THE FUTURE OF FALLOUT, AND OTHER EPISODES IN RADIOACTIVE WORLD-MAKING

JOSEPH MASCO

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On January 13, 2018, at 8:07 a.m., on an otherwise picture-perfect Pacific island morning, the outdoor Emergency Alert and Wireless Emergency Alert systems for the state of Hawaii lit up and blasted out the following message: "Ballistic missile threat inbound to Hawaii. Seek immediate shelter. This is not a drill" (figure P.1). The emergency alert activated smartphones, radio, and television—instructing the 1.4 million inhabitants of the Hawaiian Islands to stay indoors and, implicitly, to wait for the bombs to drop (FCC 2018). On television, the alert message read:

> The U.S. Pacific Command has detected a missile threat to Hawaii. A missile may impact on land or sea within minutes. THIS IS NOT A DRILL. If you are indoors, stay indoors. If you are outdoors, seek immediate shelter in a building. Remain indoors well away from windows. If you are driving, pull safely to the side of the road and seek shelter in a nearby building or lay on the floor. We will announce when the threat has ended. Take immediate action measures. THIS IS NOT A DRILL. Take immediate action measures. (CBS News 2018)

This is not a drill. For the next thirty-eight minutes Hawaiians lived inside the opening moments of a likely nuclear war, seeking shelter, sending hurried last notes to loved ones, and anxiously scanning the horizon for the first signs of the "inbound threat," which might come in the form of the contrail of an intercontinental ballistic missile or the mushroom cloud of a nuclear detonation. It was the terrifying global promise of the nuclear era, the decades of end-times rehearsals and apocalyptic potentials, played out in miniature. The "this is not a drill" language of the alert also mirrored the official emergency

Figure P.1. Hawaiian Emergency Alert System universal text message broadcast on January 13, 2018.

response to the Japanese surprise attack on Pearl Harbor some seventy-seven years earlier (FCC 2018, 3), creating an uncanny resonance for many on the islands with the historical start of that world war (see Dower 2010). Since 1941, the United States has maintained a permanent wartime mobilization relying on national security affects (Masco 2014) to enable a vast set of foreign and domestic projects, hinging the stability of everyday American life on the possibility of an impossibly sudden and total form of violence.

Indeed, a surprise nuclear attack has served as the formal authorizing nightmare of the U.S. security state since the U.S. atomic bombings of Hiroshima and Nagasaki in 1945, an anticipated existential danger (in this case, also a projective counterformation) that energized the building out of the intelligence agencies (now seventeen strong), a permanent military commitment (now more than $1 trillion a year in "defense" spending), and the ongoing mobilization of a counterterror state (with simultaneous war activities involving more than a third of all countries in 2017; see Savell 2019).[1] The United States not only remains the only country to have engaged in nuclear warfare; it has also pioneered and maintained cutting-edge nuclear weapon technologies since 1945, while cultivating a national security culture organized by nuclear fear, a perverse orchestration of international and domestic

politics through visions of an abrupt collective end. The Hawaiian missile alert came only days after a highly controversial new U.S. president promised to deliver "fire and fury like the world has never seen" to the North Korean government if they did not acquiesce to his inchoate demands to "denuclearize" (Baker and Sang-Hun 2017). At the time, Donald Trump, like George W. Bush before him, was a president who did not win the popular vote, and thus came into political power without the most basic democratic mandate. Trump, like Bush before him, also foundationally rejected the existential dangers raised by environmental scientists about petrochemical emissions and a warming planet. And Trump, like Bush before him, also issued nuclear threats at will while removing the United States from international arms control treaties, reveling as president in his sole control of the U.S. nuclear arsenal. In this heated international confrontation over nuclear weapons, the missile alert was immediately understood by many Hawaiians as a North Korean nuclear attack (although no missile source or type of warhead was named in the emergency message). In jumping to this conclusion, citizens intuitively activated a well-publicized U.S. geopolitical scenario involving a North Korean intercontinental nuclear attack on Hawaii or Alaska (which were believed to be just within reach of North Korea's longest-range missile technology in 2018). This attack scenario was immediately available to many in Hawaii because of the official orchestration of nuclear fear within the United States, the decades of nation building through images of the end and through extending military programs and geopolitical ambitions via rehearsing imagined attacks by enemies armed with nuclear weapons (see Masco 2014). But of course, this alert, though terrifying for Hawaiian residents, proved ultimately to be a phantom, a ghost in the machine of the nuclear state, an awful mistake, fully retracted some thirty-eight minutes later by officials. Indeed, a recall message was sent out by emergency managers across all media, appearing even on highway road signs, declaring "THERE IS NO THREAT" (see figure P.2).

