

complexities that the coexistence of pastoralists, agriculturalists, and wild-life entails, such hybrid uses of land can play an essential part in the long run to help dissolve the resilient, Manichean perception of blacks as poachers (or encroachers) and white environmentalists as humane toward animals but inhumane toward people. Amidst the land squeeze, increased mixed usage will be a necessary component of efforts to reconcile water, food, and ecosystem security for humans and nonhuman life-forms. The alternative is unsustainable: powerhouse international NGOs in cahoots with stereotypical tourist demands for Wild Africa driving subsistence farmers and ecosystem people off the land.

In its unevenly postapartheid mode, South Africa has to contend with the civilizational clout of powerful national and international ideologies of nature. These are potentially mutable ideologies, to be sure, but nonetheless etched into the nation's physical, psychic, and economic landscapes. These lingering legacies of political subjugation and territorial appropriation (but-tressed by the civilizational discriminations of colonial progress narratives) have been used to rationalize unequal access to land, wildlife, and leisure while erecting a vast international marketplace around charismatic megafauna and the eco-archaic. What is acutely at stake in understanding South Africa's environmental dilemmas is that they point, in critical form, toward more generalized global crises around land access, food security, resource wars, biodiversity, tourism, and the place of amnesia in the racial politics of the international wildlife marketplace.

In our quest to transform colonialism's temporal and spatial legacies, a profound tension often arises between economic, historical, and psychological impulses. How much change, how fast, at what cost to whom, and when? The strategic answers will vary according to the specific frictions or collaborations between global forces, local and national power structures, and what Tsing calls "the sticky materiality of practical encounters."⁶¹ Let Ndebele, surveying the game lodge, have the final word: "The ambiguities and choices are difficult, even painful. Now we want to throw off the psychological burden of our painful past; now we want to hold on to it. . . . We think: there is no peace for those caught in the process of becoming."⁶²

7

Ecologies of the Aftermath

Precision Warfare and Slow Violence

The war has used up words; they have been weakened, they have deteriorated like motor car tires; . . . we are now confronted with a depreciation of all our terms . . . that may well make us wonder what ghosts will be left to walk.

—Henry James in interview, March 21, 1915

One day my Sunday School teacher, Mrs. Graff, read the Noah's Ark story aloud to our class. When she came to the part about the floodwaters drying up, she held the book open to the picture of the sturdy, gleaming ark surrounded after the flood by the lush green trees and colorful plants, all under the beautiful rainbow in the sky.

The entire class was entranced except for Joel, the boy sitting beside me.

Joel stared at the picture our teacher held up and yelled suddenly. "WHERE ARE ALL THE BODIES!?"

Our teacher looked puzzled and annoyed. She put her book down.

"WHAT BODIES, JOEL?"

"THE BODIES!" he cried. "WHERE ARE ALL THE BODIES OF THE PEOPLE AND THE ANIMALS THAT DIED IN THE FLOOD!?"

—Ellen O'Grady, *Outside the Ark: An Artist's Journey in Occupied Palestine*

What is a war casualty? The answer appears painfully obvious. It asserts itself less through argument than through visceral photographs: a torso shredded by a roadside bomb; a bloodied peasant spread-eagled in a ditch; a soldier, cigarette dangling nonchalantly, crashing his boot into a dead woman's head. Yet such images account only for immediate, visually arresting fatalities. What about those casualties that don't fit the photographic stereotypes, casualties that occur long after major combat has been concluded, casualties whose belatedness and dispersal make them resistant to dramatic packaging? The media, in thrall to speed and spectacle, lacks the attention span to follow war-inflicted catastrophes that take years or generations to exact their toll. After official victory has been declared, how do we track the persistence of unofficial hostilities in the cellular domain, the untidy, attritional lethality that moves through the tissue, blood, and bones of combatants and noncombatants alike, moving through as well the living body of the land itself?

As Joel's disquiet over the shiny, rainbow version of Noah's rescue narrative suggests, stories—tightly framed for time, space, and point of view—are convenient places for concealing bodies. Stories of the aftermath are protracted, convoluted, messy, open ended, and often discomfiting to tell, particularly when—whether it's Noah's ark or the 1991 Gulf War—the official narrative frame is unequivocally triumphalist. The Gulf War offers a dramatic instance of how challenging it can be to narrate the ecology of the aftermath because America's corporate media represented that war as a spectacular achievement of speed and untainted victory—a strategically, technologically, and ethically decisive war, the nation's anti-Vietnam. Yet the Gulf War was, at the same time, the conflict that gave us Gulf War syndrome and—less remarked upon—the first conflict in which depleted uranium munitions were deployed on a large scale. It was thus a war of profound narrative contrasts: between the crisp story line that marches briskly toward victory and the diffuse, laborious story about slow violence, about convoluted scientific proof and the politics of risk, a story that fans out into the open-ended, uncertain ecologies of the aftermath.

Public debate is overdue on war's hidden human and environmental costs, a debate that acknowledges major shifts in the ways that contemporary wars kill. Military euphemisms like “precision” warfare, “surgical” strikes, “smart” wars, “depleted” uranium, and “miracle drones” have

helped legitimize recent high-tech conflicts while concealing their long-term toxic and radiological impact. The rhetoric of precision lulls us into regarding the fatalities of war as swift, immediate killings. But ironically, the increasing reliance of American and British forces on the discourse of “precision” coincides with the integration of “depleted” uranium into their missiles, bullets, and tank armor.

Ever since the 1991 Gulf War, a new kind of fatal environmental imprecision has been built into “precision” warfare, for that war was history's first depleted-uranium conflict. Arguably, not since Hiroshima and Nagasaki have humans unleashed a military substance so tenaciously hostile to life itself. Depleted uranium (DU) possesses a durability beyond our comprehension: it had a radioactive half-life of 4.51 billion years. When it enters the environment, DU effectively does so for all time, with consequences that are resistant to military metrics, consequences that we are incompetent to judge.

In our age of depleted-uranium warfare, we have an ethical obligation to challenge the military body counts that consistently underestimate (in advance and in retrospect) the true toll of waging high-tech wars. Who is counting the staggered deaths that civilians and soldiers suffer from depleted uranium ingested or blown across the desert? Who is counting the belated fatalities from unexploded cluster bombs that lie in wait for months or years, metastasizing into landmines? Who is counting deaths from chemical residues left behind by so-called pinpoint bombing, residues that turn into foreign insurgents, infiltrating native rivers and poisoning the food chain? Who is counting the victims of genetic deterioration—the stillborn, malformed infants conceived by parents whose DNA has been scrambled by war's toxins? The calculus of any conflict needs to at least acknowledge such environmental casualties, even if they cannot be quantified. Such casualties may suffer slow, invisible deaths that don't fit the news cycle at CNN or Fox, but they are war casualties nonetheless.

Fractal Wars and Surgical Tropes

The 1991 Gulf War is widely acknowledged as a benchmark moment in the representation and experience of war. It was, in Paul Virilio's influential formulation, the first “fractal war”:

With modern techniques and new logistics of perception, the battlefield of the Gulf War also developed within the field of perception. It appeared to be a local war, in the sense that its battlefield was very small compared with the Second World War. However, considering its representation, it was a worldwide war. . . . So, on one hand, *there was a local war of small interest, with very little human loss on one side, with very little consequences*, but on the other hand, there was a unique field of perception operating. Unlike the Vietnam War, it was a worldwide war, live, with all the special effects of course, the data processing supervised by the Pentagon. . . . So, yes, this war happened, more on a screen than on the ground. *It happened more on the TV screen than in the reality of the battlefield.* To that extent, one can say that real time defeated real space. (my emphases)¹

What appeared so novel about this war was its aura—its manipulated aura—of virtual immediacy. Here was a “real-time” war conducted and viewed at high speed in the present tense, a “smart” war projected through myriad networks onto linked screens in the bomber’s cockpit, on TV, and the Internet, giving the potent sensation of instant access and total, continuous immersion. Perceptually, the Gulf War was high definition, yet epistemologically it was blurry, suggesting a radically new turn in what James Der Derian has dubbed the “military-industrial-media-entertainment network.”²

Yet commentators on the Gulf War, whether technophile or technophobe, whether dazzled or appalled, have consistently represented it as a war of speed, brief in historical time and instantly available (though through complex mediations) as spectacle. Virilio, for example, glosses over the war on the ground as inconsequential, local, and quick; the war’s only long-term significance derives from its impact on the logistics of the perceptual battlefield. However, this critical fixation with the ethics of the war’s potent technological innovations has overshadowed inquiries into the environmental and epidemiological ethics of its duration. A preoccupation with the paradoxes of the Gulf War’s mediated immediacy has made this a particularly challenging war to represent in terms of the *longue durée* of the ecological aftermath.

