BEING NUCLEAR

AFRICANS AND THE GLOBAL URANIUM TRADE

GABRIELLE HECHT

THE MIT PRESS
CAMBRIDGE, MASSACHUSETTS
LONDON, ENGLAND

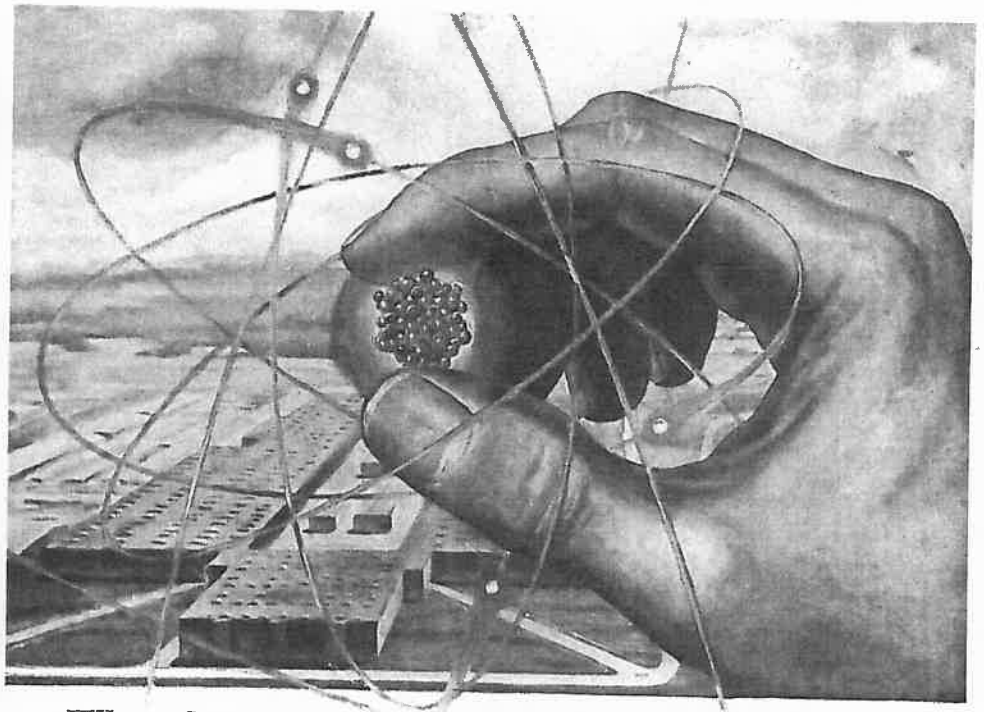
NUCLEAR EXCEPTIONALISM

The atom bomb has become the ultimate fetish for our times.[3] World order has been created and challenged in its name and for its sake. Salvation and apocalypse, sex and death: the bomb's got it all. In the two decades following World War II, "the bomb" became the ultimate political trump card, first for the superpowers (the US in 1945, the Soviet Union in 1949) then for waning colonial powers (the UK in 1952, France in 1960). Other nations soon followed (China in 1964, Israel in the mid 1960s). Geopolitical status seemed directly proportional to the number of nukes a nation possessed.

Although more than 28,000 nuclear warheads now populate the planet, they somehow retain their singularity. We still hear about "the" bomb, as in "When could Iran get the Bomb?"[4] The implication is that nuclear things are unique, different in essence from ordinary things. I call such insistence on an essential nuclear difference—manifested in political claims, technological systems, cultural forms, institutional infrastructures, and scientific knowledge—*nuclear exceptionalism*.

As a recurring theme in public discourse since 1945, nuclear exceptionalism often transcended political divisions, allowing both Cold Warriors and their activist opponents to portray atomic weapons as fundamentally different from any other human creation. The rupture in nature's very building blocks, wrought during fission, propelled claims of a corresponding rupture in historical space and time. "Nuclear" scientists and engineers enjoyed far more prestige, power, and funding than their "conventional" colleagues. Morality-speak inevitably accompanied debates, rendering nuclear things either sacred or profane. Yet whatever the political leaning, exceptionalism expressed the sense that an immutable ontology distinguished the nuclear from the non-nuclear. The difference, or so it seemed, came down to fission and radioactivity.

