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**The 1ACs descriptions of a rising China repeat the racialized tropes of Yellow Peril through the lens of techno-Orientalism which frames Asians as sub-human, unfeeling aliens whose technological success, geographic location, or large population size pose a threat to Western political ordering – none of these threats are “real” but are instead self-produced Anglo-Anxiety**

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Yellow Peril and Techno-Orientalism

The term yellow peril emerged in the late nineteenth century in response to Japan’s arrival to the geopolitical stage as a formidable military and industrial contender to the Western powers of Europe and the United States.9 The concept was further elaborated and given a tangible racial form through Sax Rohmer’s series of novels and films that provided the early content for the social imaginary of “yellow peril” along with its personification in the character of Dr. Fu Manchu, the iconic supervillain archetype of the Asian “evil criminal genius,” and his cast of minions.10 Strikingly, Dr. Fu Manchu’s characterization as evil, criminal, and genius continues to inform the racial trope of the Asian scientist spy; and more recently, we may add to the list the bioengineer, the CFO, the international graduate student, to name just a few. Moreover, the notion of the non-differentiable “yellow” masses continues to function as a homogenizing and dehumanizing device of Asian racialization, which makes possible the transference of Sinophobia to Asian xenophobia.

In its inherent attempt to construct a racial other, “yellow peril” is more a projection of Western fear than a representation of an Asian object/subject, and in this sense, it may be better understood as a repository of racial affect that can animate a myriad of representational figures, images, and discourses, depending on context. Indeed, the images and discourses of yellow peril have surfaced multiple times throughout the twentieth century, capturing a multitude of ever-shifting perceived threats that range from the danger of military intrusion (i.e., Japanese Americans during WWII), economic competition (i.e., Chinese laborers in the late nineteenth century, Japan in the 1980s), Asian moral and cultural depravity (i.e., non-Christian heathens, Chinese prostitutes, opium smokers), to biological inferiority (i.e., effeminacy, disease carriers). As Colleen Lye observes, “the incipient ‘yellow peril’ refers to a particular combinatory kind of anticolonial [and anti-West] nationalism, in which the union of Japanese technological advance and Chinese numerical mass confronts Western civilization with a potentially unbeatable force.”11 Arguably, the yellow peril of today represents heightened Western anxieties around China’s combined forces of population size, global economic growth, and rapid technological-scientific innovation—all of which emerge from a political system that is considered ideologically oppositional to ours. The current context, we suggest, is best understood through the lens of techno-Orientalism.

When the idea of techno-Orientalism first appeared in David Morley and Kevin Robins’s analysis of why Japan occupied such a threatening position in Western imagination in the late 1980s, techno-Orientalism offered a framework to make sense of the technologically imbued racist stereotypes of Japan/the Japanese that were emerging within the context of Western fears and anxieties around Japan’s ascendancy as a technological global power. They proposed that if technological advancement has been crucial to Western civilizational progress, then Japan’s technological superiority over the West also signals a critical challenge to Western hegemony, including its cultural authority to control representations of the West and its “others.” They claimed that the shifting balance in global power—the West’s loss of technological preeminence—has induced an identity crisis in the West. In response, techno-Orientalism, in which “[idioms of technology] become structured into the discourse of Orientalism,” is produced in large part to discipline Japan and its rise to techno-economic power.12 The United States, for instance, externalized its anxiety into xenophobic projections of Japan as a “culture that is cold, impersonal, and machine-like” in which its people are **“sub-human”** and **“unfeeling aliens.”**13 Techno-Orientalism, born from the “Japan Panic,” was effectively consolidated through and around political-economic concerns that frame Japanese and, by extension, Asian techno-capitalist progress as **dangerous and dystopian.**

Extending Edward Said’s concept of Orientalism,14 techno-Orientalism marks a geo-historical shift where the West no longer has control over the terms that define the East—the “Orient”—as weak, inferior, and subordinate to the West. It marks a shift not only in political-economic power but also in cultural authority. Techno-Orientalism, then, is the expressive vehicle (cultural productions and visual representations) by which Western and Eastern nations articulate their fears, desires, and anxieties that are produced in their competitive struggle to gain technological hegemony through economic trade and scientific innovation.15

Analogous to Japan’s position in the late 1980s, China currently figures into the techno-Orientalist imaginary as a powerful competitor in mass production, a global financial giant, and an aggressive investor in technological, infrastructural, and scientific developments. At the same time, the increasing purchasing power of China provokes American fear of a future global market that is economically driven by Chinese consumptive desires and practices. It is this duality—the domination of both production and consumption across different sectors of the techno-capitalist global economy—**that undergirds American anxieties of a sinicized future**.16

**Further amplifying these anxieties** around Chinese techno-economic domination **is our imagination of China**/the Chinese **as the ultimate yellow peril**, whose state ideology is oppositional to that of the United States and whose unmatched population size combined with its economic expansion and technological advancements may actually pose a real challenge to U.S. global hegemony. We turn now to examine how the ideology of yellow peril is manifesting in the current context of techno-Orientalism, beginning first with an analysis of the racial trope of **“Chinese as contagion”** and its connection to **anti-Asian aggression.**

#### We’ll read multiple quotes from the 1AC that supercharge the link – the unhighlighted text in the Bowman evidence says that China has QUOTE “commit not to place any weapons in outer space” END QUOTE and passed international treaties saying they will not militarize space. The 1AC has already passed – just not by Western powers, but no matter what Asians do the West sees them as a threat – QUOTE “Beijing “probably intends to pursue additional [anti-satellite] weapons” END QUOTE –The West uses peaceful Chinese treaties and development as REASON to militarize and then gets surprised when China tries to build a deterrent, justifying FURHTER development

#### The implementation of the AFF packaged through racist representations cause material violence. Reps matter more than the plan – we are scholars not policymakers. Atlanta is the latest example, but the past year has shown a one-to-one correlation with rhetoric that paints Asian governments as threatening and physical, sexual, and verbal assault of Asians around the world as a result. The 1AR’s claims of “Our Threats Real” is not responsive to the criticism – its not a question about the truth value of the representations but rather the proximate impact embedded in power which extends into material violence

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In the early weeks of the COVID-19 outbreak in the United States, President Trump put out many mixed messages, but he remained consistent with one—that China was to blame for the spread of the virus. Repeatedly, he insisted on calling the novel coronavirus “the Chinese virus,” despite mounting public criticism against the racialization of the deadly pathogen. Many noted the inflammatory nature of this anti-Asian rhetoric. During this same period, reports ranging from verbal **abuse** to intimidation to **physical assault** against people of Asian descent documented the sudden rise of anti-Asian **hate crimes** in the United States and globally. According to Human Rights Watch, an Asian woman in Brooklyn, New York, suffered a racially motivated **acid attack**, and in Texas, a Burmese American man and his two children were **stabbed** by a man who claimed he thought the family was “Chinese and infecting people with the coronavirus.”1 The Asian Pacific Policy and Planning Council in the United States reported over **one thousand cases** of anti-Asian incidents **in a two-week period** in March 2020.2 Outside the United States, a Singaporean student in the United Kingdom was violently **kicked** and **punched** by an angry group of men after they uttered, “we don’t want your coronavirus in our country” (my emphasis).3 In Australia, a survey taken by the community group Asian Australian Alliance recorded a total of 178 reports of anti-Asian incidents in two weeks, ranging from **racial slurs** to **physical assault.**4 Though President Trump has dropped the “Chinese virus” for “kung flu” and tweeted on March 23 that “It is very important that we totally protect our Asian American community . . . the spreading of the virus is NOT their fault,” it seems that Sinophobia and racial violence against Asian Americans have been unleashed.

Make no mistake, as long as President Trump continues to take a confrontational stance, using the **rhetoric of blame against China** with the intention to punish it with new sanctions, tariffs, and even the cancellation of U.S. debt obligations,5 the **racial aggressions against Asian Americans will continue to rise,** if not intensify. By now, it is widely accepted that the novel coronavirus emerged first in Wuhan, and scientists believe that the zoonotic disease might have jumped from animals to humans at Wuhan’s Huanan Seafood Wholesale Market, a wet market where vegetables, seafood, meat, and a small number of exotic wildlife were sold. Despite this, on April 30, President Trump casually offered a new theory, which Secretary of State Mike Pompeo tweeted: that COVID had originated in the Wuhan Institute of Virology, which houses a biosafety level-4 lab, and that the virus might have “leaked” from that lab. The implicit suggestion is that China had either intentionally bioengineered the novel coronavirus to cause massive destruction, thereby attributing malice, or carelessly leaked the virus due to scientific negligence, thereby attributing incompetence. In either case, these kinds of unsubstantiated speculations work to further stoke anger and disdain against the Chinese state. More disturbingly, they traffic in the idea of China as a biotechnology threat, resonating with pre-existing filmic representations of futuristic dystopian worlds.

The immediate and unqualified responses from the scientific community reveal the danger of these potentially incendiary speculations. Responding swiftly, the Office of the Director of National Intelligence issued a press release the morning of April 30 stating that “The Intelligence Community . . . concurs with the wide scientific consensus that the COVID-19 virus was not manmade or genetically modified . . . ” (my emphasis).6 Within days, the director of the National Institute of Allergy and Infectious Disease, Dr. Anthony Fauci, attested that the virus “could not have been artificially or deliberately manipulated.”7 These assertions sought to extinguish any attribution of malice to the Chinese state. Even with firm contestation, however, **the very invocation of** the idea of **biotechnology warfare has** tapped into and perhaps even **fueled** our existing **techno-Orientalist anxieties.**

As the COVID pandemic story transpires in real time, engulfing the entire global community, taking unexpected twists and turns, making divergences and transgressions, we have become increasingly aware that the layers of entanglements cannot be easily parsed out, nor will we know anytime soon how and when the story will end. We offer a query into how we might assess and make sense of the intensifying Sinophobia and xenophobia in this current context. To do so, we must resist the temptation to confine our analysis to the narrow parameters of the pandemic. Rather, we insist on examining the rise of anti-Asian aggression within the concomitant vectors of the **pandemic, the** escalation of the U.S.-China **trade war, and** the growing **concerns about cyber- and techno-security.** Here we assert that the **ideology of yellow peril set within a techno-Orientalist imaginary is powerfully animating the racial form and racial affect mediating the multiple terrains of public health, technology, global trade, and national security.** While it is tempting to treat this historical conjuncture as extraordinary, it is crucial that we situate the current unfolding within the long history of Asian racialization, one that indexes the abiding tension between the political impetus to define national belonging and the shifting economic imperatives of the nation-state.8

The Contemporary Racial Repertoire of the “China/Chinese” Threat

The outbreak of the pandemic could not have had worse timing (as if it could be timed), but timing is critically important here. Its emergence amid the ongoing intensive trade war between the United States and China is significant in that the prevailing tensions between the two countries and the discourses of Chinese unfair trade competition, scientific espionage, and technological surveillance frame the reception of the pandemic. One may argue that President Trump’s insistence on blaming China for the spread of the deadly virus is yet another tactic in his administration’s sustained attempt to quell China’s economic power at the same time that it provides a foil to distract from—and a scapegoat to blame for—the economic and public health crisis in which we find ourselves.

At this particular juncture, we unfortunately have been inundated with media coverage of a plethora of accusations and actions launched against China and Chinese Americans. Within the past two years, we have witnessed the implementation of trade sanctions and tariffs against China, the removal of prominent Chinese American scientists from research institutions, and the severing of nationwide economic transactions with certain China-based telecommunications corporations, with Huawei Technologies Company being the most notable. All these have been advanced in the name of national security. The discursive formation and the representational devices that have been used to justify these state directives play a critical role in constructing the People’s Republic of China (PRC) as culprit and as America’s enemy number one. These constructions, some of which will be examined in this essay, are layered upon one another, each building and elaborating on the last, and each invoking and simultaneously inciting a different set of anxieties that lie within the broader repertoire of China/ Chinese as threat. Indeed, **the inundation of media about China makes it** difficult, if not **impossible, to decipher truth from falsehood**, myth from reality, **rhetoric from evidence. Our task** here **is not to weigh the truth-value of these rep**resentation**s but to treat them as ongoing contests embedded in power and** to **draw out their material effects.** It is worth noting that while the explicit target of U.S. state aggression has been the mainland Chinese state or the PRC**, the actual effects are** much more wide-ranging and extend into **everyday aggressions against all those who present as East Asian American.**

In our examination of the variegated representations of China/Chinese, we suggest that the longstanding ideology of “yellow peril” remains not just pertinent, but extremely forceful in constructing a multifaceted repertoire of Chinese state threat and, by extension, of Chinese/Asian American threat. What is particular about this recent iteration of yellow peril is its configuration through the lens of techno-Orientalism, a framework that is primarily used to examine the explicitly fictional genres of novels, videogames, and films but that we now assert as being actively deployed in this current historical conjuncture.

#### It’s not just Atlanta, Anti-Asian hate crimes continuing to spike – their rhetoric is literally killing people

Westervelt 2/21 – [Eric, “Anger And Fear As Asian American Seniors Targeted In Bay Area Attacks,” npr, 2/2 2021, <https://www.npr.org/2021/02/12/966940217/anger-and-fear-as-asian-american-seniors-targeted-in-bay-area-attacks>, DKP]

Business and civil rights groups in California are demanding action after a recent surge of xenophobic violence against Asian Americans in the San Francisco Bay Area left one person dead and others badly injured. The brazen, mostly daylight assaults have rattled nerves in communities ahead of Friday's Lunar New Year holiday. Just last week in San Jose, a 64-year-old grandmother [was assaulted](https://www.ktvu.com/news/asian-community-feels-targeted-by-crime-ahead-of-lunar-new-year-celebrations) and robbed of cash she'd just withdrawn from an ATM for Lunar New Year gifts. Surveillance cameras have captured many of the attacks, including one against [a 91-year-old man in Oakland's Chinatown](https://abc7news.com/man-pushed-to-ground-in-oakland-violence-chinatown-robberies/10311111/), who was hospitalized with serious injuries after being shoved to the ground by a man who walked up behind him. In January, a 52-year-old Asian American woman was shot in the head with a flare gun, also in Chinatown. Later in the month, 84-year-old Vicha Ratanapakdee was going for a morning walk in his San Francisco neighborhood. Surveillance cameras captured a man running at him full speed and [smashing his frail body to the pavement](https://www.ktvu.com/news/family-of-84-year-old-killed-in-sf-believe-attack-was-racially-motivated). Ratanapakdee died of his injuries two days later. A 19-year-old man has been charged with murder and elder abuse. "These attacks taking place in the Bay Area are part of a larger trend of anti-Asian American/Pacific Islander hate brought on in many ways by COVID-19, as well as some of the xenophobic policies and racist rhetoric that were pushed forward by the prior administration," says Manju Kulkarni, executive director of the [Asian Pacific Policy and Planning Council](https://stopaapihate.org/about/), a coalition of California community-based groups.