We can give this difficulty the traction of story by embarking on a road trip in the company of two very different guides who ventured independently

down the same paved two-lane transnational highway in the same week early in March 1991. The highway stretches north from Kuwait City through the border town of Safwan and from there on to Basra, Iraq’s primary port. Both our guides traveled that road to Basra soon after American bombers had incinerated retreating Iraqi convoys in what became known as the “turkey shoot” on the Highway of Death.

Our first guide is writer Michael Kelly, whose award-winning *Martyr’s Day: Chronicle of a Small War* (1993) has won acclaim as the finest work of American war literature since Michael Herr’s *Dispatches* and has been hailed (alongside Anthony Swofford’s *Jarhead*) as the literary masterpiece of the first Gulf War.³ Kelly, a former editor of the *New Republic* and *National Journal* who would go on to edit the *Atlantic Monthly*, offers a visceral account in *Martyr’s Day* of the charred bodies and tanks strewn along the Highway of Death. As a reporter, he observes this spectacle of carnage with something bordering on relief:

The Gulf War was an experience disconnected from itself, conducted with such speed and at such distances and with so few witnesses that it was, even for many of the people involved, an abstraction. It was difficult for the Americans, who had done their killing almost entirely from afar, to feel a connection with those they killed, or with the act of killing.⁴

Kelly belongs to the camp of Gulf War commentators who suffered from pixilation fatigue; afflicted by the vertigo of the virtual, he was disturbed by the war’s fusion of video game presence with corporeal absence, its mixture of closeness and distance that made it feel both instant and elusive even, he suggests, to the killers themselves.

Traveling the Highway of Death, Kelly finally comes eye to eye with the intimate, bodily certainties of war. He has stepped outside the infosphere and into a carnal space where war residues penetrate the nostrils and coat the skin. “For miles and miles,” he observes, “the roads were rich with the physical realities of war, glutted with the evidence of slaughter and victory. They became the great circuit board of the Gulf War, where the disconnect-ness stopped.”⁵

From Kelly’s vantage point, then, the Highway of Death marks the end of the road. This is the terminus he has been craving, a place of convergent

finalities, where the war has exacted its last fatalities, where certain victory has been achieved, and where the feedback loop of bloodless mediation has been trumped by the raw materiality of a corpse-strewn highway. Here, finally, he can slough off the deranging enchantments of the virtual and, standing on the carnal terra firma of American triumph, find the empirical, experiential, and narrative closure he has yearned for.

Our second guide, traveling down that same road that very week, is a woman named Carol Picou, who ventured there in a very different capacity. First Sgt. Picou was serving as a combat support Army nurse working with a mobile hospital unit. A seventeen-year veteran of the U.S. military, she helped open a field hospital alongside the highway and for fifteen grueling days treated the injured and retrieved the Iraqi and Bedouin dead, clambering in out of those same incinerated tanks that for Kelly marked his sense of an ending.⁶ Within days of her departure from this scene, Picou's skin starting to erupt in black spots; soon she lost control of her bladder and her bowels. She came to depend permanently on a catheter and diapers. After her return to America, over the months and years that followed, she developed thyroid problems and squamous cancer cells in her uterus; she developed immunological dysfunction and encephalopathy. Three years after her stint on the Highway of Death, tests found dangerously elevated levels of uranium in her urine. Not until a barrage of afflictions had jeopardized her life did Picou first heard the phrase "depleted uranium" and begin to learn of the threat its residues could pose.

"Depleted" is a lulling word: place it in front of robust nouns like "energy" or "ambition," and "depleted" saps them of their vigor. Not so depleted uranium. It poses a terrible radioactive and chemical threat that actively endangers soldiers, civilians, and the environment itself. Despite that reassuring "depleted" in its name, depleted uranium possesses 60 percent of natural uranium's radioactivity. During the Gulf War alone, American troops fired weapons containing 340 tons of depleted uranium. According to British professor of medicinal chemistry Dr. Malcolm Hooper, this contributed significantly to making the Gulf War "the most toxic war in Western military history."⁷ In Hooper's measured opinion, depleted uranium is "a new weapon for indiscriminate, mutually-assured destruction."⁸ The United Nations Commission on Human Rights, moreover, has classified depleted uranium munitions with nuclear, biological, and chemical

weapons as "weapons of indiscriminate effect." Although German scientists first researched DU's military potential in the 1940s, for a half century it was kept off the battlefield. Not until the 1991 Gulf War was depleted uranium integrated into conventional warfare, thereby adding a new fatal kind of environmental imprecision to "precision" warfare. How did such an unethical radioactive substance become enfolded, from the Gulf War onward, into the landscape of modern warfare and into the ecology of war's aftermath?

Why, Carol Picou asked, had she and her unit not been warned of depleted uranium's potential radiological and chemical perils before entering those heavily polluted battle zones? Why had the U.S. military not outfitted them with protective gear, these nurses on their mercy mission, working inside and alongside tanks incinerated by depleted uranium-tipped munitions? In retrospect, Picou worried about the fierce desert winds that her unit had encountered while tending to the injured, winds that had whipped up the desert dust and with it, unbeknownst to her, suspended depleted uranium particles.

Picou's unit included 300 troops. Of those, 150 worked along the front line on the Highway of Death; the other 150 remained in the rear. By 1996, five years after the Gulf War's official end, of the 150 members of Picou's unit who worked on the Highway of Death forty were seriously ill and six had died. By contrast, the 150 who had stayed back from the front line had remained healthy. On learning that some returning veterans had started to father or conceive children missing an eye or an ear or a thyroid gland, that children were being born with flippers instead of arms, Picou, who had done so much to heal war's casualties, decided to have her tubes tied.

The Department of Defense discharged Carol Picou in March 1996, five years after her return from the Highway of Death. She was dismissed with "Bowel and Bladder Incontinence—Etiology Unknown." According to the document that terminated her service, the barrage of illnesses she suffered from was "non-combat-related."⁹ She was thus denied the kind of pension that servicewomen and men injured in the battlefield secured. Her decisive dismissal on the basis of a medically indecisive narrative further undermined Picou's physical and financial prospects. Beneath the camouflage of slow violence, and despite soaring uranium levels in her urine five years after combat, Picou's catastrophic physical collapse was dissociated entirely from the environment of war.

For Michael Kelly, the road to Basra marked the end of a pilgrimage, the moment when he could find relief in a triple termination: to the Gulf War's virtual disconnectedness, to the war itself, and to the murky humiliations of America's Vietnam syndrome.¹⁰ For Picou, by contrast, that same highway was where her personal and professional termination would begin, the place where the war's corporeal disconnectedness would begin in earnest. For Picou, the Highway of Death marked the onset of a different kind of disconnection—between her body's collapse and her struggle to be believed as she plunged into an unending battle to win official military acknowledgment as a postcombat war casualty. For Picou, by March 1991 the Gulf War had barely begun.

In ignoring the unfolding of slow violence across environmental and epidemiological time, Kelly, like Virilio, accepted the Gulf War's face-value brevity. The title of Kelly's book—*Martyr's Day: Chronicle of a Small War*—underscores this image of a miniconflict tidily contained, a conflict he dubs the "Hundred Hour War."¹¹ When he revisits his book eight years after publication to add a post-9/11 foreword, Kelly mounts an argument that would become widespread in rationalizing the then imminent 2003 Iraq War, namely, that a direct line could be drawn between the Gulf War's sanitary brevity, America's cutting-edge precision materiel, and American military humanitarianism:

The Gulf War wasn't named a war. It was named an operation—Operation Desert Storm. An operation is not a war; it is a surgical event. It is something the definitional purpose of which is limited: get in, get the tumor, get out. . . . The Gulf War was run as an operation, and as an operation it worked very well . . . The troops went in and removed the tumor from Kuwait, which was the sole goal of the operation. Few people got killed. (And in "few," I am including an assessment of Iraqi deaths, which were much higher than Allied deaths, but remarkably low considering the lethal capacity of Iraq's enemy; the Gulf War was the first important demonstration of the ability of the new American military to exploit its overwhelming technological superiority to produce a historic contradiction in terms—effective humanitarian war.)¹²

The notion that surgical strikes, precision warfare, and smart bombs exhibit a morally exact intelligence is understandably widespread.¹³ In America, we are primed to view contemporary life as an incessant, accelerating series of technological upgrades, each promising more marvels than the last. Inside this progress narrative, the cults of speed, novelty, and spectacle can seem to generate their own innate morality. It is easy, in such a technological climate, to grant each new weapons system an enhanced ethical potency.¹⁴

What Kelly fails to observe in retrospect is the shadow of imprecision trailing behind those luminous technologies of precision streaking across the sky, a shadow that for months, years, decades, generations would jeopardize the lives of random civilians through the lethal legacies of incinerated munition depots, depleted uranium, and unexploded cluster bombs. Quick causal leaps from "technological superiority" to "effective humanitarian war" allow no place for what Hiroshima journalist Akira Tashiro terms war's discounted casualties.¹⁵ Kelly's ornate surgical metaphor is especially inapt, given the carcinogenic risks associated with depleted uranium wars: the same "surgical" technologies used to remove the Iraqi "tumor" are instrumental in tumor spread. What kind of surgeon operates with instruments so radioactive that they may catalyze literal cancers in the name of metaphorically excising them?¹⁶

More apt is Rachel Carson's metaphor of the "unselective bludgeon," which she invokes to describe purportedly target-specific insecticides.¹⁷ Writing in the aftermath of death-camp science and the science behind Hiroshima and Nagasaki, Carson was all too aware how readily the civilizational rhetoric of progress and precision could cloak barbarous consequences. In exposing the long-term perils of unchecked techno-boosterism, she stressed how often the precision pitch relies on reckless promises of miraculous, merciful selectivity.

