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Scorched Atmospheres: The Violent Geographies of the Vietnam War and the Rise of Drone Warfare

Ian G. R. Shaw

School of Geographical and Earth Sciences, The University of Glasgow

This article explores the violent geographies of the Vietnam War. It argues that the conflict is crucial for understanding the security logics and spatialities of U.S. state violence in the war on terror. An overarching theme is that U.S. national security has inherited and intensified the atmospheric forms of power deployed across Southeast Asia, including ecological violence, the electronic battlefield, counterinsurgency (the Phoenix Program), and drone surveillance. All of these attempted to pacify and capture hostile circulations of life and place them within the secured and rationalized interiors of the U.S. war machine. The article thus expands on the concept of atmospheric warfare. This is defined as a biopolitical project of enclosure to surveil, secure, and destroy humans and nonhumans within a multidimensional warscape. Since modern state power is becoming ever more atmospheric—particularly with the rise of drone warfare—dissecting the origins of that violence in the Vietnam War is a vital task. *Key Words:* *biopolitics, security, Vietnam War, violence, war on terror.*

本文探索越战的暴力地理。本文主张,冲突是理解美国在反恐战争中的安全逻辑与国家暴力的空间性之关键。总体的主题是,美国国家安全已继承并强化了其于东南亚所部署的大气权力形式,包含生态暴力、电子战场、反叛乱(凤凰计划),以及无人机监控。这些形式的目的皆在于企图安抚并捕捉怀有敌意的生命循环,并将之置放于安全且合理化的美国战争机器内部。本文从而扩张大气战事的概念。该概念定义为在多维战争地景中,监控、保卫并摧毁人类及非人类的围堵生命政治计画。随着现代国家权力愈发大气化——特别是无人机战事的兴起——仔细研究此般暴力于越战中的起源,便是一项极为重要的工作。关键词: 生命政治, 安全, 越战, 暴力, 反恐战争。

Este artículo explora las geografías violentas de la Guerra de Vietnam. Se arguye que el conflicto es crucial para entender la lógica de seguridad y las espacialidades de la violencia de estado de los EE.UU. en la guerra al terror. Tema crucial es que la seguridad nacional de los EE.UU. ha heredado e intensificado las formas atmosféricas del poder desplegadas a través del Sudeste Asiático, incluyendo la violencia ecológica, la guerra electrónica, contrainsurgencia (el Programa Fénix) y la vigilancia con drones. Con todas estas cosas se intentó pacificar y capturar circulaciones hostiles de vida y colocarlas dentro de los interiores seguros y racionalizados de la máquina de guerra de los EE.UU. Por eso, el artículo se extiende sobre el concepto de guerra atmosférica. Tal cosa se define como un proyecto biopolítico de encierro para vigilar, asegurar y destruir humanos y no humanos dentro de un paisaje bélico multidimensional. Puesto que el poder en el estado moderno se ha hecho cada vez más atmosférico—en particular con el advenimiento de la guerra de drones—analizar minuciosamente los orígenes de esa violencia en la Guerra de Vietnam es una tarea vital. *Palabras clave:* *biopolítica, seguridad, Guerra de Vietnam, violencia, guerra al terror.*

On 30 April 1975, U.S. helicopters evacuated thousands of U.S. and Vietnamese personnel from across Saigon in chaotic scenes that were broadcast on television screens around the world. Operation Frequent Wind, as it was called, marked the unofficial end of the Vietnam War, which had continued for two years after President Nixon withdrew U.S. troops. At its peak in 1968, there were more

than half a million U.S. soldiers stationed in the country. Many were reluctant draftees, catapulted into an amorphous conflict with shifting objectives. Indeed, the Vietnam War is difficult to contain to a single time or space: Its history stretches back to French colonialism and its geography bleeds into insurgencies fought in Laos and Cambodia. Yet despite being one of the longest wars in U.S. history, second only to the

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unyielding war on terror, the violent geographies engineered in the Vietnam War have remained relatively unexamined in political geography (exceptions include Power 2001; Gregory 2011b; Bowd and Clayton 2013; Clayton 2013). However, the conflict triggered a series of important evolutions in the conduct of U.S. state violence that this article investigates.

The Vietnam War, or the Second Indochina War, was part of a wider campaign of U.S. proxy wars, black ops, and direct military conflicts pursued during the Cold War. Motivated by the flawed domino theory, President Kennedy committed the United States on a crusade to contain Ho Chi Minh's brand of nationalist communism in the early 1960s, when he sent special advisers to Saigon. Over the next decade, a total of 58,200 U.S. soldiers and 2 million Vietnamese died in the conflict. In neighboring Laos and Cambodia, an additional 2 million people were killed in insurgencies bound to the U.S. conflict. By 1975, 879,000 orphans and 1 million war widows dwelt in overcrowded urban slums, and a further 1.5 million fled the country altogether (Wiest 2002). Thousands of former South Vietnamese military personnel were also disappeared or confined to reeducation camps after Saigon fell. The violent geographies of U.S. military intervention thus endured long after U.S. troops left Southeast Asia (Figure 1). Beneath the shadows of returning Huey helicopters lay a wounded landscape, a scarred society, and the geopolitical conditions for decades of "blowback" in the region (Johnson 2002), particularly in the killing fields of Cambodia.



Figure 1. U.S. soldiers are airlifted by UH-1D helicopters on 16 May 1966. *Source:* U.S. National Archives, Identifier Number 530610. High-resolution image taken from Wikimedia Commons (https://commons.wikimedia.org/wiki/File:UH-1D_helicopters_in_Vietnam_1966.jpg). (Color figure available online.)

Of course, although U.S. troops might well have left behind a bloody legacy, many carried home their own personal hell, returning to a war-weary public in the throes of the civil rights movement and a tectonic shift in social mores. For all of these reasons, any analysis of the Vietnam War must excavate incomplete ruins and contradictory stories. Yet several important geographies emerge from the rubble of America's lost war. These are important for understanding the practice of contemporary state power, which has become increasingly atmospheric (Elden 2013; Adey 2014). An obvious example today is the securing of national airspace with military satellites, planes, drones, and even blimps (Williams 2010). These aerial technologies allow the state to access—and render transparent—the material and electronic circulations of life, which curl together in hybrid, more-than-human ecologies. U.S. national security has not only inherited but also intensified various forms of atmospheric warfare deployed in Vietnam.

The first form of atmospheric warfare this article investigates is the use of ecological weapons—such as Agent Orange and napalm—to poison, burn, and destroy the lived environment. This is important for establishing the centrality of *geography* to the conduct of U.S. military strategy in Vietnam. The second project is the U.S. military's so-called electronic battlefield (Dickson 2012). This was a sophisticated network of electronic sensors, airplanes, and computers that detected enemy movements in the forest and automated the military's kill chain. Unlike the scorched earth strategy of defoliation, the electronic battlefield enclosed the enemy's lifeworld inside a simulated, cybernetic environment. Related to this was the U.S.–South Vietnamese counterinsurgency project called the Phoenix Program (Valentine 2000). This apparatus placed insurgents inside a bureaucratic world of manhunting and pacification. The entrenchment of targeted killing within the war on terror marks a crucial line of descent. The final form of atmospheric warfare investigated is the deployment of Lightning Bug drones across North Vietnam. These unprecedented surveillance missions were a formative period in the emerging "dronification of state violence" (Shaw and Akhter 2014).