**The alternative is to reject the AFF in favor of an epistemic rejection of Area Studies that define knowledge production through mapping the external world as unstable, hostile and target. Only de-centering knowledge production from the self can solve inevitable conflict and orientalist violence**

**Chow 6** (Rey, Anne Firor Scott Professor of Literature at Duke University, April 2006, “Age of the World as Target”, Rey Chow Reader) APS recut aaditg

Among the most important elements in war, writes karl von Clausewitz, are the “moral elements.”32 From the United States’ point of view, this phrase does not seem at all ironic. Just as the bombings of Afghanistan and Iraq in the first few years of the twenty-first century were justified as benevolent acts to preserve the united States and the rest of the world against “the axis of evil,” “weapons of mass destruction,” and the like, so were the bombings of Hiroshima and Nagasaki considered pacific acts, acts that were meant to save lives and save civilization in a world threatened by German Nazism. (Though, by the time the bombs were dropped in Japan, Germany had already surrendered.) even today, some of the most educated, scientifically knowledgeable members of U.S. society continue to believe that the atomic bomb was the best way to terminate the hostilities.33 And, while the media in the united States are quick to join the media elsewhere in reporting the controversies over Japan’s refusal to apologize for its war crimes in Asia or over France’s belatedness in apologizing for the Vichy government’s persecution of the Jews, no U.S. head of state has ever visited Hiroshima or Nagasaki, or expressed regret for the nuclear holocaust.34 In this—its absolute conviction of its own moral superiority and legitimacy—lies perhaps the most deeply ingrained connection between the foundation myth of the United States as an exceptional nation and the dropping of the atomic bombs (as well as all the military and economic interventions the united States has made in nationalist struggles in Asia, Latin America, and the Middle east since the Second World War).35 even on occasions such as Pearl Harbor (December 7, 1941) and September 11, 2001, when the united States had to recognize that it was just part of the world (and hence could be attacked like any other country), its response was typically that of reasserting U.S. exceptionalism—This cannot happen to us! We are unique, we cannot be attacked!—by ferociously attacking others. In the decades since 1945, whether in dealing with the Soviet union, the People’s republic of China, north korea, vietnam, and countries in Central America, or during the gulf Wars, the united States has been conducting war on the basis of a certain kind of knowledge production, and producing knowledge on the basis of war. **War and knowledge** enable and **foster each other** primarily through the collective fantasizing of some foreign or alien body that poses danger to the “self” and the “eye” that is the nation. once the monstrosity of this foreign body is firmly established in the national consciousness, the decision makers of the u.S. government often talk and behave as though they had no choice but war. **War**, then, **is acted out as a moral obligation to expel an imagined** dangerous **alienness** from the united States’ self-concept as the global custodian of freedom and democracy. Put in a different way, **the “moral element,”** insofar as it produces knowledge about the “self” and “other”—and hence the “eye” and its “target”—as such, **justifies war by its very dichotomizing logic**. Conversely, **the violence of war**, once begun, **fixes the other in its attributed monstrosity and affirms the idealized image of the self.** In this regard, the pernicious stereotyping of the Japanese during the Second World War—not only by u.S. military personnel but also by social and behavioral scientists—was simply a flagrant example of an ongoing ideological mechanism that had accompanied Western treatments of non-Western “others” for centuries. In the hands of academics such as geoffrey gorer, writes Dower, the notion that was collectively and “objectively” formed about the Japanese was that they were “a clinically compulsive and probably collectively neurotic people, whose lives were governed by ritual and ‘situational ethics,’ wracked with insecurity, and swollen with deep, dark currents of repressed resentment and aggression.”37 As Dower points out, such stereotyping was by no means accidental or unprecedented: The Japanese, so “unique” in the rhetoric of World War Two, were actually saddled with racial stereotypes that europeans and Americans had applied to nonwhites for centuries: during the conquest of the new World, the slave trade, the Indian wars in the united States, the agitation against Chinese immigrants in America, the colonization of Asia and Africa, the U.S. conquest of the Philippines at the turn of the century. These were stereotypes, moreover, which had been strongly reinforced by nineteenthcentury Western science. In the final analysis, in fact, these favored idioms denoting superiority and inferiority transcended race and represented formulaic expressions of Self and Other in general.38 The moralistic divide between “self” and “other” constitutes the production of knowledge during the U.S. occupation of Japan after the Second World War as well. As Monica Braw writes, in the years immediately after 1945, the risk that the united States would be regarded as barbaric and inhumane was carefully monitored, in the main by cutting off Japan from the rest of the world through the ban on travel, control of private mail, and censorship of research, mass media information, and other kinds of communication. The entire occupation policy was permeated by the view that “the united States was not to be accused; guilt was only for Japan”:39 As the occupation of Japan started, the atmosphere was military. Japan was a defeated enemy that must be subdued. The Japanese should be taught their place in the world: as a defeated nation, Japan had no status and was entitled to no respect. People should be made to realize that any catastrophe that had befallen them was of their own making. until they had repented, they were suspect. If they wanted to release information about the atomic bombings of Hiroshima and nagasaki, it could only be for the wrong reasons, such as accusing the united States of inhumanity. Thus this information was suppressed.40 As in the scenario of aerial bombing, the elitist and aggressive panoramic “vision” in which the other is beheld means that **the sufferings of the other matters much less than the transcendent aspirations of the self**. And, despite being the products of a particular culture’s technological fanaticism, such transcendent aspirations are typically expressed in the form of selfless universalisms. As Sherry puts it, “The reality of Hiroshima and nagasaki seemed less important than the bomb’s effect on ‘[hu]mankind’s destiny,’ on ‘humanity’s choice,’ on ‘what is happening to men’s minds,’ and on hopes (now often extravagantly revived) to achieve world government.” On Japan’s side, as yoneyama writes, such a “global narrative of the universal history of humanity” has helped sustain **“a national victimology and phantasm of innocence throughout most of the postwar years**.” going one step further, she remarks: “The idea that Hiroshima’s disaster ought to be remembered from the transcendent and anonymous position of humanity . . . might best be described as ‘nuclear universalism.’ once the relations among war, racism, and knowledge production are underlined in these terms, it is no longer possible to assume, as some still do, **that the recognizable features of modern war**—its impersonality, coerciveness, and deliberate cruelty—are “divergences” from the “antipathy” to violence and to conflict that characterize the modern world.43 Instead, it would be incumbent on us to realize that the pursuit of war—with its use of violence—and the pursuit of peace—with its cultivation of knowledge—are the obverse and reverse of the same coin, the coin that I have been calling “the age of the world target.” rather than being irreconcilable opposites, **war and peace are coexisting, collaborative functions in the continuum of a virtualized world**. More crucially still, only the privileged nations of the world can afford to wage war and preach peace at one and the same time. As Sherry writes, “The united States had different resources with which to be fanatical: resources allowing it to take the lives of others more than its own, ones whose accompanying rhetoric of technique disguised the will to destroy.”44 From this it follows that, if indeed political and military acts of cruelty are not unique to the united States—a point which is easy enough to substantiate—what is nonetheless remarkable is the manner in which such acts are, in the united States, usually cloaked in the form of enlightenment and altruism, in the form of an aspiration simultaneously toward technological perfection and the pursuit of peace. In a country in which political leaders are held accountable for their decisions by an electorate, violence simply cannot—as it can in totalitarian countries—exist in the raw. even the most violent acts must be adorned with a benign, rational story. It is in the light of such interlocking relations among war, racism, and knowledge production that I would make the following comments about area studies, the academic establishment that crystallizes the connection between the epistemic targeting of the world and the ‘‘humane’’ practices of peacetime learning. From Atomic Bombs to Area Studies As its name suggests, area studies as a mode of knowledge production is, strictly speaking, military in its origins. Even though the study of the history, languages, and literatures of, for instance, ‘‘Far Eastern’’ cultures existed well before the Second World War (in what Edward W. Said would term the old Orientalist tradition predicated on philology), the systematization of such study under the rubric of special geopolitical areas was largely a postwar and U.S. phenomenon. In H. D. Harootunian’s words, ‘‘The systematic formation of area studies, principally in major universities, was . . . a massive attempt to relocate the enemy in the new configuration of the Cold War.’ As Bruce Cumings puts it: It is now fair to say, based on the declassified evidence, that the American state and especially the intelligence elements in it shaped the entire field of postwar area studies, with the clearest and most direct impact on those regions of the world where communism was strongest: Russia, Central and Eastern Europe, and East Asia.’ In the decades after 1945, when the United States competed with the Soviet Union for the power to rule and/or destroy the world, these regions were the ones that required continued, specialized super-vision; to this list we may also add Southeast Asia, Latin America, and the Middle East. As areas to be studied, these regions took on the significance of **target fields—** **fields of information retrieval and dissemination** that **were necessary for the perpetuation of the United States’ political and ideological hegemony**. In the final part of his classic Orientalism, Said describes area studies as a continuation of the old European Orientalism with a different pedagogical emphasis: No longer does an Orientalist try first to master the esoteric languages of the Orient; he begins instead as a trained social scientist and ‘applies’ his science to the Orient, or anywhere else. This is the specifically American contribution to the history of Orientalism, and it can be dated roughly from the period immediately following World War II, when the United States found itself in the position recently vacated by Britain and France. Whereas Said draws his examples mainly from Islamic and Middle Eastern area studies, Cumings provides this portrait of the East Asian target field: The Association for Asian Studies (AAS) was the first ‘‘area’’ organization in the U.S., founded in 1943 as the Far Eastern Association and reorganized as the AAS in 1956. Before 1945 there had been little attention to and not much funding for such things; but now the idea was to bring coe ntemporary social science theory to bear on the non-Western world, rather than continue to pursue the classic themes of Oriental studies, often examined through philology. . . . In return for their severance, the Orientalists would get vastly enhanced academic resources (positions, libraries, language studies)—and soon, a certain degree of separation which came from the social scientists inhabiting institutes of East Asian studies, whereas the Orientalists occupied departments of East Asian languages and cultures. This implicit Faustian bargain sealed the postwar academic deal. A largely administrative enterprise, closely tied to policy, the new American Orientalism took over from the old Orientalism attitudes of cultural hostility, among which is, as Said writes, the dogma that ‘the Orient is at bottom something either to be feared (the Yellow Peril, the Mongol hordes, the brown dominions) or to be controlled (by pacification, research and development, outright occupation whenever possible).’Often under the modest and apparently innocuous agendas of fact gathering and documentation, the ‘‘scientific’’ and ‘‘objective’’ **production of knowledge during peacetime** about the various special ‘‘areas’’ **became the institutional practice that substantiated and elaborated the militaristic conception of the world as target**. In other words, despite the claims about the apolitical and disinterested nature of the pursuits of higher learning, activities undertaken under the rubric of area studies, such as language training, historiography, anthropology, economics, political science, and so forth, are fully inscribed in the politics and ideology of war. To that extent, the disciplining, research, and development of so-called academic information are part and parcel of a strategic logic. And yet, if the production of knowledge (with its vocabulary of aims and goals, research, data analysis, experimentation, and verification) in fact shares the same scientific and military premises as war— if, for instance, the ability to translate a diffcult language can be regarded as equivalent to the ability to break military codes —is it a surprise that it is doomed to fail in its avowed attempts to ‘‘know’’ the other cultures? **Can ‘‘knowledge’’ that is derived from the same kinds of bases as war put an end to the violence of warfare**, or is such knowledge not simply warfare’s accomplice, destined to destroy rather than preserve the forms of lives at which it aims its focus? As long as knowledge is produced in this self-referential manner, as a circuit of targeting or getting the other that ultimately consolidates the omnipotence and omnipresence of the sovereign ‘‘self ’’/‘‘eye’’—the ‘‘I’’—that is the United States, the other will have no choice but remain just that— a target whose existence justifies only one thing, its destruction by the bomber. As long as the focus of our study of Asia remains the United States, and as long as this focus is not accompanied by knowledge of what is happening elsewhere at other times as well as at the present, such study will ultimately confirm once again the self-referential function of virtual worlding that was unleashed by the dropping of the atomic bombs, with the United States always occupying the position of the bomber, and other cultures always viewed as the military and information target fields. In this manner, events whose historicity does not fall into the epistemically closed orbit of the atomic bomber— such as the Chinese reactions to the war from a primarily anti-Japanese point of view that I alluded to at the beginning of this chapter— will never receive the attention that is due to them. ‘‘Knowledge,’’ however conscientiously gathered and however large in volume, will lead only to further silence and to the silencing of diverse experiences. This is one reason why, as Harootunian remarks, area studies has been, since its inception, haunted by ‘‘the absence of a definable object’’—and by ‘‘the problem of the vanishing object.’’

**AND, you should be skeptical of their evidence – their research model proscribes a violent model that privileges Western research practices. Voting AFF incentivizes the perpetuation of exclusion as a norm and rewards and makes us feel good about psychic violence built upon standards created by hetero-cis-white-men.**

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We argue that **knowledge cumulation in IR is a fantasy reified by paradigmatic clusters and the mimicry of research standards** and practices **in the natural sciences** (e.g., Elman & Elman, 2001, 2003). The **“evidence”** of “knowledge cumulation” in IR comes as much from the ritualized practice of research behavior as it does from any “true” or genuinenotion of knowledge cumulation. One has “succeeded” in the enterprise of IR by cumulating knowledge, and the work of “successful” scholars is by definition cumulated knowledge. Cumulation of knowledge as a standard of success is a condition of possibility for the desirability of success in the field. That ritualized practice at once is institutionalized as success and institutionalizes the need for research success, reified and reproduced by hiring, tenure, merit raise, and promotion standards.

