

At Nature's Edge  
*The Global Present and  
Long-Term History*

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*and*  
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## History and the Militarized Landscape

### Long Historical and Broad Social Views

After the end of the Vietnam War in 1975, the coastal hills around the former imperial capital, Hué, were littered with the ruins of abandoned American military camps: concrete foundations, steel skeletons of abandoned tanks, crumbling roads, and a host of buried landmines, ordnance, and chemicals. In 1981, an American documentary film crew on assignment for the WGBH production 'Vietnam: A Television History', recorded this view of the former Camp Eagle, then just bare hills littered with the rusting hulks of tanks and the skeletons of stripped buildings.

From 1968 to 1972, this camp had been a veritable city with over 15,000 troops, five helicopter pads, and a constant stream of trucks and people flowing in and out (See Figure 8.1). Today, little remains to signal to passers-by that large patches of industrial and forested hills were once Camp Eagle. The Vietnamese state today is rapidly converting such old base areas into agroforestry plots and export processing zones with new rows of dormitories in lieu of barracks.<sup>1</sup> In some cases, war-era roads, powerline rights of way, sewers, and warehouse pads have been reborn in new industrial grids occupying much the same footprint.



FIGURE 8.1 Evacuated American Troop Billets, Camp Eagle, 1972  
 Source: Box 3, RVNAF Base Turnover Inspections, MACV Inspector General  
 Records, RG472, NARA2.

Putting aside the violence and trauma of war for a moment, should it be surprising that an abandoned military base in Vietnam should now be an industrial park? There are obvious political and ideological critiques that one might make—Karl Liebknecht’s famous quote, ‘Capitalism is war’,<sup>2</sup> comes to mind. In the case of many former bases worldwide today, war effectively cleared away older claims to the land and, especially through various modes of physical or chemical destruction, has made these spaces suitable for little else than large-scale industrial enterprises. Vietnam is a relative latecomer to this trend, while the United States was one of the first. Considered ecologically, a military base is in many respects just another industrial park. Instead of exporting goods, however, militarized environments operate in reverse. They facilitate the *importing* of such *finished* goods as guns, tanks, and jeeps. Similarly, the workforce (soldiers) is typically imported, too. The warehouses, depots, and logistics centres operating in a base facilitate these *inflows*. From a distance—especially from space—the modern grids of

bases and industrial parks are almost indistinguishable. Most are cleared of vegetation, extensively paved, and reliant on extensive built environments. Where young soldiers once rested in barracks between missions, today mostly young women from rural areas live six to a room, resting after long days on assembly lines.

This chapter considers a long historical and broad social view on militarized landscapes such as the former Camp Eagle in Vietnam. Problems such as property rights claims, petitions to access ancestral lands, persistent hazards, and state–local conflicts over militarized environments are not unique to Vietnam but are common globally as well. Often, militarized sites from one conflict give way to *re*-militarization in successive ones. The term *militarization* is socially broad, too. It refers not only to physical acts of military base construction or violence, but also encompasses social processes by which people engage with military organizations and military organizations reconfigure everyday life.<sup>3</sup> In many cases, the cultural significance of a militarized landscape may be more powerful than ecological significance in shaping present-day views of it. The presence of human remains or knowledge that many died in a place often plays a key role in limiting future uses.

The following excerpt from a United States veteran who served at Camp Eagle draws out the importance of this ‘intangible’ cultural heritage at military landscapes. In 1983, he wrote a letter to the editor of the *New York Times* in response to an article by reporter Craig Whitney. Whitney had reported on a return visit to Huế and various sites he had covered during the war including Camp Eagle (Figure 8.1). Writing about the former base, Whitney remarked that nothing was left but concrete rubble. The veteran responded:

I found Craig R. Whitney’s retrospective, ‘A Bitter Peace: Life in Vietnam’ (Oct. 30) provocative. However, I must respectfully disagree with his observation ‘that only stones were left where American bases had stood—Camp Eagle, home of the 101st Airborne Division; military airfield at Phu Bai....’ As a former NCO in the 101st who spent a short but incredibly intense part of my life at Phu Bai and Camp Eagle, I know with certainty that more is left there than a few stones—things like honor and comradeship, our former naïveté and the blood of ourselves and others, in the sand. For those of us who fought there, Phu Bai and Camp Eagle remain something indelible—a place in our minds and memories, not just places on a map.<sup>4</sup>

This poignant recollection by one veteran who spent a relatively short time in Vietnam suggests the cultural potency of this subsurface and its global reach. Many American veterans of the war remain deeply connected to the sites where they served, and those who return to visit Vietnam as tourists are almost inevitably drawn to return to them.

For Vietnamese people living in and around these places, especially veterans and their descendants, this ‘invisible’ landscape plays a powerful role in their spiritual and everyday lives. There are tombs, cemeteries, and war monuments; and then there are the vast spaces in between these commemorative shrines, a subterranean wilderness of suspected chemical or munitions hazards, and an ethereal wilderness for ‘wandering souls’ (*linh hồn lang thang*). Digging below the surface, one runs the risk of being maimed by unexploded ordnance (UXO), suffering illnesses from exposure to toxic chemicals, but perhaps worst of all, being haunted by the ghosts of people who died violently or did not receive a proper burial. Vietnamese popular culture is filled with stories of them, and virtually everyone knows of someone—a neighbour or relative—who has claimed an encounter with them.<sup>5</sup> In villages around former bases and on the streets of Huế, on most full moons (*ngày rằm*), people set up altars in their front yards or on sidewalks with incense and plates of food to ‘feed’ and placate these wandering souls. This happens in some parts of Asia for the ‘Ghost Festival’ on the full moon of the seventh lunar month; but in Huế, it happens every month.