Rather than present a military history of these projects, this article explores how they each produced a mode of atmospheric warfare that sought to enclose, police, and pacify hostile forms of life. As such, it brings our attention to the immersive, ecological, and at times suffocating apparatuses of state power. By combining

the historical and the theoretical, the article not only recognizes the importance of “the *temporal* and *spatial* specificity of security logics” (Browning and McDonald 2011, 242) but also contributes to emerging debates in political geography, international relations, and critical security studies on the links between violence and the physical architectures of state power (Holmqvist 2013; Schouten 2013; Srnicek, Fotou, and Arghand 2013). More specifically, there has been a growing interest in the relationship between conflict and its material geographies (Le Billon 2001; Francis 2014; Gregory forthcoming), such that “it is no longer possible to treat war and environment as separate realms” (Pearson 2012, 125). By expanding on what we think of as an atmosphere—to include technical forms of enclosure and immersion—the article concludes by arguing that drone warfare has come to symbolize a fundamentally enclosed technological civilization.

Enclosing Life

Despite the novelty of aerial technologies such as Predator drones, state power has always been invested in surveilling and engineering the lived environment. Foucault (1977), for example, asserted that state power and violence are always-already etched into the material organization of space. His analysis begins in seventeenth-century Europe, when deviant individuals were disciplined through state enclosures, including prisons, asylums, schools, factories, and barracks. From this archipelago of hypersecured “insides,” the entire social field was slowly surveilled under a “generalizable mechanism of ‘panopticism’” (Foucault 1977, 216). In turn, this disciplinary power—which fixed docile bodies inside of state-sanctioned architectures—was supplemented by what Foucault termed a biopolitical power in the second half of the eighteenth century. This targeted the human being as a living, breathing, animal, “taking control of life and the biological processes of man-as-species” (Foucault 2003, 246–47). Biopower seeks to control the milieu of the human species, including “the direct effects of the geographical, climatic, or hydrographic environment” (Foucault 2003, 245).

Biopower is thus a profoundly atmospheric power: It targets the voluminous spaces of human existence, from the soil beneath our feet to the skies above our heads. The twentieth century intensified this atmospheric power, and “will be remembered as the age whose essential thought consisted in targeting no

longer the body, but the enemy’s environment” (Sloterdijk 2009, 14). No longer did the state focus on the minds and bodies of recalcitrant individuals: It came to occupy and engineer the wider atmosphere. As Feigenbaum and Kanngieser (2015, 81) argued, “This attunement to the air as an agential feature of political control does well to capture how military and state operatives treat the atmosphere as measurable and open to manipulation.” Atmospheric power, in short, crystallizes the state’s ability to enclose—sometimes violently—the atmospheres in which living beings are born, become, and die: “biopolitics begins as enclosure-building” (Sloterdijk 2013, 170).

Despite their apparent diversity, each of the four types of atmospheric warfare deployed in Vietnam can therefore be understood as biopolitical projects of enclosure. Whether ecological violence, electronic war, manhunting, or drone surveillance, each attempted to enclose the hostile circulations of life within the secured, rationalized interiors of the U.S. war machine. The state’s use of the atmosphere, as a medium for travel, surveillance, and violence, is now an essential feature of modern conflict, and represents what Sloterdijk (2009, 53) called “the ecologization of warfare.” Atmospheric warfare is thus an outgrowth of a mode of state power that is fundamentally concerned with targeting and occupying the lifeworld.

But what exactly is an atmosphere? Atmospheres are hybrid or more-than-human envelopes of existence, “spatially discharged affective qualities that are autonomous from the bodies that they emerge from, enable, and perish with” (Anderson 2009, 80). In other words, an atmosphere is a space, or a volume, of hybrid materials and forces. Atmospheres are constructed—and policed—not simply by human modes of existence but the force-full and affective qualities of objects (Meehan, Shaw, and Marston 2013; Shaw and Meehan 2013). An attention to the atmospheric thus extends our understanding of the spatiality of state power, adding a height, depth, and more-than-human materiality to our geographical registers (see Klauser 2010). Indeed, this kind of vertical geopolitics “requires an Escher-like representation of space, a territorial hologram in which political acts of manipulation and multiplication of the territory transform a two-dimensional surface into a three-dimensional volume” (Weizman 2002).

The Vietnam War marks a crucial moment in the history of atmospheric warfare. On the one hand, the U.S. military destroyed countless lived environments, pulverizing plants, people, animals, rivers, and trees

(Figure 2). The U.S. Air Force even tried to modify the Vietnamese climate to induce devastating typhoons. This form of atmospheric warfare was a distinctly geographical mode of violence that reengineered the Vietnamese landscape to meet the abstract blueprints of the U.S. military's war (Lacoste 1973; see also Bowd and Clayton 2013). In other words, it sought to remake the environment through physical terraforming or *terror-forming*. The conflict also inaugurated forms of atmospheric power that enclosed the biopolitical landscape indirectly, however, using technical apparatuses. This includes the electronic battlefield, the bureaucratic world of the Phoenix Program, and the aerial surveillance orbits of Lightning Bug drones. This means that atmospheric warfare must be understood as both *ecological* and *electronic*, collapsing physical and virtual surfaces inside of moving volumes of state power.

Although actor-network theory has continually brought attention to the objects and relationships that produce state power (Latour 2005), atmospheric power highlights the spheres, encasings, and enclosures that wrap themselves around the terrain, containing humans and nonhumans within hybrid, multidimensional warsapes. "Thinking through atmospheres," explained Adey (2014, 835), "helps us to extrude networked security into immersive enveloping shapes in which the subjects in and of security might be caught. Thus, understanding a security dispositif through



Figure 2. U.S. napalm bombs explode in South Vietnam, 1965. Source: U.S. National Archives, Identifier Number 542328. (Color figure available online.)

atmosphere is to attend to the multiple, expressive, and enveloping spatialities it produces and seeks to capture." In other words, atmospheric warfare seeks to capture, reengineer, and at times eliminate the circulation, shape, and spaces of life. Indeed, as will become clear, the Vietnam War offers a deep, even existential reflection on the precarious link between human existence and the environment.

The Colonial Inheritance

Since U.S. state violence is becoming ever more atmospheric, revisiting its early beginnings in the mud and blood of Vietnam is crucial. Yet the Vietnam War was never simply a U.S. war. The conflict emerged from colonial conditions present long before U.S. Marines deployed on the beaches of Da Nang in 1965. During the nineteenth century, France colonized Southeast Asia and created what was known as French Indochina, composed of the Vietnamese regions of Cochinchina, Annam, and Tonkin, as well as Laos and Cambodia. The French imposed a series of land reforms that converted vast swathes of Vietnam into rubber plantations. Particularly in the southern colony of Cochinchina, this produced a landless proletariat dependent on a small, foreign-backed elite. In short, the political geography of French colonialism sharpened the division between north and south (Fitzgerald 1972). Annam, and later Tonkin, subsequently became hotbeds for a growing anticolonial struggle during the 1920s.