This ritualization is a signifier that what counts as knowledge in the field, in particular research programs and more generally, **is performative** (Barad, 2007; Butler, 1990; Weber, 1998)—where standards are set by their utterance and repetition rather than by some external “objective” standards of (narrowly) good science or (more broadly) good research (Baudrillard, 1991; Shepherd, 2008; Williams, 2003). Scholars iterate and reify standards of measurement of knowledge in each piece of scholarship which “succeeds” in the field, and these iterations make it a paradox for scholars to both occupy the methodological, epistemological, and political space that falls outside of inherited standards and succeed. Outside -the -mainstream work’s underrepresentation in the places understood to be publishing “success” is overdetermined, and the correlation between mimicry of traditional scholarship and “success” of critical scholars a given.

We mean “performative” in the sense that Judith Butler uses it (Butler, 1990, 1993), particularly as she talks about it going hand in hand with a Foucauldian notion of disciplining,8 where “performativity cannot be understood outside of a process of iterability—a regularized and constrained repetition of norms” which resonate as “ritualized production” (Butler, 1993, p. 60). This frames performativity as a “specific modality of power as discourse” (Butler, 1993, p. 139) where the politics of the signification and the politics of the sign meet, an act of territoralization, of production, of installation—which does not have to be alone, singular, or unidirectional. Since performatives are their own referent (Butler, 1993, p. 159), they proliferate as manifestations of the power underlying them and interact relatively on the basis of that relative power. In this context, “performances” are actions and events, iterations and reifications, and context-specific, which “bring a subject into being” relationally.9

To escape the recursive, performative loop of **“disciplinary success,”** we argue that it is important to see the possibility that knowledge cumulation is not, and should not be, a given in IR research. Instead, we argue that the idea itself is an inherited empty signifier with unspoken content which governs the production of what we understand as disciplinary IR. Traditionally, the idea of knowledge cumulation is firmly grounded in a neopositivist understanding of social science, in which the role of theory is to collate observed empirical regularities across cases or what Waltz calls laws (Waltz, 1979). While this interpretation is critiqued in most critical IR, “cumulation,” in that work, becomes a term without clear conceptual content. The **paradigmatization of IR** theorizing distracts from a particular theory’s internal conditions of possibility by introducing incompatible conditions of possibility drawn from an inherited disciplinary sociology of what knowledge is and how it works. As such, any acknowledgment of the idea of cumulativity from within specific exercises in reflexive IR creates the grounds for **necessary failure** within those exercises.

The simultaneous rejection of traditional “cumulation” and continued performance of acts of cumulation can be understood by seeing the ways that **silence frames cumulation in critical IR.** We learn from feminist theorists that **the unspoken is as important as if not more important than what is spoken** (Charlesworth, 1999; Kronsell, 2006), **coming from attention to how IR’s others are omitted, excluded, kept out, and not mentioned** (Agathangelou & Ling, 2004; Tickner, 1988). We argue that IR’s silences tell us more about the state of knowledge cumulation in the discipline than looking for standards that tell us what we do know. Accordingly, we ask on principle what any given research program does not take account of and how accounting for those omissions could changes analysis. We focus on both visible omissions (like the concepts that a research program fails to incorporate) and invisible omissions. Invisible omissions are those that are unhearable by a research program— normally left out or ignored by both the researchers that form the core of the research program and their critics (Butler, 2001; Edkins et al., 2012; Hansen, 2000). By “unhearable,” we mean either that the omitted content falls outside of the boundaries set for dialog or is assumed by all stakeholders to be by definition irrelevant (for deeper analyses see MacKinnon, 2006; Spivak, 1988). Unlike its visible omissions—variables that its scholars and their critics have added to, re-operationalized, expanded on, or suggested the inclusion of—invisible omissions are often not treated as omissions at all within particular scholarly boundaries.10

The discipline’s “collective” standards for knowledge production, then, can be understood as constituted by social performances of dominance rather than founded on some given or objective notions of what science should be. **Rather than being objective judgments of quality, statements like “this is good science” and “these results are robust” are signs without referents used to discipline** (Baudrillard, 1995). The invisible disciplining nature of the performative standards of knowledge cumulation is part of the story of Butler’s understanding of performativity. The other part is attention to who is excluded by claims to knowledge cumulation (generally as well as in specific paradigmatic situations), what is left out, and on what axes. These disciplinary standards (both in the conventional and Foucauldian sense) make invisible their own impossibility and their related necessary failure.

**For example, a submission** to a traditional IR journal in the United States or Western Europe **which makes an** interesting **argument, but is not in the format of, methodologically acceptable to, inclusive of the same forms of evidence traditionally used in**, and good science to that journal’s traditional reviewers **is unlikely to succeed** in getting published.11 This will generally be justified with reference to the “quality” of the piece, and rarely if ever will questions of sex, race, gender, class, and other axes of exclusion be discussed as producers of the standards that then exclude on “quality” where “quality” has been set up in a way that **excludes all performances of scholarship which are not mimicry of a particular Western, liberal model** (Paolini, 1999).12 Even editors and **reviewers who note the exclusionary effect of these standards will often mourn that and move on,** imagining the only possible alternative being lacking standards, and **seeing such a lack of standards as more insidious than the exclusionary effects** of using certain sets of standards. **“Knowledge cumulation” then becomes a set of reified and artificial standards rather than a journey for truth or interest.**

The answer to this quagmire is sometimes a liberal politics of inclusion (e.g., Nedal & Nexon, 2018)—how do “we” get more women, more minorities, and more people from underrepresented places in the world to be able to meet the standards of good scholarship in the field? **That liberal politics of inclusion**, while well-intended, **can be read as a** (subtle, perhaps accidental) **expansion of** the **violence** it (formally) seems to abate. **It fails to question the utility of** the **existing standards** of good scholarship **and assumes that those currently excluded would be happy to change the form, shape, and/ or nature of their scholarship to fit within the** (unquestioned/unquestionable) **mold** of good scholarship, either loosely or strictly understood. As Puar (2006) argues, liberal “inclusion” to absorb the other within can be as violent as if not more so than exclusion even as it appears progressive. That violence is the reproduction of naturalized, bounded identities when identities are liminal and messy when not policed (e.g., Agathangelou, 2013; Haritaworn et al., 2013; Scott, 2013). The bounded nature of IR inclusion excludes liminality, messiness, and outsideness (e.g., Malksoo, 2012).

Expanding the boundaries of IR to include any given particular excluded work maintains an illusion of stability, hiding what is unstable; it maintains an illusion of certainty, hiding what is in doubt; it maintains an illusion of coherence, hiding the rebellious, the failed, and that which remains outside (e.g., Sjoberg, 2017). Queer theorizing of the liminality involved in unstable sex/gender identities shows that even that which is presumed to be the most primordial (sex identity) is really liminality hiding under supposed definition (e.g., Weber, 2016a). Translated to thinking about inhabitability, this theorizing suggests that the apparent safety of (constituting then occupying) inhabitable space hides liminality and uncertainty, and perhaps danger, under its supposed (empirical and normative) clarity (Haritaworn et al., 2014). Therefore, “all the repressive and reductive strategies of power systems are already present in the internal logic of the sign,” such “that violence is an inevitable byproduct of signification” (Baudrillard, 1981).

In this way, not only do traditional standards of knowledge make invisible their own impossibility, **they hide the violence of IR’s denials of failure** and continued insistence on traveling failed paths despite the condemnation of failure and the privileging of success. **IR’s continued recursive enactment of its settled “standards” despite their obvious failure and exclusiveness makes invisible the raced, classed, and sexed impacts of those standards** and their apparent objectivity. Baudrillard’s work provides a path for navigating this disjuncture between signs (IR’s “standards”) and referents (the fantastic notion that “good scholarship” exists objectively) (Baudrillard, 1975). He argues that “only ambivalence, as a rupture of value… sustains a challenge to the legibility, the false transparency of the sign… questions the evidence of the use value of the sign (rational decoding) and of its exchange value (the discourse of communication).” This ambivalence, Baudrillard argues, “brings the political economy of the sign to a standstill; it dissolves the respective definitions of symbol and referent” (Baudrillard, 1981, p. 150).

Endorsing the inclusion of nontraditional perspectives, classifying and categorizing them, and assuming inclusion’s possibility may all have violent impacts (for discussions of the violences of inclusion see Haritaworn et al., 2013, 2014; Mbembe, 2019). Moving of the signification “knowledge” from any referent to which it was originally tied makes method and research performances of scholarship, rather than (the illusive) scholarship itself. If “research” is a performance of scholarship, “standards” for research serve to disguise the fantastic nature of knowledge cumulation. As such, there is no space for liminality, uncertainty, change, inadequacy, and failure in structural rather than passing senses. Yet looking beyond the discourse of certainty, those pervade IR. A Baudrillardian ambivalence toward research programs and their truth statements can reveal the recursivity of IR’s standards of knowledge cumulation. This is because condemnation or rejection of any given research program and its truth statements endorses its assumptions about truth, as well as some of its assumptions about what the international arena is and how it works.

As such, the idea that IR knowledge cumulation can be nothing but fantasy is straightforward. If the reification of standards of knowledge cumulation is a signification divorced from a referent, where the recovery of the referent is conceptually and practically impossible, then knowledge cumulation is and will always remain an empty signifier. The only question is how that empty signifier directs and is directed.

We suggest that, in IR, more often than not, knowledge cumulation directs and is directed by discursive seduction. In Baudrillard’s words, seduction is “that which extracts meaning from discourse and detracts it from its truth” (Baudrillard, 1991[1979], p. 54). What makes a discourse of knowledge, of science, and of progress seductive “is its very appearance: the aleatory, meaningless, or ritualistic and meticulous circulation of signs on the surface, its inflections and its nuances. All of this effaces the content value of meaning, and this is seductive” (Baudrillard, 1991[1979], p. 54). Therefore, if there could be an interpretive discourse of knowledge cumulation that reached truth value, that truth value would be selfdefeating, since “the meaning of an interpretive discourse, by contrast, has never seduced anyone.” This is the fundamental contradiction, in Baudrillard’s terms, that makes standards for knowledge cumulation in IR internally impossible. He explains that “every interpretive discourse wants to get beyond appearances; this is its illusion and fraud. But getting beyond appearances is appearance, and is hence subject to the stakes imposed by seduction, and consequently to its own failure as discourse” (Baudrillard, 1991[1979], p. 54). As such, what is left in/of the failed discourse can only be the fantastic, and pretensions to success hollow.

Inhabiting a Failure of a Discipline

The need for success and the denial of failure depend on two things: first, both success and failure existing and being identifiable; and second, presuming a particular normative relationship between success and failure. In IR, as we discussed above, scholars are thought of as successes or failures according to a complicated metric of disciplinary prestige based on publication outlet, “scientific standards,” and perception of the change that they have caused in the discipline. Work is characterized as successful or failed based on whether it contributes to knowledge cumulation. The discipline itself is understood as successful or failed based on the aggregation of those measures. On these terms, the emptiness of disciplinary standards and the impossibility of knowledge cumulation make every piece of scholarship and every scholar in IR a failure and the discipline along with them.13 To us, the identification of success/failure is impossible.

Still, we focus our approach to “disciplinary IR” around questioning the second assumption, that the normative relationship between success and failure is such that success is good and desirable and failure is bad. Failure has been insufficiently explored in disciplinary IR, both in thinking about the disciplinary enterprise and in thinking about the world “out there” which we purport to study.14 Here, we look to theorize the “upside” of the failure of the disciplinary enterprise of IR. It is, after all, failure that Baudrillard called for, in different words—a willingness to drop commitment to and passion for a certain end in the recognition that both that end and its opposite are empty signifiers. Queer theorists have suggested that this sort of failure—failure to live up to expectations which were messy, detached, or a priori untenable—might be worth celebrating (Halberstam, 2011). We build on these two understandings to embrace failure in IR.

Often failure is thought about as either a final end (something has failed), as a stumbling block on a path to success (if at first you do not succeed, try, try again), or as a miscalibration (we thought this was success, but really it is failure instead). With Jack Halberstam, we suggest a normative reinterpretation. Rather than seeing failure as an end point, or as a stopping point on the way to success, it can be seen as itself a politics, “a category levied by the winners against the losers” and “a set of standards that ensure all future radical ventures will be measured as cost-ineffective” (Halberstam, 2011, p. 184). Halberstam uses the example of reproductive success. Inherited wisdom has suggested for a significant amount of time that people should have children—that a heterosexual marriage with biological offspring is the ideal of success in one’s personal life. That could be taken at face value: success (measured in biological offspring to still-married heterosexual, cissexual parents) is to be valued, and failure (measured in some other reproductive result) is to be devalued. Or the very normative value attached to reproductive success is itself a weapon, where associating failure with non-reproduction is a category levied against the losers by the winners. Redefining all reproductive results as successful or changing which reproductive results are measured as successful does not change the weaponized, normalizing character of the concept of success. This is a metaphor for IR’s disciplinary sociology, but it is also directly applicable to IR’s epistemological and methodological engagement with non-heteronormativity

Applied to IR, the normalization of “success” as the thing to which all (researchers) should aspire reifies membership in the categories of “successful” and “failed” and provides the “successful” with a **powerful weapon to continue to exclude, put down, and delegitimize the “unsuccessful.” The “winners” are by definition** in a **normatively superior** position compared to the “losers” despite the emptiness of the signification of each category. Understanding individual pieces of work, individual scholars, or research paradigms as failed (a foil to successful) is a categorization wielded by those who have already been classified as successful to achieve and **perpetuate the exclusion of those whom they can constitute as inferior.** In this way, research **success is a category IR’s winners wield against its losers to perpetuate their position as winners**, consciously or unconsciously, **against a background of** a **disciplinary** IR where the **standards** for research were **created** **largely by white, heterosexual cis-men** and remain largely undisturbed despite the intellectual and representational diversification of IR research and IR scholars.

Failure as a category in IR scholarship serves to “reinscribe and renormalize standards of ‘research success’ which remain unchanged, unchangeable, and regressive” (Halberstam, 2011). The scholarship that makes unconventional claims to knowledge cumulation (or no claim to knowledge cumulation) not only fails but constitutes its researchers as failures—which becomes recursive when “we tend to blame each other or ourselves for the failures of the social structure we inhabit, rather than critiquing the structures… themselves” (Halberstam, 2011, p. 35, citing Kipnes, 2004). In Halberstam’s view, **it is the system that privileges success, that is, the problem, and failing within it is an emancipatory possibility which “dismantles the logics of success and failure with which we currently live”** (Halberstam, 2011, p. 2).