## The Long Historical Perspective

Such processes of militarization, both tangible and intangible, are not specific to the twentieth century or even Vietnam; rather they reflect a common, global phenomenon with deep roots. From ancient times, for example, the construction of military bases and fortifications in the land often led directly to the growth of cities. Many of the world’s largest cities began as military bases. The Romans under Emperor Claudius (41–54 CE) invaded Britain, and built the empire’s largest base in the islands on the mudflats of the Thames River. Claudius’ engineers built an iconic bridge at a site later named Londinium that was essential for helping Roman troops pursue local rebels across the mudflats. Sets of walls followed the bridge, and the medieval city of London eventually spread beyond the walls, around the bridge.<sup>6</sup>

The Vietnamese capital Hà Nội likewise grew up around several ancient bases. After the Han Dynasty successfully conquered the Viet kingdom in 111 BCE, Chinese colonial governors worked inside walled garrisons along the Red River. This group of ancient garrisons included the defeated Vietnamese fortress at Cổ Loa (200 BCE), Luỹ Lâu (Chinese, 43 CE), Long Biên (Chinese, 138 CE), and Đại La (Chinese, 791 CE).<sup>7</sup> For almost a thousand years, Chinese forts protected colonial governors and commerce from rebellion. Outside the walls, merchants established markets supplying the troops inside as well as local people in surrounding areas. After the Vietnamese gained independence from China in 958 CE, the victorious Vietnamese army occupied the same forts. The last of these riverside fortresses, Đại La, had walls over 20-feet high. In 1010 CE, a new Vietnamese emperor, Lý Thái Tổ, selected it for his capital. Some of the old walls of Đại La survive in the government and military centre of Hà Nội. These ancient military bases not only supported operations, but also attracted new industrial enterprises from iron foundries to shipyards.

Before environmentalist groups and others raised concerns about the ecological damage caused by *modern* military actions in the 1960s, many saw military occupation as but the first phase of programmes for industrialization and urban growth. Philosophers of war and economics, from Sun Tzu and Carl von Clausewitz to Austrian economist Joseph Schumpeter, argued that military actions facilitated a kind of *creative destruction*. Military occupation effectively cleared the surface—literally and figuratively—so that new industries and social relations might form. In the twentieth century, German economists and philosophers discussed this idea extensively; but similar concepts can be found in other philosophical traditions such as Le Corbusier's urbanism (Greenspan 2014)<sup>8</sup> or Mao's Great Leap Forward (Shapiro 2001).<sup>9</sup> Essentially, the German term implies that from the ashes of destruction arise new cycles of innovation. Austrian economist and Harvard professor Joseph Schumpeter is most widely cited for coining the phrase 'creative destruction' with respect to cycles of business and the future of capitalism. Schumpeter writes about this process:

The opening up of new markets, foreign or domestic, and the organizational development from the craft shop and factory to such concerns as U.S. Steel illustrate the same process of industrial mutation—if I may use that biological term—that incessantly revolutionizes the economic

structure *from within*, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism.<sup>10</sup>

Schumpeter's term first appeared in 1942 during the worst fighting of the Second World War, and to a new generation of American economists, it provided a platform for explaining how natural and manmade disasters might effectively trigger a kind of reset button, erasing debt and clearing ground for post-conflict reconstruction.

Even in the current environmentalist era, this positive spin on military destruction persists. In guides to hostile takeovers and counter-insurgency alike, the updated theory argues that by dissolving the existing social and cultural fabric (of a company or village) one may open opportunities for new forms to emerge. So goes the logic. According to some, this idea dominated post-hostility planning in Washington after the United States' pre-emptive invasion of Iraq in 2003. Geographer David Harvey and writer Naomi Klein both criticized American advisors of President George W. Bush who argued for what Klein calls a 'shock doctrine' that would in effect obliterate Iraq's existing political economy, and permit the construction of a free-market economy in the Middle East.<sup>11</sup> Writes Klein of the American occupation authority's policies in Iraq in 2003:

But before the fires from 'shock and awe' military onslaught were even extinguished, [Coalition Provisional Authority Administrator L. Paul] Bremer unleashed his shock therapy, pushing through more wrenching changes [privatization] in one sweltering summer than the International Monetary Fund has managed to enact in three decades in Latin America.<sup>12</sup>

This association between military occupation and capitalism, including Schumpeter's coinage of the term 'creative destruction' thus continues to animate the arguments of some on de-militarization.

The *zeitgeist* of *creative destruction* reflects a particularly rich German philosophical tradition that predated Schumpeter by several decades. Schumpeter borrowed it from a German economic historian, Werner Sombart, who noted in his book *War and Capitalism* (1913)<sup>13</sup> how war in Europe in the seventeenth century led to the decimation of its forests; from this environmental destruction emerged a new creative, industrial impulse relying on coal, coke, and iron. Philosophers Hugo and Erik

Reinert show how Sombart in turn borrowed his theory on war and economic innovation from the writings of Friedrich Nietzsche. Reinert and Reinert in particular zero in on Nietzsche's *Thus Spoke Zarathustra*, showing how German (and Austrian) economists such as Sombart (and Schumpeter) reflected Nietzsche's views on the often-violent processes under which culture was renewed and regenerated. They cite the following passage from *Zarathustra*: 'For earthquakes bury many wells and leave many languishing, but they also bring to light inner powers and secrets. Earthquakes reveal new wells. In earthquakes that strike ancient peoples, new wells break open.'<sup>14</sup>

Nietzsche in turn borrowed his idea from older sources, in particular Hindu ideas of Brahma, Vishnu, and Shiva being the creator, protector, and destroyer of worlds.<sup>15</sup> German economists and philosophers were particularly fascinated with the Bhagavad Gita (also known simply as the Gita), especially in the early twentieth century.

