

Animalizing the Apparatus: Pigeons, Drones and the Aerial View

Jayne Wilkinson

Abstract

Aerial photography developed in the late 19th century, and amateur photographers—who were often also scientists—invented unique ways to launch cameras into the air. Pigeons with cameras strapped to their breast represented one of the earliest and most unique ways for a camera to capture images completely independent of a human operator. This meant that the animal, not the photographer, controlled the apparatus and determined the final image. As a contemporary corollary, the use of domestic drone technology represents the fullest extension of the impulse to launch into flight a device that creates images for us. This troubles Giorgio Agamben's notion of the apparatus as that which partitions human from animal. What might it mean if the apparatus were autonomous, freed from human command? John Berger argues that to apprehend the gaze of the animal is to recognize that we are being seen by our surroundings, and in many ways this mimics the way that an environment of surveillance continually "sees" us. How might this gaze operate when an *animal* is used as an instrument or apparatus of power? Berger explains that the camera fixes animals in a domain that can never be entered by the spectator, but the reverse is also true since aerial imagery fixes a space that the human subject can never properly enter. Considering photographic works by Trevor Paglen that chart the space of the drone in highly saturated color field images, this paper will address the visual culture of surveillance technologies that includes both the animalized apparatus, the pigeon camera, and the mechanized apparatus, the aerial drone.

Keywords

Biopolitics, drones, apparatus, Trevor Paglen, aerial photography.

Photographic surveillance is an established part of contemporary life. We perform our daily routines in an environment of seeing that records, tracks, watches, and uses our image in multiple ways. Countless technologies combine to produce an indiscriminate, surveillant gaze, one that regularly captures us unaware in its omnidirectional sightlines. This plurality of mechanistic sight has been largely unaddressed by the interdisciplinary field of surveillance studies, the various theoretical constructs of which are largely based on the model of the panopticon. Critiques of this model suggest that the subjects and objects of surveillance, who is looking at whom and why, have blurred to such an extent as to be nearly indistinguishable, moving far from the criminal and often class-based surveillance methods that made the panopticon a useful model and theory.¹ Further, the multiplication of the sites of surveillance ruptures the unidirectional nature of such a gaze, transforming it from a site of localized power to one where knowledge and images flow from viewer to viewer and across institutions, only to emerge in unpredictable configurations and combinations.² Surveillance is now omnipresent, and environmental. Indeed, the technological prowess of aerial surveillance means that the entire surface of the earth, from the broadest view to the most remote detail, is photographed and recorded. This paper will examine the impact of specific technologies of aerial imaging on human subjectivity in a diffused environment of surveillance, an environment where the participants are equally subjects and objects and where the watchers might be human or non-human, drone or corporation, voyeur or laborer.

Aerial photography developed in the late 19th century and amateur photographers, who were often also scientists, invented unique methods of launching cameras into the air.³ Surprisingly, pigeons represented one of the earliest ways that a camera could capture images completely independent of its human operator. As I will discuss in this paper, with an automatic camera attached to the pigeon's body, the animal, not the photographer, controlled the photographic apparatus and determined what the image would be. What then might it mean for the apparatus to be freed from human control? To probe this question further, I will here associatively link two historically disparate phenomena of visual culture to argue that as a contemporary corollary to the pigeon camera, the military and domestic use of drone technology represents the fullest extension of the impulse to launch into flight a device that creates images for us. While there are obvious and significant differences in the scope of use from "pigeon-cameras" to unattended aerial vehicles, or



Figure 1: Julius Neubronner. Photograph of pigeons displaying different camera types. At exhibition in Dresden or Frankfurt. c.1909.

UAVs, both resist Giorgio Agamben's suggestion that the apparatus determines human subjectivity.⁴ If the use of pigeons to capture aerial images independent of an embodied human operator was the first occurrence of an unattended aerial camera, the contemporary drone could be viewed as its powerfully mechanized equivalent. Do these practices of image production subvert or permanently alter our relationship to technologies of vision? What happens to human agency when the camera and its operator are severed? As apparatuses of aerial imaging, drones and pigeons bear some surprising resemblances.

In 1903, Julius Neubronner first experimented with and later patented a "pigeon-camera," which involved attaching an analogue camera and a timer to a homing pigeon in order to take a series of aerial photographs. Neubronner was a German apothecary, engineer, inventor and amateur photographer with an avid interest in early cinematography. He is also known for a series of amateur documentary films that he produced on a stage-set in his yard, using actors to perform daily rituals.⁵ Neubronner's photographs and films are now held by the Deutches Museum in Munich, and an example of his pigeon-camera exists in the Deutches Filmmuseum. Using the combination of birds and automatic camera technology to produce aerial images was completely unique and it brought Neubronner significant worldwide notoriety. Unlike what was possible at the time with tethered crafts, such as kites or hot-air balloons, his success was in retrieving images that were physically removed from the original location, sometimes by a significant distance, due to the flight paths of the birds. In 1909, for example, and for several subsequent years, visitors to the International Photographic Exhibition in Dresden could buy postcards depicting an aerial view of the fairgrounds taken on site. Neubronner's pigeons would fly over the region of the exhibition with an automatic camera attached and when they returned Neubronner would hastily develop the film to produce postcards on the spot.⁶ The German military took note of Neubronner's patent and although airplanes would be more reliably used for aerial reconnaissance, there are reports of the use of pigeons in the First and Second World Wars for military air surveillance in addition to their more frequent use for communications with the front.⁷