Japan's invasion of Vietnam during World War II and France's resulting capitulation spurred the growing nationalist cause. In 1941, Ho Chi Minh founded the Vietminh to combat the Japanese occupation and overthrow the French colonial administration. By 1945, the Vietminh had succeeded and moved into Hanoi to proclaim the free Democratic Republic of Vietnam. Following World War II, however, the French—backed by their British allies—swiftly reoccupied Cochinchina, regaining control of Hanoi in 1947. The Vietminh scattered into the countryside and began a long campaign of insurgency. Despite overwhelming technological superiority, the French met decisive defeat at the battle of Dien Bien Phu in 1954, where some 12,000 French soldiers surrendered. "What the Vietminh had lacked in techno-capital they made up for by mobilizing people" (Gibson 2000, 64).

Peace negotiations followed in 1954, with the Geneva Accords temporarily dividing the country along its seventeenth parallel and mandating an

election to reunify the country in 1956. During the armistice, the Vietminh moved into the north and consolidated their government in Hanoi. Meanwhile, in the south, the Central Intelligence Agency (CIA) backed the controversial figure of Ngo Dinh Diem. Staunchly anticommunist, Diem's autocratic regime gained its power from the Catholic émigrés who had fled to Saigon from the north. Diem balked at the Geneva Accords in 1955, and the United States—fearing a communist landslide victory—threw its support behind his Republic of Vietnam. For the next eight years, the United States would support a dictator whose unpopular policies—land reform, taxation, forced resettlement, repression of Buddhists, and terroristic anticommunist laws—would alienate the wider peasant population.

In response, Vietminh fighters who had stayed in the south, together with other groups that opposed the Saigon government, established the National Liberation Front (NLF) in 1960, gaining de facto control of the countryside. Throughout the war the NLF was supported by Hanoi's conventional, Soviet-backed army, the North Vietnamese Army (NVA), which was led by General Vo Nguyen Giap. In effect, the Vietminh and the NLF were both crystallizations of a single, revolutionary arc. No matter how hard the U.S. military fought, and no matter how superior its war machines were, it could never escape this stubborn truth. Yet the anticolonial struggle was not at the forefront of the minds of the U.S. war managers. Obsessed with the idea that communism was a monolithic force, the nuances of the Vietnam conflict were erased (Turse 2013). As such, the U.S. military, in support of its Saigon client state, faced an armed uprising it scarcely comprehended.

Initially, under the direction of General Westmoreland, the conflict was managed as a war of attrition. Rather than hold territory, the U.S. military sought to grind down enemy numbers in search-and-destroy missions. This was a defining feature of the Vietnam War in its early years: U.S. soldiers would drop down from a helicopter, fight over a contested hill, ravine, or fire-base, and then be evacuated after the battle. Karl Marlantes, a decorated U.S. Marine, put it best in his celebrated war novel, *Matterhorn*: "People who didn't even know each other were going to kill each other over a hill none of them cared about" (Marlantes 2010, 343). By viewing victory in terms of disparate body counts, the war was being fought as a patchwork of pointillist conflicts. "Westmoreland was trying to play chess while his enemy was playing Go" (Fitzgerald

1972, 343). The lack of a territorial basis meant the progress of the war was difficult for the military to measure. It also suited the Maoist-style tactics of NLF guerrillas, who melted away into the forest only to later reemerge.

By 1968, the NLF numbered some 400,000 men, women, and children (Wiest 2002). Washington's limited war, designed to prevent the Saigon government from falling into communist hands, was turning into a forever war against an enemy that few Americans even saw. Change was afoot after the so-called Tet Offensive of February 1968. This attack against South Vietnam's major cities terminally weakened the NLF as a fighting force, killing 58,000 out of 84,000 troops (Wiest 2002). But scenes of urban war in the heart of Saigon were highly symbolic to a U.S. public growing disaffected with a faraway conflict. Moreover, the Tet Offensive contradicted government assurances that a U.S. victory was imminent. On 3 July 1968, months after the My Lai massacre, General Abrams replaced Westmoreland as the new commander of the U.S. military in Vietnam. He changed U.S. tactics and inaugurated a "One War" strategy aimed at securing Vietnamese villages and eliminating the so-called NLF shadow government. Yet despite this change, throughout the war the U.S. military ran a long campaign of ecological violence that directly targeted Vietnam's forests.

Geographical Warfare: Wounding the Land

Many remember the Vietnam War for the unprecedented use of chemical weapons designed to clear the landscape. Yet this relationship between violence and the environment has persisted since the dawn of humanity. Perhaps all that has changed is the scale, intensity, and technical complexity of this relationship. For example, in their study of forests in Indonesia, Malaysia, and Thailand, Peluso and Vandergeest (2011, 604) argued that "it is difficult to understand the ecological and political lives of contemporary forests without understanding their connections to Cold War-era insurgencies and counterinsurgencies" (see also Clayton 2013). This reflects a broadening appreciation that war and violence are not discrete spatial events but merge into contorted landscapes of security and insecurity (Philo 2012; Woodward 2013; Fluri 2014). The emerging interest in the geopolitics of nature and climate change reflects rising concerns

about life in the age of what some have labeled the Anthropocene (see Dalby 2013). This sensitivity to the planet draws our attention to forms of violence that can fester and rot long after wars are won and lost. So although violence can be fast and subjective, as with the genocides that slaughter thousands within weeks, other times it can be slow and infrastructural (Nevins 2009).

Geography was very much active in the execution of state violence throughout the Vietnam War. Half of South Vietnam's entire forested land was damaged by bombs, bulldozers, and chemical weapons (Westing 1983). In this kind of an ecological war, the atmosphere becomes the space, or medium, of terror. The U.S. military sought to reengineer the physical atmospheres of Vietnam into an abstract warscape that was knowable, mappable, and bombable. At times, all forms of life, human or nonhuman, were considered fair game inside the U.S. military's enclosure. As Sloterdijk (2009, 25) wrote, this form of atmospheric terror, "from an environmental perspective, voids the distinction between violence against people and violence against things: it comprises a form of violence against the very human-ambient 'things' without which people cannot remain people."

In 1972, Yves Lacoste, a French geographer, investigated claims that the U.S. Air Force was deliberately bombing North Vietnam's irrigation systems under what he termed geographical warfare. By targeting the country's dikes, "a primordial geographical condition of existence for the people," Lacoste (1973) argued "that these bombings were designed to precipitate a frightening catastrophe" (3). This attempt to flood the landscape marshaled a form of state power that targeted and terrorized the enemy's environment directly. So although geographic warfare was by no means unprecedented (Peluso and Vandergeest 2011), its systematic deployment by the U.S. military marks a distinct amplification.