Americans, many of whom in the 1940s were in fact European exiles (such as Schumpeter) or the children of exiles (such as physicist J. Robert Oppenheimer), carried these ideas into post-1945 American culture and politics. Perhaps the most famous example of this borrowing of the idea of creative destruction directly from the Bhagavad Gita occurred in the words of Oppenheimer (a child of German Jews) who quoted a line from the Gita upon witnessing the world's first atomic bomb detonation in New Mexico in July 1945. He quoted the god Vishnu: 'Now, I am become Death, the destroyer of worlds.' Thus the 'father' of nuclear weapons viewed it as something bigger than himself, its destiny lying far beyond his control. He was to atomic energy, like the hero Arjuna to the god Vishnu in his avatar of Krishna in the Gita, merely an instrument.<sup>16</sup> The atomic bomb, the ultimate of weapons, was now the ultimate tool for creative destruction.

## An Environmentalist Zeitgeist

The deployment of atomic weapons at Hiroshima and Nagasaki, ironically, marked an important turning point in this long history of militarization: for the first time, in 1945, there was almost universal consensus among people and governments that nuclear weapons were simply too destructive to use. As a result, militaries such as the American-led UN force in Korea from 1950 to 1953 were limited to conventional

weapons. Compared to the threat of nuclear holocaust, the alternatives to atomic war—long-term military occupation, widespread bombing, prolonged counterinsurgency wars, and extensive military aid to client states—became the norm. Thus, the *area* of land intentionally targeted for destruction expanded dramatically through the decades of the Cold War; and perhaps nowhere on Earth was more seriously impacted than Vietnam.

While nuclear weapons were off the table, the American war effort in Vietnam in the 1960s included the employment of many other, new weapons, especially chemicals, aimed to clear new spaces. The United States Air Force engaged in widespread destruction of forests and croplands by aerial spraying of specially formulated tactical herbicides. From 1962 to 1971, Operation Ranch Hand resulted in the destruction of more than 2.6 million hectares of forest and croplands, accounting for over 20 per cent of South Vietnam's total forest cover.<sup>17</sup> Popular movements to regulate industrial pollution, galvanized by Rachel Carson's 1962 bestseller *Silent Spring*,<sup>18</sup> coincided with growing political opposition in the late 1960s to the United States' use of these herbicides. The result was prolonged public concern over what many called 'ecocide' in Vietnam. The political activism of scientists, some of whom had in the 1930s 'discovered' the same herbicides later used in war, ultimately led to the United States ratifying the Geneva Protocol's ban on chemical and biological weapons in 1975.<sup>19</sup>

This environmental turn in the early 1970s has since given rise to a new set of environmentalist ideas, particularly on de-militarization. In the United States, the passage of the Superfund Act in 1980 was a milestone in forcing polluters to clean up releases of hazardous substances. Since the United States Department of Defence was responsible for researching, testing, and procuring many military-related chemicals including Agent Orange, legal attention quickly turned from industrial manufacturers to end-use agencies of the United States government such as the Department of Defence and the Department of Energy. The 1986 Superfund Amendments and Reauthorization Act (SARA) formally established a special Defense Environmental Restoration Program (DERP) with funding to cover clean-ups. Inside the United States and its territories, DERP has resulted in billions of dollars spent on clean-ups. Yale professor John Wargo visited one base area, the Massachusetts Military Reservation (MMR), and noted that almost a

billion dollars had been spent till 2004 in a model clean-up of plumes of solvents and explosive chemicals in the groundwater.<sup>20</sup>

This environmental turn has produced a new *environmentalist zeitgeist* of sorts with respect to public views on militarized environments, and older ideas of creative destruction. Military base remediation has become a global enterprise, too, albeit one skewed heavily to wealthier nations. Remediation of toxic chemicals or buried hazards such as unexploded ordnance is driven largely by federal environmental agencies, and it occurs from sites around the icy waters of the Arctic and Antarctica to the deserts of Central Asia and the American Southwest. There are common scientific practices and policy approaches to base closures and clean-ups regardless of location. The science of remediation is most focused on the clean-up of toxic chemicals such as heavy metals, solvents, dioxins, fuels, and explosives. Projects in the United States and Europe often turn on lengthy court cases and public protests associated with Superfund-type clean-up actions, class action lawsuits, and multiple litigants. There is a rapidly growing literature on this form of de-militarization.<sup>21</sup>

For all this activity in affluent countries, however, there is a disconcerting lack of attention placed on environmental clean-up in poorer countries. Even in United States, territories such as Puerto Rico contested negotiations and protests over base property transfers and clean-up suggest a less satisfactory process. Wargo contrasts the story of intensive cooperation at MMR with the clean-up of a United States Navy weapons testing range at Vieques Island, Puerto Rico. After decades of the Navy using part of the island for live ammunition training, years of islander protests in the 1990s finally brought President Bush in 2001 to recommend that the Navy leave. The process of remediation at Vieques since then has been much more contentious than mainland United States sites as islanders pursue claims against the United States government for illnesses allegedly linked to exposure to toxic chemicals.<sup>22</sup>

Still, the situation in Vieques Island is far more advanced than in less industrialized countries such as Vietnam. In Vietnam, national and provincial governments have to contend with an unusually large number of former base sites as well as millions of hectares of land liable to contain remains from military operations. The extent and intensity of bombing in Vietnam, Laos, and Cambodia was unprecedented in the twentieth century. The associated military infrastructure, with dozens

of larger bases and hundreds of camps and firebases, touches practically every town and city. As one might expect, Vietnamese requests for technical and financial support from the United States have largely fallen on deaf ears. In 2004, a Vietnamese class action lawsuit seeking damages for the exposure of several million people to the tactical herbicide Agent Orange and its contaminant, dioxin, failed to win in the United States District Court.<sup>23</sup> Only in the past decade, allegedly because the United States has new strategic interests in the region, has the United States government designated funds for base remediation in Vietnam. A clean-up effort worth USD 43 million at one of the most polluted base sites in Danang commenced after a decade of negotiations concluded in 2012.<sup>24</sup>