Although Neubronner's invention and his series of images is largely a historical footnote, his fantasy of early autonomous imaging technology lived on in the military imaginary and in this essay I argue that the movement, range and autonomy offered by the camera-carrying pigeon is echoed in the current deployment of aerial drones. Like the pigeon trained to fly a certain path, the drone

is programmed to make certain maneuvers and yet both take to the skies with self-determination once freed from the earth. The pigeons fly off course, and they may swoop too low, fly too high, turn too sharply, or perhaps obstruct the image altogether; regardless of every attempt to maintain control, once the pigeon takes flight, the camera and the animal body are relinquished from human authority. The animal body becomes the sole determinant of the result. Drones push this self-determinacy even further. The body of the drone is always physically separate from its human counterpart and can crash, malfunction, fly off course or “go rogue,” as a growing number of incidents attest to.⁸ And, more alarmingly, drones are now capable of full autonomy, and are able to take off, make airborne maneuvers, and land on their own.⁹ Understanding the drone as a mechanized bird, as a being that flies, sees and captures from above, is not such an unlikely prospect. Drones are frequently assigned bird names that correspond with their size and capabilities: there is the hawk, the raven, the lark, the hummingbird and so on.¹⁰ In researching and designing drones, scientists maintain the animal connection by studying birds’ physiology and flight patterns in order to determine more effective ways for drones to navigate tight and narrow spaces.¹¹ In large part, the drone is already conceptualized as an autonomous being, a bird-like apparition in the sky that works in tandem with the human to provide something long sought-after: the ability to image the earth from above. The bird and the drone both function as an apparatus to human vision. In so doing they produce disembodied, aerial imagery for the use of humans engaged in surveillance and combat, imagery whose strength is anything but neutral.

In *War and Cinema: The Logistics of Perception* (1989), Paul Virilio offers a perspective on the history of war in the 20th century that reveals the inherent violence of disembodied sight. Working through the twinned concepts of eyeless vision and the sight machine, he outlines the uncontestable relationship between the eye and the weapon. In situations of war, the strategic need to be able to see beyond one’s immediate surroundings is paramount. The capacity to generate images and the ability to wage war thus became mutually dependent.¹² Virilio argues that “for men at war, the function of the weapon is the function of the eye,” where the physical, movements of pulling the trigger and releasing the camera shutter are synonymous.¹³ The inverse of that relationship also holds, where “the eye’s function being the function of a weapon” undeniably suggests that vision is power.¹⁴ Here the seeable and the foreseeable completely merge so as to eliminate distinction between the actual and the potential on the battlefield, precisely

articulating the mediated environment that both war and everyday life now operate within.

It is revelatory that this synergistic relationship is a largely technological one: new forms of technology replace human bodies in the war machine, and the parallel “watching machine” of war becomes inevitable.¹⁵ Replacing human bodies with mechanical ones is a clearly political strategy as much as it is a military one, and it has serious implications not only for the bodies of men and women at war, but for our relationships to the apparatuses of vision.¹⁶ Outside the realm of the military complex, this urgent drive to see beyond is evident in the ubiquity of imaging technologies. Through the powerful and pervasive use of satellites and drones, we have an expansive ability to expose other beings, and to be exposed ourselves. Virilio describes such images as:

electronic image[s] of remote detection; the artificial image[s] produced by satellites as they endlessly sweep over the surface of continents drawing automatic maps; [and the] life-size cinema in which the day and the light of film-speed succeed the day and the light of astronomical time. It is subliminal light of incomparable transparency, where technology finally exposes the whole world.¹⁷

It is not human observers that are capable of this type of sight, this “surgically precise vision,” but rather it is a “sight machine,” an intelligent satellite, that will automate the perception of enemy territory.¹⁸ These wandering, eyeless machines that “expose the whole world,” what do they catch in their never-ending searchlight? Unlike in the late '80s when the “enemy territory” to which Virilio refers was a physically demarcated space, precision satellites now image the entire earth from above for innumerable purposes, one of the most widespread being to provide citizens with the instant ability to see from the ground and the sky simultaneously.¹⁹ Enemy territory has temporally and spatially collapsed and with it aerial vision has multiplied and dispersed. Human subjectivity and agency is subsumed under this omnipresent surveillance since we are never quite sure if we are being recorded or watched. Our environment sees us, and similarly controls how we see ourselves within this environment. The eyeless, disembodied vision that Virilio first articulated is now geographical. No longer restricted to use for spying on enemy territory, the territories of vision are now fully incorporated into the everyday life of citizens and consumers. Disembodied and dehumanized, the contemporary drone is powerfully resonant with

Virilio's original argument, producing images at times beyond the control of its human counterpart, and in ways that are dispersed, distributed and often autonomous.

