POSTCATASTROPHIC UTOPIAS

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Abstract **Space colonization and subterranean dwelling have been staples of speculative fiction since at least the nineteenth century, but the invention of nuclear weapons and the prospect of global environmental collapse have, certainly since the Cold War, made proposals offering vertical escape from the surface of the planet a matter worthy of serious consideration among engineers, planners, military strategists, and countercultural futurologists. The shift in the conception of utopia, from the lateral displacements typical of its classical formations to the vertical modes of descent and ascent considered in this article, suggests a structural relationship between utopia and catastrophe produced out of the new conditions of global threat inaugurated by atomic weapons. While the prospect of impending global catastrophe would appear to lead to a dystopian or even fatalistic acceptance of the limits of human life on Earth, the most devastating assessments of humanity's future have also produced utopian proposals for the reimagining of human potentiality below and above the surface of the planet. In a real sense, then, catastrophe has become the precondition for the establishment of utopia, both as the compelling threat that demands a plausible response to impending annihilation and as the necessary event that apocalyptically clears the ground for new modes of living.**

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Faced with the equally plausible but unknowable global threats of nuclear devastation and environmental catastrophe, each of which would likely render Earth's surface uninhabitable, there are two obvious escape routes: up or down. Space colonization and subterranean dwelling have been

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staples of speculative fiction since Edgar Allan Poe, H. G. Wells, and Jules Verne, often as the figurations of an imperial imaginary or as longed-for exits from misanthropic despair. Since the invention of nuclear weapons materialized the long-dreaded prospect of biospheric annihilation, the option of removal from the planetary surface to some extra-atmospheric or subcutaneous redoubt has been periodically revisited as among the most likely long-term solutions to the question of how to preserve life in the face of disaster. While the emancipatory implications of release from gravity have lent spaceflight something of the euphoric uplift of a utopian future, the downward move—although perhaps more technically achievable—has most often been interpreted as retrogressive and death bound, a return to some presocietal primal space or, worse, a descent into hell. Theological connotations of the vertical axis aside, what the above and below bestow upon the beleaguered denizens of the surface is the possibility of a threshold beyond which the depredations of the here and now cease to matter. As such, there is always a temporal dimension to the vertical refuge, which—even in the case of descent narratives—becomes a future prospect as well as an escape from the present. If the presiding sense of the future on the ground, as it were, is a dystopian one, any project that is able to rewrite catastrophe as survival opens up the possibility of a postcatastrophic utopia where the conditions of life, far from being at the mercy of toxic or violent agencies, can instead be engineered from the outset to expand rather than diminish the prospects for life. Even the most dread-infused project devised to escape certain death carries with it the germ of a genuinely apocalyptic utopianism inasmuch as it offers the creative possibility of a life beyond. As Fredric Jameson, following Louis Marin, argues, the construction of utopias is always driven by "what is to be accomplished after the demolitions and the removals" of the old order (Jameson 2005: 12). In this way, "the end of the world may simply be the cover for a very different and more properly Utopian wish-fulfillment" (199, n. 35). Thus seen, technocratic attempts to reach above or below the limits of the horizon come into focus as never merely emergency fixes but instead as opportunities to achieve fully realized totalities. Whether in space or underground, the postcatastrophic environment shares with all utopias, as Jameson explains, the "enclave structure" (2010: 25) that defines the utopian in relation to its undesirable and fallen other. Within many of the darkest imaginings of a world on the threshold of annihilation, a yearning for renewal through containment and control can be discerned—a yearning that has, in turn, animated large-scale projects designed to circumvent catastrophe since at least the Cold War and that connects the bunkers and space colonies of the nuclear era with a much longer tradition of utopian wish-fulfillment underpinned by colonial violence and appropriation.