The clean-up of one base site in Vietnam is an important step forward but also largely a symbolic gesture given the scale of war-related pollution. Many people in Vietnam, speaking off the record, express deep concerns and frustration that this work at one site means little given the vast area of countryside affected by war. With Danang, there are also obvious potential benefits for the United States in the future: access to a deep water port and possibly returning to airfields that United States money helped expand in the 1950s. One needs to remember that Agent Orange was just one chemical used among many in Vietnam. What about solvents, napalm, oils, paints, polychlorinated biphenyls (PCBs), spent munitions, and tear gases? It was the 1960s, pre-EPA (Environmental Protection Agency), and industrial activity in Vietnam reflected the disposal practices of the day. The Agent Orange issue since the 1970s has become a touchstone for drawing global attention to the environmental impacts of war; but it tends to take all of the oxygen in the room, leaving little space to consider a more holistic environmental footprint of war in Vietnam. Agent Orange is only *one* hazard among many that has come to symbolize the totality of 1960s-era military environmental legacies in Vietnam and the world.

## A Broader View on Landscape

Like the term militarization, the word *landscape* also requires some theoretical unpacking. Different ways of conceiving a landscape or space allow historians different platforms for analysing intersections of

military, ecological, and environmental processes. A wholly modern concept brought into English from Dutch landscape painting, it suggests a nexus of intertwined, physical and cultural elements defined essentially by human *views*. Landscapes are measurable, physical spaces, often depicted in photographs, paintings, or maps; they are also cultural spaces where natural and built features take on social meanings. By virtue of its visibility (the *scape* in landscape), a landscape is a simultaneously physical, cultural, and representational space. American writer J.B. Jackson described 'vernacular landscapes' as places to which people have ascribed meanings in locally significant terms and practices over time.<sup>25</sup> The cited passages on Camp Eagle above describe what, for the American veteran, was a deeply *vernacular* landscape. For Vietnamese whose families had once occupied the same hills prior to the war, Camp Eagle presented a violent disruption of a long-functioning village space. Throughout history, most military bases are inevitably sited within such pre-existing, cultural landscapes.

Another provocative approach to militarized landscapes is one that trades the term 'landscape' for 'space'. Philosopher Henri Lefebvre published in 1974 one of the most extensive musings on space (and arguably landscape) in *The Production of Space*. Space, he argues, consists of three components held in tension with each other: spatial practices, activities such as road-building that alter a space's physical characteristics; representational space, symbolic spaces akin to J.B. Jackson's vernacular landscape; and representations of space, artefacts such as maps, bird's-eye level photographs, and paintings that influence how people 'read' a space.<sup>26</sup> A second point of Lefebvre's work is that space is not static or timeless but rather evolving with shifting modes of production. In other words, space is both generated (past) and generative (present and future).<sup>27</sup>

With respect to military landscapes or spaces, Lefebvre's ideas raise a number of possibilities for analysis. First, in terms of spatial practice, the history of a militarized 'space' during a war reflects competing spatial practices of militants and non-militants. Besides state militaries, there are insurgents, farmers, shop owners, villagers, and other men and women moving through highly contested, highly gendered areas such as firing ranges, bars, checkpoints, laundries, garages, and brothels. The practices of insurgents, especially supporters of the National Liberation Front, were largely hidden from view. In some cases, they were literally

underground, working via cellars and tunnels to avoid detection from above. Police records and memoirs show glimpses of their movements in the underground in the occupied landscape.

Second, Lefebvre's notion of representational spaces, an idea akin to J.B. Jackson's vernacular landscapes, opens up possibilities for considering the struggle by competing military forces and locals to name the landscape. With the militaries of the Republic of Vietnam, the United States, and France, historic records and maps indicate a rapid-fire succession of vernacular spaces overlaid one on top of another. The name 'Camp Eagle', for example, was unique to the 'Screaming Eagles' 101st Airborne Division, and used only after 1968. Previous to that, American military engineers referred to the area by the Vietnamese village's name, Giã Lê Thờng. The upland (*thờng*) area of the village Giã Lê was covered for the most part in iconic, circular concrete tombs. Villagers buried their dead on upland, bare slopes, and worked fields in the narrow, coastal plains below. The first American unit to use the land for military purposes was the United States Marines. Seeing all of the tombs, they then named the spot 'LZ (Landing Zone) Tombstone', a reference also to the quintessential pioneer town in the American 'Wild West'.

Lefebvre's third point about spatial representations such as maps and air photos playing formative roles in 'spatial production', is especially important to twentieth-century military history. Modern militaries have, since the development of air forces in the First World War, been especially preoccupied with ideas of landscape shaped by maps and the aerial perspective. The rich collections of military maps, air photos, base plans, and snapshots, residing in archives and online, provide a deep array of spatial representations. Such documents and imagery during times of war were critical to the commanders who read them, and the news crews that attempted to explain the *where* of this war to audiences at home.

Lefebvre's final point, that space is generative, opens up questions about space and historical agency, especially in a highly contested, militarized space. Do spaces—imagined or real—shape human actions and thus influence the outcome of historic events? Does space have agency? Do military wastelands have agency, perhaps the ability to foster thriving industrial parks? This is Lefebvre's point in arguing that space is generative; for him, it figured into the hegemonic spaces of cities and

his own Marxist politics in France. He was intimately concerned with the ways that majority political parties and state authorities used spaces to influence the decisions of people to flee, conform, or resist. However, Lefebvre's aim was not solely to develop a spatially-inflected theory of political economy, but more to detonate commonly held assumptions about the structural unity of space, especially modern, built space.

This last question about the generative power of a militarized space is central to the problem of de-militarizing many landscapes long impacted by military conflict. The world today is full of many aging military installations left over from past wars; and the volume of small weapons and spent military materials continues to increase. In times of peace, what will states and their constituents do with such places? Who benefits from de-militarization and who does not? Do historic ties between military units, state agencies, and large, heavy industries, persist after de-militarization? If so, then why?