For Virilio, the question of the eyeless apparatuses that "do the looking for us," was directly related to the environment of war.²⁰ But contemporary environments of surveillance are similarly reliant on complex technologies, requiring them to capture, record, quantify, save and archive images and information related to every aspect of life on earth. Interrogating further the objects of image production, and how those objects operate within their systems of production, might help us to think about what it means when the photographic apparatus is integrated with a non-human being, as in the pigeon-camera, or is physically, geographically and psychologically separated from human control, as in the drone. For Giorgio Agamben, the concept of the apparatus begins from a general but severe partitioning, where beings are classified as either living beings, or as the "apparatuses *in which* living beings are incessantly captured."²¹ Thus he constructs a binary that precludes living beings from functioning as apparatuses full stop, because an apparatus is that category of thing *in which* beings are captured. One thing, the apparatus, captures another thing, the living being. The apparatus contains and holds the living being in its grasp, and the living being cannot escape its necessity. Instead of questioning the use-value of apparatuses, imagining that there is a "correct" way to use them or to avoid eventual capture, an important question to ask might instead be how do we, or can we, witness this act of capture? How do we first recognize this negation, this surrender, in order to engage in the ever-present struggle between beings and apparatuses?²² For Agamben it is precisely through this struggle that human subjectivity is shaped. As he suggests, today every aspect of our lives can be understood as shaped, infected, or otherwise controlled in this manner.²³ We are able to have endlessly multiple subjectivities because subjectivity is the result of struggle with different, multiple apparatuses.

By first following Agamben's categorical separation of living beings and apparatuses, and his amalgamation of human and animal under the all-encompassing term "living beings," it seems clear that animals must similarly be caught by and in apparatuses, or at least assume the capability of being caught. But Agamben resolutely refrains from suggesting that animals have the same capacity for interacting or struggling with apparatuses as humans do:

The fact is that according to all indications, apparatuses are not a mere accident in which humans are caught by chance, but rather are rooted in the very process of 'humanization' that made 'humans' out of the animals we classify under the rubric *Homo sapiens*.²⁴

Further,

we must also immediately consider the apparatuses that crowd the Open with instruments, objects, gadgets, odds and ends, and various technologies. Through these apparatuses, man attempts to nullify the animalistic behaviors that are now separated from him...At the root of each apparatus lies an all-too-human desire for happiness. The capture and subjectification of this desire in a separate sphere constitutes the specific power of the apparatus.²⁵

Although apparatuses are separated from all living beings, according to Agamben they belong strictly to the realm of the human, an end product of the process of humanization, and one ultimately based on desire. The prevalence of the apparatus defines us as human and it is through a constant tension between living being and apparatus that human subjectivity is produced and preserved. However, the animal as a living being resists this notion. When animals can both *use* an apparatus (camera), *become* an apparatus (pigeon-camera) and are, like human beings and other forms of life on earth, increasingly watched and tracked by various apparatuses in an all-encompassing environment of surveillance, then the animal as a category cannot be employed to partition difference. In the case of Neubronner's pigeon-cameras, the bird determines the variations of its course, determines where and how the photograph is secured, and ultimately enables the production of that photograph. Body and apparatus are literally and metaphorically tangled together, each requiring the other for production. So could we not say here that the apparatus has "caught" the living being? That the pigeon is as much caught in a "relentless fight" as a human being is caught by the apparatuses—airplane, satellite, drone, and so on—required to image the earth from above? This is not to suggest a kind of agency here, the pigeon as would-be photographer, but instead to show that animals

are equally capable of being caught by an apparatus, equally at risk of having their gestures, behaviors or discourses of living oriented, determined, intercepted, or controlled.²⁶

If animals can also confront the apparatus, this problematizes the strictly human-apparatus struggle Agamben constructs. As the contemporary animal-cam art and experiments of Sam Easterson and others document,²⁷ when a camera is combined with the body of a non-human, living being, what constitutes an apparatus changes; the apparatus becomes both the pigeon and the camera, dissolving the limits of living and non-living. The animalized apparatus operates a leveling of the human and non-human. Within an environment of total surveillance dependent on technological devices, human subjectivity and agency are minimized by these apparatuses. If the human subject can no longer realize herself through a vital conflict with her technological extensions, does she merely become such an extension? Like the pigeon-camera, the drone too resists Agamben's categorical separation of living beings and apparatuses, albeit from the side of the apparatus, not the living being.²⁸ When a tool comes to act as a disembodied body part—a mediated, though not physical, extension of the body—its relationship with the human is not characterized by struggle but by admission. The situation of war is now almost entirely mediated by vision machines, and a drone has the capacity to take human life, to kill in a nearly autonomous way such that responsibility is distributed, if not entirely avoided; does this not also suggest that the human subject has surrendered agency? As a contemporary corollary to the pigeon and its camera, the drone and its airborne imaging capabilities not only challenge the question of the apparatus, but also challenge our very notions of what defines human subjectivity.