As luck would have it, I was in Hawaii when the missile alert was issued, having just arrived for a much-needed vacation, actively seeking a rest from contemporary crisis politics. But there is no escape from collective problems such as these, for we are always already inside them: my intended reprieve was instead abruptly interrupted by neighbors frantically shouting about incoming missiles and the need to shelter in place with terrified voices and panic in their eyes. A profound sense of the "nuclear uncanny" emerged on our street, as people experienced a world that from every sensory perspective seemed perfectly calm and normal but was simultaneously infused with invisible forms

Figure P.2. Hawaiian Emergency Alert System retracting the missile attack warning on January 13, 2018 (photograph by Jhune Liwanag).

of totalizing danger (see Masco 2006, 27). While surrounded by incredible flowering plants in January and looking out at a pristine beach and ocean, it was impossible to reconcile the "ballistic missile threat inbound" message with the peaceful calm of the island on a beautiful clear blue day. Both time and space became out of joint, and different generational responses to the alert were immediately on display: older Americans revisited a fear that had been a structuring principle in their lives since childhood (leading to later discussions of duck-and-cover drills and the "where were you" question of other nuclear scares), while younger residents sought to gain more information and distinguish this emergency from all the other ones that compete for their urgent attention in the twenty-first century (from economic collapse, to resurgent racisms and xenophobia, to radically changing environmental conditions—each operating on its own frequency of collective danger). The official alert thus not only activated an emergency response communication system that was a key achievement of Cold War technopolitics (one recently upgraded in Hawaii in light of the heightened U.S.–North Korean tensions); it also activated a range of national security affects built up by generations of nuclear nation building in the United States (Masco 2014). The nervous systems of the U.S. nuclear state were instantly on display—connecting the infrastructures of command and control and warning with the negative affects of nuclear terror in citizens, mobilizing (or in many cases immobilizing)

individuals in different ways as they confronted a long-fantasized imminent obliteration.

But if the first emergency message of nuclear attack was officially in error, so too was the second, that there was no threat. Since the invention of intercontinental missiles and nuclear submarines, one might always already be under attack, with each citizen-subject living simply in the lag between the missile launch and its detonation. All residents of planet Earth reside somewhere within a fifteen-minute window of nuclear warning, a condition not changed by the end of the Cold War, or the dissolution of the Soviet Union, or nearly two decades of the War on Terror. This lag between industrial capability and embodied experiences of injury informs numerous other domains of life today. Indeed, the accumulating force of historical greenhouse gas emissions is shifting all ecosystems and climatic potentials, creating planetary conditions that are increasingly both hypervolatile and violently in motion.

Thus, the politics of lag—what I call in this book the fallout—of the military industrial petrochemical age are vitally important to understand, as they are playing out now in a wide range of violences that operate over different time-space dimensions and with radically different tempos.[2] Life on a Pacific island (under nuclear threat and facing both ocean rise and intensifying storms from global warming) amplifies these understandings, as there is literally nowhere to run, no safe space to retreat to in troubled times. The missile alert was ultimately attributed to human error, produced when an unannounced training exercise was mistakenly understood by a key member of the emergency response team as a real attack (FCC 2018, 14). Mistakes in the nuclear age—accidents, malfunctions, human errors, unintended effects—are as much of a danger as nuclear war, as the always-on, 24/7, U.S. nuclear triad of missiles, submarines, and bombers is the center of a global nuclear war infrastructure involving a vast set of machines, people, and contingencies. The nuclear age is already filled with the near misses of accidental cataclysm (see Hoffman 2010; Schlosser 2013) and the slower violences created by the nuclear production complex itself.[3] A radically destabilizing climate is also the unintended outcome of a petrochemical-based global economy, the side effect of an energy regime promising security and safety but only at the expense of future ecological conditions. These two existential dangers—nuclear weapons and climate disruption—are industrially manufactured problems that now colonize the future in different ways but also draw on each other (in technoscientific, affective, and imaginary registers) in increasingly complex configurations.