To answer this, we must dig deep into the many layers—physical and conceptual—of *past* militarized landscapes. If spaces are generative, then one can only travel *backwards* in time to consider how earlier episodes of conflict, military seizures of land, and even periods of de-militarization, have shaped them. An occupation army may see land as a blank slate, but local residents do not.

## History and the Spatial Imagery Archive

In the twentieth century, air photographs, maps, and satellite imagery provide important visual and spatial clues to changing conditions in a given landscape. However, as historic and environmental sources, they present both technical and aetiological challenges. On a technical level, air photographs are challenging as sources because comparing them requires one to find a sufficient array of photos from different times taken of the same location at a similar scale and resolution. Simple issues such as cloud cover may obscure a site, too. The changing interests of militaries and archivists from one regime to another often results in varying completeness in air photo collections. In Vietnam, the changing nature of military occupation in the twentieth century from colonial to Japanese, French, American, and Vietnamese commands means that photo collections from a specific era such as the French War (1945–54) are housed within French military archives, while photos

from the American War (1960–75) are housed at various locations in the United States.<sup>28</sup>

The aetiology of maps, air photographs, and even geographic coordinate systems deserves attention because of the degree to which these things were and are still shaped by military actions. Maps have long been considered by many people in the world as tools for military action. Before the use of aircraft, topographic surveyors were very careful to measure benchmarks on the summits of hills. Knowing one's altitude was essential in predicting trajectories for artillery shells. With the growth of modern empires in the late nineteenth century, each great power advanced its own preferred coordinate systems and map projections. Mapping from the late nineteenth century onward reflected the grids and projections of the occupying power. The end of the First World War meant a surplus of cheap aircraft, and it was in the early 1920s that national survey organizations such as the Société Géographique de l'Indochine began to use air photography to improve topographic mapping. The Second World War, especially with the military victories of the United States, led to a major watershed in the use of global coordinate systems and projections such as Universal Transverse Mercator (UTM). In the Second World War, international cooperation and the transnational extent of aerial missions required cooperating militaries such as the United States and the Allies to work off of a common grid space. The development of satellite-based global positioning systems (GPS) used to guide intercontinental ballistic missiles from the mid-1960s eventually led to new efforts by Cold War allies to refine global models of the Earth's surface. The partial de-militarization of GPS in the 1980s then led to widespread adoption of a common World Geodetic Survey based on the UTM projection called 'WGS84'. Even today, nation states and militaries continue to maintain internal and highly secret collections of maps, satellite imagery, and other forms of spatial data.

Like maps and air photos, geographic information systems (GIS) have origins in military activities too, presenting challenges to historians involved especially in digital humanities projects. One of the early popular software systems for analysing spatial data was the Geographic Resources Analysis Support System (GRASS). The United States Army's Construction Engineering Research Laboratory commenced development of this software in 1982. Very much like the early Internet, GRASS

relied on extensive collaboration between the United States military, universities, and private companies. In 1995, the Army ceased updating source code, and in 1997, an international development team, composed largely of academics, took over its development.<sup>29</sup> Thus these broader processes of militarization have even shaped the geographic 'data' and software that digital historians may use today. De-classifying old military maps and making technology such as GIS free is still in many countries, a 'radical' and untenable idea.

At a time when anyone with a smartphone can quickly call up *digital* satellite images and maps, the twenty-first century presents a special *photographic* moment for studying environmental history. From low-altitude air photos and oblique snapshots to space photographs, the production of celluloid images circa 1930–80 has resulted in relatively discrete collections of historic air and satellite photos followed by a flood of digital information since 2000. Vietnam presents an especially rich assortment of photographic archives in part because of its global significance in the Cold War, and because the countries producing these photographs (especially France and the United States) make their historic air photo collections accessible.

Excluding colonial air surveys, military air photo collections for Vietnam date back to 1943, when American and British military reconnaissance units photographed the coastline from B-29 bombers. Their mission was to identify bombing targets such as coal mines and railroad bridges and to gather intelligence for a planned, sea-based invasion. From 1945 to 1959, United States Navy pilots shot thousands of low-altitude oblique views of the same coastline to prepare visual aids for American reconnaissance, and later to aid French military forces. After 1952, the United States Army supported the French Expeditionary Corps in Vietnam more directly with planes and photographic equipment to update aerial surveys. In the late 1950s, the United States Army surveyed all of southern Vietnam again to produce map collections comparable to topographical maps in the United States. By the 1960s, this celluloid-based campaign reached its zenith—quite literally—in two top-secret American spy programmes, U2 and Corona. The U2 was a jet aircraft that flew at altitudes of 70,000 feet, taking high-resolution pictures of selected sites. (The photos taken over Cuba during the 1962 Cuban Missile Crisis were U2 photos.) Corona referred to a United States Central Intelligence Agency programme to launch reconnaissance

satellites taking celluloid pictures in Earth orbit, and ejecting the film canisters to be picked up mid-air. This celluloid era in aerial reconnaissance waned in the 1970s, when satellites such as Landsat using multi-spectral scanners replaced the planes and cameras.

Considering just one image, a photograph of the Hué area taken by a Corona Program satellite on 20 March 1969, the environmental history afforded by one archival image when digitized, georeferenced, and compared with other images is rich (Figure 8.2).