Kelly, in advocating an ethics of corporeal intimacy over the confounding paradoxes of virtual distance, succumbs to an environmentally obsolete image of war as spectacle. What he observes is not a luminous victory for both America and unmediated empiricism, but rather unwittingly the mirage of war's end. A visible precision—readily framed as instant spectacle—may mask a devastating imprecision, invisible and inhumane, dispersed across the desert sands and across the sands of time. In trusting the authority of his eyes to bring the war to closure, Kelly fails to acknowledge

the chemical and radiological perils that lie ahead for Iraqis; for the region's water, earth, and air; for creatures domestic and wild; for the region's crops; and for American troops as well. Beyond the vanishing point of Kelly's sight line stretches the prospect of months, years, generations of epidemiological and environmental threat, a threat that Carol Picou, for one, would come to know with a different kind of intimacy, the intimacy of her own disintegrating organs and crumbling bones. Entering those incinerated tanks along the Highway of Death, Picou unknowingly entered a new phase of that "small war" to which her body's cells would bear corrosive witness.

Hysteria, Millenarianism, and Slow Violence Disavowed

In the aftermath of the Gulf War, the forces of epidemiological disavowal gained an ally from an unexpected quarter: Princeton literary scholar Elaine Showalter. Showalter, best known for her brilliant, pathbreaking work on the cultural production of gendered madness, adjudged in her book *Hystories* that Gulf War syndrome was the result of a media-stoked millennial hysteria. Showalter maintained that with the millennium's approach, Americans were especially susceptible to social panics, hence the rise of alien abduction, Satanic ritual abuse, multiple-personality syndrome, the recovered-memory movement, and Gulf War syndrome—all of them, in her view, millennial epidemics of hysterical disorders and imaginary illnesses, and all virally transmitted through the media.¹⁸

Gulf War syndrome could thus best be understood as a hysterical "plot-line" that gave shape and meaning to the war neuroses of returning veterans:

Patients learn about diseases from the media, unconsciously develop the symptoms, and then attract media attention in an endless cycle. The human imagination is not infinite, and we are all bombarded by these plot lines every day. Inevitably, we all live out the social stories of our time.¹⁹

Gulf War syndrome thus becomes little more than a feedback loop in which "psychogenic symptoms" generate stories, which in turn generate further self-identifying victims.²⁰ As a *fin-de-siècle* hysterical script, Gulf War syndrome, like alien abduction and Satanic ritual-abuse stories, thereby becomes

part of a media-transmitted psychological plague. Showalter dismisses objections to her theory as evidence of resistance to psychology itself: "A century after Freud, many people still reject psychological explanations for symptoms; they believe psychosomatic disorders are illegitimate and search for physical evidence that firmly places cause and cure outside the self."²¹

Despite its idiosyncratic millennial-media spin, Showalter's argument is continuous with a slew of narratives of disavowal that are quick to dismiss or trivialize causes "outside the self." What such narratives downplay is the way each war generates a distinctive, historically specific chemical, radiological, epidemiological, and environmental legacy. As the technologies of war shift, so does the composition of the aftermath. Showalter, obsessed with the millennium's media prelude, deflects attention away from the aftermath in all its textured chemical and radiological specificity.

Moreover, if Gulf War syndrome (or more accurately, Gulf War illness) really were expressive of a *fin-de-siècle* media-induced panic and had no root environmental causes, then the moment for that panic has long passed: the millennium has come and gone, as have the "media-stoked millennial panics." Yet the number of veterans reporting Gulf War illness continues to soar. In 1997, when Showalter published her book, some 60,000 U.S. Gulf War veterans were afflicted; by 2008, eight years after the uneventful passing of the millennium, that number had surpassed 175,000.²² The inhabitants of the Basra region, where depleted uranium weaponry was used extensively during the Gulf War, share some disturbingly similar symptoms to America and Britain's ailing veterans. Are we to believe that the Basrans also contracted these symptoms from America's millennial media? After NATO planes deployed depleted uranium-tipped missiles in the Balkan Wars, returning European troops reported a high incidence of "peacekeeper's syndrome," again with strong epidemiological similarities to the symptoms suffered by Gulf War veterans and the Basrans. All three groups experienced, in particular, spikes in leukemia, renal collapse, and birth deformities. While the science on this remains incomplete—indeed, it has in many instances been insufficiently investigated or obstructed—the overlapping tendencies in the epidemiological aftermath of depleted uranium wars are cause, at the very least, for a more precautionary approach.

By insisting that Gulf War syndrome is the creation of millennial panics, the mass media, and veteran hysteria, Showalter excludes from the

realm of explanation battlefield environmental forces. Her line of thinking thereby shrinks the spatial and temporal frames of the aftermath; it is a line of thinking readily reconciled with the military's dismissal of cases such as Carol Picou's: "etiology unknown, not combat-related." Surely we can acknowledge the power of "plot bombardment" without losing sight of the less metaphoric battlefield bombardment that profoundly shapes the bodily aftermath?

Showalter, like others in the disavowal camp, displays a naïve, unwarranted faith in the commitment by the Departments of Defense and Veterans Affairs to a thorough, well-funded investigation. The historic track record of such organizations—most notably, toward atomic veterans and casualties of Agent Orange—gives ample grounds for skepticism. The U.S. military has a long record of dissimulation on such matters, a record of "it's all in your mind" dismissals, of foot dragging and of underfunded, half-hearted science. For twenty years it dismissed the physiological effects of Agent Orange as a grand hallucination. Similarly, it would take the U.S. military until 2008—seventeen years after the official end of Kelly's "small war"—to acknowledge that Gulf War illness exists and has material chemical causes.²³

Temporal Camouflage and the Politics of Belatedness

As we have seen, the proponents of "smart" wars often market them as humane because they appear to promise not just greater accuracy but greater brevity. However, the Iraq War that began in 2003 complicated that assumption, exposing the chasm between a hygienically "smart" war and the messy hazards of a drawn-out, urban guerilla conflict. Innumerable commentators, of course, have made this point. However, they typically continue to overlook the way the specific technologies that purport to shorten a conflict may delay, disperse, and therefore extend "precision" warfare's ecological impact. Such technologies, when they compromise the environment, morph into long-term killers, creating landscapes that inflict lingering, off-camera casualties. Time itself becomes the ultimate cover-up, a dependable ally in camouflaging "smart" warfare's sprawling toll.

Environmentalists routinely face the quandary of how to convert into dramatic form urgent issues that unfold too slowly to qualify as breaking news—issues like climate change and species extinction that threaten in

slow motion. Any environmentalist who seeks to tally the delayed-action casualties of "precision" warfare labors under a similar disadvantage. How many years, how many decades, how many generations will he or she be granted to come up with an always-approximate count that includes war's after-dead? Since 1991, depleted-uranium ordnance has been deployed in Afghanistan, Bosnia, Kosovo, Kuwait, Serbia, Somalia, and Chechnya and—in unprecedented quantities—during the 2003 war in Iraq. Given depleted uranium's 4.51 billion-year half-life, what can counting even mean?