Realizing the caging nature of the boundaries of disciplinary success, it is possible to think that **failure might be perceived as something to celebrate and strive toward rather than something which should inspire shame.** Halberstam suggests that “under certain circumstances, failing, losing, forgetting, unmaking, undoing, unbecoming, not knowing may in fact offer more creative, more cooperative, and more surprising ways of being in the world” (Halberstam, 2011, pp. 2–3). In Halberstam’s view, **it is only when** the **norms** and metrics by which we aspire to success **become** both politicized and **problematized that freedom becomes possible.** It is not failing that we as scholars or as people need to learn to do—we fail all the time. As Halberstam notes, failure is endemic in life and work as “to live is to fail, to bungle, to disappoint, and ultimately die,” despite denial, resistance, and constructs of success (Halberstam, 2011, pp. 186–187). Instead of needing to learn to fail, we argue, we need to learn to embrace failure, particularly the collective failure of the enterprise of “disciplinary IR” to achieve or approximate “knowledge cumulation” generally or the aspirations of particular research programs specifically.

## Case

#### The hegemony advantage is ahistorical and racist – the warrants for why US unipolarity solves existential crisis is anything but WRONG – US interventions in the Middle East increased terrorist radicalization, only the US pulled out of Paris and didn’t follow through with emissions, and incentivzes countries like North Korea and Iran to proliferate because they cannot trust the US; the US’ potentiality to do good does not equate to what it actually does; I’ll quote the Brands evidence QUOTE “China’s power continues to grow, or if it is successful in dominating the Western Pacific, it will surely move on to grander endeavors” END QUOTE but has NO reason why it would besides that it has economic interests in Europe.

#### Western hegemony is founded on violence and perpetual war. Only scholarly intervention against the militarization of IR is sufficient to solve.

Persaud 19 (Randolph B. Persaud, American University; Narendran Kumarakulasingam, University of KwaZulu-Natal School of Built Environment and Development Studies, Development Studies, Durban; “Violence and ordering of the Third World: an introduction”, Third World Quarterly, 40:2, 199-206, 2019, DOI: 10.1080/01436597.2019.1578646)

Introduction

Violence has been a definitive and structurally constitutive factor in the contact between the rest and the West. This has been the case from the very early period of conquest, through the long centuries of colonisation and occupation, and very much so since independence, much of it plagued by imperialism and new constructions such as ‘humanitarian intervention’. This violence has taken multiple forms, ranging from the everyday rituals of extracting submission for labour exploitation, to outright, total war. These regimes of violence include but are not limited to everyday disciplinary punishment to maintain ‘order’ (especially in slavery and indentureship), massacres (Morant Bay, Jamaica – 1865, Wounded Knee – 1890, Amritsar – 1919, No Gun Ri – 1950, My Lai – 1968, Haditha, Iraq – 2005), saturation bombing of peoples and landscapes (Vietnam, Cambodia, Laos), genocide (Belgian Congo, German South West Africa) and near extermination (indigenous peoples of the Caribbean, the Americas and Australia).

Astoundingly, hegemonic discourses of international relations (IR) have been silent about this.1 This silence is neither passive nor innocent, but a form of active forgetting resulting from the discipline’s ‘fetishization of abstraction’.2 Moreover, Susan Buck-Morss’ contention that well-established disciplines tend to consolidate their borders by expelling ‘counterevidence’3 is an apt way of describing established IR’s relationship with the problems under consideration here. Violence in, and against, the Third World is generally treated either as purely internal and cultural, or as a dimension of a larger narrative of historical progress, this latter in the Hegelian sense of the dialectic of History. The task of ‘dissenters and insurgents’4 is not to merely prosecute what we see as the methodological negligence of hegemonic IR, but to embark on the necessary and unremitting work of finding, and showing, the violent and profoundly racialised interconnectedness of the West and its Others. Some of the critiques of hegemonic IR have also, and already, been applied to some branches of Marxian/ World Systems Theory,5 neo-Gramscian theory6 and Foucauldian security studies.7

Two important moves are necessary for challenging this silencing. The first calls for a major methodological shift in the production of knowledges, a shift from the positivist and nomothetic to the grounded and historical. Or, as Siba Grovogui puts it, we need to go beyond ‘racial clichés and oversimplified notions of culture’.8 The second challenge is for scholars to investigate, describe and situate violence in the making and reproduction of forms of state/societies and successive world orders. This special issue takes up this task by examining violence in and against the Third World in various forms/modalities and in different historical situations as well as their interconnectedness.

Colonial acts of physical destruction and the expropriation of resources during conquest constitute what Achille Mbembe calls ‘founding violence’.9 This founding violence was not simply an effect of racialised ideologies or of great power geopolitical contestations but, instead, worked to ‘create the space over which it was exercised’.10 This founding violence did not work in isolation but in turn enabled a host of regimes and infrastructures of rights for the coloniser and the denial of the same for the colonised. The second form of violence was constitutive in ‘authorizing authority’,11 that is to say, in embedding frameworks of legitimation needed to exercise the hierarchy of rights (and privileges) associated with what Anibal Quijano12 has called the coloniality of power. Thirdly, and as a continuation of the second form, Mbembe sees violence as techniques of reproduction, through the construction of cultural ‘imaginaries. This form of violence is banal ‘crystallized, through a gradual accumulation of numerous acts and rituals’.13

If the colony is a place constituted by manifold forms of violence, these forms of violence continue to operate in Third World societies after new flags were raised. Apropos the postcolony, Mbembe notes: ‘Through the harshness of the exactions required, the redeployment of constraints and the new forms of subjection imposed on the most deprived segments of the population, this form of government forces features belonging to the realm of warfare and features proper to the conduct of civil policy to co-exist in a single dynamic’.14 At the same time, the postcolony does not exist in isolation but is also externally shaped by the imperatives of powerful states underwritten by the coloniality of power.15 Thus, there is a need to trace the specific modalities of violence and the precise ways in which they continue to structure global capitalism and world order.16

Violence, we realise, is a contested and complicated concept that is most often used to connote the unauthorised or unsanctioned use of force.17 Most commonly, it has been linked to naturalised or cultural conditions of aberrance and pathology. The papers in this volume do not subscribe to a singular understanding of violence but seek to historicise it by focusing on varying historical and contemporary instances such as anti-Black violence in contemporary USA, US conquest of the Philippines, the Global War on Terror, contemporary aerial bombardment of Yemen, counter-insurgency in India, gang violence in Central America and the war on drugs in Latin America. By so doing, they allow us to see the workings of various political, economic and psychological forces and disciplines (legal, religious) in the making and governance of Third World states and societies. It is our hope that this will spur closer examination of the multiple and massive material and other forms of devastation unleashed by colonialism and post-independence interventions.

Organisation of the volume

Alexander Barder makes the argument that world orders in the nineteenth and twentieth centuries were constituted as a global racial imaginary. Instead of focusing on state to state interactions within the inter-state system, Barder shows how the world could be made ‘intelligible’ by examining the ways in which civilizational factors influenced, and often directly pushed, economic policies and geo-strategic calculations. Social Darwinism and the associated cultural fall-out from eugenic science were pervasive to the point of common sense. The global racial imaginary found articulate expression in writers such as Robert Knox, Charles Hamilton Smith, Joseph Arthur de Gobineau, Charles Henry Pearson, Franklin Giddings, Lester Ward, Benjamin Kidd and Madison Grant. Barder goes beneath the surface of inertstate relations and shows how racial ideology profoundly infected strategic thinking and, ultimately, war itself.

In order to examine the impact of religion on First World–Third World interactions, Christopher Rhodes makes a heretofore unidentified connection between two truisms concerning European colonialism: the differing reputations for violence and brutality earned by British, French and German colonial states in the nineteenth and twentieth centuries, and the notion that European Christian actors – The Catholic Church, various Protestant denominations and movements, and missionary societies – significantly influenced colonial policies. Rhodes’ work draws upon different strands of the political economy of religion literature. In doing so, he takes seriously the impact that differences in religious doctrine – in this case, whether Christian evangelisation is meant to convert nonbelievers as individuals or to transform non-Christian societies on a macro level – have on religious actors’ preferences and strategies. Second, Rhodes identifies how a specific set of political outcomes, the level, nature and variability of organised violence conducted by Western States against the Others, are determined by the interaction between religious organisations’ doctrinally-based preferences and the mechanisms by which these organisations influence states to carry out actions consistent with these religious goals. During instances of high influence by Christian actors over colonial states and prevailing ideas of individual-level evangelisation, a situation that was significantly more characteristic of British colonialism than its French or German counterparts, colonial violence is relatively constrained.

Drawn in by critical attempts grappling with the excesses of the Global War on Terror (GWOT), Narendran Kumarakulasingam wonders about the efficacy of theorising violence as horror. Closely attending to the idea of horrorism proposed by the acclaimed philosopher Adriana Cavarero, he underscores horror’s emergence as a response to the events of September 11, 2001. His critique attempts to re-centre colonial violence as the rightful starting point for a discussion on violence as horror, and to not only indicate why the erasure of colonial violence is present in both mainstream and critical discourse, but also to understand why this tendency is so pervasive. Doing so leads him to argue that critical productions of horror end up producing a homecoming for the West, rather than illuminating the traumatic impact of the GWOT. Given this, he wonders if what is needed is not so much increasingly sophisticated modes of critical theorisation but rather the courage on the part of the West to submit itself to honest self-examination in the colonial mirror.

The profound impact of race on international relations is also explored by Randolph B. Persaud. His analysis is focused on the entry of the US into the business of empire. Although he agrees that economic and geopolitical factors influenced American foreign policy towards Asia in the late nineteenth and early twentieth centuries, he insists that civilizational factors, and specifically a world-view based on race, were deeply embedded in many of the strategic thinkers. Accordingly, he examines the US conquest of the Philippines as an extension of Manifest Destiny, and the execution of notions of duty by America to teach the art of governance to the ‘uncivilised’. The period also coincides with a dramatic expansion of the US navy, and Persaud links this to the ‘civilizing mission’ by arguing that questions of American security (much less survival) were not the driving force.

By looking at the murders of two American teenagers – Trayvon Martin and Abdulrahman al-Awlaki – during the Obama presidency, Sankaran Krishna highlights the racism that structures both the foreign and domestic policies of the US. Racialised violence against brown and black ‘terrorists’ abroad complements a racist carceral state within the US that prejudges blacks and other minorities to be inherently criminal and unworthy of life. This structural racism has historically been rendered as marginal, not constitutive, of the US through discourses of American exceptionalism and a creedal narrative that sees it as moving towards ‘a more perfect union’ over time. Obama had to subscribe to both these discourses of exceptionalism and the American creed in order to emerge as a viable Presidential candidate. Yet his subscription to these narratives also ensured that his Presidency would only continue and deepen American racism at home and abroad rather than change it in any consequential manner.

Jeff Bachman draws on the literature on genocide in his analysis of massive aerial bombardments of Yemen by a Coalition of Saudi Arabia and Gulf states, and backed by the US and UK. The consequences of the war have been immense, not only in terms of the number of deaths, but also the sheer violent inhumanity that is visited on the Yemeni population on a daily basis. In many ways, the carnage in Yemen belies claims that the days of traditional warfare are over. While Bachman’s claims about genocide are grounded in numerous factors within the extant understanding of genocide, he argues that a more holistic approach is needed. Drawing on the Yemen Data Project, he found that two-thirds of 16,749 air attacks between 26 March 2015 and 25 March 2018 were on non-military targets, and that many of these were synchronised attacks against targets that are physical, economic and cultural. The concept of synchronised attacks as developed by R. Lemkin allows for ‘process-oriented conception of genocide’, an approach that facilitates a more comprehensive view of systematically organised violence.18

There is a sense in which sanctions are a more diplomatic and humane strategy of coercing a state to comply with the wishes of the ‘international community’ or alternatively, and more critically, as a dastardly set of punishments to elicit submission. Georgis and Gewarges take the second of these perspectives, much so because of the extraordinary suffering and Iraqi lives lost due to the sanctions sponsored, imposed and forcefully enforced by the US, UK and France (albeit under the rubric of the ‘international community’). The hundreds of thousands of lives lost – people killed – were in fact widely criticised by UN officials and many in the West, but it was also masked by the all-too-familiar media construction of a supposedly greater evil, in this case reduced to a single person, a sign, namely Saddam Hussein. Georgis and Gerwarges wrench the sanctions out from the rhetoric of ‘peace and democracy’, and locate it on the masked but intended target – the Iraqi people, Iraqi bodies. They show that sanctions are indeed violence by other means.

The coloniality of power, meaning the continuity of the colonial imaginaries (economic, political, cultural) is amplified by Swati Parashar’s article which focuses on the Maoist insurrectional activities in India and the responses by the state apparatus after independence. Parashar connects the architecture of the old colonial state with the current state practices. She demonstrates that the actions of the current Naxalite Maoists are consistent with a centuries-old tradition of peasant revolts. Going beyond the Maoists, Parashar links uprisings by the structurally marginalised Dalits and Adivasis to a tradition of resistance dating back to the specific policies (such as the Forest Act of 1878) put in place by the British Raj. And then, in ‘most cases the draconian colonial era laws and regulations against the tribal societies were further strengthened by the postcolonial Indian state, such as by excluding the bona fide forest communities from forest administration’.19

As most critical international relations scholars note, it is important to understand that the domestic and the global are deeply connected, and specifically that forms of state are partially configured through downward pressure from the inter-state system on the one hand, and pressure from below within the domestic political economy on the other. Moreover, the tight separation of economy, security and culture is only a rough guide of convenience. Horace Bartilow’s article falls squarely within this critical political economy tradition. He investigates the ways in which foreign aid and the war on drugs in Latin America are linked to the expansion of capital. State sovereignty, far from being compromised, is actually a conduit for complicated flows of Overseas Development Aid and transnational capital. Thus, foreign aid in the form of counter-narcotic assistance becomes a precursor to foreign direct investment, and for greater embedding of neoliberal forms of economic governance. Bartilow explains the ways in which this anti-narcotic development model has impinged on the rights of indigenous peoples, and the violent confrontations that have emerged on account of determined resistance. Of immense importance here is what Bartilow frames as the ‘privatization of terror’

Drawing insights from Marxist and feminist scholarship on work, María José Méndez approaches violence as labour – as violence work – to provide a fuller account of how violence not only destroys but produces livelihoods and social worlds. Méndez uses the notion of violence work to show how banks, state agents of various ranks, inhabitants of marginalised neighbourhoods, etc. derive income and wealth from the extortion economy that gang violence sustains in the Northern Triangle of Central America. Moreover, Méndez argues that the participation of transnational gangs in violent modes of extraction mirrors modes of state wealth accumulation that flourished during the US-sponsored counterinsurgency period in Central America. The complex political-economic entanglements of gang violence that Méndez’s research bears light on provide an important counterpoint to the dominant view of transnational gang violence as a threat to state and world order. In addition to reframing gang violence, Méndez problematises research agendas that foreground the deviations of non-state armed groups and that fail to situate non-state violence within broader landscapes of income and wealth production.