The animalized apparatus is thus not only an animal-like apparatus (although certainly the example of the drone suggests as much), but an apparatus that points beyond human subjectivity as a possible horizon. When the proliferation of surveillance means that no part of biological life—human, animal, plant or otherwise—is safe from visual invasion or colonization, can there still be possibilities of resistance? How does the struggle with an animalized apparatus change the dynamics of an environment of surveillance? Are there subversive possibilities for aerial imagery in this age of drone surveillance, Google Earth and geosynchronous satellites designed to perpetually orbit the earth? The remainder of this paper will analyze some of the images that result from engagements with an animalized apparatus in the guise of both the pigeon-camera and the contemporary drone. With the larger

question of human subjectivity looming, an analysis of the images created by Julius Neubronner's pigeons in tandem with the photographic work of artist and experimental geographer Trevor Paglen will reveal some of the relational processes at stake when the view from above and the view from below intertwine.



Figure 2: Julius Neubronner. Photograph of Kronberg, Germany, taken by pigeon-camera. c. 1908.

Three of the earliest examples of Julius Neubronner's experiments with pigeon photography use a small panoramic camera to capture the definitively "bird's eye view" of its pigeon operator. In each of these images the view is low and angled, bearing striking similarity to the types of aerial imagery that would be captured from plane cockpits only a few years later.²⁹ The position of the camera is low enough that the details of the town below are easily read and understood, unlike photographs shot from a distant, vertical position and thus rendered illegible to the untrained eye.³⁰



Figure 3: Julius Neubronner. Photograph of Frankfurt, Germany, taken by pigeon-camera. c. 1908.

In the photograph of Kronberg the horizon is just barely visible on the left side of the frame, and in the photograph of Frankfurt it has disappeared completely, replaced with an elongated, vertical but almost street-level view. Abstracted, detached, atmospheric aerial views these are not. Instead, a surveillant aesthetic is at work here, as the urban environment of the human is present everywhere: streets and storefronts, apartment windows and public squares all crowd the images. Neubronner's images in the early twentieth-century not only offered the potential for reconnaissance but in this early instance of an "eye-in-the-sky," the bird navigates with its camera just above the city streets, recording environments of daily life.

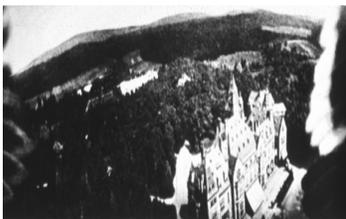


Figure 4: Julius Neubronner. Photograph of Schlosshotel Kronberg, Germany, taken by pigeon-camera. c. 1908.

The images produced by the pigeons also bear surprisingly strong formal qualities. They are sharp, high-contrast images and the low-oblique angle from which they are necessarily taken constructs a frame full of intersecting diagonals. The ground is visible but, lacking a clear horizon, is not available to orient oneself. What differentiates these images from turn-of-the-century kite or balloon aerial photographs is that, for the first time, it was possible to see or to imagine that you were seeing the perspective of a bird. For millennia birds have been held as symbols of freedom and the ability to fly has long been mythologized as a desirable trait. The viewer can now project herself into the fanciful, liberating path of an airborne being. Neubronner's images not only offered the potential for reconnaissance and military use that aerial photography was largely developed for, but he also fixed together, for the first time, human and animal vision.

This brings us to a third photograph, of the Schlosshotel in Kronberg (Fig. 4), which garnered attention at the time due to the accidental inclusion of “the photographer’s wing tips.”³¹ At first glance, the inclusion of the wings of the bird within the frame of the photograph clearly suggest the pigeon as the “photographer,” with its wings propelling forward so much so that they obscure the camera lens. Framing our view as we look down upon the earth, the inclusion of the wings reminds us that the camera is not stationary, not focused or held. So strong is the human desire for flight that we are easily prepared to associate the image with the animal body in order to substitute ourselves in the position of sight the bird occupies. But considering the image more carefully, it is not actually representing what the bird sees at all. The view between the wings might suggest that we have a “bird’s-eye-view,” but the camera is strapped to the pigeon’s breast and a direct view from the bird’s eye is, of course, not one that we can ever apprehend. Instead the image represents an imaginary scene, one that we fabricate and project. The photograph captures us as surely as does the gaze of the bird, as it looks not only at the humans below but also at any number of animals, plants, and structures within its view. The actual gaze of the bird is thus doubled by the photograph—by the image that protrudes from the belly of the beast, so to speak.