I was visiting the Pacific Islands to explore coral ecologies, to experience the remarkable intensity and diversity of marine life informing reef ecosystems.

Taking refuge from the missile alert by diving into the ocean, I could see not only a fantastic range of life—continually surprising in its diversity and beauty—but also the mounting evidence of bleaching, of coral killed by the cumulative effects (of both chemicals and warming) on the ocean, a direct but slow-moving effect of a petrochemical-based global economy. Endangerment, as Tim Choy (2011) has shown, is a future anterior subject position, a way of looking back from a not-yet-existing future to create urgency in the present for an imagined loss. In the age of nuclear weapons and climate disorder, endangerment is increasingly a planetary formation, a multivector problem set that threatens the biosphere with different temporalities and forms of violence. Thus, the issue in any given moment is not whether or not the "threat is real" but to identify the specific material intensities (radioactive, greenhouse gases, synthetic chemical) that matter in the moment, as well as the linked practices of psychosocial erasure that structure environmental awareness across the radically different ways of living on Earth. Put more directly, the imbrication of nuclear nationalism and petrochemical capitalism over the past seventy-five years has produced a world that no longer has natural disasters. Rather, life in the twenty-first century is structured by violent events formed, over different tempos of time, by the increasingly dangerous fusion of consumer activities, technological revolutions, aging infrastructures, and earthly conditions.[4] Is there a place on planet Earth that has not already been altered by radioactive fallout, petrochemical emissions, synthetic chemicals, and plastics? What storm, heat wave, flood, or famine is not today affected by modes of carbon-intensive living distributed unequally across the globe? Similarly, what war or refugee crisis is not in part a result of a competition for petrochemical resources or based on projections of future environmental scarcity? These questions are at the center of this book, as is another: What if our inherited language and social theory fail precisely when confronted by these embedded forms of violence, forms that have become so large, so long-lived, varied, and embedded that they exceed human sensory perception as well as the reach of existing governmental administrative instruments and social theory?

The chapters in this book were written in an effort to assess the strange conceptual reliance on existential danger in the United States after 1945. I am interested in how the language of imminent existential danger has been, and continues to be, linked to disavowals of actually existing forms of violence and mobilized to create new forms of war. I track the historical development and contemporary consequences of a perverse mode of necropolitics (Mbembe 2003) across these chapters, analyzing an American style of

living that focuses so intently on one kind of manufactured danger (consolidated in the image of "the bomb") that all others can be dismissed or de-prioritized by a state that is both an economic and military superpower. I am interested in showing how technological revolution is both world-making and world-breaking, installing new capacities in everyday life but also new forms of violence that can both become a norm and create new conceptual blockages to peace and collective safety. In the United States, technological revolution over the past century rides on top of, and often works to reinforce, the foundational violences of a settler colonial society (founded in indigenous dispossession, antiblackness, immigrant exclusions, and related forms of environmental extraction) while also simultaneously promising that the future can be endlessly reengineered, perfected through technoscience, markets, and war.

In these chapters, I am interested in engaging (ethnographically, historically, and in terms of social theory) the psychosocial project of living within a violent technopolitical order that could always have been, or could still be, otherwise (see Povinelli 2012), one that claims to value democracy and nonviolence while at the same time practicing atrocities at home and abroad. That is, I assess the mechanisms of recognition and misrecognition, indoctrination and recruitment, desire and dehumanization that naturalize nuclear weapons and climate disorder as foundational conditions of life within a nation-state that spends so much on defense that it has literally attempted to garrison the world via military bases and activities. I am interested in how, over only a few decades, in the life span of many living people, it is possible that multiple problems literally the size of the planet could emerge via the technoscientific intensities of military-industrial capitalism and how such problems are mediated politically and imaginatively in relation to one another. I consider how human senses (affects, imaginaries, nervous systems) are remade via industrial living and the types of futurity that are both conceivable and rendered inconceivable in any given moment. The crisis of contemporary life, across war, economy, and environment, is not then a recent invention but a long-standing structural achievement, a multigenerational project that continues. This raises vital questions about the logics and languages of emergency, crisis, and apocalypse and the ways these idioms come to structure specific political moments as defensive, even counterrevolutionary, forms. As I explore in the final chapter, one consequence of the "crisis in crisis" today is the loss of a range of social imaginaries and positive ideas about the future, a key attribute of the fusion of nuclear nationalism and petrochemical capitalism in the United States.