The technopolitical qualities of being "nuclear" made this form of exceptionalism remarkably robust. Yet nuclear exceptionalism could be made, unmade, and remade. In the early decades, exceptionalism emanated mainly from atomic energy experts and the journalists whose imaginations they captured. The utopian dreams that had accompanied the advent of railways and airplanes found their apotheosis in atomic fantasies. "Our children will enjoy in their homes electrical energy too cheap to meter,"



What does Atomic Energy really mean to you?

Dramatic new developments in medicine, agriculture, and industry promise long-time benefits for us all

A 1952 Union Carbide magazine ad promised a beautiful atomic future.

the chairman of the US Atomic Energy Commission proclaimed in 1954. "It is not too much to expect that our children will know of great periodic regional famines in the world only as matters of history, will travel effortlessly over the seas and under them and through the air with a minimum of danger and at great speeds, and will experience a lifespan far longer than ours, as disease yields and man comes to understand what causes him to age."[5] Shattering the atom had apparently put humanity's ageless dreams within grasp. These were the many promises of nuclear things, and the promise of many nuclear things: limitless electricity, atomic-powered transportation, huge increases in crop yields, cures for disease, and if not eternal life at least one much longer and far more comfortable.

Utopias can be infectious. Atomic fantasies spread quickly on both sides of the Iron Curtain. Nuclear nationalism comforted state leaders anxious about their country status. The French compared reactors to the Arc de Triomphe and the cathedral of Notre Dame. The Russians likened them to samovars. In Communist China, leaders spoke of "the people's bomb"; in India, of the "Smiling Buddha."

Utopian dreams breed dystopian nightmares, though, and few were more terrifying than nuclear war. Photos of Hiroshima and Nagasaki, censored for two decades, trickled out to haunt the public imagination with spectacles of horrifying burns, peeling skin, and ashy landscapes. Shortly after the atomic arms race began, the superpowers upped the ante on public anxiety by testing vastly more destructive thermonuclear weapons in the waters around the Marshall Islands and on the plains of the Kazakh Soviet Socialist Republic. As geneticists studied chromosomal aberrations caused by radiation, gigantic ants and towering lizards began to wreak havoc, at least in the reels of B movies.

Apocalypse, no longer the preserve of religion, now lay within humanity's technological grasp. Authors and directors spun out scenarios, grim and comic, for reaching the tipping point at which someone, somewhere, pushed the button to end it all. Books and movies imagined the few remaining humans taking refuge in a world sizzling with fallout. Sometimes the two apocalyptic modes merged, famously so in Walter Miller's 1959 novel *A Canticle for Liebowitz*. Set centuries after a devastating nuclear war, the novel opens by depicting a monastic order whose mission is to preserve and illuminate the remnants of scientific texts, including a blueprint signed by a soon-to-be-sainted engineer named Liebowitz. By the end of the book, humanity has reinvented the bomb and again stands poised on the brink of self-destruction.

Exuberant or ghastly, nuclear exceptionalism was full of contradictions. For all the efforts at making nuclear things exceptional, there were opposing attempts to render them banal. Government propagandists assured citizens that simple gestures offered protection if the bombs did fall. American schoolchildren could take refuge under their desks, sang Bert the Turtle in the famous "Duck and Cover" ditty. Fallout shelters promised the perpetuation of suburban lifestyles in the event of nuclear war. The hyper-organized Swiss went so far as to pass building codes *requiring* fallout shelters. In the late 1970s, as a teenager, I lived in the suburbs of Zürich.