War deaths from environmental toxicity demand patient, elaborate proof. Spikes in renal collapse; infertility; leukemia; testicular, brain, and breast cancers; and clusters of infant malformations are harder to link to war's technologies than a bullet through the head. The military statistician can simply count corpses within a given place and time, subdivide those columns into combatants and civilians, then draw a line beneath his sums. Such calculations conform tidily to our preconceptions about the time frame within which a war is waged. However, to view war through the prisms of ecological time and genetic mutation demands a different ethical attention span. Uranium, after all, is genotoxic and chemically alters DNA.²⁴

An earlier generation of environmental historians first addressed this problem of the relationship between changing military technologies, official disavowal, and belated casualties. Thomas Whiteside's *The Withering Rain: America's Herbicidal Folly* and John Lewallen's *Ecology of Devastation: Indochina* (both published in 1971) launched the by now extensive literature on the protracted lethality of Agent Orange.²⁵ In 1982, Harvey Wasserman and Norman Solomon's *Killing Our Own: The Disaster of America's Experience with Atomic Radiation* detailed the catastrophic long-term impact of atmospheric nuclear testing on America's "atomic soldiers."²⁶ The turn to depleted-uranium warfare and the unprecedented proliferation of cluster bombs demands that we revisit the question of who counts as a casualty. Who is counting the veterans slain or disabled by environmentally transmitted "friendly fire" and the deferred casualties among refugees returning to poisoned, radiated landscapes, both groups harboring the illusion that the war is safely behind them?

What accounts for depleted uranium's sudden surge in military popularity? As a by-product of nuclear testing and nuclear power, depleted uranium is extremely cheap—indeed, better than free. A half century of

nuclear-weapons and nuclear-power production has left the Department of Defense with more than a billion pounds of nuclear waste in storage. The Department of Defense is delighted to off-load some of that waste onto arms manufacturers, gratis, in the form of depleted uranium. The result is a seductive kind of alchemy: weapons manufacturers magically cut their production costs while the Defense Department magically rids itself of a five-alarm waste product that no American wants buried in their backyard. The result is a kind of antienvironmental recycling that converts highly toxic waste into even more deadly explosive forms.

In a classified acknowledgement of depleted uranium's perils, Britain's Atomic Energy Authority warned that, in the Gulf War's wake, depleted uranium could enter the food chain and cause a half million premature Iraqi and Kuwaiti deaths.²⁷ By expanding its depleted-uranium arsenal, America is effectively exporting nuclear waste to foreign soil—nuclear waste that contains traces of plutonium, for which there are no safe levels. This nuclear waste also contains the uranium isotope 236, which does not exist in nature and has caused concern among epidemiologists. Dr. Michael Kilpatrick, a leading Pentagon spokesperson on DU has asserted that "our studies in the United States over fifteen years have not shown depleted uranium going from soil into groundwater."²⁸ However, as Dan Fahey notes, several scientific studies have refuted Kilpatrick's claim by demonstrating the seepage of DU into aquifers and ecosystems:

Depleted uranium dumped into a pit at the Starmet (formerly Nuclear Metals) manufacturing plant in Concord, Massachusetts, has leached through the soil into groundwater. The State of Massachusetts permits drinking water to contain up to 29 micrograms of uranium per liter, but test wells at the Starmet site have measured levels up to 87,000 micrograms of uranium per liter water. A recent study found DU in the sapwood and bark of oak trees on the Starmet site; the DU was apparently transferred to the sapwood through uptake of contaminated groundwater.²⁹

Foreign war zones may appear far-off and, yes, foreign civilians (and the environments on which they depend) bear the brunt of the noxious load. However, they do not bear that load alone: as we have seen, American

and British troops also become victims of depleted uranium's slow-motion slaughter.

The Pentagon loves depleted uranium not just because it's free, but also because the metal's density gives it a high penetrative capacity. That means depleted-uranium munitions can be fired from greater distances, ensuring improved "kill range" and thereby purportedly helping keep U.S. troops out of harm's way. But such reasoning depends on a myopic notion of "harm's way" and "kill range"; both euphemisms demand an environmental gloss.³⁰ For we need to measure a weapon's "kill range" not just across battlefield space but across ecological and genetic time as well.

When a depleted-uranium warhead strikes a metal target, the depleted uranium spontaneously combusts, releasing minute glass particles in aerosol form. These so-called ceramic aerosols, despite the aesthetic elegance of that phrase, give off no scent, so troops and civilians alike inhale them unknowingly. Because ceramic aerosols emit radiation in potentially lethal doses, if they enter your lungs or if you ingest them or if they seep into a cut, you're at grave risk of developing life-threatening renal carcinoma, leukemia, lymphomas, or any one of multiple cancers. Most cancers take five to thirty years to incubate.

Narrating the Aftermath: The Challenges of Scale

In February 1991, on the eve of the Gulf War, the nuclear scientist Leonard A. Dietz warned of catastrophic consequences if the United States and its allies introduced depleted-uranium weaponry to the battlefield.³¹ Dietz's prescient appeal was ignored. As a consequence the Gulf War has left in its wake radioactive landscapes that will continue, for untold years, to wage widespread, random warfare. When Dietz cautioned against integrating depleted uranium into conventional warfare, his alarm was grounded in experience. During the late 1970s, he was employed to monitor depleted-uranium levels outside an Albany factory that produced cannon shells for the Air Force. New York state authorities, on learning that radiation levels near the factory had reached ten times permissible state standards, shut down the plant. The subsequent cleanup cost more than \$100 million.

Dietz underscored the hypocrisy of such stringent domestic regulation when the United States was creating in the Gulf an infinitely more toxic

environment for its troops and for the region's inhabitants. Shortly after the Gulf War began, Dietz observed: "To protect the health of Americans, we shut down a factory for discharging the equivalent of about two 30mm shells into the atmosphere per month. How can we justify using a million such shells in Iraq and Kuwait, most of it in only four days of war?"³²

Major Doug Rokke, former director of the Bradley Radiological Laboratory in Fort McLellan, Alabama, makes a similar argument to Dietz. Rokke was tasked with leading an operation to clean up American military vehicles shipped back to the United States in the Gulf War's aftermath. That clean up, Rokke notes, took four years. What does that indicate about the toxic threat those war-exposed vehicles posed, not to speak of the long-term threat to the environment whose toxicity went untreated?³³

No sooner had military victory been declared in the Gulf War than the public relations battle was joined to shield depleted uranium materiel from environmental critiques that might jeopardize its future in the United States' arsenal. On March 1, 1991, Lt. Col. M. V. Ziehm of the Los Alamos National Laboratory sent out this memo to all officers in the field:

Depleted Uranium penetrators were very effective against Iraqi armor . . . but there has been and continues to be a concern regarding the impact of DU on the environment. Therefore, if no one makes a case for the effectiveness of DU on the battlefield, DU rounds may become politically unacceptable and thus, be deleted from the arsenal . . . I believe we should keep this sensitive issue at mind when after-action reports are written.³⁴

On receiving this memo in Kuwait where he was leading his meticulous effort to scour vehicles of DU residues before shipping them back to the United States, Rokke read it as an unambiguous instruction to self-censor: "[W]e want this stuff—don't write anything that might make it difficult for us to use it again."³⁵

Pentagon officials closed ranks around a public insistence that DU was environmentally innocuous. Former Pentagon spokesman Dr. Michael Kilpatrick was especially vocal and insistent: depleted uranium, he declared, is "a lethal but safe weapons system. . . . I think we can be very confident that what is in the environment does not create a hazard for those living in the

environment and working in it."³⁶ But sometimes a less decisive view slipped through. "The military benefits are so much larger compared to any health problems," Colonel James Naughton declared,

[w]e feel we have to use it. It's radioactive—I wish it wasn't, but I can't change the laws of physics. The issue is, once you've had a hit, once you're involved in the catastrophic failure of the tank, did the crew survive long enough to really care whether it was tungsten or depleted uranium that hit them? Anyone who does should count themselves damn lucky. I'm sure every one of them would thank God that they lived forty years to contract lymphoma.³⁷

What Naughton acknowledges openly here is a two-speed lethality, the difference between what I call cold- and hot-war casualties. Here, as is typically the case, the immediate risk in the heat of battle trumps the violence of deferred effects. But as Carol Picou, Doug Rokke, and veterans in their thousands—not to mention far greater numbers of Iraqis—already knew in their soft organs and in the marrow of their bones, you can become a post-combat war casualty in well under forty years. As Major Rokke explains:

Four years after the first Gulf War I was blowing 432 micrograms of uranium per liter of urine. That's 5,000 times the permissible level. I was pissing fire . . . My immune system is fucked up. I get endless rashes, open sores that bleed, renal problems. My kidneys are gone to crap, my lungs have gone to crap, my bones are crumbling. My teeth break off and fracture. Uranium replaces calcium. Chemistry 101.³⁸

To revisit Michael Kelly's title, a chronicle of Rokke's "small war" requires a different type of attention span and more fine-grained narrative strategies. The slow, invisible ousting of calcium by uranium in the body isn't compatible with the triumphal narrative arc that leads, ineluctably, to the tank-and-corpse scene that delivers a satisfying terminus to Kelly's victory quest. We need counternarratives that locate the Highway of Death circa March 1991 as not a scene of finality, but an early moment in a far longer story of slow

violence, of random, unofficial hostilities fought out in the cellular theatres of a physically dispersed aftermath. The task facing both epidemiologists and environmentalists is how to track and recount the winding, concealed metamorphoses of sequestration.