Descent

Saturation bombing during World War II and the detonation of the atomic bomb revealed the redundancy of conventional strategies of defense that, after 1945, as Paul Hirst observes, "switched from active to passive, from fortifications as a means of fighting to the hardening and protection of specific assets" (2005: 216). While in the United States, during the early years of the Cold War, civil defense measures stressed the importance of building and maintaining private fallout shelters, the development of the hydrogen bomb in

the early 1950s and the introduction of intercontinental ballistic missiles exposed civil defense as a largely performative ritual with little meaningful defensive purpose. Nevertheless, the development of a culture of nuclear preparedness, and the role of the local or family fallout shelter as a metonym for national security, gave credence to emerging technocratic projects for much larger scale encapsulated habitation, and governments after 1945 invested heavily in bunker complexes, even if most were intended for military use. The US Congress, for example, was provided with a bunker under the Greenbrier Hotel in West Virginia (1959–62), and in 1966 the North American Aerospace Defense Command (NORAD) headquarters was embedded two thousand feet inside Cheyenne Mountain in Colorado. Efforts in the United Kingdom were similarly bold, though beset with problems. A series of reinforced government War Rooms were built, but by the time they were completed in 1965 the development of the hydrogen bomb had rendered them useless. Instead, a dispersed network of installations for Regional Seats of Government was envisaged, only for the secret plan to be exposed in 1963 by activists and reporters. By 1980, three new secret sites were slated for construction, but the end of the Cold War left many installations abandoned, demolished, or sold off to the private sector. As nuclear states, the United States and the United Kingdom sought to bunker assets rather than populations, but in neutral Switzerland mass sheltering was taken so seriously that, by the early 1980s, 75 percent of the Swiss population had access to a fully protected shelter, and everyone had at least some sort of makeshift redoubt. Alongside Switzerland, the contender for most bunkered territory in Europe, though for different reasons, is Albania. Albania's paranoid Stalinist dictator Enver Hoxha built around seven hundred thousand bunkers throughout the country between 1950 and his death in 1985, which were intended to shelter citizens from attack but more usefully served as a perpetual reminder of their domination. Beyond Europe, fear of external aggression led to the building in the late 1960s of many underground shelters in China, including nineteen miles of air-raid shelters beneath Beijing—the so-called Underground Great Wall—that offered cover for three hundred thousand people and housed a munitions warehouse, hospital, theater, and library.

These various bunker projects demonstrate a persistent faith in the preservationist capacity of societies to withstand external aggression, but they also acknowledge the status of the civilian population as a permanent target. Large-scale bunker projects indicate how far habitat itself was reconceived according to military necessity after 1945, though the social and political costs of such realignment remained a matter of dispute. While the massive military installations constructed by dictatorial regimes stand unapologetically as material manifestations of state domination, in democracies during the Cold War one of the main concerns voiced in opposition to large-scale shelter programs was the threat to free society posed by the sequestration of communities for their own protection. The dystopian dimension of the bunker solution to the nuclear problem loomed large during the early Cold War in the United States and the United Kingdom, with films, television, fiction, and scientific debate focusing on the cost of living under permanent threat of imminent destruction and the questionable desirability of bunkered life postcatastrophe. Nevertheless, despite

this profound unease, the plausibility of survival—given the prevailing sense that nuclear war was inevitable—continued to rest on the development of a sustainable environment sealed off from sources of certain death. In this way, the power of the dystopian imagination allowed for the extrapolation of utopian counterreadings that configured the bunkered future as life as it might be supported through design and technology. This creative management of a restructured life-world might, rather than signaling the end of the world, instead allow for a technologically propelled transformation of civilization into some new, properly engineered future. If Nazi rocket science could be recontextualized as space exploration, the creativity awakened by the nuclear holocaust might start with the concrete building blocks of what had previously been the excrescences of an unenlightened militarism.

The sense that a utopian aspiration lurks inside every dystopia is latent even in the most doom-laden articulations of Cold War shelter-dread. Mordecai Roshwald's celebrated novel *Level 7* ([1959] 1981), for example, imagines life inside a military bunker complex from the point of view of an operative whose sole job is to be on hand to activate a missile strike. Presented in the form of this man's diary, *Level 7* is concerned with the inverted rationality that governs global nuclear stalemate and the relinquishment of human agency such a situation requires. Promoted to the rank of major only to find himself officially dead and four thousand feet underground, Officer X-127 is fated to spend the rest of his days servicing a security system that can only, in the end, protect itself. Selected on the grounds of low empathy levels, the bunker's five-hundred-strong staff operates according to the principle that "high is bad, low is good" (66), and while the dungeon-like Level 7 existence is clearly positioned as Dante's seventh level of Hell, it is also the place of refuge for the most favored military personnel. On the face of it, there is little to recommend *Level 7* as a utopian expression, but the novel's recognition that only the military is equipped to survive nuclear attack did not, in all cases, lead to the sealed-off functionalism Roshwald pessimistically envisaged. What *Level 7* pictured as Hell, others were able to imagine as a society at last brought under the right kind of control.