This image shows an approximate footprint for one photograph taken by satellite. The satellite was equipped with twin panoramic cameras, taking pictures of the Earth's surface in stereo. Each satellite carried approximately 8,000 feet of state-of-the-art film, capable of recording three to four times the detail of regular film, and over a much larger frame. Upon completing a photographic sequence, a 'bucket' of exposed film separated from the satellite and re-entered Earth's atmosphere. Typically, United States Navy planes picked up the falling film containers by hooking the parachute in mid-air. The Clinton

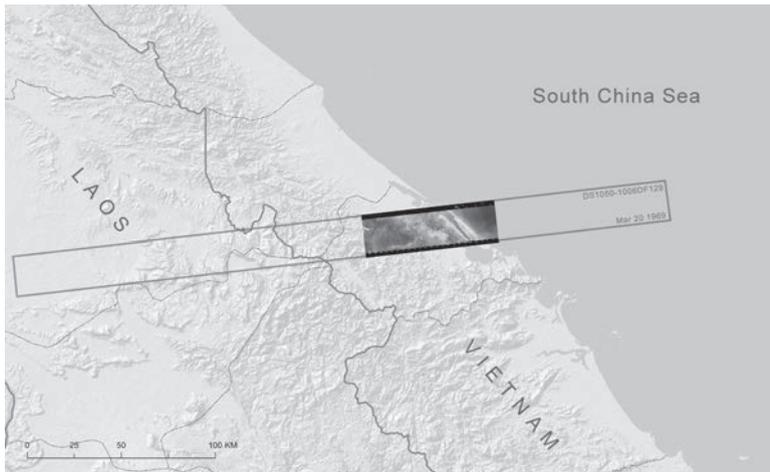


FIGURE 8.2 Footprint of a Single Corona Satellite Frame Taken Over Central Vietnam and Laos on 20 March 1969

Source: Map by Author, adapted from sources including ESRI Inc. (shaded terrain), National Geospatial Agency (NGA) (national boundaries), and United States Geological Survey (USGS) (photograph DS1050-1006DF129).

Administration in 1995 declassified this once top-secret programme, and today the programme's thousands of images are publicly available through the United States National Archives. Figure 8.2 shows the vast extent of just one frame from the camera.<sup>30</sup>

Inspecting the same image at larger scales, one can see historically and spatially situated details of landscapes altered by military construction and conflict. Figure 8.3 shows: (a) hills pockmarked by high-explosive aerial bombing runs; (b) the protective walls and moat built in the 1830s around the old imperial city of Huế; and (c) new base construction associated with Camp Eagle after January 1968.

Taking this satellite photo as an example, it should be clear that the image alone is not sufficient to generate this knowledge of features. Here, all of the traditional tools of historical research are required to bring meaning to such spatial images. This includes studying older and newer images or maps of the area, researching military unit records, interviewing local residents, corresponding with historians, and visiting the site. By incorporating more visual, geospatially tagged evidence into environmental history, my aim is to bring in more discussion of physical spaces, maps, and air photographs. By compiling a history of military landscapes that draws from oral histories, aerial photographs, maps, archaeological surveys, and many other texts, we may better be

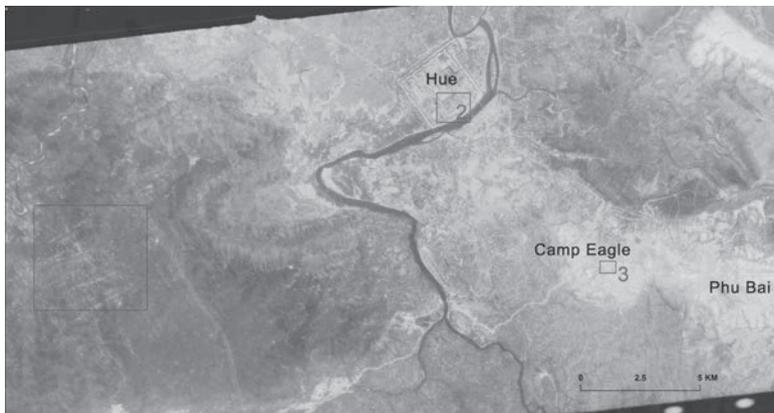


FIGURE 8.3 Zoomed View of Corona Satellite Frame Around Huế, Vietnam  
 Source: Map by Author. Sources include ESRI Inc. (georeferencing) and USGS (photograph DS1050-1006DF129).

able to triangulate an environmental history along the lines described by Lefebvre in his provocative (if impenetrable) opus. Relying on this array of sources while borrowing heavily from geography and other disciplines, environmental histories of militarized landscapes may challenge us to consider in much broader social, historical, and spatial terms, the ways that military conflict becomes embedded in the surfaces of the present, and may shape possibilities in the future.

### Environmental History and Militarized Landscapes: Looking Forward

Since the reunification of Vietnam in 1975, the state has increasingly adopted an approach that mirrors de-militarization and land transfers in more developed countries. One story related by a Vietnamese-American economist who had worked in Singapore suggests that the base-to-industrial park model now employed widely in Vietnam began in 1986 at the very moment the government approved market-oriented ‘*đổi mới*’ reforms. Then Prime Minister Võ Văn Kiệt visited Singapore and solicited input from Singaporean officials and the economist on the development of export processing zones. They pointed to the large parcels of former bases as ideal sites to commence an economic recovery following a Singapore model.<sup>31</sup> In the state-controlled press, the unveiling of new industrial zones follows a common boosterish thread, with newly repaved lots beckoning manufacturers that will in turn create good jobs. In the more remote areas, the state has ceded most former base areas to long-term forestry leases. Reforestation in many of these areas typically features smallholders who are military veterans, and the term ‘re-greening’ (*phủ xanh*) is understood to mean plantation forestry—monocrops of acacia, pine, or rubber. As many have noted, this state-controlled narrative on re-greening often obfuscates local processes of dispossession, racialization, and violence against those continuing to claim traditional rights or ancestral ties to pieces of these parcels.<sup>32</sup> Vietnamese reforestation efforts in the highlands as well as many NGO-led efforts in reseeding coastal mangroves have produced a sharp rebound in the total area of forest cover, suggesting a definitive speeding up of remediation in the past decade; however, local complaints against agroforestry and corruption in land leasing are widespread.