Far-fetched depictions of how radiation exposure might change the human race expressed the inherent ambiguities in 1950s atomic fantasies. (*Mechanix Illustrated*, December 1953)

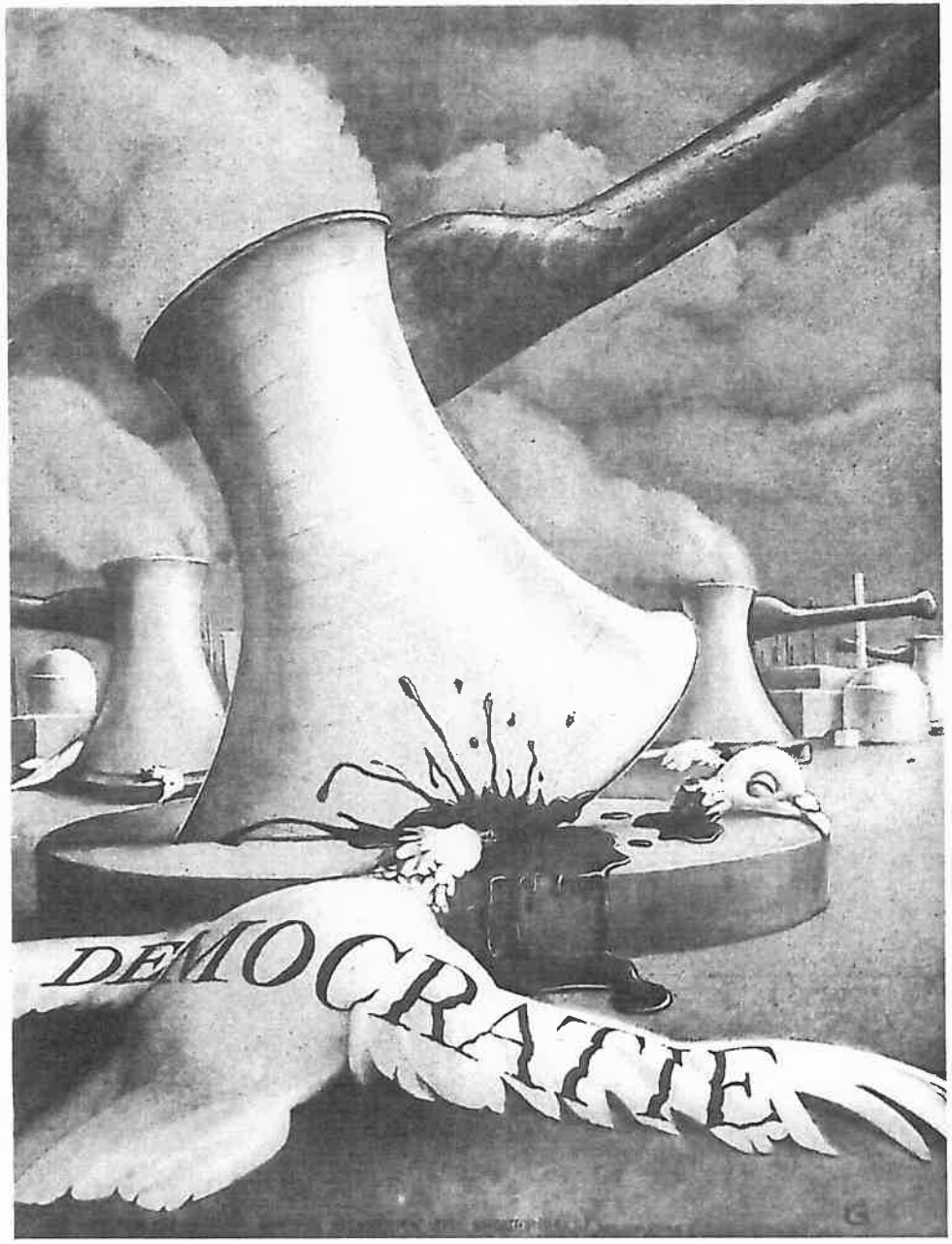
My parents ignored the basement shelter, with its massive lead-lined door, leaving it devoid of the canned goods and blankets prescribed for nuclear survival. Secretly I feared the place. How and what would we breathe if the bombs fell?