This is to say that the atomic bomb offers a particularly salient mirror to American society, as it took a multidisciplinary scientific effort, a wide political consensus, and an industrial society to build a nuclear arsenal, a military-political culture, and the supporting national security affects in citizens.[5] In my first book, *The Nuclear Borderlands*, I examined how the Manhattan Project remade northern New Mexico across multiple domains, proliferating kinds of insecurity for populations marked by class, race, and radically different understandings of nature. I argued that, after 1945, the United States built itself via the bomb, remaking its political, industrial, military, and academic institutions around the nuclear revolution while distributing nuclear injury domestically with a wide range of intensities. In this way, the atomic bomb has always presented a foundational challenge to democratic order, as it was made in secret, relies on the production of existential enemies, provokes a genocidal imaginary, and locates sole authority to launch a nuclear war in a single individual, the president (see Wills 2010). Maintaining the atomic bomb thus requires a new kind of radically undemocratic social contract, one that is negotiated only through fear: the early Cold War state taught U.S. citizens to engage the bomb in a particular way, establishing nuclear fear as a new terrain of nation building and thereby opening up the emotions of citizens in unprecedented ways. The U.S. nuclear project rides on a set of foundational contradictions, promising a superpowered relationship to other states while colonizing American life across multiple vectors of materiality and imagination. In New Mexico this means that nuclear politics fundamentally matter but not in the same way for everyone, linking concerns about employment to scientific research to environmental and health issues to matters of religion, ecology, ethics, and futurity in powerful and often incommensurable ways across communities. In *The Nuclear Borderlands*, I sought to show how the bombs built in Los Alamos remade everyday life for everyone but not in the same way or with the same consequences, fusing basic questions about settler colonialism, environmental justice, worker rights, and radically different ideas about security within U.S. nuclear nationalism.

Right from the start, the U.S. nuclear state sought to unify American experience via depicting a collective future of unlimited technological revolutions across medicine, engineering, and society or a world that would end suddenly, and finally, in a nuclear flash. This split view of the future—either purely utopian or purely apocalyptic—was promoted via state propaganda about both progress and existential danger, ideological projects that have now been weaponized across generations of U.S. statecraft. The chapters in this book are efforts to understand how nuclear fear was crafted and mo-

bilized in the United States across a variety of these registers, connecting the countercommunism of the Cold War to the counterterrorism of the War on Terror while always negotiating the fundamental violence of American inclusion, exclusion, and extraction. I also consider the legacy of these core projects of U.S. state- and nation building for collective thought today, tracking the political impasses and conceptual restrictions produced by national security in an age of planetary-scale environmental disruption. For despite an unprecedented investment in defense, the U.S. security state cannot today address a wide range of dangers that impact everyday life (across health, economy, and the environment), which makes national security a form that colonizes everyday life in the twenty-first century rather than protects it.

Much of this book was written in an effort to understand, and respond to, the George W. Bush administration's declaration of a war on terror in 2001, after the suicide-hijacker attacks on New York and Washington, DC, and the coterminous, but much less publicized, Bush administration war on environmental science. The Bush administration immediately claimed that American history was starting over in light of the suicide attacks, that the U.S. needed to create a vast new security apparatus to fight a new kind of enemy, and that many of the normative tools of international order (the Geneva Conventions, arms control treaties, the sovereignty of state borders, democratic modes of accountability, citizen privacy, to name but a few) could no longer be maintained in the face of unprecedented danger. But in making this argument for a hegemonic counterterror state unrestrained by law, norms, or democratic order, U.S. officials often used language citational to that deployed fifty years earlier at the start of the Cold War orchestration of nuclear fear—thus, Bush's program was as much a repetition as a reinvention of the security state. In my second book, *The Theater of Operations*, I sought to understand precisely how the countercommunist state focused on nuclear weapons of the twentieth century was converted (at the level of affect, imagination, and infrastructure) into a counterterror state focused on the phantasmatic figure of the terrorist with a weapon of mass destruction (WMD) in the twenty-first century. The notable lack of content in either the figure of the terrorist or the WMD constitutes a radical expansion in the concept of threat, one that makes the future itself an unending field of existential danger subject to an equally unending militarization (while allowing older forms of racism to be resanctioned and expanded).[6] I identified the national security affects that support these historical forms of American militarism, theorizing the affective, imaginary, and material infrastructures that inform a national security society focused on different kinds of existential dangers. Few remember today that the Bush