The failure to historicise massive physical and psychological devastation is not an accidental oversight but shaped by ideological and political conditions. Emily Mitamura’s concept of abridgement deployed in the context of representations of the Cambodian genocide, shows how the silencing of geopolitical forces and the unthinkability of revolution in Cambodia coalesce to make what happened intelligible as an auto genocide. Knowledge of America’s bombings, its war on Vietnam as well as support of the Khmer Rouge are expunged from the historical record thereby creating the conditions of possibility for the narrativisation of genocide as a form of primitive slaughter lacking any political objective. Consequently, Cambodia becomes yet another instance of violence, sans history and politics; a place where dark-skinned bodies brutalise each other.

W. Andy Knight employs a broadened concept of security that spans from outright violence, much of it related to the narco-economy, to vulnerabilities caused by hurricanes, earthquakes and the weakness of Caribbean economies. While it is true that some Caribbean countries have greater political and economic security compared to many other developing countries, it is still the case that the structural economic weakness must be reckoned with. Guyana, Haiti and Jamaica have long been vulnerable to the vicissitudes of commodity prices, a fact directly linked to their colonial past and to the invasive roles of International Financial Institutions (IFIs) – especially the World Bank and the International Monetary Fund (IMF). While Knight is concerned with many of the proximate effects of insecurities and vulnerabilities, he also adumbrates the more structural and cultural sources that have generated the same. In that vein, it is important to recognise that North American recreational (and addictive) drug-consumption is a leading cause of violence in the Caribbean. The drug-habits of the north, combined with the flow of guns from the US down into Latin America and the Caribbean, must be taken for what they are – threats to livelihoods and lives to the region.

Conclusion

These efforts to historicise violence show that it is no longer possible to think of violence in and against the Third World in terms of transition or interruption. Two years ago, Persaud organised a set of panels at the annual convention of the International Studies Association (ISA) inviting contributors to take seriously the materiality of devastation unleashed against the peoples of the Third World. This special issue, arising from those panels, directs us to be attentive to the linkages between visible and invisible forms of violence and the ways in which these connections form an ecology, rather than continuum, of violence. To trace this ecology is to reveal the bloody attempts at governing the international.

Mbembe’s call to get back to the more material aspects of historical capitalism and violence, or ‘war capitalism’ in the language of Beckert,20 comes at an especially propitious moment in the liberal discourses and historiographies of violence. Of recent, there has been a growing body of literature suggesting that violence, and especially deaths due to war, is on the decline.21 In this vein, Pinker has argued not only has violence declined but that ‘[t] hough imperial conquest and rule can … be brutal, they do reduce endemic violence among the conquered’.22 Our volume shows that such findings of ‘decline’ are only possible through a platform of abstractionism that restricts violence and silences its articulation with various forms of racialities. 23 In the current conjuncture of the global war of terror, the world is again divided between the ‘saved and the dammed’. This time it is neatly aligning with a new geo-civilizational cartography, perhaps best expressed in Mamdani’s acute observation that, in effect, what we have is a world divided between ‘good Muslims, bad Muslims’, where the good Muslims are on the side of the White West, and the rest are a clear and present danger.24

#### The question that frames space militarization advantage is ask yourself why China would be aggressive in space when QUOTE from the Kelley evidence “space provide a range of satellite services essential to the new space economy, such as in situ repairs and refueling of satellites and active removal of space debris” – why would china want to have military features in SPACE when everything they’ve done says otherwise and they’ve explicitly come out and passed no first placement resolutions per 1AC Bowman. But of course, don’t believe the Asians, because they’ll lie – if China came out tomorrow and denuclearized, no one would believe them because pre-scripted notions of aggression and racism undercode IR decisions. The warrants for Chinese aggression are space grappling hooks and satellite movement which has nothing intrinsically militaristic or aggressive and ground-level ASAT development does not prove aggression – the US does the SAME EXACT THING.

## Spark

#### Rigorous climate simulations prove that hydrophilic black carbon would cause to atmospheric precipitation – results in a rainout effect that quickly reverses nuclear cooling

Reisner et al. 18 (Jon Reisner – Climate and atmospheric scientist at the Los Alamos National Laboratory. Gennaro D’Angelo – Climate scientist at the Los Alamos National Laboratory, Research scientist at the SETI institute, Associate specialist at the University of California, Santa Cruz, NASA Postdoctoral Fellow at the NASA Ames Research Center, UKAFF Fellow at the University of Exeter. Eunmo Koo - Scientist at Applied Terrestrial, Energy, and Atmospheric Modeling (ATEAM) Team, in Computational Earth Science Group (EES-16) in Earth and Environmental Sciences Division and Co-Lead of Parallel Computing Summer Research Internship (PCSRI) program at the Los Alamos National Laboratory, former Staff research associate at UC Berkeley. Wesley Even - Computational scientist in the Computational Physics and Methods Group at Los Alamos National Laboratory. Matthew Hecht – Atmospheric scientist at the Los Alamos National Laboratory. Elizabeth Hunke - Lead developer for the Los Alamos Sea Ice Model (CICE) at the Los Alamos National Laboratory responsible for development and incorporation of new parameterizations, model testing and validation, computational performance, documentation, and consultation with external model users on all aspects of sea ice modeling, including interfacing with global climate and earth system models. Darin Comeau – Climate scientist at the Los Alamos National Laboratory. Randy Bos - Project leader at the Los Alamos National Laboratory, former Weapons Effects program manager at Tech-Source. James Cooley – Computational scientist at the Los Alamos National Laboratory specializing in weapons physics, emergency response, and computational physics. <MKIM> “Climate impact of a regional nuclear weapons exchange:An improved assessment based on detailed source calculations”. 3/16/18. DOA: 7/13/19. <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2017JD027331>)

\*BC = Black Carbon

The no-rubble simulation produces a significantly more intense fire, with more fire spread, and consequently a significantly stronger plume with larger amounts of BC reaching into the upper atmosphere than the simulation with rubble, illustrated in Figure 5. While the no-rubble simulation **represents the worst-case scenario** involving vigorous fire activity, **only a relatively small amount of carbon makes its way into the stratosphere** during the course of the simulation. But while small compared to the surface BC mass, stratospheric BC amounts from the current simulations are significantly higher than what would be expected from burning vegetation such as trees (Heilman et al., 2014), e.g., the higher energy density of the building fuels and the initial fluence from the weapon produce an intense response within HIGRAD with initial updrafts of order 100 m/s in the lower troposphere. Or, in comparison to a mass fire, wildfires will burn only a small amount of fuel in the corresponding time period (roughly 10 minutes) that a nuclear weapon fluence can effectively ignite a large area of fuel producing an impressive atmospheric response. Figure 6 shows vertical profiles of BC multiplied by 100 (number of cities involved in the exchange) from the two simulations. The total amount of BC produced is in line with previous estimates (about 3.69 Tg from no-rubble simulation); however, the majority of BC resides **below the stratosphere** (3.46 Tg below 12 km) and can be **readily impacted by scavenging from precipitation** either via pyro-cumulonimbus produced by the fire itself (not modeled) or other synoptic weather systems. While the impact on climate of these more realistic profiles will be explored in the next section, it should be mentioned that **these estimates are** still **at the high end**, considering the inherent simplifications in the combustion model that lead to **overestimating BC production**. 3.3 Climate Results Long-term climatic effects critically depend on the initial injection height of the soot, with larger quantities reaching the upper troposphere/lower stratosphere inducing a greater cooling impact because of longer residence times (Robock et al., 2007a). Absorption of solar radiation by the BC aerosol and its subsequent radiative cooling tends to heat the surrounding air, driving an initial upward diffusion of the soot plumes, an effect that depends on the initial aerosol concentrations. **Mixing and sedimentation** tend to **reduce this process**, and low altitude emissions are also significantly impacted by precipitation if aging of the BC aerosol occurs on sufficiently rapid timescales. But once at stratospheric altitudes, aerosol dilution via coagulation is hindered by low particulate concentrations (e.g., Robock et al., 2007a) and lofting to much higher altitudes is inhibited by gravitational settling in the low-density air (Stenke et al., 2013), resulting in more stable BC concentrations over long times. Of the initial BC mass released in the atmosphere, most of which is emitted below 9 km, **70% rains out within the first month** and 78%, or about 2.9 Tg, is removed within the first two months (Figure 7, solid line), with the remainder (about 0.8 Tg, dashed line) being transported above about 12 km (200 hPa) within the first week. This outcome differs from the findings of, e.g., Stenke et al. (2013, their high BC-load cases) and Mills et al. (2014), who found that most of the BC mass (between 60 and 70%) is lifted in the stratosphere within the first couple of weeks. This can also be seen in Figure 8 (red lines) and in Figure 9, which include results from our calculation with the initial BC distribution from Mills et al. (2014). In that case, only 30% of the initial BC mass rains out in the troposphere during the first two weeks after the exchange, with the remainder rising to the stratosphere. In the study of Mills et al. (2008) this percentage is somewhat smaller, about 20%, and smaller still in the experiments of Robock et al. (2007a) in which the soot is initially emitted in the upper troposphere or higher. In Figure 7, the e-folding timescale for the removal of tropospheric soot, here interpreted as the time required for an initial drop of a factor e, is about one week. This result compares favorably with the “LT” experiment of Robock et al. (2007a), considering 5 Tg of BC released in the lower troposphere, in which 50% of the aerosols are removed within two weeks. By contrast, the initial e-folding timescale for the removal of stratospheric soot in Figure 8 is about 4.2 years (blue solid line), compared to about 8.4 years for the calculation using Mills et al. (2014) initial BC emission (red solid line). The removal timescale from our forced ensemble simulations is close to those obtained by Mills et al. (2008) in their 1 Tg experiment, by Robock et al. (2007a) in their experiment “UT 1 Tg”, and © 2018 American Geophysical Union. All rights reserved. by Stenke et al. (2013) in their experiment “Exp1”, in all of which 1 Tg of soot was emitted in the atmosphere in the aftermath of the exchange. Notably, the e-folding timescale for the decline of the BC mass in Figure 8 (blue solid line) is also close to the value of about 4 years quoted by Pausata et al. (2016) for their long-term “intermediate” scenario. In that scenario, which is also based on 5 Tg of soot initially distributed as in Mills et al. (2014), the factor-of2 shorter residence time of the aerosols is caused by particle growth via coagulation of BC with organic carbon. Figure 9 shows the BC mass-mixing ratio, horizontally averaged over the globe, as a function of atmospheric pressure (height) and time. The BC distributions used in our simulations imply that the upward transport of particles is substantially less efficient compared to the case in which 5 Tg of BC is directly injected into the upper troposphere. The semiannual cycle of lofting and sinking of the aerosols is associated with atmospheric heating and cooling during the solstice in each hemisphere (Robock et al., 2007a). During the first year, the oscillation amplitude in our forced ensemble simulations is particularly large during the summer solstice, compared to that during the winter solstice (see bottom panel of Figure 9), because of the higher soot concentrations in the Northern Hemisphere, as can be seen in Figure 11 (see also left panel of Figure 12). Comparing the top and bottom panels of Figure 9, the BC reaches the highest altitudes during the first year in both cases, but the concentrations at 0.1 hPa in the top panel can be 200 times as large. Qualitatively, the difference can be understood in terms of the air temperature increase caused by BC radiation emission, which is several tens of kelvin degrees in the simulations of Robock et al. (2007a, see their Figure 4), Mills et al. (2008, see their Figure 5), Stenke et al. (2013, see high-load cases in their Figure 4), Mills et al. (2014, see their Figure 7), and Pausata et al. (2016, see one-day emission cases in their Figure 1), due to high BC concentrations, but it amounts to only about 10 K in our forced ensemble simulations, as illustrated in Figure 10. Results similar to those presented in Figure 10 were obtained from the experiment “Exp1” performed by Stenke et al. (2013, see their Figure 4). **In that scenario as well, somewhat less that 1 Tg of BC remained in the atmosphere after the initial rainout**. As mentioned before, the BC aerosol that remains in the atmosphere, lifted to stratospheric heights by the rising soot plumes, undergoes sedimentation over a timescale of several years (Figures 8 and 9). This mass represents the effective amount of BC that can force climatic changes over multi-year timescales. In the forced ensemble simulations, it is about 0.8 Tg after the initial rainout, whereas it is about 3.4 Tg in the simulation with an initial soot distribution as in Mills et al. (2014). Our more realistic source simulation involves the worstcase assumption of no-rubble (along with other assumptions) and hence serves as an upper bound for the impact on climate. As mentioned above and further discussed below, our scenario induces perturbations on the climate system similar to those found in previous studies in which the climatic response was driven by roughly 1 Tg of soot rising to stratospheric heights following the exchange. Figure 11 illustrates the vertically integrated mass-mixing ratio of BC over the globe, at various times after the exchange for the simulation using the initial BC distribution of Mills et al. (2014, upper panels) and as an average from the forced ensemble members (lower panels). All simulations predict enhanced concentrations at high latitudes during the first year after the exchange. In the cases shown in the top panels, however, these high concentrations persist for several years (see also Figure 1 of Mills et al., 2014), whereas the forced ensemble simulations indicate that the BC concentration starts to decline after the first year. In fact, in the simulation represented in the top panels, mass-mixing ratios larger than about 1 kg of BC © 2018 American Geophysical Union. All rights reserved. per Tg of air persist for well over 10 years after the exchange, whereas they only last for 3 years in our forced simulations (compare top and middle panels of Figure 9). After the first year, values drop below 3 kg BC/Tg air, whereas it takes about 8 years to reach these values in the simulation in the top panels (see also Robock et al., 2007a). Over crop-producing, midlatitude regions in the Northern Hemisphere, the BC loading is reduced from more than 0.8 kg BC/Tg air in the simulation in the top panels to 0.2-0.4 kg BC/Tg air in our forced simulations (see middle and right panels). The more rapid clearing of the atmosphere in the forced ensemble is also signaled by the soot optical depth in the visible radiation spectrum, which drops below values of 0.03 toward the second half of the first year at mid latitudes in the Northern Hemisphere, and everywhere on the globe after about 2.5 years (without never attaining this value in the Southern Hemisphere). In contrast, the soot optical depth in the calculation shown in the top panels of Figure 11 becomes smaller than 0.03 everywhere only after about 10 years. The two cases show a similar tendency, in that the BC optical depth is typically lower between latitudes 30º S-30º N than it is at other latitudes. This behavior is associated to the persistence of stratospheric soot toward high-latitudes and the Arctic/Antarctic regions, as illustrated by the zonally-averaged, column-integrated mass-mixing ratio of the BC in Figure 12 for both the forced ensemble simulations (left panel) and the simulation with an initial 5 Tg BC emission in the upper troposphere (right panel). The spread in the globally averaged (near) surface temperature of the atmosphere, from the control (left panel) and forced (right panel) ensembles, is displayed in Figure 13. For each month, the plots show the largest variations (i.e., maximum and minimum values), within each ensemble of values obtained for that month, relative to the mean value of that month. The plot also shows yearly-averaged data (thinner lines). The spread is comparable in the control and forced ensembles, with average values calculated over the 33-years run length of 0.4-0.5 K. This spread is also similar to the internal variability of the globally averaged surface temperature quoted for the NCAR Large Ensemble Community Project (Kay et al., 2015). These results imply that surface air temperature differences, between forced and control simulations, which lie within the spread may not be distinguished from effects due to internal variability of the two simulation ensembles. Figure 14 shows the difference in the globally averaged surface temperature of the atmosphere (top panel), net solar radiation flux at surface (middle panel), and precipitation rate (bottom panel), computed as the (forced minus control) difference in ensemble mean values. The sum of standard deviations from each ensemble is shaded. Differences are qualitatively significant over the first few years, when the anomalies lie near or outside the total standard deviation. Inside the shaded region, differences may not be distinguished from those arising from the internal variability of one or both ensembles. The surface solar flux (middle panel) is the quantity that appears most affected by the BC emission, with qualitatively significant differences persisting for about 5 years. The precipitation rate (bottom panel) is instead affected only at the very beginning of the simulations. The red lines in all panels show the results from the simulation applying the initial BC distribution of Mills et al. (2014), where the period of significant impact is much longer owing to the higher altitude of the initial soot distribution that results in longer residence times of the BC aerosol in the atmosphere. When yearly averages of the same quantities are performed over the IndiaPakistan region, the differences in ensemble mean values lie within the total standard deviations of the two ensembles. The results in Figure 14 can also be compared to the outcomes of other previous studies. In their experiment “UT 1 Tg”, Robock et al. (2007a) found that, when only 1 Tg of soot © 2018 American Geophysical Union. All rights reserved. remains in the atmosphere after the initial rainout, temperature and precipitation anomalies are about 20% of those obtained from their standard 5 Tg BC emission case. Therefore, the largest differences they observed, during the first few years after the exchange, were about - 0.3 K and -0.06 mm/day, respectively, comparable to the anomalies in the top and bottom panels of Figure 14. Their standard 5 Tg emission case resulted in a solar radiation flux anomaly at surface of -12 W/m2 after the second year (see their Figure 3), between 5 and 6 time as large as the corresponding anomalies from our ensembles shown in the middle panel. In their experiment “Exp1”, Stenke et al. (2013) reported global mean surface temperature anomalies not exceeding about 0.3 K in magnitude and precipitation anomalies hovering around -0.07 mm/day during the first few years, again consistent with the results of Figure 14. In a recent study, Pausata et al. (2016) considered the effects of an admixture of BC and organic carbon aerosols, both of which would be emitted in the atmosphere in the aftermath of a nuclear exchange. In particular, they concentrated on the effects of coagulation of these aerosol species and examined their climatic impacts. The initial BC distribution was as in Mills et al. (2014), although the soot burden was released in the atmosphere over time periods of various lengths. Most relevant to our and other previous work are their one-day emission scenarios. They found that, during the first year, the largest values of the atmospheric surface temperature anomalies ranged between about -0.5 and -1.3 K, those of the sea surface temperature anomalies ranged between -0.2 and -0.55 K, and those of the precipitation anomalies varied between -0.15 and -0.2 mm/day. All these ranges are compatible with our results shown in Figure 14 as red lines and with those of Mills et al. (2014, see their Figures 3 and 6). As already mentioned in Section 2.3, the net solar flux anomalies at surface are also consistent. This overall agreement suggests that the **inclusion of organic carbon aerosols, and** ensuing **coagulation** with BC, **should not dramatically alter the climatic effects** resulting from our forced ensemble simulations. Moreover, aerosol growth would likely **shorten the residence time of the BC particulate in the atmosphere** (Pausata et al., 2016), possibly **reducing the duration of these effects.**