In addition to U.S. bombing campaigns in the north—such as Operation Rolling Thunder (1965–1968) and Operation Linebacker I and II (1972)—the U.S. Air Force routinely struck South Vietnam, Laos, and Cambodia. By the end of the war, approximately 21 million bomb craters pockmarked South Vietnam's landscape (Gibson 2000, 225). B-52 Arc Light bombing missions could leave a trail of destruction that was miles long. These craters then became flooded in the tropical Mekong Delta region, acting as breeding grounds for mosquitos and diseases. "Huge numbers of

rice paddies, orchards, farms, and gardens were lost to cultivation. This led to rampant soil erosion and weed invasion, destroyed wildlife habitats, and played havoc with the countryside's intricate irrigation systems" (Turse 2013, 93). Shrapnel also punctured tree bark, leading to the growth of wood-rotting fungi (Westing 1975). In total, 9,000 out of 15,000 rural villages in South Vietnam were destroyed (Westing 1983). Nearly 10.5 million people abandoned their homes because their rural livelihoods were destroyed (Gibson 2000).

One of the most controversial elements of the Vietnam War was the use of chemical defoliants such as Agent Orange. The U.S. military's defoliation program aimed to strip the forests of life, reducing the cover for the NLF, particularly along the Ho Chi Minh Trail. This was the main logistical network of supplies to the South that wound through Laos and Cambodia. Around 72 million liters of herbicide were dumped across South Vietnam, including 42 million liters of Agent Orange (Palmer 2005). This spraying represented around a seventh of South Vietnam's total land area (Gibson 2000). The first defoliation flights took place on 28 November 1961. The Air Force modified UC-123 aircraft for the missions, which became part of Operation Ranch Hand, lasting until 1971 (Frankum 2006; see Figure 3). For years following the spraying, only uncultivable plants would grow in extensive white zones. When wildlife wasn't deliberately targeted by the U.S. military—as it



Figure 3. UC-123 aircraft on a defoliation flight as part of Operation Ranch Hand. *Source:* National Museum of the U.S. Air Force, Identifier Number 071002-F-1234P-022. Available in Wikipedia Commons (https://upload.wikimedia.org/wikipedia/commons/9/96/Ranch_Hand'_run.jpg). (Color figure available online.)

sometimes was in the case of water buffalo (Westing 1983; see also Turse 2013)—it was unable to survive in these deathly ecosystems. Residual dioxins from Agent Orange are still responsible for a number of congenital health problems (see Palmer 2005; Ngo et al. 2006; Wilcox 2011).

U.S. soldiers carrying flamethrowers, and later Phantom and B-52 airplanes, delivered approximately 400,000 tons of napalm during the war, with fires ravaging around 100,000 acres of forested land (Turse 2013). Beyond chemical weapons, sometimes the destruction of forests was achieved more mechanically. Approximately 1,200 square miles of forest were bulldozed by Rome plows, which were 33,000-kg armored tractors. In total, they tore up approximately 2 percent of the entire land area of the South (Westing 1975). Furthermore, an experimental program of weather warfare was developed. U.S. aircraft released photoflash cartridges inside of clouds to trigger the release of moisture. Industrial-scale atmospheric power had arrived in Southeast Asia. Yet ironically, “typhoon-induced rains interfered with cloud seeding, cooling the earth and preventing the updrafts of heated air that were essential to the project” (Nalty 2005, 33). This practice of climatic modification was later banned in a 1977 UN Convention.

Finally, the use of tear gas represents a more intimate attack against and through the atmosphere. The U.S. military began equipping South Vietnamese troops with what were then termed riot control gases in 1962, under its Military Assistance Program. U.S. Marines, in turn, first used tear gas during the 1965 Operation STOMP in Qui Nhon. Because NLF tunnels were extremely dangerous places for U.S. and South Vietnamese troops to crawl into (a practice carried out by so-called tunnel rats), “it soon became standard practice to throw tear-gas grenades into the entrance and . . . force the gas down into the recesses of the tunnel” (Ellison 2011, 50).

One of the ironies about the use of tear gas was how quickly it boomeranged back to the U.S. homeland, where it was used against anti-Vietnam War protesters at Berkeley. Since the Vietnam War, tear gas has become an important weapon for securing the urban environment across the planet (Nieuwenhuis 2013). By flooding the urban volume with a toxic cloud of chemicals, the state seizes the territory that protestors occupy and converts it into a hostile milieu. As Feigenbaum and Kanngieser (2015, 81) argued, “Atmospheric policing refers to those technologies and techniques for controlling populations that are

fundamentally predicated on their relationship with air . . . they colonize space in ways that other weapons do not.” Tear-gassing is a biopolitical war launched against and through the atmosphere. “By using violence against the very air that groups breath, the human being’s immediate atmospheric envelope is transformed into something whose intactness or non-intactness is henceforth a question” (Sloterdijk 2009, 25). Here, then, state power is enforced directly on bare animal surfaces—in the lungs of unwilling subjects. Biological tissue becomes a target and participant in atmospheric war.

Electronic Enclosure

Atmospheric warfare has so far been synonymous with methods of state power that seek to destroy and rework the lived environment. But atmospheric warfare cannot be restricted to thinking about the circulations of biological life—as if atmospheres are nothing more than the bubbles that envelop living organisms in the natural kingdom (i.e., Uexküll 2010). Atmospheres are equally technological. I therefore want to broaden how an atmosphere is understood to encompass the electromagnetic spheres that enclose, code, and secure the circulation of life. The idea of (remotely) sensing the atmosphere through electronic machinery is crucial to this section, which traces how a battlefield suffused with networked sensors came to exploit the atmosphere for surveillance and control.

The Vietnam War was history’s first “Technowar” according to Gibson (2000). This is defined as a technologically intensive, managerial conflict, fought with spreadsheets and statistics as much as soldiers and bombs. A crucial figure in realizing Technowar was Robert Strange McNamara, the Secretary of Defense during the early years of the Vietnam War. Along with ex-RAND systems analysts, his aim was to transform the military into a corporatized, machinistic system. “There was to be no ‘fog of war’ for his Pentagon” (Turse 2013, 42). The complicated lives of humans were converted into streams of data, part of the cybernetic revolution that was sweeping across the Pentagon. “The cybernetic model of warfare erected by the system analysts was one that was frictionless, a perfectly oiled machine resting on elegant mathematical constructs” (Bousquet 2009, 161).

In the summer of 1966, a group of U.S. scientists were charged with reviewing Vietnam War strategy. The Jasons, as they were known, concluded that

Rolling Thunder was a strategic failure. They proposed replacing it with a gigantic fence across the southern belt of the demilitarized zone and into the Laotian panhandle. This was designed to interdict the flow of men and resources along the Ho Chi Minh Trail. The Senate Armed Services Committee named this the “electronic battlefield” (U.S. Senate 1971). The first segment of the electronic battlefield proposed was a ground barrier constructed with an assemblage of firebases, outposts, sensors, barbed wire, trip lines, and landmines, which stretched inland from the South China Sea for about nineteen miles (Staaveren 1993).

Igloo White was the name of the second segment of the electronic battlefield and was a virtual barrier that used electronic sensors to remotely track the movement of enemy troops through Laos and Vietnam. Once a sensor detected a stimulus in the surrounding atmosphere—such as the sound of a passing truck, a vibration in the ground, the chemical “smell” of an NLF soldier, or even a change in light—it broadcasted a radio signal to nearby ground and air receivers, including Lockheed EC-121 planes. These signals were then relayed through the atmosphere to the U.S. Infiltration Surveillance Center at Nakhon Phanom in Thailand. This 20,000-square-foot operations hub, known as Task Force Alpha, was the nerve center of Igloo White, staffed by around 400 Air Force personnel (Nalty 2005).