administration declared war not only on "terror" but also on environmental science, limiting the work of climate researchers, downplaying or denying the evidence of global warming while working at every stage to promote the very petrochemical industries shifting the chemical composition of both atmosphere and biosphere. The politics of both lag and terror, here, are complicated, recursive, and competing; they also draw on a set of logics, imaginations, and affects built up over generations of nuclear governance. I came to understand that nuclear danger and climate danger were competing forms in the Bush years because one enabled a superpowered state sovereignty while the other required a new planetary political order (see Masco 2010).

The paradox (if not to say incoherence) of declaring a war on terror was evident from the start: it was a renewal of a long-standing form of military-industrial power but also one no longer tied to a specific state or enemy configuration, and, of course, it was bound to fail: for when will there be no more terror in the world or an end to the possible emergence of new technologies that might become frightening to someone? Thus, this new type of war was conceived from the start to be endless and unwinnable, a project not limited to the danger posed by any specific state, group, or individual (although in practice it often reinforced existing racisms and ethnic demonizations). In this sense, it was a perfection of the Cold War state apparatus that was limited only in its ties to a specific enemy formation that could, and did, disappear. The Bush administration also sought explicitly to control which terrors mattered and which did not, and it used nuclear fear aggressively at home and internationally to bypass democratic and international norms and law. Thus, an expansive global campaign against future terror was accompanied by a near-total rejection of the dangers documented with increasing precision and urgency by climate science, dangers that will affect literally every region of the world in the decades to come with ever-amplifying violence, constituting a direct and serious threat to life as it currently exists.

The Future of Fallout, and Other Episodes in Radioactive World-Making considers how the two existential dangers of our collective moment—nuclear war and climate disorder—emerged in the mid-twentieth century together and are entangled at the levels of scientific infrastructures, imaginaries, and affects in the United States. I also evaluate the code shifts at the level of national security discourse and culture that render certain threats hypervisible and urgent while others become disavowed, are rendered invisible, or are simply ignored.[7] My core question has to do with normalized violence in the U.S., with the mechanisms by which technological, political, and imaginative infrastructures built in the name of security and prosperity install violent

conditions in the world in such a manner that requires constant psychosocial and affective support to maintain as unchallenged forms. Thus, this book is an effort to unpack how national culture functions in the nuclear age, literally colonizing bodies and minds in ways that drastically curtail democratic potentials and collective futures.

This is another way of saying that existential dangers are conceptual formations that are constantly in motion, changeable over time and subject to reevaluation, and thus are always political. The nuclear referent, for example, has never been stable and requires enormous cultural work to maintain (see Masco 2006; Hecht 2012). Consider these quite recent articulations of the nuclear problem: the United States has formally committed to rebuilding its nuclear triad and warheads by the mid-twenty-first century, effectively giving up on its legal commitments to the Nuclear Nonproliferation Treaty to pursue universal nuclear disarmament while reinvesting American geopolitical power in the ability to launch a nuclear war and destroy any location on the globe in less than thirty minutes (U.S. Department of Defense 2018). Simultaneously, 122 nonnuclear states passed a Treaty on the Prohibition of Nuclear Weapons at the UN General Assembly (United Nations 2017), which when fully ratified will add the atomic bomb to the list of illegal weapons (thereby rendering all existing nuclear powers, including the United States, rogue states from the point of view of international law).[8] Meanwhile, geologists looking for a planetary-scale sign of human activity on the earth that could be the basis for designating a new geological epoch concluded that the plutonium distributed by atmospheric nuclear detonations in the mid-twentieth century meets the criteria for starting what they are calling the Anthropocene, thereby rendering the nuclear age a distinct chapter not only in geopolitics but also in the material composition of the earth (Waters et al. 2016). These are radically different acts of radioactive world-making, in the sense that each articulates a different kind of collective order and projects different conditions of futurity and injury via the bomb.[9] They also do not easily align. The nuclear age is therefore still emerging, still highly contested, and changeable, informing simultaneously a new arms race, a new international antinuclear legal regime, and a new earth science periodization. The atomic bomb remains an affectively charged technology that is at the center of global politics. It is also woven so deeply into U.S. statecraft and institutions that it is infrastructural in American life, holding a tenacious grip on definitions of power in ways that restrict action on other planetary-scale problems. This book ultimately then seeks to historicize and theorize a mode of thinking that blocks both thought and action, one that functions to maintain and exacerbate collective danger