The spread of commercial nuclear power brought new expressions of exceptionalism and banality, especially in the 1970s. Environmental activists seized on nuclear energy as the symbol of ruthless capitalism and its pollution. They countered the promises of cheap, abundant electricity with the prospects of meltdowns and radioactive leaks. The industry insisted that radioactivity was part of nature, nuclear power just a form of energy like all others. It published reassuring charts that compared the radiation received from the sun, airplane flights, bananas, medical procedures, and reactor proximity. When accidents at Three Mile Island (1979) and Chernobyl (1986) challenged claims to banality, nuclear experts reasserted exceptionalism in the guise of extraordinary safeguards. The nuclear industry spent *more* money than any other on accident prevention and risk mitigation, at least in the West. Chernobyl, they insisted, could be chalked up to Soviet sloppiness.[6]

With the end of the Cold War, nuclear exceptionalism shifted terrain. The "clash of civilizations" replaced the "superpower struggle," and climate change replaced nuclear war as the greatest global fear.[7] In 1989, French public intellectual Régis Debray opined that "broadly speaking, green [meaning Islam] has replaced red as the rising force." This was especially frightening because "the nuclear and rational North deters the nuclear and rational North, not the conventional and mystical South."[8] Anthropologist Hugh Gusterson calls this sort of discourse "nuclear orientalism," arguing that it has crossed left-right political divides to become part of "common sense" in the West.[9] Sure enough, at the dawn of the twenty-first century, George W. Bush's "axis of evil" formulation escalated fears that nuclearity might escape the control of the "rational North."

Discourse surrounding the "nuclear renaissance" of the early twenty-first century has hewed to the standard industry script by playing down the terrifying longevity of radiation. The prospect of the imminent apocalypse of global warming has allowed nuclear power to reemerge as a commonsense and desperately needed energy source. Predictably, within hours of the 2011 Fukushima reactor disasters, the industry scrambled to maintain a sense of banality. Exceptionalism, nuclear power advocates

Atomic air raid wardens, Bonn, Germany, 1954. (Bettmann/Corbis Images, used with permission)



Anti-nuclear poster for Verenigde Aktiegroep Stop Kernenergie, Belgium, ca. 1978–1982. (collection of Laka Foundation; used with permission)

insisted, lay in the earthquake's magnitude and the tsunami that followed—not in the technology.

So much for public discourse. But historians and other scholars have also fetishized "the bomb" and its builders. Witness the obsession with the historical minutiae of "*the* decision to drop *the* bomb," the endless stream of biographies of Manhattan Project scientists, and the insistence on the uniqueness of moral dilemmas posed by atomic activities. Scholars who've managed to move beyond the 1950s remain caught in the trappings of nuclear exceptionalism, concentrating on electricity production and the high-tech systems surrounding weapons. Their work remains geographically centered on the Cold War superpowers and Europe, only occasionally extending to South Asia and Japan. Most treat the "nuclear" as exceptional and self-evident. I include myself among the culprits.

Here's the problem. This unreflective reflex, this certainty about which things do or don't fall into the domain of the "nuclear," simply doesn't correspond to historical realities. That can be difficult to see from the vantage point of a European reactor or a North American weapons lab. Standing in an African uranium mine makes the contingent character of nuclearity much more visible.

Consider: Yellowcake from Niger made Iraq nuclear in 2003. But in 1995 yellowcake didn't make Niger itself nuclear. According to a major US government report on proliferation that year, neither Niger nor Gabon nor Namibia had *any* "nuclear activities." Yet together these nations accounted for more than one-fifth of the uranium that fueled power plants in Europe, the US, and Japan that year.[10] Experts noted decades ago that workers in uranium mines were "exposed to higher amounts of *internal* radiation than . . . workers in any other segment of the nuclear energy industry."[11] But neither workers' radiation exposures nor their role in the global nuclear power industry was enough to render uranium mining in these countries a "nuclear activity."

So what things make a state "nuclear," what makes things "nuclear," and how do we know? Are the criteria for nuclearity scientific? Technical? Political? Systemic?

These questions are matters of ontology, questions about the things and categories of things that exist. Historical actors often deployed an ontology that appeared fixed, incontrovertible, and transparently empirical, in which essential qualities rigidly separated the nuclear from the non-nuclear.