John Berger argues that to recognize the gaze of the animal is to recognize that we are being seen by our surroundings, and that being seen by the animal makes us a part of the same surroundings that we see from within.³² In many ways this “being seen” mimics the way that an environment of surveillance continually “sees” us, as the doubled-vision of the pigeon-camera captures human subjects unaware in their spaces of everyday activity. There is an irony to this capture. Discussing the massive proliferation and cultural manifestations of animal imagery³³ Berger explains that the camera fixes animals in a domain that can never be entered by the spectator.³⁴ This is both technological—the camera captures what the human eye can never physically see—and ideological, because “animals are always the observed,” and the fact that they can observe us has lost all significance.³⁵ “They [animals] are objects of our ever-extending knowledge. What we know about them is an index of our power, and thus an index of what separates us from them.”³⁶ As an index of power, there is a certain reversal at work in the project of the amateur photographer and the flight of the pigeon: no matter how well trained, no matter how much the animal might be an object of human knowledge, the imagery produced is autonomous. There is no person manually tripping the shutter, no decisive moment, no human intervention to

trap the incoming light. When Berger describes the domain that cannot be entered he is describing how the act of photographing animals fixes them somewhere that, in reality, we can never be.³⁷ Aerial imagery similarly fixes a space that the human subject can never properly enter, as made evident in the view captured by the pigeon, which we so intensely presume to be his own. Animals here are no longer always the observed. In fact, Neubronner's project reverses that index by suggesting the power of the animal gaze, looking back at us from above and sublimely, benignly, surveilling us like so many overhead satellites and drones.

As creatures tethered to the earth, it seems reasonable that humans would look to the skies with interest and envy. As film studies scholar Paula Amad has argued, and the example of the pigeon camera suggests, the aerial gaze was dreamed of, pictorially represented, experimented with and vicariously experienced before it was permanently realized through the use of photography in military aviation in 1910.³⁸ In the attempt to imagine or envision the unknowable, the view from above "has always been dialectically in tension with the view from below, the two gazes enmeshed in a struggle of attraction and repulsion."³⁹ The utopic and the dystopic, the beautiful and the sublime, the benign and the threatening: the relationship between these views of earth and sky, and all that they reveal or keep hidden, is at the crux of the photographic works of Trevor Paglen.

Drawn from his 2011 solo exhibition *Unhuman*, Paglen's recent photographs address contemporary drone technology and its relation to the expansive American military complex. These visually charged abstract prints raise questions about photography that are historical and discursive. If photography can be considered a practice of seeing with machines, how might humans intervene in this type of "machine seeing?"⁴⁰ Titriling the exhibition in the negative suggests that mechanical vision is a negation of what constitutes human sight. Whether animal or machine, there are beings with vision that have the ability to see us that are insistently not human. The drone thus provides an apt subject for Paglen as its process of seeing is relatively autonomous and its control is mitigated through a dispersed, relational geography of image production.⁴¹ With a small but powerful presence, drones look back at us; they activate the space between viewer and viewed with an eyeless vision and a geographically indeterminate location. Such indeterminacy is manifest in Paglen's visual strategy, the flat, all-over, abstract fields of color he employs in the drone series. With no horizon line to orient us towards either earth or sky, we are thrust into a vividly

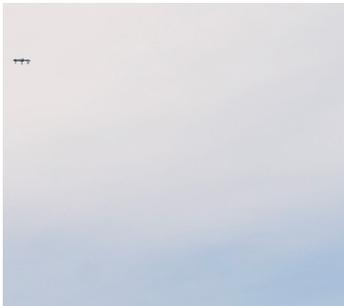


Figure 5: Trevor Paglen.
Untitled (Predators; Indian Springs, NV), 2010,
c-print 60 x 48 in.
Source:
www.altmansiegel.com.



Figure 6: Trevor Paglen.
Untitled (Reaper Drone),
2010, c-print, 48 x 60 in.
Source:
www.altmansiegel.com.

atmospheric space. As viewers we neither look up to the drone, nor down to the earth, confusing our sense of spatial orientation.

The clouds spread wide across the picture plane, serving to reflect, color, abstract and obscure, attracting our gaze to search for what is held within them. Often only after close scrutiny does the tiny point of the drone reveal itself, like a tear rupturing the fabric of the sky, to remind us that the sky is not neutral. Heaving with “the electromagnetic waves of encrypted information that pulse through the atmosphere,” the sky bears the digital information required to keep UAVs airborne.⁴² Perhaps this is why the question of aesthetic representation persists in Paglen’s work, because with striking and sublime images he paradoxically makes clear that the sky can no longer act as a projection of our desire for limitless freedom. To gaze upwards is not to look continually out to the heavens but to realize the paradox of humanity’s complete intervention into the natural world.