Two IBM 360-65 super-computers processed the incoming sensor information. Strings of activated sensors would light up across a map display in the war room. These illuminated patterns became known as worms, and were used to determine the time that human and truck convoys would arrive at a predetermined strike zone. As Dickson (2012, 85) noted, sometimes the pilot of these planes would “not even push the button that dropped the bombs—like so much else in Igloo White this was automated with the bombs released at the movement selected by the computer.”

From beginning to end, the enemy of the electronic battlefield existed as an abstract signal generated by remote sensors. Igloo White installed a sophisticated radio enclosure, a self-referential atmosphere of computer algorithms, automated gunships, and electronic worms. “At the point when Technowar reaches its technological apex, it turns completely into a representation. Indeed, the very name for a ‘target’ was ‘target signature’” (Gibson 2000, 397). To U.S. military analysts sitting in Thailand, human lives and deaths were viewed as illuminated simulacra. In 1972, Eric

Herter, a U.S. veteran of the Vietnam War, claimed that the electronic battlefield was “an automated electronic and mechanical death machine.” He continued, “We have seen the mechanical monster, the mindless devastation, the agony of simple people caught in the fire storm of our technological rampage” (quoted in Dickson 2012, 208–09).

During President Nixon’s so-called war on drugs, the U.S.–Mexico border became a crucial testing ground for the electronic battlefield. Seismic sensors were used by the U.S. Border Patrol in the summer of 1970 to monitor illegal border crossings (Clawson 1970), together with Air Force Pave Eagle remotely piloted aircraft. As Barkan (1972, 619) observed, “Vietnam’s \$3250 million automated battlefield is coming home to America, the land where it was conceived. Though they may not know it, many Americans are already being watched.” This atmospheric form of security continues today, with fleets of Predator drones orbiting the U.S. borderlands—together with billions of dollars spent on virtual fences in the desert. Both are embodiments of the same kind of hope and hubris poured into Igloo White. By the close of the Vietnam War, the Pentagon was investing millions into electronic battlefield programs. Igloo White was thus the trigger for a growing revolution in military affairs, centered around the idea of network-centric warfare (Cebrowski and Garstka 1998; Deitchman 2008). Crucially, the electronic battlefield enabled the U.S. military to globalize its battlespace, to install a networked sensor-shooter system that brought the planet’s undulating topographies inside its machinic topologies.

This was the beginning of a completely digitized battlespace, an electronic enclosure big enough to place the Earth’s vast oceans and skies inside. In 1975, *The New York Times* ran a story on this brave new world, prophesizing, “Wars fought by planes without pilots, between armies that may never see each other except as blips on an oscilloscope” (Stanford 1975, 12). In another forward-looking piece, *Newsweek* predicted, “By the 1980s . . . the President will be able to order up a television overview of battlegrounds, to survey damage to both American and enemy cities and to evaluate potential target areas” (“Visions of the Next War” 1974, 53). This future has, of course, come to pass. A range of global apparatuses, from satellites and drones orbiting the planet, to National Security Agency (NSA) listening posts, now produce an increasingly totalizing form of atmospheric surveillance, forming what I’ve elsewhere called a “Predator

Empire” (Shaw 2013; see also Engelhardt 2011; Scahill 2013).

By converting the uncertainty of the warscape into an electronic battlefield, the U.S. military’s Igloo White project also foregrounded the pattern of life analysis that would come to define the CIA’s drone program of targeted killing in Pakistan (Shaw and Akhter 2012). U.S. analysts from Task Force Alpha in Thailand, plotting the geographic trajectory of electronic worms using analog technologies, were conducting a simplistic form of signals intelligence (SIGINT) and geographical intelligence (GEOINT) that CIA and NSA analysts would build upon decades later. In particular, the movement from analog to digital warfare dates back to an important period following the Gulf War. In the summer of 1994, the Army Science Board Summer Study Panel reviewed the Army’s technological capabilities and began a series of experiments in digital war under the name Force XXI.

Today, the U.S. intelligence community regularly uses GEOINT and SIGINT to plot the space–time trajectories of targeted individuals. One of the most sophisticated geographic information systems (GIS) used by the military is GeoTime, which allows an analyst to map temporal data, so that patterns over space *and* time can be discerned. This represents a transition from feature-based to activity-based intelligence (see Crampton, Roberts, and Poorthuis 2014). Underlying this evolution has been a proliferation in computational forms of governance under what Amore (2009) called algorithmic warfare. Automated GIS tracking systems must be capable of finding and fixing suspicious spatial trajectories among billions of pieces of information. This algorithmic calculation aims to locate dangerous patterns of life, a “militarized rhythm analysis, even a weaponized time-geography” (Gregory 2011a, 195). If such biopolitical signatures are defined as dangerous—often through their association with known or suspected terrorists—they can be subsequently eliminated in a so-called signature (drone) strike (Shaw 2013).

Signature strikes represent an evolution of state power away from fixed sovereign territorialities and citizen subjects, to a globalized biopolitics of security based on targeting emergent patterns of life, in which “subjectivities, boundaries, and territory are comprehensively reconfigured” (Dillon 2007, 17). In other words, state power is not simply exercised across disciplinary enclosures (Foucault 1977) marked by insides and outsides, friends and enemies. “The production of

this form of individuality belongs neither to discipline nor to control but to something else: to *targeting* in its most contemporary procedures, whose formal features are shared today among fields as diverse as policing, military reconnaissance and marketing” (Chamayou 2014). Contemporary state power circulates among diffuse atmospheres with uncertain boundaries and targets threatening patterns of life. These are porous, roving volumes that complicate traditional ideas of sovereignty, territory, and subjectivity.

Counterinsurgency and the Phoenix Program

The third form of atmospheric security I want to investigate is centered on the bureaucratic forms of power that came to define U.S. counterinsurgency. Although very much grounded in a material infrastructure, U.S. pacification and counterinsurgency was constellated through a variety of symbolic regimes, bureaucratic protocols, and cultural dispositions. As with the electronic battlefield, atmospheric warfare can exercise a certain psychological power over those caught in its volumes: Both practitioners and targets are forced to dwell beneath the same semiotic sky.

Although it was not widely appreciated at the time, many believe that the U.S. military lost the Vietnam War because of how it routinely misunderstood the importance of village life, as both a wellspring of identity and insurgency. The village and the land that it occupied were sacred to many Vietnamese people, connecting them to their ancestors in an undying spiritual constant (Fitzgerald 1972). Moreover, the village was the principal source of NLF power: Due to its dispersed and decentralized organization across hamlets big and small, the NLF was nearly impossible to erase. This meant that the average Vietnamese peasant played a delicate balancing act between Saigon and NLF cadres. “For most Americans in Vietnam, the dynamics of the Vietnamese villager’s dilemma were impossible to grasp” (Herrington 1982, 53).