#### Islands are an empirically successful refuge for low-tech catastrophes like nuclear war, but can’t check against future technology like AI or Nano weapons.

Turchin and Green 18 (Alexey Turchin – Scientist for the Foundation Science for Life Extension in Moscow, Russia, Founder of Digital Immortality Now, author of several books and articles on the topics of existential risks and life extension. Brian Patrick Green – Director of technology ethics at the Markkula Center for Applied Ethics, teaches AI ethics in the Graduate School of Engineering at Santa Clara University. <MKIM> “Islands as refuges for surviving global catastrophes”. September 2018. DOA: 7/20/19. https://www.emerald.com/insight/content/doi/10.1108/FS-04-2018-0031/full/html?fullSc=1&mbSc=1&fullSc=1)

In recent decades, researchers have identified many global risks which could result in the collapse of civilization and/or human extinction. These risks may be divided in three classes: natural, like asteroid risks (Gritzner et al., 2006); low-tech, connected with currently existing technologies, like the risk of nuclear war (Barrett et al., 2013); and futuristic hightech, connected with new expected super technologies, like nanotechnology (Freitas, 2000) and artificial intelligence (AI) (Bostrom, 2014). **Super technological risks are the most dangerous**, as they are expected to be the most powerful and least controllable (Bostrom, 2002). The best way to fight all the types of risks is to prevent (Bostrom, 2013) or mitigate them, **but another option, or plan B, is to adapt to them to survive them**. There are several ideas for how such risks could be survived, including a Mars colony (Musk, 2017), a Moon colony (Shapiro, 2009; Turchin and Denkenberger, 2018), underground bunkers (Jebari, 2014), space bunkers (Torres, 2016) and retrofitted nuclear submarines [which are one of the most cost-effective solutions (Turchin and Green, 2017)]. Planning for surviving these risks, whether by mitigation or adaptation, should be a paramount ethical duty of humankind (Jonas, 1984; Green, 2014, 2016). Several authors (Jebari, 2014; Beckstead, 2015) have analyzed the problem of global risk survival and concluded that most catastrophes are either too small or too large for bunkers or other refuges to be a useful option. But **even a 1 per cent increase in the chance of survival is worth considering,** especially because there are not yet useful working ideas of the magnitude of some larger risks, such as unsafe AI (Bostrom, 2014). Additionally, at the workshop on existential risk to humanity (Gothenburg Chair Programme for Advanced Studies, 2017), Karim Jebari mentioned that such refuges will also be important for cultural transfer and as consolidation points, even if there might be many survivors in other places. Baum has suggested that the gold standard for global risks refuges should be “surface independence” (Baum et al., 2015). Islands only partly satisfy this criterion: they are not connected to the mainland, thus making them discontinuous with the land surface of the Earth, but they are still accessible by air and sea. However, if they were very remote and equipped with underground and/or underwater shelters, they could provide a higher level of protection than surface-independent bunkers on the mainland for certain types of catastrophes. By definition, global risks affect much or all the surface of the Earth, or at least all populated areas. This creates a chance for survival, as **there is a probability that some parts of the Earth will be affected to a lesser extent**. For example, a gamma ray burst (Cirkovi c and Vukotic, 2016 ) that happened away from the equatorial plane would have less of an effect on one of the polar regions. Likewise, extreme global warming (Hanna and Tait, 2015) would be more survivable on mountains at high latitudes, while atmospheric pollution (Mount, 1970) by some toxin or contamination could be less of an issue in the Southern hemisphere because of geography and atmospheric circulation patterns. Yet, most catastrophes which could be survived on temporary space refuges on the Moon or Mars could also be survived on Earth, if there were adequate shelters or refuges, with some notable exceptions. Such exceptions include very large asteroid impacts, a severe and long-term case of multiple pandemics (with many lethal diseases active in the environment) or massive and irreversible global warming. For some preliminary calculations of the usefulness of shelters from global catastrophes see Turchin and Green (2017). Islands have proven to be survival refuges for some species which are extinct in other places, like mammoths, which survived on Wrangel island up to 2000 BC (Vartanyan et al., 1995). **Islands have proven to be effective refuges for humans as well**. For example, the islands of New Caledonia and American Samoa did not have a single death from the 1918 Spanish flu because of their **effective quarantine measures** (Bell et al., 2006). While islands have been extensively discussed as refuges for animals and plants, the topic of using islands as a means for humans to survive global catastrophic risks has not yet been formally explored. This article seeks to remedy this deficiency. Section 2 looks at the requirements for survival on islands; Section 3 looks at the possible role of islands as consolidation centers after a social collapse; Section 4 reviews several islands as possible refuges; Section 5 puts island refuges in the context of other possible types of refuges; Section 6 discusses how to maximize protection by combining islands refuge with subterranean and/or submarine refuges; and Section 7 discusses other places on Earth, similar to islands, where survival might be possible. Islands offer excellent protection against natural and/or **low-tech catastrophes** which are neither too large nor too small. Remoteness, isolation and the diverse conditions found on different islands could be helpful features to aid survival in the face of different types of catastrophes. Islands could provide protection against a human-to-human transmitted biological pandemic; as mentioned in the Introduction, some islands were able to escape the 1918 flu pandemic by implementing effective quarantine measures. Islands may help to survive a **long-term collapse in food production caused by nuclear winter**, agricultural pests and other catastrophes. Islands often have **non-traditional food sources**, such as birds and sea flora and fauna, which may provide independent subsistence for an indefinitely long period. On remote islands, **the extent of radioactive and chemical contamination from catastrophes would likely be smaller**. This is especially true of islands located in the Southern hemisphere close to the Antarctic, as **winds around the pole maintain some isolation from the rest of the atmosphere**. **Constant rains and winds may accelerate the decontamination of some islands** (like Kerguelen). In addition, **sea animals may be relatively less contaminated food sources**. Islands away from the equator could provide protection against some of the direct effects of a gamma ray burst (muons) (Cirkovi c and Vukoti c, 2016 ) if they were in the constant shadow of the Earth, below the horizon of the gamma ray source. In the case of global war or technological collapse, **many islands could become unreachable**. This would protect them against human-borne diseases, pirates, looters and certain autonomous weapon systems such as land-based or short-range drones. Additionally, remote and sparsely populated islands may not be interesting military targets. In case of war, it may be more expensive to reach them than to ignore them, though this depends on the nature of the war. For example, the Germans used remote unpopulated islands in the Arctic (Grossman, 2016) and in the Southern Ocean (Rogge and Frank, 1956) as secret bases during Second World War, and the allies later sent cruisers to Kerguelen to check if Germans were hiding there. It might be too expensive for a hostile AI to seek out and kill small groups of people in remote places, if they do not pose an immediate risk to the AI’s interests. However, over time, the AI’s risk calculation might change.

#### AI is growing rapidly - rogue AI, enemy hacking, autonomous weapons, and medical misuse make extinction highly likey

Bernard Marr, 11-19-2018, "Is Artificial Intelligence Dangerous? 6 AI Risks Everyone Should Know About," Forbes, https://www.forbes.com/sites/bernardmarr/2018/11/19/is-artificial-intelligence-dangerous-6-ai-risks-everyone-should-know-about/#2c94049b2404

Some notable individuals such as legendary physicist Stephen Hawking and Tesla and SpaceX leader and innovator Elon Musk suggest AI could potentially be very dangerous; Musk at one point was comparing AI to the dangers of the dictator of North Korea. Microsoft co-founder Bill Gates also believes there’s reason to be cautious, but that the good can outweigh the bad if managed properly. Since recent developments have made super-intelligent machines possible much sooner than initially thought, the time is now to determine what dangers artificial intelligence poses. What is applied and general artificial intelligence? At the core, artificial intelligence is about building machines that can think and act intelligently and includes tools such as Google's search algorithms or the machines that make self-driving cars possible. While most current applications are used to impact humankind positively, any powerful tool can be wielded for harmful purposes when it falls into the wrong hands. Today, we have achieved applied AI—AI that performs a narrow task such as facial recognition, natural language processing or internet searches. Ultimately, experts in the field are working towards artificial general intelligence, where systems can handle any task that intelligent humans could perform, and most likely beat us at each of them. In a comment, Elon Musk wrote: "The pace of progress in artificial intelligence (I'm not referring to narrow AI) is incredibly fast. Unless you have direct exposure to groups like Deepmind, you have no idea how fast—it is growing at a pace close to exponential. The risk of something seriously dangerous happening is in the five-year timeframe. 10 years at most.” There are indeed plenty of AI applications that make our everyday lives more convenient and efficient. It's the AI applications that play a critical role in ensuring safety that Musk, Hawking, and others were concerned about when they proclaimed their hesitation about the technology. For example, if AI is responsible for ensuring the operation of our power grid and our worst fears are realized, and the system goes rogue or gets hacked by an enemy, it could result in massive harm. While we haven’t achieved super-intelligent machines yet, the legal, political, societal, financial and regulatory issues are so complex and wide-reaching that it’s necessary to take a look at them now so we are prepared to safely operate among them when the time comes. Outside of preparing for a future with super-intelligent machines now, artificial intelligence can already pose dangers in its current form. Let’s take a look at some key AI-related risks. Autonomous weapons AI programmed to do something dangerous, as is the case with autonomous weapons programmed to kill, is one way AI can pose risks. It might even be plausible to expect that the nuclear arms race will be replaced with a global autonomous weapons race. Russia’s president Vladimir Putin said: “Artificial intelligence is the future, not only for Russia, but for all humankind. It comes with enormous opportunities, but also threats that are difficult to predict. Whoever becomes the leader in this sphere will become the ruler of the world.” Aside from being concerned that autonomous weapons might gain a “mind of their own,” a more imminent concern is the dangers autonomous weapons might have with an individual or government that doesn’t value human life. Once deployed, they will likely be difficult to dismantle or combat. Social manipulation Social media through its autonomous-powered algorithms is very effective at target marketing. They know who we are, what we like and are incredibly good at surmising what we think. Investigations are still underway to determine the fault of Cambridge Analytica and others associated with the firm who used the data from 50 million Facebook users to try to sway the outcome of the 2016 U.S. presidential election and the U.K.'s Brexit referendum, but if the accusations are correct, it illustrates AI's power for social manipulation. By spreading propaganda to individuals identified through algorithms and personal data, AI can target them and spread whatever information they like, in whatever format they will find most convincing—fact or fiction. Invasion of privacy and social grading It is now possible to track and analyze an individual's every move online as well as when they are going about their daily business. Cameras are nearly everywhere, and facial recognition algorithms know who you are. In fact, this is the type of information that is going to power China's social credit system that is expected to give every one of its 1.4 billion citizens a personal score based on how they behave—things such as do they jaywalk, do they smoke in non-smoking areas and how much time they spend playing video games. When Big Brother is watching you and then making decisions based on that intel, it’s not only an invasion of privacy it can quickly turn to social oppression. Misalignment between our goals and the machine’s Part of what humans value in AI-powered machines is their efficiency and effectiveness. But, if we aren’t clear with the goals we set for AI machines, it could be dangerous if a machine isn’t armed with the same goals we have. For example, a command to “Get me to the airport as quickly as possible” might have dire consequences. Without specifying that the rules of the road must be respected because we value human life, a machine could quite effectively accomplish its goal of getting you to the airport as quickly as possible and do literally what you asked, but leave behind a trail of accidents. Discrimination Since machines can collect, track and analyze so much about you, it’s very possible for those machines to use that information against you. It’s not hard to imagine an insurance company telling you you’re not insurable based on the number of times you were caught on camera talking on your phone. An employer might withhold a job offer based on your “social credit score.” Any powerful technology can be misused. Today, artificial intelligence is used for many good causes including to help us make better medical diagnoses, find new ways to cure cancer and make our cars safer. Unfortunately, as our AI capabilities expand we will also see it being used for dangerous or malicious purposes. Since AI technology is advancing so rapidly, it is vital for us to start to debate the best ways for AI to develop positively while minimizing its destructive potential.