rather than working to reduce it. It is a study of the multiple modalities of radioactive world-making in the United States—of thinking life, politics, and futures via the uncanny logics of nuclear technoscience.

The first chapter introduces the major concerns of the book, theorizing the material legacies of twentieth-century nuclear national security regimes that will continue to colonize life well beyond the twenty-first century, unfolding violent relations in increasingly complicated and unpredictable ways. It considers the emergence of planetary-scale dangers by revisiting the history of radioactive fallout and mobilizing it as a model for a wide range of toxic problems that operate at maximum scale and on a wide range of temporalities. "The Age of Fallout" pays particular attention to the politics of lag as a form of violence, one that opens up conceptual problems for evaluating terms like progress, profit, and security. It then moves past the nation-state form to see nuclear effects as a planetary-scale formation, one that unsettles perspectives on security via consideration of the multigenerational legacies of environmental injury. It calls for an entirely new definition of security, one that operates outside the nation-state and that sees collective life as simultaneously integrated, connected, and exposed.

Part I, "Dreaming Deserts and Death Machines," then gathers a set of chapters around technoscience and claims made on the modernist desert, where settler colonial visions of an empty space fuse directly with nuclear nationalism in a violent formation. Written as the post–Cold War era (1991–2001) became the War on Terror era (2001 to today), these chapters ethnographically engage the psychosocial spaces of insecurity produced by U.S. militarism inside the United States, attending to the politics of erasure, imagination, and fantasy in the U.S. Southwest. Each chapter considers the mechanisms (imaginary, mass mediated, infrastructural) of creating a phantasmatic relationship to technoscience and history, finding in military machines modes of self-fashioning that constitute the grounds for power but only via new forms of dispossession, toxicity, and collective endangerment.

Part II, "Bunkers and Psyches," brings together genealogical studies of infrastructures and affects that are key to maintaining a highly militarized, nuclear society, focusing on how the imaginary space of the bunker was crafted as a site of power, pleasure, desire, and escape. These chapters address the psychosocial preconditions for some of the most violent aspects of the War on Terror, written as preemptive war, rendition, torture, and illegal surveillance were publicly revealed to be tools of a new counterterror state focused on eliminating imaginary WMDs in Iraq and beyond. These chapters work to unpack the ways that Cold War officials crafted existential danger as

a perverse space of nation building while promoting military technoscience as the means to perfect, and perfectly secure, the collective future. I am interested here in a set of pivot points between citizens and the state that open up modes of internal escape, encouraging a retreat into the bunkers of the psyche while also creating and/or reinforcing long-standing forms of internal exclusion across race and class. These pivot points are mechanisms of insulating the self from state violence in both its international and domestic forms, enabling, for example, the United States to become the most nuclear-bombed country on the earth, all in the name of national defense.

Part III, "Celluloid Nightmares," continues this exploration of a specifically American form of necropolitics by looking at the cinematic building blocks of nuclear fantasies and fears. For despite the fact that millions of Americans have worked within the U.S. nuclear complex over the past seven decades, relatively few understand or have witnessed the power of the exploding bomb. In this lacuna, film has always filled the educational gap, with documentaries made for political, military, scientific, and public audiences. The midcentury effort to craft the bomb on film created the visual vocabulary for the nuclear age, generating a set of images and ideas that have been continuously repurposed since the 1950s in both documentary and Hollywood productions. These forms also come to play a huge role in how collective danger itself is understood and inform debates about rival existential dangers such as global warming in complicated ways. This part of the book consequently asks how images of collective danger change over time, and how the countersubversive imagination, in Michael Rogin's (1988) sense of the term, could become so powerful that it cannot be challenged, or corrected, by documented facts or monumental failures in policy and action. "Celluloid Nightmares" follows Derrida's (1984) insight that until existential danger is realized, it is "fabulously textual"—that is, one can only tell stories about it. Thus, the stories people tell—in print and, I would argue even more powerfully, on film—matter to the conceptual space that is understood to be collective danger, installing a fundamental weakness in the ongoing challenge of reconceptualizing nuclear and climate dangers.