The Holifield Committee's findings in *Civil Defense for National Survival* (1956) noted the disturbing inadequacy of US civil defense preparedness, leading James Deer to respond in the *Bulletin of Atomic Scientists* with an urgent call for the president of the United States to initiate a mass shelter-building program. Predicting that shelter building was likely to become part of the arms race, Deer imagined a future United States comprised of around one hundred underground, decentralized "city-states" capable of sustaining themselves "in a state of indefinite siege" (1957: 66; see also Simpson 1956). For Deer, this was not a proposal that threatened to deaden humanity but instead to provide a viable means of survival for ordinary people not protected by military installations. A massive shelter-building program was, then, a pragmatic response to a state of affairs that could not be ignored: "The situation is not of our making," Deer explained, but "the result of the way the world developed." The solution, however, "is up to us" (1957: 67). Roshwald's novel tallies the negative human cost of a bunkered life, but presumably Deer would have argued that this is because proper preparations had not been made to protect enough people. Though he does not develop a sense of what life

in his subterranean city-states would be like, the urgency of Deer's call suggests that it would be a life worth living. Although shelter building never received anything like the kind of federal support Deer demanded, as David Monteyne shows, numerous large-scale projects were seriously explored, from the Cornell University studio exercise for a township in Schoharie Valley in upstate New York to the functioning US Army Corps of Engineers project known as Camp Century—the "City under the Ice"—in Greenland (Monteyne 2011: 98–105). The vast scale of Deer's proposal meant that exercises like these remained isolated realizations of the military-industrial imaginary and, despite the construction of hundreds of community bunkers, citizens were instead encouraged to prepare their own defenses (though not their own city-states), as the social engineering promised by Deer's megashelters was downsized to the family unit, in keeping with conventional values of character-building and resourcefulness. What Deer might have seen as the failure of the federal government to invest in a properly managed subterranean democracy became, briefly, an opportunity for militarized homesteading more in keeping with the ideology of American individualism.

It is here, articulated in novels written in the wake of shelter panic, such as Philip Wylie's *Triumph* ([1963] 2007) and Robert Heinlein's *Farnham's Freehold* ([1964] 1994), that a retort to Roshwald's militarized instrumentalism is found in a variously feared and hoped-for resurgence of robust social Darwinism. Through the individually crafted bunker, the solution to the way the world has developed is pursued not as a means of preserving society in a more efficiently managed form but as a far more radical mode of creative destruction. In *Triumph*, a wealthy industrialist manages to squirrel his houseguests and a passing electricity meter-reader away in the vast elaborate bunker he has built beneath his modernist hilltop mansion on Long Island, while in Heinlein's novel, Hugh Farnham is less well-off but no less prepared. In each novel, the foresight of the patriarch means he can save his family from Armageddon; all he has to do is deal with the local threats posed by alcoholic wives, weak young men, and the sudden removal of societal inhibitions. Both of these books expose deep anxieties about the sustainability of asymmetrical class, race, and gender relations once the social structure that preserves them has disintegrated. Strong leadership and enforced collective effort is seen as fundamental to survival, and both Wylie and Heinlein stress the ways in which strict authority nurtures strength of character. Alcoholism, laziness, and infidelity are all cured by a stint in Wylie's bunker, while it is Farnham's African American "houseboy" who is promoted to second-in-command. The Soviet-style total administration of the life-world threatened by the megabunker is avoided here, but the commitment to authoritarian rule survives intact. While Wylie retains a degree of understanding of human frailty and offers a robust dismissal of the private shelter as an adequate response to global annihilation, in Heinlein's novel Farnham is ferocious in his belief that nuclear war will "improve the breed" by eliminating the worthless (Heinlein [1964] 1994: 33). Nevertheless, in each case, the bunker enables not just survival but a future purged of the degenerative influences of the present. For Heinlein, the bunker is literally a time machine, with a nuclear strike hurling the shelter two thousand years into the future; after many struggles, Farnham ends the novel in his concrete