The narrative challenges posed by slow violence of this kind are challenges of catastrophic miniaturism, as the difficulty of narrating temporal duration is compounded by the difficulty of narrating physical scale. "What would constitute adequate protection?" Rokke asks of depleted uranium. "There is none. This stuff is 21 microns. It's smaller than the inner diameter of a red blood cell. We don't have respiratory filters anyplace that can stop it short of a space suit."³⁹ These microscopic temporal narratives of preentry threat and postentry mutation are amplified by a spatial threat that, again, passes beneath the levels of naked eye detection. Pentagon spokesmen have asserted that because depleted uranium is heavier than lead, it lies where it falls and can't pose a mobile risk. But as research by Dr. Dietz and others has shown, the particles in question are so minute—finer than talcum powder—that they can attach themselves to minuscule particles of sand and become readily resuspended in desert winds. Thus, Dietz concludes, "the fallout range of airborne DU aerosol dust is virtually unlimited."⁴⁰

The spatial and temporal carry of this threat, together with the extreme physical scales across which it operates (from the cellular to the transnational) compound the challenge of producing simple, readily communicative narratives of risk. What we need is stories of anticipation based on the emerging science. The science itself is inescapably slow and has been further slowed by an official reluctance to commit funds to long-term, in-depth research. However, this much we know: studies show that DU is carcinogenic, causes tumors and DNA damage, crosses the blood-brain barrier, deposits in the brain, deposits in the lymph nodes and testes, can cross the placenta, and enters the fetus.⁴¹ Alexandra Miller, a radiobiologist with the Armed Forces Radiobiology Research Institute in Bethesda, Maryland, has discovered direct evidence that radiation from DU can damage chromosomes. Miller observes that when assaulted by depleted uranium "the chromosomes break and the fragments reform in a way that results in abnormal joins. Both the breaks and the joins are commonly found in tumor cells."⁴² On the basis of her research she has expressed concern that the chemical and radiological effects of DU were reinforcing each other and, moreover, that

DU was causing indirect damage to so-called bystander cells, that is, cells adjoining those that were directly hit.

Home and Away

If the Gulf War is any measure, we can anticipate an even more widespread, protracted epidemic of belated casualties following the war in Iraq that began in 2003, given the considerably greater volume of depleted-uranium munitions deployed by American and British troops and the lengthier duration of the official war itself. But this judgment is based on more than just the comparative volume of DU munitions used. For the Gulf War was essentially a desert conflict, whereas the later war was decidedly more urban, so that densely populated areas suffered direct exposure to chemical and radiological risk.

The gravity of this urban risk startled Scott Peterson, a reporter for the *Christian Science Monitor*, when in May 2003 he began taking Geiger counter readings at sites across Iraq:

Near the [heavily bombarded] Republican Palace where US troops stood guard and over 1,000 employees walked in and out of the building the radiation readings were the hottest in Iraq, at nearly 1,900 times background radiation levels. Spent shell casings still littered the ground.⁴³

If the 2003 war involved heightened urban exposure, there was another critical difference in the deployment of depleted uranium by U.S. and British forces. Whereas most Gulf War troops, like Carol Picou, had never even heard of depleted uranium, much less the threat it posed, by 2003 army training manuals insisted that anybody who came within seventy-five yards of any blown-up tank or spent shells had to wear respiratory and skin protection. The manuals also warned that "contamination will make food and water unsafe for consumption."⁴⁴

The U.S. military, however, continued to send out mixed messages on depleted uranium's threat. One report from the U.S. Army Environmental Policy Institute asserted: "If DU enters the body, it has the potential to generate significant medical consequences."⁴⁵ Yet when questioned about the

spike in cancers reported in Basra, where the Gulf War's heaviest bombardment had occurred, director of the Pentagon's deployment health support directorate Dr. Michael Kilpatrick responded unequivocally: "To the question, could depleted uranium be playing a role, the medical answer is no."⁴⁶

How were troops and their families—not to mention Iraqis permanently domiciled in the area—supposed to reconcile such contradictory messages? While U.S. troops in the 2003 war had received warnings about the hazards of getting closer than seventy-five yards to scorched tanks and spent munitions without respiratory and skin protection, Iraqi civilians had received no such warnings. The implications are clear. When Scott Peterson was roaming Baghdad with his Geiger counter he happened to pause by a roadside vegetable stand and chatted with a woman selling parsley, mint, and onions. Five yards away from her vegetable stand stood the scorched hulk of an Iraqi tank; some children were frolicking inside. When Peterson entered the tank, his Geiger counter started singing, registering almost 1,000 times normal background radiation. Peterson asked the vegetable vendor how often the children play inside the tank. She shrugged and replied, "Every day."

Because Iraqi civilians received no official warnings about depleted uranium, and because no one has claimed responsibility for postwar cleanups, this scene is replaying itself across Iraq, as a whole army of dead tanks tempts bored children to turn them into instant jungle gyms. Let's call one of the children playing in that radioactive tank beside the vegetable vendor Ahmed. Like most children, Ahmed yearns to be taken seriously. The tank offers him that chance, the chance to leapfrog into imaginary adulthood, to get behind the wheel of this mighty machine, steer it, fire fantasy shells at fantasy enemies. Day after day Ahmed and his friends return to that tank beside the parsley vendor to reinvent themselves as battlefield heroes. But unbeknownst to Ahmed or his family, he is fighting two wars at once: the war game inside his head, and another long-term war, a hide-and-seek with mortality itself.

Did Ahmed cut himself on the tank's jagged metal? Did he lick a finger, wipe or pick his nose, or breathe in DU particles? If so, he may have unwittingly enlisted as a child soldier to fight in a real biological war, waged slowly, silently against his kidneys, his lungs, his lymph glands, or his thyroid—his blood, bones, chromosomes all under fire.

In the language of the Geneva Conventions, DU has been condemned as a "weapon of indiscriminate effect," yet its effects are not entirely indiscriminate. Its increasing military popularity threatens children most directly: children are ten to twenty times more sensitive than adults to radiation's cancerous risks. Once DU passes into the water system, it travels from there into mother's milk, gathering concentration as it goes, contributing to the cancer clusters among children that were recorded in the Gulf War's aftermath, particularly in the heavily bombarded Basra region. In 2002, eleven years after that war's official end, Basra hospitals reported a tenfold increase in birth defects and miscarriages.⁴⁷ When Democratic congressman, doctor, and child psychiatrist Jim McDermott visited Iraqi hospitals in September 2002, he was told by a resident obstetrician that "the average Iraqi woman giving birth no longer says, 'Is it a boy or a girl?' She asks, 'Is the baby normal or abnormal.'"⁴⁸ "It would be a tragedy," McDermott concluded, "for us to bring democracy to Iraq and leave in our wake a horrendous cloud of nuclear waste."⁴⁹ Within six months of McDermott's visit, the country would be subjected to a second depleted-uranium war, as tanks and planes unleashed another long dying under cover of a cloud of rhetoric about "precision."

Under such circumstances, the boundaries between the domestic and the foreign, home and away, are impossible to maintain. American and British troops are drawn disproportionately from communities that (by their own countries' standards) are poor; their fates crisscross the fates of those poor from global South war zones who must inhabit, long term, the uranium-compromised aftermath. Many wives and girlfriends of returning Gulf War veterans complained repeatedly that when making love to their husbands and boyfriends, they experienced a ferocious burning in their genitals. For years these women were ridiculed, some for suggesting that Gulf War syndrome could be transmitted through semen. Recent research suggests these women were only partly wrong. The burning is a sign that a lover's semen is polluted with uranium. Research also points to a connection between uranium-polluted semen and increased levels of endometriosis among veterans' sexual partners. Thus depleted uranium munitions may launch a preemptive strike against both semen and the womb. This is the other ultimate sacrifice—sacrificing in perpetuity one's procreative prospects and the integrity of one's DNA.

One man's precision-guided missile is another man's weapon of indiscriminate destruction. With depleted uranium, we're not talking about rogue missiles that accidentally shred a marketplace or a wedding party. We're talking about the triumphant, pinpoint strike that doubles as a chaotic weapon, a weapon that haphazardly strikes down civilians who, whether under some future tyranny or future democracy, just happen to live downwind in time.