The U.S. pivot toward pacification and away from search-and-destroy missions came after a series of failures in South Vietnam. The Strategic Hamlet program, for example, was modeled on British counterinsurgency in Malaya, where the practice of “winning hearts and minds” was developed (see Belcher 2012). Sir Robert Thompson was head of the British Advisory Mission to South Vietnam and recommended securing existing villages with barbed wire

and bamboo fencing. Under Diem, however, the Strategic Hamlet program forcibly relocated communities to agrovilles. Moreover, the land outside these fortified archipelagos could be—and was—declared as free-fire zones that were subject to random artillery fire in a practice known as harassment and interdiction. Needless to say, the resettlement program was a disaster: “the circle of artillery and barbed wire enclosed a political void that waited for the NLF” (Fitzgerald, 1972, 125). The Strategic Hamlet strategy waned after the military coup against Diem in 1963, but U.S. management of the war increased the outpouring of villagers to overcrowded urban areas, which became de facto Strategic Hamlets.

Although U.S. counterinsurgency can be traced back to the military’s occupation of the Philippines (McCoy 2009b) and documents such as the Marines’ Small Wars Manual of 1940, it was under the direction of Robert Komer that a widespread program of counterinsurgency was pursued. This was institutionalized in the 1967 Civil Operations and Revolutionary Development Support (CORDS) program. This was a joint military and civil program that acted as an umbrella for all the various pacification programs run across South Vietnam. Its aim was to win hearts and minds through various social and rural programs, as well as dismantling the political apparatus of the NLF—variously labeled as the Viet Cong Infrastructure (VCI) or shadow government—that existed across the countryside. The system was heavily computerized. The Hamlet Evaluation Scheme, for example, required district-level advisers to input eighteen separate quantitative metrics to generate the average value of pacification in each hamlet.

By this time, there was a range of different agencies in South Vietnam producing intelligence on the NLF. The CIA was thus eager to create a unified anti-infrastructure intelligence program. The result was the Infrastructure Coordination and Exploitation (ICEX) program. ICEX was signed into law in December 1967 by President Thieu, who named it Phung Hoang, the All-Seeing Bird, which was translated to Phoenix. Officially, the program sought to neutralize—that is, capture, kill, or convert—the so-called VCI. Sir Robert Thompson had long recommended that Phoenix be made a police responsibility, citing British counterinsurgency in Malaya, Palestine, and Cyprus (Hunt 1995). As such, Thieu’s decree enlarged Special Branch’s responsibility for anti-infrastructure

operations. This was to be a bureaucratic “machine” that maintained target folders and blacklists of known communist cadres (Valentine 2000, 131).

Although the Phoenix Program was baptized under CORDS, its precedents stem from the counterterror (CT) teams recruited by the CIA in the early 1960s. For years, the agency had overseen secretive hunter-killer teams under the Mountain Scout Program. Instead of winning hearts and minds like CORDS, the CIA’s strategy—pioneered by Saigon CIA station chief Peer De Silva—was to mirror the political and psychological tactics of the NLF, creating “an instrument of civilian terror” (Fitzgerald 1972, 412). Around 4,000 CT teams were formed, supported by Special Forces and the CIA, and divided into teams of a dozen or so members. Years before U.S. troops officially landed in Vietnam, “increasing numbers of American Special Forces were in South Vietnam, practicing the terrifying black art of psychological warfare” (Valentine 2000, 34). The CIA’s CT teams were later rebadged as Provincial Reconnaissance Units (PRUs) and became the main action arms of Phoenix alongside the South Vietnamese police. Although the PRU members were chosen, trained, and paid for by the CIA, the Pentagon later distanced itself from PRUs (Hunt 1995).

A second component of Phoenix was interrogation (Figure 4). At each South Vietnamese province, a Province Interrogation Center (PIC) was constructed, again funded and supervised by the CIA. These formed a carceral archipelago of de facto black sites across



Figure 4. A suspected National Liberation Front prisoner awaits interrogation at a Special Forces Detachment close to Da Nang in 1967. Source: U.S. National Archives, Identifier Number 531447. High-resolution image taken from Wikimedia Commons (<https://commons.wikimedia.org/wiki/File:Vietconginterrogation1967.jpg?uselang=en-gb>).

South Vietnam. These overcrowded centers were alleged to be the locations of crimes carried out by South Vietnamese officials, including rape; gang rape; rape using eels, snakes, and other hard objects; rape followed by murder; electrical shock; water boarding; dog mauling; and beatings (Valentine 2000). The U.S. Army, investigating the testimony of one Phoenix operative, K. Barton Osborn, “did not challenge Osborn’s overall sense of Phoenix’s systematic brutality” (McCoy 2012, 98). Tens of thousands of men, women, and children passed through these bleak interrogation rooms. Innocent individuals could, and were, blacklisted by specious allegations. Tragically, as one Pentagon study confirmed, most intelligence gained was of negligible importance (Mayer 2007).

The efficacy and notoriety of Phoenix as a counter-terrorist operation varied across South Vietnam’s many districts. Its legacy remains defended and derided, but it was undoubtedly open to abuse. For close to fifteen years, U.S. advisors in South Vietnam outsourced dirty war missions and assassinations against the communist infrastructure to PRUs and other paramilitaries that operated outside of direct U.S. supervision. According to the CIA’s own figures, anti-infrastructure operations neutralized around 80,000 members of the VCI (Finlayson 2007). Although estimates vary, and the true number will never be known, perhaps as many as 46,000 people were killed under the program (McCoy 2009a).

Like the Hamlet Evaluation System, Phoenix was heavily computerized and used sophisticated computer information banks to centralize data (McCoy 2012). The introduction of computation into the Vietnam War was hardly a neutral or objective technology of course but, like the electronic battlefield, articulated the conditions through which populations were rendered intelligible to state power (Belcher 2016). Beginning in 1968, the Viet Cong Infrastructure Information System—later rebadged the Phung Hoang Management Information System—collated population data from the Defense Intelligence Agency, the FBI, and the CIA, together with other agencies across South Vietnam. “At that point the era of the computerized blacklist began” (Valentine 2000, 259).

It is in this sense that Phoenix, together with CORDS, was an atmospheric form of warfare. Its computational methods of neutralization reinforced the wider conceits of U.S. counterinsurgency and electronic warfare, creating a self-referential world, or a technological enclosure, through which blacklisted individuals and U.S. war managers were hailed as technological subjects of pacification. Atmospheric

power thus includes the affects, habits, and subjects that are enveloped by the interior spaces of the war machine. The Vietnam War witnessed two worlds collide: technological modernism and ancient Confucianism. “In a sense there was no more correspondence between the two worlds than that between the atmosphere of the earth and that of sea” (Fitzgerald 1972, 7). Atmospheric power surrounded its practitioners in a cocoon of bureaucratic power no less than the communities terrorized across South Vietnam. In both cases, a psychological power saturated the atmosphere.

An atmosphere thus disrupts the dichotomy between individual and environment, biology and technology. Both subject and object exist in shifting halos of more-than-human force relations. Such atmospheres “occur *before* and *alongside* the formation of subjectivity, *across* human and nonhuman materialities, and *in-between* subject/object distinctions” (Anderson 2009, 78). An atmosphere can therefore be understood as the space of an objective discharge—an existential envelope in which the organic is mediated, transferred, and extended by the inorganic. “It is in this sense that the *what* invents the *who* just as much as it is invented by it” (Stiegler 1998, 177). In other words, atmospheric warfare creates pacified interiors composed of humans and non-humans. Enclosed by artificial husks, these hypersecured spaces can blind bureaucrats no less than they can terrorize targets.