homestead with a new young wife. The "triumph" in Wylie's novel refers not only to the group's emergence after two years underground but also to the promise of a new life for interracial couples in a post-holocaust world free from bigotry. In each of these narratives, nuclear catastrophe is an opportunity for social reinvention underwritten by an ideology of self-help. It should come as no surprise, then, that *Farnham's Freehold* was among the Cold War texts that enjoyed a revival among Reagan-era survivalists, in part because of the book's fondness for practical instruction but also because of its aggressive view of annihilation as a mode of apocalyptic liberation. Works like Heinlein's and Dean Ing's *Pulling Through* (1983)—which, in a separate section, offers instruction in survival skills and problem solving—anticipate, contra Roshwald, a postbunker future that supports the resurgence of masculine self-reliance and the triumph of libertarian sustainability. The unwillingness in these texts to think beyond the individual, who is either strong enough to thrive through self-bunkering or else reduced to serfdom by an administered and militarized collective, is perhaps most expressive of their own confinement within the Cold War mindset, where all collectivity takes the form of a surrender of will. What Wylie's and Heinlein's novels do register, though, is the desire for a release from dread, which can only come after nuclear war has actually occurred.

Even more disastrous than Armageddon might be a scenario such as the one outlined in James Blish's *A Case of Conscience* ([1958] 1975), in which a version of Deer's bunkered city-states has actually been built, but the war has failed to come. Here, after the arms race, comes the shelter race, no less urgent because "the nation that lagged behind invited instant attack" (103). What distinguishes the shelter race is the "dawning realization that the threat of nuclear war was not only imminent but transcendent; it could happen at any instant, but its failure to break out at any given time meant that it had to be lived with for at least a century, and perhaps five centuries. Thus the race was not only hectic, but long-range" (103). These two temporalities create a situation where planning is too successful: discontent among subterranean populations leads the United Nations to establish "a real supernational government—a world state with teeth in it," eliminating the threat of war but preserving the underground system, which has become too complex to dismantle. "How do you unbuild a shelter economy?" the novel asks: "An economy which cost twenty-five billion dollars a year, every year for twenty-five years, to build?" (103). Inside the shelter economy, the social order has calcified, with the rich maintaining status through ostentatious consumption while everyone else remains cowed due to inherited behavior from ancestors who believed they were on the verge of destruction. Motiveless crime and mental illness are rampant, and the authorities spend a fortune on "recreation and rehabilitation programs for adolescents" (135). This is not really a far future scenario at all but a fairly straightforward articulation of 1950s Cold War capitalism. Blish recognizes that once a threat becomes "transcendent," it structures and naturalizes all activity as a necessary and irreversible response to permanent emergency: once instituted, the shelter economy "could not be undone; the planet would be a mausoleum for the living from now until the Earth itself perished: gravestones, gravestones, gravestones" (104). The only solution Blish

can muster to this ideologically air-locked world comes, in the end, from another planet.

The clash of temporalities imagined in *A Case of Conscience*—build in haste, repent at leisure—also drives Philip K. Dick's *The Penultimate Truth* ([1964] 1978), where the outbreak of World War III prompts governments to bunker entire populations in huge underground shelters known as "ant tanks." As the war rages overhead, the subterranean masses are put to work manufacturing the robots that have replaced human combatants in the toxic conflict. Years pass, and the bunkered survivors watch on television as cities are incinerated and the president delivers morale-boosting messages that stress the need for increased productivity to meet the war effort. When a tank man burrows to the surface, however, he discovers that the war is long over and the robot armies his people have been building are, in fact, used as servants for a powerful conspiratorial elite that lives in vast demesnes that have recovered from what was, in fact, a brief nuclear conflict. The destruction of cities is part of a global hoax, staged by those above ground to keep Earth free from its troglodyte hordes. Like Blish, Dick reads the Cold War arms race and civil defense policies as repressive measures intended to preserve and cement social inequality. While Wylie and Heinlein imagine a real conflagration releasing individual agency from dread, Blish and Dick remain skeptical of the inevitability of nuclear destruction and see the arms race in terms of an already achieved engineering of the repressive bunker-state.