Despite the classic works of Sombart and Schumpeter, historians by and large have only recently turned serious attention to the overlapping histories of war and environmental change. Richard Tucker and Edmund Russell's *Natural Enemy, Natural Ally: Toward an Environmental History of War* (2004) represents one of the first attempts in the twenty-first century by historians to address some of the same questions first raised by Sombart and his colleagues. Other works cited in this chapter have come out since, and they represent the continuation of scholarly discussions within the circles of environmental history, military history, and diplomatic history. Still, it bears noting that Sombart was not a historian per se but an economist like Schumpeter. Traditional historical research based on archival and other primary sources can answer some questions, but as a discipline it lacks certain 'tools' essential to understanding intersections of environmental, political, and cultural processes. More contact across the disciplines—especially with geographers and anthropologists—is critical for future histories of militarized landscapes to better address some of the conceptual and archival challenges described above.

## Notes and References

1. To aid readers who may be unfamiliar with the general time frame of war and post-war activities in Vietnam, Vietnam's first postcolonial struggle (with France and its allies) commenced in September of 1945 and ended with the Geneva Accord and armistice in July 1954. The United States first supported France and its Vietnamese allies in 1950, and it escalated aid to South Vietnam after the Geneva Accords. The United States committed more military advisors after 1954, and dramatically increased its military aid in 1961. American ground troops first arrived in March 1965, and American base construction commenced from then, spiking in 1968 in response to the communist-led Tet Offensive. The United States closed most of its bases in 1972–3, and South Vietnam collapsed 30 April 1975. The United States and the Socialist Republic of Vietnam resumed full diplomatic relations in 1994, and most bilateral negotiations over environmental remediation, especially regarding unexploded ordnance and Agent Orange/dioxin, have developed since 2000. Regarding the boom in industrial parks, this is due in part to the signing of the United States–Vietnam Bilateral Trade Agreement in 2000. Vietnam entered the World Trade Organization in 2007, and as of 2016, the United States and Vietnam have entered into new agreements for the sale of American military equipment to the Vietnamese Ministry of Defence.

2. Karl Liebknecht, *Militarism and Anti-militarism, with Special Regard to the International Young Socialist Movement* (New York: B.W. Huebsch, 1917).

3. Political scientist Cynthia Enloe popularized the term in her studies on the impacts of military bases and militarized imagery on gender relations. A growing number of historians, geographers, and others have extended the term to study other processes, including environmental ones. See Cynthia H. Enloe, *Bananas, Beaches & Bases: Making Feminist Sense of International Politics* (Berkeley, CA: University of California Press, 1990); Cynthia H. Enloe, *Maneuvers: The International Politics of Militarizing Women's Lives* (Berkeley, CA: University of California Press, 2000); Michael Szonyi, *Cold War Island: Quemoy on the Front Line* (Cambridge: Cambridge University Press, 2008); Trevor Paglen, *Blank Spots on the Map: The Dark Geography of the Pentagon's Secret World* (New York: Dutton, 2009); and Mark L. Gillem, *America Town: Building the Outposts of Empire* (Minneapolis, MN: University of Minnesota Press, 2007).

4. Paul A. Scipione, 'Life in Vietnam', *New York Times*, 4 December 1983, 174, <http://search.proquest.com/docview/122141018> (accessed 7 September 2012). This letter refers to an essay published by journalist Craig R. Whitney, 'A Bitter Peace: Life in Vietnam', *New York Times*, 30 October 1983, 24-7, 54-7, <http://www.nytimes.com/1983/10/30/magazine/a-bitter-peace-life-in-vietnam.html?pagewanted=all> (accessed 7 September 2012). Whitney, like the veteran above, was also familiar with Camp Eagle during the war. He covered the Easter Offensive from Huế as a stringer for the *New York Times* in 1972. See Craig R. Whitney, 'Supplies Running Low at Besieged Fire Base Near Hue', *New York Times*, 13 April 1972, 16, <http://search.proquest.com/docview/119445069> (accessed 7 September 2012).

5. Heonik Kwon's *Ghosts of War in Vietnam* offers a fascinating anthropological analysis of the role that ghosts, especially wandering souls, play in everyday life. See Heonik Kwon, *Ghosts of War in Vietnam* (Cambridge: Cambridge University Press, 2008). There are many Vietnamese books, films, and news stories about wandering souls, including some that are available in translation to global audiences. For example, see Bao Ninh, *The Sorrow of War: A Novel of North Vietnam*, trans. Frank Palmos (New York: Pantheon Books, 1995). Ghosts also feature prominently in such films as Director Đặng Nhật Minh's 1985 film, 'When the Tenth Month Comes.' [Bao giờ cho tới tháng Mười].

6. Francis Sheppard, *London: A History* (Oxford: Oxford University Press, 1998), 8-12.

7. Keith Taylor, *The Birth of Vietnam* (Berkeley, CA: University of California Press, 1983), 63.

8. Anna Greenspan, *Shanghai Future: Modernity Remade* (New York: Oxford University Press, 2014).

9. Judith Shapiro, *Mao's War against Nature: Politics and the Environment in Revolutionary China* (Cambridge: Cambridge University Press, 2001).

10. Joseph Schumpeter, *Capitalism, Socialism and Democracy* (New York: Harper & Bros, 1983), 83.

11. David Harvey, 'Neoliberalism as Creative Destruction,' *Annals of the American Academy of Political and Social Science* 610 (March 2007): 22–44; Naomi Klein, *The Shock Doctrine: The Rise of Disaster Capitalism* (New York: Picador, 2007).

12. Naomi Klein, 'Baghdad Year Zero: Pillaging Iraq in Pursuit of a Neocon Utopia', *Harpers* 43 (September 2004): 43.

13. Werner Sombart, *Krieg und Kapitalismus*. Leipzig: Duncker and Humblot, 1913.

14. Friedrich Nietzsche, *Thus Spoke Zarathustra: A Book for All and None*, trans. Walter Kaufmann (London: Penguin, 1968), 211, cited in Hugo Reinert and Erik Reinert, 'Creative Destruction in Economics: Nietzsche, Sombart, Schumpeter', in *Friedrich Nietzsche (1844–1900)*, ed. Jürgen Backhaus (New York: Springer, 2006), 69.