The final part, "After Counterrevolution," brings together a range of chapters exploring the resetting of American sensibilities of existential danger after 2001, tracking the excitable subjects and technoscientific revolutions that inform national security in the twenty-first century. Here, I am interested in the ways that certain political and conceptual impasses are constructed and maintained, even when challenged by factual evidence, historical distance, or the recognition of unexpected forms of violence caused by official action. The question of how a political culture or governmental apparatus

deploying a language of security creates its own future crises informs these chapters, which also ask where revolutionary energies are located today (see Siegel 1998). Motivating this section is the foundational challenge of understanding how the War on Terror with its now well-documented illegality, immorality, and immense body count exists without formal modes of accountability in the United States. Nearly two decades into this new form of war, there is both no end in sight to counterterror and also no formal effort inside the United States to hold anyone accountable for spectacular forms of mass violence, strategic deception of the public, or even financial fraud committed in the name of U.S. national security. I consider how it is that two decades into the War on Terror, formal U.S. policy is set to expand military budgets and activities globally (including new nuclear weapons) while simultaneously rejecting environmental science and the ever-amplifying physical evidence of global warming (revealed in almost daily environmental emergencies). I ask how it is, given the historical record, that a presidential administration can reject both nuclear arms treaties and international climate change mitigation protocols while promoting both petrochemical industrial expansion and next-generation nuclear weapons. I ask how, in other words, the U.S. has come to officially embrace and promote the very counterrevolutionary forms—nuclear weapons and petrochemical capitalism—that threaten its future in the most immediate, visceral, measurable, and documented ways.

The book concludes with an epilogue looking back across my research on national security sciences and the constitution of the two linked existential dangers in the United States, underscoring the loss of once-vital demilitarized concepts and commitments to social welfare. In the end, this book seeks to unpack a particular American investment in military-industrial capitalism (relying on existential enemy formations, threat escalations, and a belief in constant technological revolution) that increasingly has blocked attention to health, welfare, and a demilitarized collective future. This form of nuclear nationalism has been literally world-making, informing all major institutions of society today. But it also remains equally world-breaking, as nuclear nationalism is pursued regardless of outcomes, enables antidemocratic and inhumane policies, functions with indifference to the collective costs of permanent war, and has been used to block action on global warming and other forms of industrial toxicity. Seventy-five years of nuclear nationalism combined with nearly two decades of counterterror have profoundly altered democratic order in the United States, evidenced by the inability to respond, despite vast institutions and resources, to lived forms of violence that operate in unrelentingly slower registers (such as toxicity, financial precarity, dispossessions, and

racisms) or existential dangers that exceed the space of the nation-state (such as climate disruption). But then, a society that has forgotten the concept of peace, exchanging it for a limited universe of imagined dangers with which it can forever be at war, cannot ever be safe, let alone secure.

The Future of Fallout, and Other Episodes in Radioactive World-Making seeks then to interrupt the normative forms of security culture in the United States, to explore moments when alternative political paths were available, and to mobilize a critical mode of assessment for multigenerational forms of violence that continue to unfold without much serious debate. My goal is to activate the positive world-making attributes of society by resisting calls to American exceptionalism or pure crisis or permanent war. It is to foment critical and collective assessment of a mode of living—call it national security or petrochemical capitalism—that has remade material, psychic, and political orders so profoundly that the ongoing transformation of the conditions of possibility for life on the planet—what biologists call the sixth great planetary extinction—can be experienced as unremarkable, inevitable, and nonurgent. The project of this book, then, is to call for a foundationally different concept of security, to imagining and enabling a radically different, culturally and ecologically diverse, planetary future.