Scholars have generally left this assumption unchallenged. Yet close examination shows that the boundary between the nuclear and the non-nuclear has been frequently contested. The qualities that make a nation, a program, a technology, a material, or a workplace count as "nuclear" remain unstable, even today. There isn't one nuclear ontology; there are many.[12] My term for this contested terrain of being, this unsettled classificatory scheme, is *nuclearity*.

Nuclearity, this book argues, is a contested technopolitical category. It shifts in time and space. Its parameters depend on history and geography, science and technology, bodies and politics, radiation and race, states and capitalism. Nuclearity is not so much an essential property *of* things as it is a property *distributed among* things.[13] Radiation matters, but its presence does not suffice to turn mines into nuclear workplaces. After all, as the nuclear industry is quick to point out, people absorb radiation all the time by eating bananas, or sunbathing, or flying over the North Pole. For a workplace to fall under the purview of agencies that monitor and limit exposure, the radiation must be man-made rather than "natural." But is radiation emitted by underground rocks natural (as mine operators sometimes argued), or man-made (as occupational health advocates maintained)?

For mines to be treated as "nuclear" workplaces in any meaningful scientific, political, or cultural sense, their radiation levels must be detected and recorded using instruments, laboratories, and comparison data. If these devices and institutions don't exist, if they break down, if the connections between them are weak, then the mines devolve into ordinarily dangerous workplaces rather than specifically nuclear ones. This is one reason why I argue that history and geography have shaped nuclearity. Mining in Madagascar began under French colonial rule; uranium in South Africa came from the gold mines whose labor systems formed the template for apartheid; Namibian uranium became tied up with the struggle for independence from South African occupation. These circumstances all shaped the institutions and technologies of uranium production. They thus shaped how a given mine did—or did not—become identified as a nuclear workplace.

Inherently fractured, nuclearity was achieved by laborious degrees. Treating mines in France as nuclear didn't automatically confer nuclearity on French-run mines in Madagascar. Malagasy ore may have achieved a

geological nuclearity by way of Geiger counters and geologists. But this didn't translate into *medical* nuclearity that Malagasy workers could invoke to make political or economic claims. Colonial rule (and its legacies), grounded in presumptions of racial difference, made that translation particularly difficult to achieve. Making medical nuclearity politically useful would have required that Malagasy radiation exposures become visible through a denser network of instruments, labs, and the like. It would have required state agencies and courts through which claims could be filed. And it would have required that broader manifestations of nuclearity—such as the countless images and scenarios that made "the nuclear age" an "age" in some parts of the world—acquire cultural and political relevance in Madagascar. By shaping the things onto which nuclearity was distributed, time and place shaped nuclearity itself.

Put differently: *Radiation* is a physical phenomenon that exists independently of how it is detected or politicized. *Nuclearity* is a *technopolitical* phenomenon that emerges from political and cultural configurations of technical and scientific things, from the social relations where knowledge is produced. *Nuclearity is not the same everywhere*: it is different in the US and France, in Namibia and Madagascar, in South Africa and Gabon. *Nuclearity is not the same for everyone*: it has different meanings for geologists and physicists, geneticists and epidemiologists, managers and workers, Nigériens and Canadians. *Nuclearity is not the same at all moments in time*: its materialization and distribution in the 1940s and 1990s differed markedly.

To understand nuclearity, we must explore its spatial and temporal variations. Nuclearity took different shapes and had different heft in Gabon, Madagascar, Namibia, Niger, and South Africa. By excavating the historical contingencies, however, I am *not* claiming that bombs and radiation have no specific physical properties. Radiation exposure can cause diseases; atomic bombs could destroy the planet. Such properties matter to the formation of nuclearity, of course, but they do not *by themselves* determine the nature or power of "nuclear" things.

Equally important, my critique of nuclear exceptionalism is *not* an accusation of "atomic alarmism."[14] I do not discount the historical and material significance of nuclear things. Rather, I aim to show the consequences of rendering such things exceptional or dismissing them as banal.

