Bruegel the Elder in the mid 1500s. *The Tower of Babel* underscores the challenge Paglen faced in creating *The Last Pictures*—communicating with an unknown, future viewer.
Gold Artifact, 2013
etched, gold-plated disk
Courtesy of the artist and Metro Pictures
The Gold Artifact, one of Paglen’s impossible objects, is a wondrous thing, showing human history for an unknowable—perhaps a nonhuman—viewer. Collaborating with a public arts organization and scientists at the Massachusetts Institute of Technology, Paglen developed an ultra-archival disc, micro-etched with one hundred photographs and encased in a gold-plated shell. The object presented here is a duplicate. In late 2012, the communications satellite EchoStar XVI was launched into orbit with the original artifact mounted to its deck, where it remains slowly circling Earth. The Gold Artifact refers to Carl Sagan’s Golden Record, copies of which were attached to NASA’s two Voyager deep-space probes in the 1970s. It carried audio and visual mementos of life on Earth meant to communicate about humanity to extraterrestrials.

The Last Pictures (Warning From Space; Demonstration of Eating, Licking, and Drinking), 2012
gelatin silver prints
Courtesy of the artist and Metro Pictures, New York
Demonstration of Eating, Licking, and Drinking was included on Carl Sagan’s Golden Record. It was his attempt to show extraterrestrials about human life on Earth. Paglen pairs Sagan’s message with a still from the Japanese science-fiction film Warning from Space (1956). In the film, a group of starfish-like alien beings travel to Earth to warn of an imminent collision with a rogue planet. As the artist conceived it, The Last Pictures project itself becomes a time capsule or a future alien artifact. “In the future,” Paglen said, “we are the ancient aliens.”

EchoStar XVI Satellite Materials
In late 2012, the communications satellite EchoStar XVI—shown here as a model—was launched into orbit with Paglen’s Gold Artifact mounted to its deck. The video animation tracks EchoStar’s orbit, slowly encircling Earth. The Table of Earth Satellites, published by the Royal Aircraft Establishment, catalogs man-made objects orbiting Earth. Included are launch dates, names and international designations, shape and weight, size, and date of orbital determination, giving a rough idea how long a particular satellite might remain in space.

Angelus Novus, 2012
C-print
Courtesy of the artist and Metro Pictures, New York
The Last Pictures opens with a photograph of the back of a picture frame. The label indicates the artwork contained in the frame is Paul Klee’s Angelus Novus (1920). Philosopher Walter Benjamin bought the drawing in 1921, and he wrote about it shortly before his death by suicide while fleeing Nazi Germany. In Benjamin’s description of the composition, an angel faces the past, watching catastrophic events pile up in front of him while storm winds propel him into the future.

Paglen positioned the subject of the drawing so that its back is turned against the future; the unseeable angel figuratively faces the historical images that follow in The Last Pictures matrix. The image matrix, culled largely from the public domain, represents the debris of human history metaphorically growing skyward toward what Paglen sees as the debris of civilization—space artifacts.
**LACROSSE/ONYX V Radar Imaging Reconnaissance Satellite Crossing the Disk of the Moon (USA 182), 2007**

C-print
Collection of Nion McEvoy

The *LACROSSE/ONYX V*, which is operated by the National Reconnaissance Office, can see through cloud cover and penetrate soil and renders images in three dimensions.

**STSS-1 and Two Unidentified Spacecraft Over Carson City (Space Tracking and Surveillance System, USA 205), 2010**

C-print
Smithsonian American Art Museum, Gift of Mike Wilkins and Sheila Duignan

The STSS-1 is one of a pair of satellites built to serve within the U.S. Ballistic Missile Defense System. Operating in low-Earth orbit, these satellites surveil in real-time and enable the targeting systems of self-guided missiles and drones.

**The Other Night Sky**

For *The Other Night Sky* series, Paglen turned to the heavens to ask, “What does aerospace surveillance look like?” To photograph objects in space, he used cameras fitted with powerful lenses attached to a computer-controlled mount. The computer calibrated his location in relation to those of common stars, and the mount rotated the cameras to offset the Earth’s rotation. Here Paglen captures orbiting spy satellites, whose locations he identified through research and whose movement can be predicted with great accuracy. The titles of the photographs identify the remote subjects and their intelligence-gathering functions. Some pictures in this series document active intelligence gathering and space debris; others refer to earlier photographers and the tradition of landscape photography. Altogether, the series exposes a celestial surveillance infrastructure with extraordinary imaging and targeting capacities that operate in real time. As Paglen looked up at the sky, machines returned his gaze.

**Impossible Objects**

Paglen describes his recent sculptural works as “impossible objects.” The expression signals both the difficulty of fabricating the objects and the alternative futures they invite us to imagine. Responding to what he sees as the withering of civic institutions under ubiquitous surveillance, Paglen repurposes military and intelligence technologies to help us envision a world free from intrusive government and corporate monitoring.

*Nonfunctional Satellites* are an example of the artist’s impossible objects. With this body of work he asks, “What might aerospace engineering, decoupled from intelligence gathering, look like?” Paglen made the *Nonfunctional Satellites* shown here as prototypes for an inflatable sculpture to be crafted from a lightweight, mylar-like material. He plans to affix the sculpture, which he called *Orbital Reflector*, to a small satellite that will orbit for several weeks before disintegrating upon re-entry into Earth’s atmosphere. The *Orbital Reflector* serves no commercial or military function. Instead, for a brief time it will become an artificial star, a reflective object of pure delight and wonder.
**Ring (Möbius Variation),** 2018
lacquered fiberglass
Courtesy of the artist and Altman Siegel, San Francisco
This collection of sculptures represents various experiments leading to Paglen’s *Orbital Reflector* project. Developed in collaboration with and co-produced by the Nevada Museum of Art, *Orbital Reflector* is a hundred-foot-long reflective satellite shaped like an elongated diamond. Scheduled to launch in fall 2018, *Orbital Reflector* will be visible to the unaided eye in the night sky before harmlessly burning up in the Earth’s atmosphere several months after launch.

**Autonomy Cube,** 2015
Plexiglas cube with computer components
Courtesy of the artist; Metro Pictures, New York; Altman Siegel, San Francisco
The *Autonomy Cube*’s transparent housing offers a glimpse of hardware that allows users to connect to the Internet. Paglen configured the work to route Wi-Fi traffic through the Tor network, which encrypts and anonymizes communications. In *Cable Landing Sites*, Paglen posed the question, “What does the Internet look like?” With the *Autonomy Cube* he asks instead, “What might the Internet look like if severed from its surveillance functions?” The artwork produces a space, within an institution of the civic state, that is free from government and corporate monitoring. When it is installed, its users become participants in the debate about surveillance, especially within spaces such as libraries and museums, where privacy has traditionally been protected.

**How to Use Autonomy Cube**
To use *Autonomy Cube*, a mobile device or computer is connected to the open Wi-Fi network called “Autonomy Cube.” Connection to the Tor network can be confirmed by visiting the URL https://check.torproject.org. If the device is connected, the web page will display the message, “Congratulations. This browser is configured to use Tor.”
When using the Tor network, some slight changes to online activities are apparent. Many websites that collect personal data make impediments to Tor users. On Google, for example, the device might be served with several CAPTCHAS requesting entry of a series of letters and numbers. Many government and corporate websites will not allow Tor users to anonymously download documents and reports. Some will not allow Tor users to connect at all. Finally, search results and web pages may appear in different languages. This is because the Tor network routes traffic through different countries, so a Tor user in San Francisco, for example, might appear to be based in Poland and served content in Polish. This is a sign that Tor is working properly.