15. Reinert and Reinert, 'Creative Destruction in Economics', 58.

16. While the quote is often used to suggest Oppenheimer's remorse in the 1960s for creating a world-annihilating bomb, a more thorough consideration of that passage in the Gita instead shows how a physicist, working at an elite, top-secret military base (Los Alamos), saw the bomb as bringing about creative destruction. In the Gita, the god Vishnu is only destroying the world of hero Arjuna's enemies. The more complete quote from the Gita reads as follows, where Arjuna asks to see the god Vishnu in his cosmic, non-human form: [Arjuna speaking:] O Vishnu! Swallowing all the worlds with Thy blazing flames, Thou art licking all around. Thy fierce, radiant rays, filling the whole universe, are burning. Tell me, who art Thou, in this terrible Form? ... [Vishnu replying:] I am eternal, world-destroying Time [I am become Death], manifested here for the destruction of these people. Even without Thee, none of these warriors, arrayed here in the hostile armies, shall live. Therefore do arise and acquire glory ... be thou merely an instrumental cause...' For a more in-depth discussion of Oppenheimer's deep abiding interest in the philosophy of the *Bhagavad Gita*, see James A. Hijaya, 'The "Gita" of J. Robert Oppenheimer', *Proceedings of the American Philosophical Society* 144, no. 2 (June 2000): 123–67. Quote from Swami Paramananda, trans., *Srimad Bhagavad Gita or the Blessed Lord's Song* (Boston, MA: Vedanta Centre, 1913), 92–93.

17. Richard Stone, 'Agent Orange's Bitter Harvest', *Science* 315, no. 5809 (2007): 177.

18. Rachel Carson, *Silent Spring* (New York: Houghton Mifflin, 1962).

19. Historian David Zierler provides a detailed history of these scientist-activists, and the deliberations of American administrations from Johnson to Nixon over the problem of ecocide and the use of chemical and biological

weapons. See David Zierler, *The Invention of Ecocide: Agent Orange, Vietnam and the Scientists who Changed the Way We Think about the Environment* (Athens, GA: University of Georgia Press, 2011). Edwin A. Martini's *Agent Orange: History, Science and the Politics of Uncertainty* (Amherst, MA: University of Massachusetts Press, 2012) provides an updated synthesis of the intersecting military, legal, and scientific concerns with Agent Orange.

20. John Wargo, *Green Intelligence: Creating Environments that Protect Human Health* (New Haven, CT: Yale University Press, 2009), 131–133.

21. There are too many works, especially in scientific literature, government publications, and case law to cite here. In the United States, military agencies such as the Army Corps of Engineers have taken the lead in designing clean-up programmes at former sites. This work includes archive search reports and writing base histories. See Michael W. Harper, Thomas R. Reinhardt, and Barry R. Sude, *Environmental Cleanup at Former and Current Military Sites: A Guide to Research* (Alexandria, VA: Office of History and Environmental Division, U.S. Army Corps of Engineers, 2001). For site-based environmental histories, see Szonyi, *Cold War Island*; Michele S. Gerber, *On the Home Front: The Cold War Legacy of the Hanford Nuclear Site* (Lincoln: University of Nebraska Press, 1992); Marianna Dudley, *An Environmental History of the UK, 1945 to the Present* (London: Continuum, 2012); and Chris Pearson, *Mobilizing Nature: The Environmental History of War and Militarization in Modern France* (Manchester: Manchester University Press, 2012).

22. Wargo, *Green Intelligence*, 131–133. See also Mireya Navarro, 'New Battle on Vieques, Over Navy's Cleanup of Munitions', *New York Times*, 7 August 2009, A10, <http://www.nytimes.com/2009/08/07/science/earth/07vieques.html> (accessed 4 November 2013).

23. Martini, *Agent Orange*, 222–230.

24. USAID, 'Vietnam, United States Launch Historic Agent Orange/Dioxin Cleanup Project in Danang', <http://www.usaid.gov/vietnam/press-releases/vietnam-united-states-launch-historic-agent-orangedioxin-cleanup> (accessed 4 November 2013).

25. John Brinckerhoff Jackson, *Discovering the Vernacular Landscape* (New Haven, CT: Yale University Press, 1984).

26. Henri Lefebvre, *The Production of Space* (Oxford: Blackwell, 1991), 38–39.

27. Lefebvre, *The Production of Space*, 34.

28. David Biggs, 'Frame DS1050-1006DF129', *Environmental History* 19, no. 3 (2014): 271–80.

29. GRASS GIS, 'Historical Notes', <http://grass.osgeo.org/home/history/> (accessed 5 November 2013).

30. The (open source) Wikipedia page for Corona offers an excellent, comprehensive introduction to this unique group of images. See Corona, 'Corona

(satellite)', Wikipedia. [http://en.wikipedia.org/wiki/Corona\\_\(satellite\)](http://en.wikipedia.org/wiki/Corona_(satellite)) (accessed 5 November 2013). For a more in-depth discussion of CORONA, see Biggs, 'Frame DS1050-1006DF129'.

31. Anonymous interview, 5 April 2013.

32. Some key works in this discussion across Southeast Asia are Nancy Lee Peluso, *Rich Forests, Poor People: Resource Control and Resistance in Java* (Berkeley, CA: University of California Press, 1994); Pamela McElwee, *Forests are Gold: Trees, People and Environmental Rule in Vietnam* (Seattle, WA: University of Washington Press, 2016); John F. McCarthy, 'Processes of Inclusion and Adverse Incorporation: Oil Palm and Agrarian Change in Sumatra, Indonesia', *Journal of Peasant Studies* 37, no. 4 (2010): 821–50; and Nancy Lee Peluso, 'Rubber Erasures, Rubber Producing Rights: Making Racialized Territories in West Kalimantan, Indonesia', *Development and Change* 40, no. 1 (2009): 47–80.