Paglen’s work pivots on the tension between the aesthetic and the relational, a disjunction with an established history in aerial photography. In his text on the wartime photographs of Edward Steichen, Allan Sekula constructs a striking binary division between the aerial photograph as documentary evidence, an image that yields to a rationalized act of interpretation,⁴³ and the aestheticized object, the artwork that manifests benign neutrality through its abstraction.⁴⁴ Yet this binary elides the fact that aerial photographs cannot be reduced to either pure document or pure art object. No other type of photography both reveals and conceals its limits in such a way, obscuring its objects at the same time that it reveals its process. Paglen’s work similarly disrupts this binary. First, by capturing images of the contemporary equivalent of a cameraman in a fighter plane—covert satellites, military drones—Paglen exposes the apparatuses of surveillance and war in what has been termed an exchange of gazes, where “the masters of surveillance are in their turn surveilled.”⁴⁵ But such images can only reverse the gaze in a symbolic sense. As documents they reveal little: there is no dramatic disclosure here, no unmasking of the war apparatus, no shocking military secret uncovered. Instead they offer the viewer a means of inquiry through a process that makes visible structures of power that seek to operate through invisibility. Second, using detailed and informative titles and texts to accompany each image, Paglen emphasizes the process required to produce his images, what he terms relational photography. This fully engages image and apparatus, where his practice encompasses the “seeing machines,” that allow a historically determined type of vision.⁴⁶ Paglen states that the means of achieving a particular abstraction



Figure 7: Trevor Paglen. Untitled (Reaper Drone), 2010, c-print 48 x 60 in. Source: www.altmansiegel.com.

are critical to the final image since “they imply a politics of seeing and of relations of seeing.”⁴⁷ Thus the image and its production are in constant tension, in an “apparent disjunction between process and visual result.”⁴⁸ Well aware of this potentially problematic disjunction, Paglen uses a relational practice to productively reveal it, shifting our attention “from the truth or exposure value of the image to photography’s complex framing of the relation between knowledge and vision.”⁴⁹ The drone is not a simple subject for photographic investigation but an apparatus that mobilizes an awareness of the unequal power dynamics between citizen and state, particularly when we accept life as lived within an environment of complete visual surveillance.

In such an environment what both the historical experiment of the pigeon-camera and the contemporary prevalence of the drone suggest is the potential for an apparatus that functions, physically and discursively, independent of the human subject. In the refusal to realize human subjectivity through an encounter, the animalized apparatus, both pigeons and drones, remains strictly autonomous. The sky may have once been the domain of the imaginary, that screen upon which to project hopes and desires, but it is now a space that teems with technologically determined, even self-reliant, apparatuses that roam freely. The impulse initiated by the flight of an ordinary pigeon, camera tethered to breast, has been transformed into a complex network of powerfully capable mechanized drones. Their capacity to capture is not benign, and their force has the potential to radically redefine human subjectivity.

Jayne Wilkinson is a graduate student at the University of British Columbia in the Art History, Visual Art and Theory department. Her research interests focus on the intersections of aesthetics and politics in contemporary photography, film, and new media art. Her Master’s thesis explores the politics of visibility in the works of Taryn Simon and Trevor Paglen. She currently holds the position of Exhibitions Assistant at the Vancouver Art Gallery and is on the Board of Directors for Cineworks Independent Filmmakers Society.

Notes

- 1 David Lyon, “The search for surveillance theories,” in *Theorizing Surveillance, the panopticon and beyond*, ed. David Lyon, (Portland: Willan Publishing, 2006). This volume offers a range

of surveillance theories that critique the use of the panopticon as a model for understanding systems of surveillance while searching out new theoretical models.