#### Extinction is inevitable from future technology — nanotech, our simulation gets shut down, AI, biotech, particle accelerators, and black swans

Bruce Sterling 18, 6-1-20**18**, "When Nick Bostrom says “Bang”," WIRED, <https://www.wired.com/beyond-the-beyond/2018/06/nick-bostrom-says-bang/>

\*We do not endorse the author’s language\*

4.1 Deliberate misuse of nanotechnology In a mature form, molecular nanotechnology will enable the construction of bacterium-scale self-replicating mechanical robots that can feed on dirt or other organic matter [22-25]. Such replicators could eat up the biosphere or destroy it by other means such as by poisoning it, burning it, or blocking out sunlight. A person of malicious intent in possession of this technology might cause the extinction of intelligent life on Earth by releasing such nanobots into the environment.[9] The technology to produce a destructive nanobot seems considerably easier to develop than the technology to create an effective defense against such an attack (a global nanotech immune system, an “active shield” [23]). It is therefore likely that there will be a period of vulnerability during which this technology must be prevented from coming into the wrong hands. Yet the technology could prove hard to regulate, since it doesn’t require rare radioactive isotopes or large, easily identifiable manufacturing plants, as does production of nuclear weapons [23]. Even if effective defenses against a limited nanotech attack are developed before dangerous replicators are designed and acquired by suicidal regimes or terrorists, there will still be the danger of an arms race between states possessing nanotechnology. It has been argued [26] that molecular manufacturing would lead to both arms race instability and crisis instability, to a higher degree than was the case with nuclear weapons. Arms race instability means that there would be dominant incentives for each competitor to escalate its armaments, leading to a runaway arms race. Crisis instability means that there would be dominant incentives for striking first. Two roughly balanced rivals acquiring nanotechnology would, on this view, begin a massive buildup of armaments and weapons development programs that would continue until a crisis occurs and war breaks out, potentially causing global terminal destruction. That the arms race could have been predicted is no guarantee that an international security system will be created ahead of time to prevent this disaster from happening. The nuclear arms race between the US and the USSR was predicted but occurred nevertheless. 4.2 Nuclear holocaust[winter] The US and Russia still have huge stockpiles of nuclear weapons. But would an all-out nuclear war really exterminate humankind? Note that: (i) For there to be an existential risk it suffices that we can’t be sure that it wouldn’t. (ii) The climatic effects of a large nuclear war are not well known (there is the possibility of a nuclear winter). (iii) Future arms races between other nations cannot be ruled out and these could lead to even greater arsenals than those present at the height of the Cold War. The world’s supply of plutonium has been increasing steadily to about two thousand tons, some ten times as much as remains tied up in warheads ([9], p. 26). (iv) Even if some humans survive the short-term effects of a nuclear war, it could lead to the collapse of civilization. A human race living under stone-age conditions may or may not be more resilient to extinction than other animal species. 4.3 We’re living in a simulation and it gets shut down A case can be made that the hypothesis that we are living in a computer simulation should be given a significant probability [27]. The basic idea behind this so-called “Simulation argument” is that vast amounts of computing power may become available in the future (see e.g. [28,29]), and that it could be used, among other things, to run large numbers of fine-grained simulations of past human civilizations. Under some not-too-implausible assumptions, the result can be that almost all minds like ours are simulated minds, and that we should therefore assign a significant probability to being such computer-emulated minds rather than the (subjectively indistinguishable) minds of originally evolved creatures. And if we are, we suffer the risk that the simulation may be shut down at any time. A decision to terminate our simulation may be prompted by our actions or by exogenous factors. While to some it may seem frivolous to list such a radical or “philosophical” hypothesis next the concrete threat of nuclear holocaust, we must seek to base these evaluations on reasons rather than untutored intuition. Until a refutation appears of the argument presented in [27], it would intellectually dishonest to neglect to mention simulation-shutdown as a potential extinction mode. 4.4 Badly programmed superintelligence When we create the first superintelligent entity [28-34], we might make a mistake and give it goals that lead it to annihilate humankind, assuming its enormous intellectual advantage gives it the power to do so. For example, we could mistakenly elevate a subgoal to the status of a supergoal. We tell it to solve a mathematical problem, and it complies by turning all the matter in the solar system into a giant calculating device, in the process killing the person who asked the question. (For further analysis of this, see [35].) 4.5 Genetically engineered biological agent With the fabulous advances in genetic technology currently taking place, it may become possible for a tyrant, terrorist, or ~~lunatic~~ to create a doomsday virus, an organism that combines long latency with high virulence and mortality [36]. Dangerous viruses can even be spawned unintentionally, as Australian researchers recently demonstrated when they created a modified mousepox virus with 100% mortality while trying to design a contraceptive virus for mice for use in pest control [37]. While this particular virus doesn’t affect humans, it is suspected that an analogous alteration would increase the mortality of the human smallpox virus. What underscores the future hazard here is that the research was quickly published in the open scientific literature [38]. It is hard to see how information generated in open biotech research programs could be contained no matter how grave the potential danger that it poses; and the same holds for research in nanotechnology. Genetic medicine will also lead to better cures and vaccines, but there is no guarantee that defense will always keep pace with offense. (Even the accidentally created mousepox virus had a 50% mortality rate on vaccinated mice.) Eventually, worry about biological weapons may be put to rest through the development of nanomedicine, but while nanotechnology has enormous long-term potential for medicine [39] it carries its own hazards. 4.6 Accidental misuse of nanotechnology (“gray goo”) The possibility of accidents can never be completely ruled out. However, there are many ways of making sure, through responsible engineering practices, that species-destroying accidents do not occur. One could avoid using self-replication; one could make nanobots dependent on some rare feedstock chemical that doesn’t exist in the wild; one could confine them to sealed environments; one could design them in such a way that any mutation was overwhelmingly likely to cause a nanobot to completely cease to function [40]. Accidental misuse is therefore a smaller concern than malicious misuse [23,25,41]. However, the distinction between the accidental and the deliberate can become blurred. While “in principle” it seems possible to make terminal nanotechnological accidents extremely improbable, the actual circumstances may not permit this ideal level of security to be realized. Compare nanotechnology with nuclear technology. From an engineering perspective, it is of course perfectly possible to use nuclear technology only for peaceful purposes such as nuclear reactors, which have a zero chance of destroying the whole planet. Yet in practice it may be very hard to avoid nuclear technology also being used to build nuclear weapons, leading to an arms race. With large nuclear arsenals on hair-trigger alert, there is inevitably a significant risk of accidental war. The same can happen with nanotechnology: it may be pressed into serving military objectives in a way that carries unavoidable risks of serious accidents. In some situations it can even be strategically advantageous to deliberately make one’s technology or control systems risky, for example in order to make a “threat that leaves something to chance” [42]. 4.7 Something unforeseen We need a catch-all category. It would be foolish to be confident that we have already imagined and anticipated all significant risks. Future technological or scientific developments may very well reveal novel ways of destroying the world. Some foreseen hazards (hence not members of the current category) which have been excluded from the list of bangs on grounds that they seem too unlikely to cause a global terminal disaster are: solar flares, supernovae, black hole explosions or mergers, gamma-ray bursts, galactic center outbursts, supervolcanos, loss of biodiversity, buildup of air pollution, gradual loss of human fertility, and various religious doomsday scenarios. The hypothesis that we will one day become “illuminated” and commit collective suicide or stop reproducing, as supporters of VHEMT (The Voluntary Human Extinction Movement) hope [43], appears unlikely. If it really were better not to exist (as Silenus told king Midas in the Greek myth, and as Arthur Schopenhauer argued [44] although for reasons specific to his philosophical system he didn’t advocate suicide), then we should not count this scenario as an existential disaster. The assumption that it is not worse to be alive should be regarded as an implicit assumption in the definition of Bangs. Erroneous collective suicide is an existential risk albeit one whose probability seems extremely slight. (For more on the ethics of human extinction, see chapter 4 of [9].) 4.8 Physics disasters The Manhattan Project bomb-builders’ concern about an A-bomb-derived atmospheric conflagration has contemporary analogues. There have been speculations that future high-energy particle accelerator experiments may cause a breakdown of a metastable vacuum state that our part of the cosmos might be in, converting it into a “true” vacuum of lower energy density [45]. This would result in an expanding bubble of total destruction that would sweep through the galaxy and beyond at the speed of light, tearing all matter apart as it proceeds. Another conceivability is that accelerator experiments might produce negatively charged stable “strangelets” (a hypothetical form of nuclear matter) or create a mini black hole that would sink to the center of the Earth and start accreting the rest of the planet [46]. These outcomes seem to be impossible given our best current physical theories. But the reason we do the experiments is precisely that we don’t really know what will happen. A more reassuring argument is that the energy densities attained in present day accelerators are far lower than those that occur naturally in collisions between cosmic rays [46,47]. It’s possible, however, that factors other than energy density are relevant for these hypothetical processes, and that those factors will be brought together in novel ways in future experiments. The main reason for concern in the “physics disasters” category is the meta-level observation that discoveries of all sorts of weird physical phenomena are made all the time, so even if right now all the particular physics disasters we have conceived of were absurdly improbable or impossible, there could be other more realistic failure-modes waiting to be uncovered. The ones listed here are merely illustrations of the general case.

#### Nuke war won’t cause extinction— BUT, it’ll spur political will for meaningful disarmament.

Daniel Deudney 18. Associate Professor of Political Science at Johns Hopkins University. 03/15/2018. “The Great Debate.” The Oxford Handbook of International Security. www.oxfordhandbooks.com, doi:10.1093/oxfordhb/9780198777854.013.22. //reem

Although nuclear war is the oldest of these technogenic threats to civilization and human survival, and although important steps to restraint, particularly at the end of the Cold War, have been achieved, the nuclear world is increasingly changing in major ways, and in almost entirely dangerous directions. The third “bombs away” phase of the great debate on the nuclear-political question is more consequentially divided than in the first two phases. Even more ominously, most of the momentum lies with the forces that are pulling states toward nuclear-use, and with the radical actors bent on inflicting catastrophic damage on the leading states in the international system, particularly the United States. In contrast, the arms control project, although intellectually vibrant, is largely in retreat on the world political stage. The arms control settlement of the Cold War is unraveling, and the world public is more divided and distracted than ever. With the recent election of President Donald Trump, the United States, which has played such a dominant role in nuclear politics since its scientists invented these fiendish engines, now has an impulsive and uninformed leader, boding ill for nuclear restraint and effective crisis management. Given current trends, it is prudent to assume that sooner or later, and probably sooner, nuclear weapons will again be the used in war. But this bad news may contain a “silver lining” of good news. Unlike a general nuclear war that might have occurred during the Cold War, such a nuclear event now would probably not mark the end of civilization (or of humanity), due to the great reductions in nuclear forces achieved at the end of the Cold War. Furthermore, politics on “the day after” could have immense potential for positive change. The survivors would not be likely to envy the dead, but would surely have a greatly renewed resolution for “never again. ” Such an event, completely unpredictable in its particulars, would unambiguously put the nuclear-political question back at the top of the world political agenda. It would unmistakeably remind leading states of their vulnerability It might also trigger more robust efforts to achieve the global regulation of nuclear capability. Like the bombings of Hiroshima and Nagasaki that did so much to catalyze the elevated concern for nuclear security in the early Cold War, and like the experience “at the brink” in the Cuban Missile Crisis of 1962, the now bubbling nuclear caldron holds the possibility of inaugurating a major period of institutional innovation and adjustment toward a fully “bombs away” future.