Designating something as "nuclear" is not a straightforward act of classification. Ambivalence and ambiguity, as political scientist Itty Abraham argues, are structural features of nuclear technologies.[15] Agreements and disagreements about *degrees* of nuclearity have significant consequences. They structure global control over the flow of radioactive materials. They constitute the conceptual bedrock of anti-nuclear movements and nuclear power industries. They affect regulatory frameworks for occupational health and compensation for work-related illnesses. And sometimes they send nations off to war.

The ambiguities underlying recent struggles over the nuclear state of the world are too important to be dismissed as mere political wrangling. They are part of the "nuclear age," the claim that nuclear technologies define a phase of human history. Largely because of our mooring in time and space, we haven't known how to view these ambiguities. Our fetishes keep us close to bombs and reactors and far from other places where nuclearity gets made and unmade. We have become complacent and complicit in the equation between nuclearity and "development."

Nuclearity, like many categories, can be deployed as a tool of empowerment or disempowerment. Its significance depends on its technopolitical distribution. Its contingencies are particularly visible in African places . . . provided we don't lump all African places into a single undifferentiated geography. The temptation to do so offers another starting point for our history.

AFRICA AND TECHNOLOGY

"Africa" has also been a fetish in Western imaginations, and for far longer than the atom bomb. Savage and starving, inferior and infantile, superstitious and corrupt—the list of pejoratives goes on and on. The image of Africans as irrational took root in the Enlightenment and took off during the imperialism that followed. Europeans built political philosophies premised on the radical Otherness of Africans.[16] Armed with Maxim guns and industrial goods, they saw artisanally produced African technologies as proof of a primitive existence.[17] "Africa" became seen as a place without "technology." Colonialism, the conquerors were convinced, would transform the continent through European science, technology, and medicine.[18] During the decades of decolonization and Cold War, modernization

theorists followed suit, updating the language and tools of the colonial "civilizing mission" but sticking to its core vision: humanity perched along a ladder of development, with well-meaning Westerners at the top and Africans at the bottom.[19]

Such perceptions infused Cold War pop culture, which sometimes placed its atomic fixations and "savage Africa" in the same narrative frame. Uranium mines provided the most legitimate reason for setting atomic stories in Africa. In the 1953 film *Beat the Devil*, Humphrey Bogart and Gina Lollobrigida set off with a band of rogues to stake a uranium claim in British East Africa. An episode of the campy 1950s television series *Sheena: Queen of the Jungle*, set in Kenya, has the buxom heroine protecting "her natives" and a white-owned uranium mine from a nefarious prospector and his African sidekick, Leopard Man.

African jungles and feuding superpowers pervaded comic books too, merging again in stories about uranium mines found amid ignorant "natives" in loincloths. My favorite example comes from a 1954 *Jungle Action* comic featuring Lo-Zar, a blond, muscle-packed Tarzan clone. The lord of a remote African jungle inhabited by pygmies, Lo-Zar learns that "human beings from a red power" have invaded his "sanctuary." "Behold, little men of the Matubi tribe," he says after capturing a map from a red agent, "plans for the location of a new material for which rats like these invade our jungle and kill, scheme, and rob . . . Uranium!" Lo-Zar immediately knows what "uranium" means, even though the Matubi find the word "strange." "In the world," he intones, "there are two types of men . . . those on the side of democracies who would use it to protect their rights . . . and creatures called reds who seek destruction and terror with it!" Upon which he grabs a vine and swings off to defeat the Reds, along the way battling dinosaurs, "sentries from prehistoric ages" that signal the primitiveness of the place.[20]

Black Africans had no agency in these narratives. Their homes were sites of Cold War struggle; white heroes protected them and their resources from falling into the wrong hands.[21] Black superheroes didn't achieve distinction until the *Black Panther* series in the 1970s, over a decade into decolonization. This time uranium was rendered as "vibranium," which could "change the body structure of humans and transform them into living horrors." The African kingdom of Wakanda guarded the mysterious metal. "Wakanda history is the history of vibranium," explained T'Challa,