- 2 Kevin D. Haggerty, "Tear down the walls: on demolishing the panopticon," in *Theorizing Surveillance, the panopticon and beyond*, ed. David Lyon (Portland: Willan Publishing, 2006), 29.
- 3 "History of Aerial Photography," *Professional Aerial Photographers Association (PAPA) International*, accessed March 4, 2012, <http://www.papainternational.org/history.asp>.
The first person to take an aerial photograph was French photographer, balloonist, and journalist Gaspar Felix Tournachon, known as "Nadar," who used a tethered hot-air balloon to take a photograph from 80 metres above the ground in 1858. As technological improvements made it easier to use and transport camera equipment, early pioneers also launched cameras into the air using kites, pigeons, and rockets.
- 4 Giorgio Agamben, "What is an Apparatus?" in *What Is an Apparatus and Other Essays*, (Stanford: Stanford University Press, 2009), 16.
- 5 Walter Schobert, "Early Amateur Films by Julius Neubronner: Restored," *Journal of Film Preservation* 25, no. 53. (November 1996): 47, accessed February 22, 2012. <http://www.fiafnet.org/pdf/uk/fiaf53.pdf>
- 6 William E. Burrows *Deep Black: Space Espionage and National Security*, (New York: Random House, 1986), 31.
- 7 Frank W. Lane, "Pigeons as Birds of War," *Flight: The Aircraft and Engineer* (October 21, 1943): 456. In this substantial account, the author reports that an estimated half a million pigeons were trained and used by the combined Allied forces during the First World War, suggesting the immense importance attached to pigeons during wartime. He further reports that the German and the Japanese militaries were reputed to be using pigeons for aerial reconnaissance during World War II, and that the American Army was aware of the possible application of pigeons for aerial imagery but had not yet employed them.
- 8 Jordan Crandall, "Ontologies of the Wayward Drone: A Salvage Operation," *C Theory* (November, 2011), 1-2. www.ctheory.net/articles.aspx?id=693. Crandall outlines several examples of drone crashes with security risks and implications for domestic life along the American / Mexican border. As drones have become more fully utilized in the systems of war, independent groups have begun tracking their usage and failure. The British group Drone Wars UK maintains a database of news

- reports on drone crashes worldwide at:
<http://dronewarsuk.wordpress.com/drone-crash-database/>.
- 9 W. J. Hennigan, "New drone has no pilot anywhere, so who's accountable?" *Los Angeles Times*, January 26, 2012.
<http://articles.latimes.com/2012/jan/26/business/la-fi-auto-drone-20120126>
 - 10 Jordan Crandall, "Ontologies of the Wayward Drone: A Salvage Operation," *C Theory* (November, 2011), 4.
www.ctheory.net/articles.aspx?id=693 and W. J. Hennigan, "It's a bird! It's a spy! It's both," *Los Angeles Times*, February 17, 2011. UAVs can range from as large as the "Global Hawk," the size of a small airliner, to the medium-sized, hand-launched "Raven," at 38 inches long, to the tiny "Wasp," at 13 inches, and now the "Nano Hummingbird," that actually imitates a hummingbird in its design and movement with a "wingspan" of 6.5 inches and total weight of 19 grams.
 - 11 Ted Thornhill, "An idea with wings? Pigeons could influence the design of the next generation of surveillance drones," *Daily Mail Online*, December 15, 2011.
<http://www.dailymail.co.uk/sciencetech/article-2074487/Pigeons-influence-design-surveillance-drones.html>
 - 12 Paul Virilio, *War and Cinema: The Logistics of Perception*, trans. Patrick Camiller, (London: Verso, 1989), 3.
 - 13 Ibid, 20.
 - 14 Ibid, 3.
 - 15 Ibid.
 - 16 Peter W. Singer, "Do Drones Undermine Democracy?" *New York Times*, January 21, 2012. The U.S. Air Force now trains more operators of unmanned aerial systems than fighter and bomber pilots combined. Where during the first and second World Wars the use value of photographing/shooting from a plane was obviously more practical than with a pigeon, in contemporary warfare the rationale for replacing pilots with drone operators is not only one of logistics, economics, and power; it is also political. As Singer points out, when politicians can avoid sending condolence letters to families the impact that casualties have on the news media, and on voters, is lessened and the impact of war diminished.
 - 17 Virilio, 88.
 - 18 Ibid, 2.
 - 19 Here I refer to the familiar consumer uses of Google Earth and Google Streetview. The most widespread and freely available technology of its kind, Google's products allow users to map destinati points using a combination of remote satellite images

and street-level images, drilling down to ground level from atmospheric height with incredible detail.

- 20 Virilio, 2.
- 21 Agamben, 13, my emphasis.
- 22 Agamben, 15.
- 23 Ibid.
- 24 Ibid, 16.
- 25 Ibid, 17.
- 26 Ibid, 14. Agamben clearly defines an apparatus as “literally anything that has in some way the capacity to capture, orient, determine, intercept, model, control, or secure the gestures, behaviors, opinions, or discourses of living beings.”
- 27 Peter Bowen, “Seen and Herd,” *Filmmaker Magazine*. Spring, 2003.
<http://www.filmmakermagazine.com/archives/issues/spring2003/reports/herd.php>
Easterson’s large-scale project *Animal, Vegetable, Video* is an ongoing series of videos shot from an animal’s point of view, using small video cameras that are strapped to the body of the animal in order to record their experiences of the world. For example in *Animal, Vegetable, Video: Swamp Sanctuary*, he includes videos that chart the points of view of an alligator, frog, millipede, a pitcher plant and a lily pad. The apparatus blends the body of the animal with the viewing machine to create the impression that we are able to see what the animal sees. An increased concern for animal subjectivity in contemporary art is further evident in the range of work included in large-scale group exhibitions such as MASS MoCA’s *Becoming Animal* (2005) and the Power Plant’s *Adaptation: Between Species* (2010).
- 28 Hennigan, *New drone has no pilot*, n.p. and Joe Pappalardo, “X-47B Completes a Carrier Takeoff,” *Popular Mechanics Online*, May 14, 2013.
<http://www.popularmechanics.com/technology/aviation/military/x-47b-uav-completes-a-carrier-takeoff-15470192>. While advances in drone development may, at some point, necessitate considering the drone a sentient being, for now drones can provisionally be understood as apparatuses through Agamben’s definition. Technological advancements that point to this possible transformation include the development and testing of drones that can take off and land themselves, as demonstrated by the American Navy’s X-47B. As Hennigan states, “With the drone’s ability to be flown autonomously by onboard computers, it could usher in an era when death and destruction can be dealt by machines operating semi-independently.” Currently the X-