NOTES

PROLOGUE

1 For a detailed assessment of the violence (over 800,000 killed), global dislocations (21 million displaced persons), and financial cost ($6.4 trillion) of the U.S. War on Terror from 2001 to 2019, see the ongoing Costs of War project at Brown University's Watson Institute: https://watson.brown.edu/costsofwar/.

2 The concept of fallout here addresses modes of exposure and delayed perceptions, as well as the shifting affects and materialities of a lag in understanding. See Thomas (2019) for a vital study of historical aftermaths and political consciousness in Jamaica, and Sharpe (2016) for an important theorization of antiblackness and historical consciousness in the United States. See Povinelli (2016) for a study of life and nonlife in "settler late liberalism," and de la Cadena (2015) on incommensurable understandings of ecological relationality.

3 On the concept of slow violence, see Nixon (2011). For assessments of the health and environmental legacies of nuclear production, see Brown (2013), Johnston and Barker (2008), Makhijani and Schwartz (1998), Makhijani, Hu, and Yih (1995), and Masco (2004).

4 On industrial aftermaths and the long-term transformation of ecologies, see Fortun (2012), Liboiron (2020), Mitman, Murphy, and Seller (2004), and Murphy (2017a).

5 For discussion of environmental damage from Cold War nuclear projects, see Brown (2013, 2019), Cram (2016), and Gallagher (1993). For discussion of technoscientific nuclear cultures and related forms of radioactive colonization, see Gusterson (1996, 2004), Johnston and Barker (2008), Kuletz (1998), Masco (2006, 2014), and Titus (1986).

6 The redefinition of the future as a domain of endless turbulence and proliferating threat now informs a great range of domains, linking militarism to finance capital, to climate change, to public health. See Caduff (2015) on the anticipatory politics of public health, and see Collier and Lakoff (2015) for an important theorization of governance under conditions of permanent vulnerability.

7 See Paglen (2009) on the geography of state secrecy and how to fill in those blank spots on the map.
8 As of this writing, the Treaty on the Prohibition of Nuclear Weapons has been ratified by eighty-seven countries and is not yet in force. See the United Nations Office for Disarmament Affairs website at http://disarmament.un.org/treaties/t/tpnw.
9 By radioactive world-making I mean a process that combines the material reality of nuclear effects, and the installed global dangers of nuclear war and climate disruption, with the multiple affective orientations and ontological realities that support and inform the diversity of ways of living and being. Thus, the concept navigates a shared set of existential problems, but it does not assume a universal or singular understanding of how petrochemical capitalism or nuclear nationalism shapes and informs individual psyches or communities. As a form of world-making, however, it does underscore the processual nature of these engineered dangers, as they continue to remake ideas about place, health, and futurity.

1. THE AGE OF FALLOUT

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1 On the question of the planetary, see Cosgrove (2001) and Heise (2008). On the contribution of Cold War sciences to an understanding of the earth system, see Cloud (2001), Doel (2003), Edwards (2010), Farish (2010), Hamblin (2013), Masco (2010), McNeill and Unger (2010), and Oreskes and Krige (2014).
2 See Winiarek et al. (2014) for a thirty-day simulation of the global cesium fallout from the Fukushima Daiichi nuclear accident as it traversed the Pacific Ocean.
3 See Choy and Zee (2015) on the politics of atmospheric suspension; Simmons (2017) on "settler atmospherics"; Mitman (2007) on air quality and allergies; Sloterdijk (2009) on the relationship between environmental thinking, air, and terrorism; and Russell (2001) on the industrial logics and multispecies politics of chemical warfare. See Lindqvist (2001) for a highly innovative reading of bombing from the colonial era through the nuclear age.
4 For innovative studies of toxic legacies and unequally embodied consequences, see Agard-Jones (2013), Cram (2016), Graeter (2017), Murphy (2008), and Shapiro (2015).
5 See, for example, Gallagher (1993) for fallout effects in Utah; Johnston and Barker (2008) on the Marshall Islands; and Makhijani, Hu, and Yih (1995) for fallout as a global condition.
6 See Poole (2008) for a historical assessment of the first photographs of Earth; Gabrys (2016) on the evolution of sensing and earth systems science; and Kurgan (2013) on techniques of data visualization.
7 For assessments of the global health effects of Cold War–era nuclear programs, see Lindee (1997), Makhijani, Hu, and Yih (1995), and Makhijani and