The Phoenix Program also feeds directly into the most sophisticated program of U.S. atmospheric warfare to date: dronified manhunting. Killing by kill list, in which war managers select targets for assassination from a computerized database, exploded during the war on terror. This was crystallized in the so-called disposition matrix of the Obama administration (Shaw and Akhter 2014). This violent geography of manhunting is mapped next.

The Phoenix Rises in the War on Terror

Project X was the code name for the Army’s Foreign Intelligence Assistance Program (Priest 1997). The aim of Project X was to transcribe the counterinsurgency and interrogation techniques from the Phoenix Program into a set of training manuals for Latin American governments in the 1970s and 1980s. Project X materials were distributed to guide anticommunist forces in prisoner interrogation, surveillance, wiretapping, assassination, and even the use of truth serum

(sodiopentathol). “By the mid-1980s, counterinsurgency operations in Columbia and Central America would thus bear an eerie but explicable resemblance to those in South Vietnam” (McCoy 2012, 100). The exact contents of the Army’s Project X materials are difficult to assess, because most were destroyed by the Pentagon. Nonetheless, Phoenix-derived methods—embodied in seven Spanish-speaking training manuals—were taught at the U.S. Army’s School of Americas. Many of its 60,000 graduates have been implicated in atrocities across Latin America (Monbiot 2001).

Project X methods were later revived in the war on terror (see National Security Archive 2014), where both the CIA and Special Forces implemented extrajudicial practices. “Under the pressure of the occupation of Iraq in 2003, these brutal interrogation policies were revived and quickly proliferated to involve thousands of ordinary Iraqis” (McCoy 2012, 103). Indeed, at the outset of the war on terror, Donald Rumsfeld and his staff detailed a vision for a global conflict based on hunting individuals outside of traditional military channels. As the former Secretary of Defense stated, “A manhunt is certainly not what the armed forces of the United States are organized, trained, and equipped to do. We may have to learn to do that and we are indeed learning to do it” (Rumsfeld 2002). Some CIA and Pentagon officials came to view the Phoenix Program as an explicit model for the war on terror (Mayer 2007). The CIA subsequently became “a killing machine, an organization consumed with man hunting” (Mazzetti 2013, 4).

Yet as the war on terror progressed, Special Forces would soon come to spearhead the manhunt, leaving the CIA to focus on drone strikes in Pakistan’s tribal areas. Beginning in 2003, during the U.S. occupation of Iraq, a program of “preemptive manhunting” began (Hersh 2003). This targeted Ba’ath Party members and was partly designed to terrorize people into submission. According to Valentine (2003), this was “the point of Preemptive Manhunting, just as it was the point of the CIA’s Phoenix Program.” As the war on terror continued, a Phoenix-style manhunt moved from the periphery to the center of U.S. national security. Under Stanley McChrystal’s command, Special Forces in Iraq, and the Joint Special Operations Command (JSOC) in particular, were moved to the frontlines of a clandestine manhunt. The sharp end of this knife was Task Force 121. These teams had the authority to assassinate insurgents without further governmental approval, much like the CIA’s CT teams in Vietnam.

JSOC operatives also ran a program of black sites authorized under the covert Greystone program. So bad was the torture at one facility that the CIA withdrew its interrogators (Scahill 2013). Afghanistan was not much different than Iraq: JSOC maintained its own blacklist of people to kill or capture. John Nagl, a former counterinsurgency adviser to General Petraeus, described JSOC’s campaign as “an almost industrial-scale counterterrorism killing machine” (quoted in Gavett 2011).

The practice of manhunting has since come to define U.S. drone warfare, which has entrenched a cartography of killing based on an amorphous battlespace populated by dangerous patterns of life, rather than discrete battlefields with national militaries. Manhunting is “an invasive power based not so much on the rights of conquest as on the rights of pursuit: a right of universal intrusion or encroachment that would authorize charging after the prey wherever it found refuge, thereby trampling underfoot the principle of territorial integrity classically attached to state sovereignty” (Chamayou 2015, 53). And so, from blacklist to kill list, from black site to black site, and from hunter to Predator, the specters of the Vietnam War swirl across an increasingly “dronified” U.S. national security. The Phoenix Program left a winding document trail that connected Vietnam with Central America, Iraq, and Afghanistan.

The Crystallization of Drone Warfare

The Vietnam War birthed the most sophisticated program of drone surveillance in the history of flight, which, together with the electronic battlefield, “prefigure the technical infrastructure for today’s drone wars” (Gregory 2011b). If modernity is the process of bringing atmospheres under surveillance and security (Sloterdijk 2013), then drone warfare crystallizes the *longue durée* of these trends. Atmospheric power—no longer bound to the horizontal, the network, or the surface—targets and occupies the shape-shifting volumes of human coexistence. It is in this sense that “security produces atmospheres and it even becomes atmospherically distributed and immersive” (Adey 2014, 835).

The Cold War backdrop spurred the development of drones, which offered the U.S. military visual access to denied and dangerous spaces. In 1960, Francis Gary Powers was shot down over the Soviet Union while



Figure 5. U.S. Air Force AQM-34L Firebee drone, 1969. *Source:* Taken from Wikipedia Commons (https://commons.wikimedia.org/wiki/File:556th_RS_AQM-34_Drone.jpg?uselang=en-gb). (Color figure available online.)

piloting a U-2 spy plane. As a result, the Eisenhower administration scrambled to replace its manned reconnaissance program. In 1962, the year of the Cuban missile crisis, Ryan Aeronautical Company was given money from the U.S. Air Force's Big Safari research funds to develop surveillance drones. Ryan went on to modify its jet-powered Firebees, creating a family of drones that went by several designations: Ryan 147, AQM-34, and the commonly used Lightning Bug (Figure 5). Launched from a Lockheed DC-130 Hercules airplane, the Lightning Bugs flew pre-programmed routes or were piloted by Airborne Remote Control Officers on board the Hercules. After performing their surveillance mission, the Lightning Bugs deployed their parachutes and were scooped up by helicopters under the guidance of Drone Recovery Officers. The Lightning Bugs were flown under the auspices of the U.S. Strategic Air Command and were used for surveillance across a wide Cold War battlespace, including Cuba, North Korea, and the People's Republic of China. Between 1964 and 1975, Lightning Bugs flew more than 3,500 combat sorties in Vietnam (Ehrhard 2010).

The development of drones was also driven by the exigencies of the Vietnam War. Sophisticated North Vietnamese aerial defenses, together with monsoon weather, pushed pilots to fly at higher and higher altitudes. And so, under Big Hunter missions, Lightning Bugs were used as replacements to manned missions, "relying on their speed and small size to elude heavy and effective North Vietnamese defenses" (Comptroller General of the United States 1981, 2). According

to Colonel John Dale, director of the Strategic Air Command's 15th Air Force headquarters, "One of the things that is not said anywhere is, from October 1968 to November 1972—four years—we were the only aircraft flying in North Vietnam" (quoted in Orr 2014). More than 1,000 Lightning Bugs were eventually built, costing \$250 million a year to maintain (Ehrhard 2010).