- 47B drone prototypes are being tested by the American Navy and have thus far been successful in their self-navigation.
- 29 Allan Sekula, "The Instrumental Image: Steichen at War," *Artforum* 14, no. 4, (December 1975), 32. Sekula discusses Steichen's "low-oblique aerial photographs," photographs that are less abstract than typical aerial photographs taken from a higher, strictly vertical position.
- 30 Sekula, 27.
- 31 Frank W. Lane, "Pigeons as Birds of War," *Flight: The Aircraft and Engineer* (October 21, 1943): 456.
- 32 John Berger, "Looking at Animals," in *About Looking*, (New York: Vintage Books, 2001), 5.
For Berger it is the gaze between human and animal, "across a narrow abyss of non-comprehension," that, lacking language, defines the human, or defines the difference between human and non-human being.
- 33 The proliferation of animal imagery is all the more widespread today than it was when Berger's text was first published in 1977. It is perhaps ironic that in the face of environmental disaster the BBC nature documentary series *Planet Earth* has become so popular. Entire stations are now devoted to images of animals in the wild in order to placate our need to experience a connection with animal life, even as it is a highly mediated one. Further, the rise in popularity of "animal cams," cameras that are situated in extremely close proximity to animals, for example the nest of an eagle, in order to give the viewer the closest possible connection to an animal perspective. Animal cams are now a popular feature on the websites of zoos and nature reserves and the BBC has an entire program devoted to them, *Animal Camera*.
- 34 Berger, 16.
- 35 Ibid.
- 36 Ibid.
- 37 By this Berger means spaces that are physically impossible to co-exist within: standing next to the open jaws of a lion, swimming alongside a shark or blue whale, burrowing next to a marmot.
- 38 Paula Amad, "From God's-eye to Camera-eye: Aerial Photography's Post-humanist and Neo-humanist Visions of the World." *History of Photography* 36:1, (February, 2012): 68.
- 39 Amad, 67.
- 40 *Unhuman*. February 10 – April 2, 2011. Press Release. Altman Siegel Gallery, San Francisco.
<http://www.altmansiegel.com/tpaglen2show/tpaglen2show.pdf>.
- 41 Trevor Paglen, "The Omnipresent Camera," (presentation, The Photographic Universe: A Conference, Vera List Center for Art

- and Politics, New York, NY, March 2-3, 2011). Paglen outlines how the dispersed relations of drone operations deploy such a geography of vision; while the military predator drone might physically be hovering over a field in Pakistan, the pilot or operator is in Nevada, flying it by a satellite link, the intelligence analyst looking at the images might be in Washington, D.C., and the force commander could be in Florida or in Qatar.
- 42 Brian Homes. "Visiting the Planetarium: Images of the Black World," in *Trevor Paglen*, (Vienna: Revolver Verlag, Vienna Secession, 2010), 5.
- 43 Sekula, 27.
- 44 Ibid, 29. Sekula rightfully questions the valorization of such images, denying the neutrality associated with images that represent the landscapes of war as seemingly depopulated and thus aestheticized. He suggests that with these photographs it's possible to "have one's war and enjoy it too," in a reading that "acknowledges and celebrates the documentary status of the image while translating the representation into an abstraction." (32)
- 45 Holmes, 4.
- 46 Trevor Paglen, "The Omnipresent Camera," (presentation, The Photographic Universe: A Conference, Vera List Center for Art and Politics, New York, NY, March 2-3, 2011).
- 47 Julian Stallabrass, "Negative Dialectics in the Google Era: A Conversation with Trevor Paglen," *October* 138 (Fall 2011): 7.
- 48 Ibid.
- 49 Karen Beckman, "Telescopes, Transparency, and Torture: Trevor Paglen and the Politics of Exposure," *Art Journal*, 66, no. 3 (Fall 2007): 67.

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