#### Industrial civilization wouldn’t recover.

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Imagine that the world as we know it ends tomorrow. There’s a global catastrophe: a pandemic virus, an asteroid strike, or perhaps a nuclear holocaust. The vast majority of the human race perishes. Our civilisation collapses. The post-apocalyptic survivors find themselves in a devastated world of decaying, deserted cities and roving gangs of bandits looting and taking by force. Bad as things sound, that’s not the end for humanity. We bounce back. Sooner or later, peace and order emerge again, just as they have time and again through history. Stable communities take shape. They begin the agonising process of rebuilding their technological base from scratch. But here’s the question: how far could such a society rebuild? Is there any chance, for instance, that a post-apocalyptic society could reboot a technological civilisation? Let’s make the basis of this thought experiment a little more specific. Today, we have already consumed the most easily drainable crude oil and, particularly in Britain, much of the shallowest, most readily mined deposits of coal. Fossil fuels are central to the organisation of modern industrial society, just as they were central to its development. Those, by the way, are distinct roles: even if we could somehow do without fossil fuels now (which we can’t, quite), it’s a different question whether we could have got to where we are without ever having had them. So, would a society starting over on a planet stripped of its fossil fuel deposits have the chance to progress through its own Industrial Revolution? Or to phrase it another way, what might have happened if, for whatever reason, the Earth had never acquired its extensive underground deposits of coal and oil in the first place? Would our progress necessarily have halted in the 18th century, in a pre-industrial state? It’s easy to underestimate our current dependence on fossil fuels. In everyday life, their most visible use is the petrol or diesel pumped into the vehicles that fill our roads, and the coal and natural gas which fire the power stations that electrify our modern lives. But we also rely on a range of different industrial materials, and in most cases, high temperatures are required to transform the stuff we dig out of the ground or harvest from the landscape into something useful. You can’t smelt metal, make glass, roast the ingredients of concrete, or synthesise artificial fertiliser without a lot of heat. It is fossil fuels – coal, gas and oil – that provide most of this thermal energy. In fact, the problem is even worse than that. Many of the chemicals required in bulk to run the modern world, from pesticides to plastics, derive from the diverse organic compounds in crude oil. Given the dwindling reserves of crude oil left in the world, it could be argued that the most wasteful use for this limited resource is to simply burn it. We should be carefully preserving what’s left for the vital repertoire of valuable organic compounds it offers. But my topic here is not what we should do now. Presumably everybody knows that we must transition to a low-carbon economy one way or another. No, I want to answer a question whose interest is (let’s hope) more theoretical. Is the emergence of a technologically advanced civilisation necessarily contingent on the easy availability of ancient energy? Is it possible to build an industrialised civilisation without fossil fuels? And the answer to that question is: maybe – but it would be extremely difficult. Let’s see how. We’ll start with a natural thought. Many of our alternative energy technologies are already highly developed. Solar panels, for example, represent a good option today, and are appearing more and more on the roofs of houses and businesses. It’s tempting to think that a rebooted society could simply pick up where we leave off. Why couldn’t our civilisation 2.0 just start with renewables? Well, it could, in a very limited way. If you find yourself among the survivors in a post-apocalyptic world, you could scavenge enough working solar panels to keep your lifestyle electrified for a good long while. Without moving parts, photovoltaic cells require little maintenance and are remarkably resilient. They do deteriorate over time, though, from moisture penetrating the casing and from sunlight itself degrading the high-purity silicon layers. The electricity generated by a solar panel declines by about 1 per cent every year so, after a few generations, all our hand-me-down solar panels will have degraded to the point of uselessness. Then what? New ones would be fiendishly difficult to create from scratch. Solar panels are made from thin slices of extremely pure silicon, and although the raw material is common sand, it must be processed and refined using complex and precise techniques – the same technological capabilities, more or less, that we need for modern semiconductor electronics components. These techniques took a long time to develop, and would presumably take a long time to recover. So photovoltaic solar power would not be within the capability of a society early in the industrialisation process. Perhaps, though, we were on the right track by starting with electrical power. Most of our renewable-energy technologies produce electricity. In our own historical development, it so happens that the core phenomena of electricity were discovered in the first half of the 1800s, well after the early development of steam engines. Heavy industry was already committed to combustion-based machinery, and electricity has largely assumed a subsidiary role in the organisation of our economies ever since. But could that sequence have run the other way? Is there some developmental requirement that thermal energy must come first? On the face of it, it’s not beyond the bounds of possibility that a progressing society could construct electrical generators and couple them to simple windmills and waterwheels, later progressing to wind turbines and hydroelectric dams. In a world without fossil fuels, one might envisage an electrified civilisation that largely bypasses combustion engines, building its transport infrastructure around electric trains and trams for long-distance and urban transport. I say ‘largely’. We couldn’t get round it all together. When it comes to generating the white heat demanded by modern industry, there are few good options but to burn stuff While the electric motor could perhaps replace the coal-burning steam engine for mechanical applications, society, as we’ve already seen, also relies upon thermal energy to drive the essential chemical and physical transformations it needs. How could an industrialising society produce crucial building materials such as iron and steel, brick, mortar, cement and glass without resorting to deposits of coal? You can of course create heat from electricity. We already use electric ovens and kilns. Modern arc furnaces are used for producing cast iron or recycling steel. The problem isn’t so much that electricity can’t be used to heat things, but that for meaningful industrial activity you’ve got to generate prodigious amounts of it, which is challenging using only renewable energy sources such as wind and water. An alternative is to generate high temperatures using solar power directly. Rather than relying on photovoltaic panels, concentrated solar thermal farms use giant mirrors to focus the sun’s rays onto a small spot. The heat concentrated in this way can be exploited to drive certain chemical or industrial processes, or else to raise steam and drive a generator. Even so, it is difficult (for example) to produce the very high temperatures inside an iron-smelting blast furnace using such a system. What’s more, it goes without saying that the effectiveness of concentrated solar power depends strongly on the local climate. No, when it comes to generating the white heat demanded by modern industry, there are few good options but to burn stuff. But that doesn’t mean the stuff we burn necessarily has to be fossil fuels. Let’s take a quick detour into the pre-history of modern industry. Long before the adoption of coal, charcoal was widely used for smelting metals. In many respects it is superior: charcoal burns hotter than coal and contains far fewer impurities. In fact, coal’s impurities were a major delaying factor on the Industrial Revolution. Released during combustion, they can taint the product being heated. During smelting, sulphur contaminants can soak into the molten iron, making the metal brittle and unsafe to use. It took a long time to work out how to treat coal to make it useful for many industrial applications. And, in the meantime, charcoal worked perfectly well. And then, well, we stopped using it. In retrospect, that’s a pity. When it comes from a sustainable source, charcoal burning is essentially carbon-neutral, because it doesn’t release any new carbon into the atmosphere – not that this would have been a consideration for the early industrialists. But charcoal-based industry didn’t die out altogether. In fact, it survived to flourish in Brazil. Because it has substantial iron deposits but few coalmines, Brazil is the largest charcoal producer in the world and the ninth biggest steel producer. We aren’t talking about a cottage industry here, and this makes Brazil a very encouraging example for our thought experiment. The trees used in Brazil’s charcoal industry are mainly fast-growing eucalyptus, cultivated specifically for the purpose. The traditional method for creating charcoal is to pile chopped staves of air-dried timber into a great dome-shaped mound and then cover it with turf or soil to restrict airflow as the wood smoulders. The Brazilian enterprise has scaled up this traditional craft to an industrial operation. Dried timber is stacked into squat, cylindrical kilns, built of brick or masonry and arranged in long lines so that they can be easily filled and unloaded in sequence. The largest sites can sport hundreds of such kilns. Once filled, their entrances are sealed and a fire is lit from the top. The skill in charcoal production is to allow just enough air into the interior of the kiln. There must be enough combustion heat to drive out moisture and volatiles and to pyrolyse the wood, but not so much that you are left with nothing but a pile of ashes. The kiln attendant monitors the state of the burn by carefully watching the smoke seeping out of the top, opening air holes or sealing with clay as necessary to regulate the process. Brazil shows how the raw materials of modern civilisation can be supplied without reliance on fossil fuels Good things come to those who wait, and this wood pyrolysis process can take up to a week of carefully controlled smouldering. The same basic method has been used for millennia. However, the ends to which the fuel is put are distinctly modern. Brazilian charcoal is trucked out of the forests to the country’s blast furnaces where it is used to transform ore into pig iron. This pig iron is the basic ingredient of modern mass-produced steel. The Brazilian product is exported to countries such as China and the US where it becomes cars and trucks, sinks, bathtubs, and kitchen appliances. Around two-thirds of Brazilian charcoal comes from sustainable plantations, and so this modern-day practice has been dubbed ‘green steel’. Sadly, the final third is supplied by the non-sustainable felling of primary forest. Even so, the Brazilian case does provide an example of how the raw materials of modern civilisation can be supplied without reliance on fossil fuels. Another, related option might be wood gasification. The use of wood to provide heat is as old as mankind, and yet simply burning timber only uses about a third of its energy. The rest is lost when gases and vapours released by the burning process blow away in the wind. Under the right conditions, even smoke is combustible. We don’t want to waste it. Better than simple burning, then, is to drive the thermal breakdown of the wood and collect the gases. You can see the basic principle at work for yourself just by lighting a match. The luminous flame isn’t actually touching the matchwood: it dances above, with a clear gap in between. The flame actually feeds on the hot gases given off as the wood breaks down in the heat, and the gases combust only once they mix with oxygen from the air. Matches are fascinating when you look at them closely. Wartime gasifier cars could achieve about 1.5 miles per kilogram. Today’s designs improve upon this To release these gases in a controlled way, bake some timber in a closed container. Oxygen is restricted so that the wood doesn’t simply catch fire. Its complex molecules decompose through a process known as pyrolysis, and then the hot carbonised lumps of charcoal at the bottom of the container react with the breakdown products to produce flammable gases such as hydrogen and carbon monoxide. The resultant ‘producer gas’ is a versatile fuel: it can be stored or piped for use in heating or street lights, and is also suitable for use in complex machinery such as the internal combustion engine. More than a million gasifier-powered cars across the world kept civilian transport running during the oil shortages of the Second World War. In occupied Denmark, 95 per cent of all tractors, trucks and fishing boats were powered by wood-gas generators. The energy content of about 3 kg of wood (depending on its dryness and density) is equivalent to a litre of petrol, and the fuel consumption of a gasifier-powered car is given in miles per kilogram of wood rather than miles per gallon. Wartime gasifier cars could achieve about 1.5 miles per kilogram. Today’s designs improve upon this. But you can do a lot more with wood gases than just keep your vehicle on the road. It turns out to be suitable for any of the manufacturing processes needing heat that we looked at before, such as kilns for lime, cement or bricks. Wood gas generator units could easily power agricultural or industrial equipment, or pumps. Sweden and Denmark are world leaders in their use of sustainable forests and agricultural waste for turning the steam turbines in power stations. And once the steam has been used in their ‘Combined Heat and Power’ (CHP) electricity plants, it is piped to the surrounding towns and industries to heat them, allowing such CHP stations to approach 90 per cent energy efficiency. Such plants suggest a marvellous vision of industry wholly weaned from its dependency on fossil fuel. Is that our solution, then? Could our rebooting society run on wood, supplemented with electricity from renewable sources? Maybe so, if the population was fairly small. But here’s the catch. These options all presuppose that our survivors are able to construct efficient steam turbines, CHP stations and internal combustion engines. We know how to do all that, of course – but in the event of a civilisational collapse, who is to say that the knowledge won’t be lost? And if it is, what are the chances that our descendants could reconstruct it? In our own history, the first successful application of steam engines was in pumping out coal mines. This was a setting in which fuel was already abundant, so it didn’t matter that the first, primitive designs were terribly inefficient. The increased output of coal from the mines was used to first smelt and then forge more iron. Iron components were used to construct further steam engines, which were in turn used to pump mines or drive the blast furnaces at iron foundries. And of course, steam engines were themselves employed at machine shops to construct yet more steam engines. It was only once steam engines were being built and operated that subsequent engineers were able to devise ways to increase their efficiency and shrink fuel demands. They found ways to reduce their size and weight, adapting them for applications in transport or factory machinery. In other words, there was a positive feedback loop at the very core of the industrial revolution: the production of coal, iron and steam engines were all mutually supportive. In a world without readily mined coal, would there ever be the opportunity to test profligate prototypes of steam engines, even if they could mature and become more efficient over time? How feasible is it that a society could attain a sufficient understanding of thermodynamics, metallurgy and mechanics to make the precisely interacting components of an internal combustion engine, without first cutting its teeth on much simpler external combustion engines – the separate boiler and cylinder-piston of steam engines? It took a lot of energy to develop our technologies to their present heights, and presumably it would take a lot of energy to do it again. Fossil fuels are out. That means our future society will need an awful lot of timber. An industrial revolution without coal would be, at a minimum, very difficult In a temperate climate such as the UK’s, an acre of broadleaf trees produces about four to five tonnes of biomass fuel every year. If you cultivated fast-growing kinds such as willow or miscanthus grass, you could quadruple that. The trick to maximising timber production is to employ coppicing – cultivating trees such as ash or willow that resprout from their own stump, becoming ready for harvest again in five to 15 years. This way you can ensure a sustained supply of timber and not face an energy crisis once you’ve deforested your surroundings. But here’s the thing: coppicing was already a well-developed technique in pre-industrial Britain. It couldn’t meet all of the energy requirements of the burgeoning society. The central problem is that woodland, even when it is well-managed, competes with other land uses, principally agriculture. The double-whammy of development is that, as a society’s population grows, it requires more farmland to provide enough food and also greater timber production for energy. The two needs compete for largely the same land areas. We know how this played out in our own past. From the mid-16th century, Britain responded to these factors by increasing the exploitation of its coal fields – essentially harvesting the energy of ancient forests beneath the ground without compromising its agricultural output. The same energy provided by one hectare of coppice for a year is provided by about five to 10 tonnes of coal, and it can be dug out of the ground an awful lot quicker than waiting for the woodland to regrow. It is this limitation in the supply of thermal energy that would pose the biggest problem to a society trying to industrialise without easy access to fossil fuels. This is true in our post-apocalyptic scenario, and it would be equally true in any counterfactual world that never developed fossil fuels for whatever reason. For a society to stand any chance of industrialising under such conditions, it would have to focus its efforts in certain, very favourable natural environments: not the coal-island of 18th-century Britain, but perhaps areas of Scandinavia or Canada that combine fast-flowing streams for hydroelectric power and large areas of forest that can be harvested sustainably for thermal energy. Even so, an industrial revolution without coal would be, at a minimum, very difficult. Today, use of fossil fuels is actually growing, which is worrying for a number of reasons too familiar to rehearse here. Steps towards a low-carbon economy are vital. But we should also recognise how pivotal those accumulated reservoirs of thermal energy were in getting us to where we are. Maybe we could have made it the hard way. A slow-burn progression through the stages of mechanisation, supported by a combination of renewable electricity and sustainably grown biomass, might be possible after all. Then again, it might not. We’d better hope we can secure the future of our own civilisation, because we might have scuppered the chances of any society to follow in our wake