From Landmines to Cluster Bombs

In 1932, almost sixty years before the first Gulf War, the Indian Nobel laureate Rabindranath Tagore boarded a plane and flew over Iraq during a British attempt to put down an anticolonial rebellion from the air. He was availing himself of a novel technological perspective: British aerial bombings in Iraq and Afghanistan during the late 1920s and 1930s foreshadowed the way the airplane would reshape the politics, ethics, and aesthetics of military distance during the mass bombings of civilians during World War II. On landing in Baghdad, Tagore met the chaplain at the local British air force base and observed: "[T]he Christian chaplain informs me that they are engaged in bombing operations on some Sheikh villages. . . . The men, women and children done to death there meet their fate by a decree from the stratosphere of British imperialism—which finds it easy to shower death because of its distance from its individual victims."⁵⁰

Tagore's insight into the military power of distance remains as resonant as ever in our age of "precision" warfare, above all, with the advent of the drone. The stratosphere Tagore writes of is susceptible to multiple interpretations: as a measure of the technological distance between the pilot and his invisible victims, as a measure of the geographical distance between imperial metropolis and invisible colony, and as a measure of the numbing emotional distance between the trigger act of killing and the earthly consequences far below. The emotional sanitation of war involves, in entangled ways, technological, geographical, temporal, and linguistic strategies for distancing. Particularly in our age of slow-acting "precision" weapons delivered from afar, we're readily distracted from the violence of deferred effects—those causal chains stretched thin by time. Stretched thin not just by technologies of instant spectacle but also by the forces of linguistic dissociation, those

regiments of euphemism, prominent among them depleted uranium and cluster bombs.

Humans have long relied on a combination of verbal, geographical, technological, and temporal distance to shield themselves from the enormity of what Walt Whitman called war's "red business."⁵¹ How in a democracy could wars possibly be sold, justified, perpetuated without the softenings of euphemism? ("Death," Donald Rumsfeld once noted, "has a tendency to encourage a depressing view of war.")⁵² Each conflict brings together new euphemisms, new technologies, new strategies of temporal and geographical displacement that help us keep suffering at arm's length, allowing us to live in states of denial distinctive to our age. One crucial displacement of this kind involves the official efforts to segregate—linguistically and thereby ethically—the barbarous landmine from the humane cluster bomb that, together with depleted uranium, has become a signature weapon in the contemporary battlefield discourse of "precision."

Landmines have accrued a public stigma, especially since Princess Diana's much-publicized walk through an Angolan minefield in 1997. Later that year, 150 nations signed the Ottawa Landmine Treaty, which barred the further production, transfer, and use of mines—"weapons of indiscriminate effect." In conflicts over the past two decades (the Balkans, Afghanistan, Iraq, and Lebanon), America, Britain, and their allies have phased out landmines and relied increasingly on cluster bombs instead. Especially in the United States, the cluster bomb has attracted less scrutiny and generated far less public indignation than the landmine. While the landmine has been denounced as backward and barbarous, the cluster bomb has become associated with the era of advanced "smart" wars, wars whose technological sophistication offers the promise of a merciful, civilized precision. The United States has not only used cluster bombs in more conflicts than any other nation, it has also become the most vocal advocate of this technology's purportedly indispensable and humane intelligence.⁵³

The cluster bomb has become a pivotal actor in the story of smart warfare's shadow casualties—casualties that result from what one might call precision's death lag. The rise of the cluster bomb has largely corresponded to the decline in the reputation of the landmine, ever more widely condemned as an environmental and ethical pollutant. In 1993, the U.S. Department of State adjudged landmines to be "perhaps the most toxic and

widespread pollution facing mankind.”⁵⁴ The scale of landmine pollution remains forbidding: 100 million unexploded mines lie inches beneath our planet’s skin. Each year they kill 24,000 civilians and maim many times that number. They kill and maim on behalf of wars that ended long ago; they kill and maim as if in afterthought, spreading social and environmental havoc. In neither space nor time can mine-terrorized communities draw a clear line separating war from peace.

The British government under former Prime Minister Tony Blair rallied behind American efforts to maintain a decisive moral divide between landmines and cluster bombs. Blair signed the 1997 Landmine Treaty, but he showed no ethical qualms about deploying cluster bombs. On the eve of the 2003 invasion of Iraq, Blair’s Defense secretary, Geoffrey Hoon, defended cluster bombs as legitimate, conventional weapons that his troops would be at liberty to use. Likewise, questioned about cluster bombs that the United States dropped on Afghanistan, former American Deputy Secretary of Defense Paul Wolfowitz offered a blunt retort: “[W]e have to win this war and we’ll use the weapons we need to win this war.”⁵⁴

How distinct are the humanitarian and environmental repercussions of landmines and cluster bombs? To address this question, we need to ponder the terms themselves, for when it comes to waging war, the softening of euphemism are no less dispensable than military hardware. Landmines aren’t called landmines in military jargon. The technically correct term is anti-personnel mines, to distinguish them from mines that target tanks and other vehicles. “Anti-personnel,” however, is one of those verbal fudgings that under the guise of technocratic exactitude obscures what it purports to reveal. “Anti-personnel” is a faceless word, a word without hands or feet or arms or legs.

According to the U.S. Air Force Dictionary, “anti-personnel” means “designed to destroy or obstruct personnel.”⁵⁶ But who are these personnel that the mines are so anti? An Afghan girl, late for school, who takes a short cut across a hill. A Vietnamese herder, dreaming of dinner, while rounding up his pigs. An Angolan peasant clambering down a riverbank to fill her water jug. A Laotian farmer, stooping to harvest his rice, who reaps blindness and amputation instead.

Webster’s defines “personnel” as “the body of persons employed in an organization.”⁵⁷ So to call mines “anti-personnel” flatters their accuracy by implying that they target an organization, military or otherwise. Yet

four-fifths of landmine casualties are civilians: mostly peasants and, disproportionately, children. Children’s spontaneous energy and their craving for play make them particularly vulnerable. For this reason, in heavily mined northern Somalia, mothers took to tethering their toddlers to trees. Human ingenuity has devised some 270 varieties of landmine, yet not one that can discriminate between a soldier’s tread and the footfall of a child.

Peasants cannot tend their crops or flocks without moving through their land. But to the mine’s undiscerning eye, all movement is enemy movement: any human or other mammalian body above a certain weight is adjudged to be a body in uniform—personnel in need of blowing up. Long after the troops have returned home, long after a war’s soldiers have been demobilized, the landmine maintains its unblinking vigilance. It is there to do its duty—even if ten, twenty years too late, retaliating against an enemy as unspecific as humanity itself. These are not anti-personnel mines, they are anti-person mines.

“Cluster bomb” is an even more insidious misnomer than “anti-personnel mine.” What distinguishes cluster bombs is less their clustering than the dispersal of their malign effects. Whether ground launched or dropped from planes, these munitions are indeed clustered at the moment of dispatch, but their impact across space and time is scattershot. Part of what’s at stake here is a numbers game. Take, for example, the Pentagon’s declaration that it dropped or fired 10,800 cluster bombs during the first, pre- “mission accomplished” phase of the Iraq War. (The British deployed another seventy such bombs.) Using the most conservative of official dud rates, 5 percent, this would suggest to the casual observer that some 550 coalition bombs failed to explode on impact, posing a long-term, landmine-like threat. In a country the size of Iraq, 550 unexploded munitions is a modest number. So the official American and British figures would seem consistent with the protocol in the Geneva Conventions barring the use of disproportionate firepower and weapons of indiscriminate effect.

However, to tally cluster bombs the way we tally landmines amounts to false accounting. A cluster bomb only remains a single weapon for a few seconds after it is dispatched, until its canister bursts open to deliver (depending on the model) scores or hundreds of bomblets. Each bomblet, in turn, explodes (on impact or when touched) to release a hail of sharp metal shards that can kill or injure people up to 150 yards away.

Here's how the Human Rights Watch Report, *Off Target*, describes the impact of the bomblets delivered by the CBU-130, a cluster bomb the U.S. Air Force first deployed in Afghanistan in 2001:

The CBU-103's bomblets . . . are soda can-sized yellow cylinders. Each one of these "combined effects munitions" represents a triple threat. The steel fragmentation core targets enemy troops with 300 jagged pieces of metal. The shaped charge, a concave copper cone that turns into a penetrating molten slug, serves as an anti-armor weapon. A zirconium wafer spreads incendiary fragments that can burn nearby vehicles.⁵⁸

Let's do the math. Each CBU-103 contains 202 bomblets, and each bomblet harbors 300 jagged pieces. In other words, a single cluster bomb can dispatch 63,600 potentially lethal pieces driven outward by the blast wave at ballistic speed. The destructive capacity of the molten cone and incendiary fragments amplifies this threat.

Viewed this way, the coalition's use of 10,870 cluster bombs during the first phase of the 2003 Iraq War appears less restrained. Those bombs strewed 2 million bomblets across Iraqi cities, villages, deserts, and fields. According to Human Rights Watch, a minimum of 100,000 bomblets failed to explode on impact. Given that some American ground-launched cluster weapons had dud rates as high as 22 percent, the war's final figure could be closer to a half million potentially live failures. The threat posed by each of those 100,000 to a half million live failures then needs to be multiplied by 300 jagged shards.