By the end of the Vietnam War, U.S. surveillance drones were fitted with long range aid to navigation (LORAN) technology, which drastically improved their reconnaissance capabilities. The Air Force subsequently launched the Compass Cope program in the 1970s to increase the range and endurance of drones. Yet the 1980s actually saw government funding for drones fall. Reasons varied, including what some labeled a propilot bias in the Air Force (Comptroller of the United States 1981). The 1990s, however, triggered a resurgence in interest in drones. The Balkan conflicts placed an increased importance on aerial surveillance and dynamic forms of targeting.

In 1994, under the codename LOFTY VIEW, the CIA operated the GNAT-750 drone in secrecy over Bosnia. According to the CIA director, "I could sit in my office, call up a classified channel and in an early version of e-mail type messages to a guy in Albania asking him to zoom in on things" (quoted in Finn 2011). The GNAT-750 was subsequently upgraded with a satellite data link, becoming the Predator drone synonymous with the war on terror today. Under Operation Allied Force, the Predator was used to provide targeting intelligence for NATO and U.S. air

strikes over Kosovo. In 2001 the Big Safari office successfully fitted an antitank Hellfire missile under the wings of the Predator. The hunter was now a killer; “the remote-controlled age had begun, and the killer drones became an object of fascination inside the CIA” (Mazzetti 2013, 100).

Unlike the Vietnam-era drones, the slower Predator can loiter for much longer, sending real-time satellite imagery to the other side of the planet. The Predator drone, perhaps more than any other robotic weapon, is a concrete symbol of a form of electronic enclosure that annihilates distance through technology, multiplying the reach of state power through an atmospheric topology. Sophisticated apparatuses of aerial capture are now productive of enveloping and immersive security atmospheres (Adey 2014) that surveil and pacify the human lifeworld.

With drone warfare in particular, we can understand how the atmosphere is directly targeted and secured. As Feigenbaum and Kanngieser (2015, 83) argued, “Atmospheres of terror are built through the escalation of military governance into the air in which everyday life is enveloped.” By occupying the sky with drones—often for days, months, and years at a time—a form of terror saturates the volume below like an insidious fog. “People are afraid of dying,” said one shopkeeper in Pakistan’s tribal areas, a region that has been frequently targeted by CIA drone strikes. “Children, women, they are all psychologically affected. They look at the sky to see if there are drones” (quoted in International Human Rights and Conflict Resolution Clinic at Stanford Law School and Global Justice Clinic at NYU School of Law 2012, 151).

The drone is thus a crucial machine for performing a kind of spheric hacking. By this, I mean that the psychological “mood” of an atmosphere is modulated by the technical infrastructures that pervade it. Military drones access the phenomenological profiles of hostile spheres to reconfigure and incarcerate them within the imperial geometries of electronic enclosure, transducing what is seen, heard, said, and felt. The drone is an atmospheric weapon then, not simply because it moves through the skies and enforces a vertical power but because it modulates the atmosphere. The drone, in other words, polices the phenomenological structure of the world it haunts (Shaw 2012). Unmanned robots, legacies of the Vietnam War no less than the electronic battlefield, reconstitute the transcendental logic of the atmospheres they stalk, policing—or simply destroying—the biopolitical climate of their interiors.

Conclusion: An Enclosed Technological Civilization

Revisiting the violent geographies of the Vietnam War is important for many reasons, not least of which is to revisit a conflict that underwrites the war on terror, and drone warfare in particular. State power has been, and always will be, invested in managing the spaces of life: the geographies that bind biology and technology in moving atmospheres. As this article has insisted, such atmospheres must be understood as politically charged volumes. An atmosphere is a space of psychopolitical enclosure beyond the air that we breathe, the soil we dig, or the climate that envelops us. It is a more-than-human volume of technology, electronic mediation, and aerial policing. This complicates current compositions about biopolitics without evacuating the centrality of state power in securing the spatial conditions of people, objects, and affects. In short, atmospheric warfare targets the hybrid forms of human and nonhuman coexistence and encloses them within the interior worlds of the war machine.

The Vietnam War marked a crucial moment in the development of atmospheric warfare. Ecological violence, Igloo White, the Phoenix Program, and drone surveillance each produced a spatiality of conflict that shared an atmospheric DNA. Whether this was a chemical power, an electronic power, a bureaucratic power, or an aerial power, all were designed to pacify and enclose hostile circulations of life. If, to repeat Sloterdijk (2013), “biopolitics begins as enclosure-building” (170), then we can expand the idea of enclosure building to the organic and inorganic apparatuses of state power. An armada of war machines operated on the landscape of Vietnam, Laos, and Cambodia. Sometimes the target was people. Other times the aim was simply to destroy the forest.

In any case, rather than being passive ingredients of an atmosphere, objects modify the biopolitical climate of their interiors. Atmospheres emanate around human and nonhuman objects, condensing into shape-shifting affective halos. In this sense, an atmosphere is the space of an objective, as well as subjective, structure of experience; a volumetric order constituted by nonhuman discharges of force. Assemblages of nonhuman actors constantly produce, protect, and police bubbles of biopolitical sense. In turn, state power is fundamentally invested in this process of atmospheric transduction: the very passage through which the atmosphere is modulated. Sometimes, this includes a form of atmospheric power that

envelops but does not touch. Drone warfare is an important example of modern security in which dangerous patterns of life are immersed within a voluminous technogeography without physical containment.

Indeed, drone warfare has come to symbolize a fundamentally enclosed technological civilization. The electronic battlefield is slowly developing into a general biopolitical condition of human being. The need to secure the U.S. homeland has expanded the frontiers of the electronic battlefield to encompass the many physical and virtual spaces of the planet. Across land, sea, and outer space, Predators—both human and robotic—now surveil, police, and contain the planet's restive populations in the kind of Predator Empire that the Washington war managers of Vietnam could have only dreamt about. Atmospheric warfare, at its apex, becomes a form of full-spectrum dominance, a totalizing space of state violence, in which a hyper-individualized manhunt takes place across diffuse biopolitical enclosures modulated by material and electronic infrastructures. These atmospheres are not easily mappable, and their topological transductions defy the topographic certainties of sovereign boundaries.

The Vietnam War therefore offers a deep, even existential reflection on the precarious link between human existence and the environment. If we come to understand our lives as inseparable from the atmospheres in which we dwell, perhaps we would take more seriously the toxicity of their continual securitization. Atmospheres are not neutral background to human life but the space of our subjectivity. Any attack waged against these spheres—as the Vietnam War exposed so viscerally—is a violence launched against the very essence of the human condition.

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IAN G. R. SHAW is a lecturer in Human Geography at the School of Geographical and Earth Sciences, The University of Glasgow, G12 8QQ, Glasgow, UK. E-mail: Ian.Shaw.2@glasgow.ac.uk. He writes on drone warfare, global (in)security, and political philosophy. He is author of the forthcoming book *Predator Empire: Drone Warfare and Full Spectrum Dominance*, to be published by The University of Minnesota Press in 2016.