What did all this look like from the ground?

Mohamed Moussa, who lives in al-Hilla (sixty miles south of Baghdad), described to a British reporter how, on March 31, 2003, a hailstorm of silvery objects "like small grapefruit" descended from tumbling white canisters onto his neighborhood. "If it hadn't exploded and you touched it, it went off immediately," he said. "They exploded in the air and on the ground and we still have some in our home, unexploded."⁵⁹

That same day those "grapefruit" killed 38 civilians and injured 156 in al-Hilla alone.

It is at this point, after the initial civilian toll, that the dud bomblets are reincarnated as landmines in all but name. Their passive-aggressive presence

has the power to rend a community's social, agricultural, economic, and environmental fabric. Generals like to refer to cluster bombs euphemistically as "situational obstacles," meaning they can be used to impede the progress of enemy troops by boxing them in. But when, in defiance of the Geneva Conventions, American, British, Israeli, and Russian forces have fired cluster bombs into populated areas, the failed offspring of those bombs become, long term and en masse, "situational obstacles" to life itself.

In Iraq, to speak of the shards of memory is to make metaphor material again. The unexploded remnants of war have assumed the sedimentary character of that nation's layered conflicts. Landmines from the epic Iran-Iraq War continue to pose a hazard, their threat redoubled by thousands more (planted by both sides) during the Gulf War. The 24 million cluster munitions the allies dropped on Iraq in 1991 have compounded this hazard. How many of them continue to strew fear across the landscape? Not to speak of the further load (from both coalition cluster bombs and Saddam Hussein's mines) that has polluted Iraq's land and waters since the onset of the 2003 war.

The problem in Afghanistan—our planet's most heavily mined nation—is similarly stratified. As in Iraq, the 1980s proved to be a dire decade for landmine pollution in Afghanistan. The Soviet occupiers left the country densely seeded with mines, turning immense huge swaths of the nation into what Lydia Monin and Andrew Gallimore have called "the devil's gardens."⁶⁰ The country's Taliban-era internal conflicts and American and British cluster bombing during the 2001–2002 war added to that deathly crop.

Wherever troops use cluster bombs and/or landmines, a tangle of economic, humanitarian, and environmental crises typically results. National reconstruction and the safe return of refugees are impeded; medical resources become overstretched; rural dwellers face a diabolical choice between abandoning their pastures or fields and risking death or mutilation; amidst a degraded environment, pressure on the land increases, fueling further rounds of conflict. These developments often lead to rapid deforestation and the slaughtering of wildlife. We can witness all these convergent ill effects, for example, in Angola—a lush, once agriculturally self-sufficient country whose economic and medical fabric continues (despite the official end of a twenty-five-year-long civil war) to be overstrained by 5 million landmines and the world's highest per capita population of amputees. In Angola,

desperate, displaced rural peoples have hacked down much of the country's woodlands and decimated its once rich and varied game.

Most people forced to adjust to living amidst unexploded ordnance are rural and surviving off the land. Across the mined globe, people have found colloquial ways to convey the mad morphing around them of the land's former fecundity: "the devil's gardens," Cambodia's "killing fields," Iraqi descriptions of cluster bomblets as strange, mutant fruit appearing in the wrong groves—deadly oranges and grapefruits dangling from palm trees. This sense of the earth's munificence taking a demonic turn was evident in the language of the Vietnam War as well: the Vietcong dubbed two early American cluster bomblets (the CBU-24 and the BLU-3) the guava and the pineapple. And in a particularly resonant coinage in terms of the violence of deferred effects, the Vietcong nicknamed another brand of cluster submunition the "lazy dog": that pseudo slumberer who takes his time to rouse himself and bite.⁶¹

The submunitions that cluster bombs dispense are often gleaming and colorful—inquisitive children readily mistake them for toys or food. Some bomblets resemble striped soda cans, others green baseballs or cigarette lighters. During the war in Afghanistan, Allied planes dropped two types of smallish yellow objects: cluster bomblets and humanitarian rations. Eventually, pamphlets explaining the difference had to be dropped too, after humanitarians warned that children would simply see yellow, reach for the false food, and be blown up.

This was not some freak tragedy but a predictable disaster that gets reenacted every time imprecise weapons are deployed in another so-called precision war. During and after the Afghanistan War, 69 percent of casualties from unexploded ordnance were under eighteen. And in the aftermath of the first Gulf War, 60 percent of such casualties in southern Iraq had yet to turn fifteen. A UNICEF report has estimated that there is one landmine for every twenty children on earth, a figure that doesn't even include the untold number of quasi landmines in the form of cluster bomblets.⁶²

Like most forms of pollution, cluster bomb and landmine pollution is only semirandom. Just as in Western nations toxic waste sites tend to be placed near poor or minority communities, so too unexploded ordnance pollution is concentrated in the world's most impoverished societies, Afghanistan, Cambodia, Laos, Somalia, Angola, Mozambique, Vietnam, Somalia,

Nicaragua, and El Salvador among them. Because the burden of lethal war residues is unevenly distributed between wealthy and poor nations, the physical liberty to forget the wars themselves is also unevenly distributed. As the list above suggests, many of the world's most heavily mined societies were once cold-war battlefronts, where the superpowers fanned, funded, and armed internal conflicts, often through proxy armies. Many of these countries—destabilized, overarmed, and undermined—have descended into serial warfare. In such societies, where landmines continue to inflict belated maimings and after-deaths, the post- in post-cold war has never fully arrived. Instead, whole provinces inhabit a twilight realm in which everyday life remains semimilitarized by slow violence and in which the earth itself must be treated with permanent suspicion, as armed and dangerous.

Our planet's 100 million leftover landmines approximate in number the combined residents of California, New York, Texas, Florida, and Pennsylvania. Except that the mines are over there, not over here. As Cyrus Vance and Herbert Okun have noted:

If children walking to school or playing in a field in Manhattan, Maine, or Monterey were having their legs blown off, the U.S. government would certainly be doing everything possible to stop it. This is happening, however, in foreign places where medical care is often almost nonexistent, and physical labor is necessary for survival.⁶³

It costs roughly 100 times more to remove a landmine than to lay it. The case of Kuwait after the Gulf War illustrates the human and financial toll that mine clearance exacts. The bill for clearing that minute, New Jersey-sized country of unexploded landmines and cluster bombs came to \$800 million. And before the clearance was complete, those mines had slaughtered several hundred Kuwaiti civilians, 100 bomb disposal workers, and 100 American soldiers. The figure for deminers and American troops alone exceeds the total number of U.S. forces killed during Desert Storm.

Eighty-four countries now suffer from landmine and/or cluster bomb pollution. Most are far larger and far poorer than Kuwait. As a result, for example, it took demining agencies fourteen years to clear just 754 square kilometers in Afghanistan. The International Committee of the Red Cross

estimates that between 9 million and 27 million landmines and bomblets remain embedded in Laotian soil and streams alone—relics of the huge load that U.S. forces dropped on Laos, Cambodia, and Vietnam between 1964 and 1973 and during the subsequent civil foment. How are Laotians to forget the twenty-first-century threat, as immediate as ever, from cluster bombs and landmines that rained down on them—in American time—during the era of President Johnson?

The slow violence of unexploded munitions exacerbates the problem of political accountability. In the aftermath of war, political changes occur far faster than environmental recovery. There remains little incentive for an administration to spend taxpayer money cleaning up lethal detritus left behind in far-off countries from a predecessor's war.

In 2004, the Bush administration issued a new landmine policy that put a greater distance between the American position and international efforts to universalize the 1997 Mine Ban Treaty. Bush's policy reversed a prior U.S. commitment to sign that treaty by 2006 if alternative weapons were identified. The administration's revised stance permitted the United States to deploy long-lived "anti-personnel" mines in Korea and self-destructing mines anywhere in the world. With "self-destructing mines," another euphemism—and another form of temporal camouflage—has arisen. As Human Rights Watch has observed, self-destructing mines may take up to nineteen weeks to become inactive.⁶⁴ And a significant number malfunction, resulting in the usual unpredictable mix of live and dead duds, a mix that continues to pose a humanitarian hazard to civilians that requires painstaking demining.

No single nation or administration is responsible for the ongoing cluster bomb and landmine crisis. However, it does seem especially hypocritical for an American administration to campaign vocally for fetal rights while its advocacy of "precision" weapons was wreaking ruin on the unborn, who months or years later would inherit an environment that treated them, anachronistically, as enemy personnel. It is equally disturbing that the Obama administration—despite advance pledges to change course on landmines—has adhered to the Bush-era policies.

In November 2003, ninety-two countries (including the United States) approved a treaty obliging nations to clean up cluster submunitions and other explosive remnants at war's end. This, the first disarmament treaty

the former Bush administration endorsed, could potentially help narrow the gap in international law between landmines and cluster bombs. The treaty was a first step toward acknowledging that cluster bombs, while classed as conventional weapons, often behave more like landmines—weapons of indiscriminate effect that contravene the Geneva Conventions. The treaty marked a tentative first step toward addressing postwar obligations. However, it has no preemptive force in a world where cluster munitions and landmines still proliferate, with lethal fecundity, faster than they can be removed. The Pentagon continues to argue that it can produce smart-weapon solutions to the cluster bomb problem, in the belief that dud levels can be reduced to as little as 1 percent. (That's far below the 14 to 22 percent failure rate of America's ground-launched cluster munitions during the 2003 Iraq War.) However, the fine print in the Pentagon's position remains chilling. It insists that in future wars American forces will continue to include in their weapons mix old cluster ordnance, what the Pentagon calls "legacy" munitions (as if they were irreplaceable heirlooms). Those "legacy" reserves are huge: the American military has stockpiled more than a billion cluster submunitions of extremely variable antiquity and inaccuracy, like the Rockeye cluster bombs developed during the 1950s and deployed in the Vietnam War and again in the 1991 Gulf War. In both Vietnam and the Gulf, Rockeyes continue to inflict long-deferred twenty-first-century deaths and injuries.

Mistrust and enduring animosity are the ultimate legacies of so-called legacy munitions. In Iraq and Afghanistan, as in Indochina, American cluster bombing has alienated many of the very civilians that the military purported to be liberating, by instilling in their midst a material dread that outlasts the bounds of victories and defeats. As a Church of England spokesman has put it: "You will not win the hearts and minds of a people if, in your effort to provide them with a better future, your real legacy is to be associated with hidden deaths and hideous wounds for years to come."⁶⁵

Imprecise intelligence makes even supposedly precise bombs dumb. In 2003, the United States fired rumor-guided cluster bombs into urban Iraqi neighborhoods where someone or other from the CIA's "blacklist" was alleged to be hiding. Time after time, the rumor came to nothing and civilians took the hit. Formidable human, meteorological, and environmental obstacles exacerbate the inaccuracy of these weapons. For instance, pilots

hoping to avoid enemy fire may drop their bomb load from inappropriately high altitudes, expanding the broad footprint over which the bombs scatter. (This has happened in the Balkans and Afghanistan.) Wind drift may drag the bomblets off course. Cluster munitions, furthermore, explode most consistently when they strike hard surfaces like roads. Soft surfaces—sand, marshy areas—result in high live failure rates, a recurrent problem if one is waging desert wars. As the cluster canister disgorges its bomblets, and as the detonating bomblets in turn spew out their jagged pieces, the dispersal area widens along with the scope for inaccuracy. The resulting imprecision in space is compounded by temporal imprecision, as the remnants maintain their assaults beyond war's end.

One of the strongest currents of American optimism flows from Thomas Jefferson's vision of land as the most prudent investment, an investment that benefits both the individual and the nation. You can mint more money, Jefferson observed, but you cannot mint more land. Yet that credo seems less certain when one considers a nation like Cambodia, where 4 million to 7 million active mines and uncounted cluster submunitions have rendered half the country unsafe. To demine Cambodia would amount to a miraculous land-minting scheme, effectively doubling the country's size without conquering a neighbor.

In terms of military strategy, landmines and cluster bombs are both "area denial weapons." The problem is that, too often, "area denial" persists into the so-called postwar era, shrinking the viable earth and straining its resources. As a first step toward alleviating this scourge, we need to acknowledge landmines and cluster bombs as two versions of one problem; we need to recognize the ease with which cluster bombs become *de facto* landmines under cover of a pseudonym.

Fifty-seven nations now possess cluster munitions and sixteen have deployed them, the United States most extensively. Ideally, we should be campaigning for a universal ban on both air- and surface-delivered cluster bombs. But given the daunting pervasiveness of these weapons, it may be more pragmatic to endorse Human Rights Watch's initial demand that as a first step, all obsolete, high-failure legacy munitions be outlawed. This move needs to be supplemented by a moratorium on newer ordnance until a dud rate of less than 1 percent can be demonstrated. But the ultimate goal should be to outlaw all cluster bombs as weapons of indiscriminate effect.

To achieve such a goal, we will first have to start dismantling the whole delusory rhetorical domain of "smart wars" and "precision" warfare.

We need to demand, moreover, that the former Bush administration's regressive landmine policy be overturned, for the sake of children and adult civilians in as yet unimagined wars, and for the sake of an environment that remains compromised wherever landmines and cluster bombs congregate. In the words of Kenneth Anderson, director of the Arms Project of Human Rights Watch: "The effects of landmines as a pollutant in the environment are just now beginning to be understood. . . . all of society pays, over and over again."⁶⁶ The same society-wide payments are exacted by cluster bomblets—those landmines in masquerade.

The Highway of Harm

Again and again with furrowed brows, our leaders pledge to keep "our troops out of harm's way." But the highway of harm is broad and long, stretching beyond the sight lines of the generals and beyond any single generation. As nurse Carol Picou learned, the Highway of Death is a deceptive road that dips and rises through convoluted switchback narratives of disavowal, a road that, despite its simple two-lane surface, is traveled unwittingly at many different speeds.

At least seventeen nations have bought depleted-uranium weapons from the United States since they were first showcased during the Gulf War. As these weapons and cluster bombs become increasingly enfolded into contemporary warfare, we have an ethical responsibility to redraw the boundary between the war survivor and the war casualty. People may outlast a given conflict, but if untold thousands die deferred war deaths, what kind of justice is it to call them survivors?

In our age of depleted-uranium shells and cluster bombs, "smart" wars become wars of ecological folly as we turn soil, air, and water and into slow weapons of mass destruction, wielded unremittingly against ourselves. Armies move on, as do our memories, but a deeper memory remains lodged in the earth. Despots may be deposed, but environmental mayhem outlives regime change.

One of the greatest challenges we now face is to reinstate a more expansive vision of what it means to be secure. What time span will we allow

to define our national security and our security as a species? At home and across the planet, in wartime and in peace, environmental safeguards must be reasserted, safeguards on which our health, freedoms, and international standing depend. The fixation on meeting terrorism with high-tech military terror has shrunk our vision of what constitutes sustainable security. If we improved the fuel efficiency of America's cars and light trucks by a mere 2.7 miles per gallon, we would be liberated from the need to import any oil from Saudi Arabia. Such a bold, but feasible move to conserve energy would also help reintegrate a viable environment into our vision of how to protect America in the long term.

Americans cannot afford to shrink military threats to the future to the real but reductive threat of terrorism. If we continue to glorify poisonous weapons of fake precision, belated war deaths will become increasingly widespread, as will the political consequences of the accompanying blow-back rage. We will face an unbounded war, as the planet itself metastasizes into a combatant: the ultimate, toxic hyperpower, a force of random, abiding retribution.

We need to find (as Rachel Carson did some fifty years ago) new ways to tell the slow-moving stories about the long dying; about last year's cluster bombs that turn into next year's killers, about depleted uranium that treats as its arbitrary enemy the child of a child as yet unborn. Carson insisted it was impossible to nourish democracy on a diet of dead rivers and poisoned fields. Her warning applies to any vision of long-term social stability, whether at home or abroad. If a war leaves in its wake terrifyingly polluted lands and mangled genetic codes, any victory will be pyrrhic, as death by indirection becomes the ultimate form of friendly fire. No homeland can be secure if we convert the earth into a biological weapon that threatens biology itself. We're all downwinders now, some sooner than others.

8

Environmentalism, Postcolonialism, and American Studies

We may be living in post-colonial times, but we are not yet living in post-imperial times.

—Linda Colley, "What Is Imperial History Now?"

What would it mean to bring environmentalism into a full, productive dialogue with postcolonialism? These two fields have emerged in recent decades as among the most dynamic areas in literary studies, yet their relationship has been, until very recently, dominated by reciprocal indifference or mistrust. Unlike many initiatives within literary studies (reader response theory, say, or deconstruction), environmental studies and postcolonial studies have both exhibited an often-activist dimension that connects their priorities to movements for social change. Yet for the most part, a broad silence has characterized environmentalists' stance toward postcolonial literature and theory while postcolonial critics have typically been no less silent on the subject of environmental literature. What circumstances shaped this mutual reluctance? And what kinds of intellectual initiatives might best deepen an overdue dialogue that is belatedly starting to emerge?

In other areas of the humanities and social sciences—notably environmental history, cultural geography, and cultural anthropology—a