Attempting to sing the praises of Swiss bomb shelters to Americans in the early 1980s, Princeton-based British scientist Freeman Dyson discovered that "nobody in the United States wants to hear about shelters" (1984: 89). His assessment of this antipathy was that it had less to do with a general suspicion of the ethical legitimacy or practical effectiveness of shelters than with a culturally specific hostility borne of a society that values "the tradition of freedom under the open sky" (93). Americans, reasoned Dyson, could "never share the feelings of warmth and friendliness which Europeans of my generation associate with our experiences of shelters in World War II" (93). The positive collective experience was so strong, Dyson claimed, that people continued to descend to the tunnels after the war was over until the beds were finally taken away. The Swiss, in similar fashion, "carry in their cultural tradition, as Americans do not, the knowledge that when the bombs begin to fall, there is nothing so comforting as a group of friendly faces in a deep hole underground" (94). This curiously sanguine view of the shelter as community builder is far from typical, though Dyson's sense of American libertarianism is confirmed in the kind of survivalist wish-fulfillment seen in Heinlein and others. More commonly felt than the camaraderie generated by subterranean shelter is the sense, so thoroughly examined in Dick and Blish, of the multiple ways in which the containments and restrictions of World War II have been perpetuated and expanded under an always imminent threat. Blish served in the Civil Air Patrol during the 1950s and his writing during that decade is, as *A Case of Conscience* suggests, preoccupied with the limits of the shelter as a plausible response to nuclear threat.

In Blish's early story "The Box" (1949), the incarceration implicit in the fallout shelter is scaled up in order to address the more immaterial sense of containment experienced under the condition of permanent emergency. New Yorkers wake

one morning to find themselves locked behind a vast bomb screen that has inexplicably appeared overnight. Instead of being saved, however, the city, drained of air and water, withers to the point of death. Blish situates this incipient Cold War articulation of environmental lockdown as a continuation of World War II by other means, by making his protagonist, Jake Meister, who is the only man with the scientific know-how to fix the problem, also a survivor of the Dora slave-labor camp, an offshoot of Buchenwald where inmates worked on the construction of V-2 rockets. Prefiguring similar scenarios in Stanley Kubrick's *Dr. Strangelove* (1964) and Thomas Pynchon's *Gravity's Rainbow* (1973), Blish's story positions the permanent nuclear emergency of the postwar world as an extrapolation of the total war economy—and its reliance upon underground facilities, in particular—that had been normalized during World War II. Initially suspected of causing the Manhattan bomb screen's emergence and branded a Nazi, presumably because of his name, Meister eventually finds a way of saving New York. While in place, though, the screen serves to articulate a sense of atmospheric enclosure common to much Cold War discussion of nuclear dread. The screen, an "unguessable wall," is "smooth, deep gray, featureless, yet somehow quivering with a pseudo-life of its own." It has "no definite boundary" and is "hypnotical" and "dizzying"; there is nothing upon which the eye can focus, yet "the eye was drawn to it because it was the only source of light there" (135). In the absence of definite form or edge, the "mind made up patterns and flashes of lurid color and projected them into the grayness" (135). The combination of brute materiality and spectacular insubstantiality here renders the incarcerated entranced and immobile.

In "The Box," there is no explanation of the screen's provenance; while the assumption on the ground is that the enemy, whoever that might be, has turned a defensive mechanism into an offensive weapon, the question of agency is irrelevant in the face of imminent death. In Vernor Vinge's novel *The Peace War* ([1984] 1987), a similar technology is at the core of a narrative about containment as a weapon, though here war's inventiveness is worked through in a more complex fashion than in Blish's straightforwardly negative reading. Livermore Laboratory in California has developed, in *The Peace War*, the ultimate means of preventing conflict: the capacity to "bobble" entire areas inside an impenetrable force field. After a period of devastating global war that has also included the use of biological weapons to spread plague, this apparently permanent sealed-off condition is applied to all military installations, allowing the scientists and their political backers to institute a Peace Authority that bans further scientific innovation. The authoritarianism of the Peace Authority is challenged, however, when a mathematical savant is found who can produce bobbles for the resistance movement. It is discovered that what had previously been thought of as deadly—it had been presumed that the bobble seals in forever, and thus kills, anything and anybody inside (as in "The Box")—was, in fact, only a temporary condition. Although the original bobblers had not sufficiently understood the technology and could not manage the duration of the effect, the bobbles, in fact, freeze time for the incarcerated and, once they are released, they reenter the world unaware of what has happened to them and how much time has elapsed. After successfully overthrowing the Peace Authority, the resistance is left with not only the means to

reestablish science in the service of humanity but also the capacity to move through time at variable rates, since individuals and groups can, now that the duration of the technology's effect is under control, be held in suspended animation, through bobbling, for selected periods of time.

For Vinge, taking the long view means, among other things, being able to imagine science moving beyond the limitations of the seemingly intractable dystopian present. Weapons of mass destruction are eliminated by technology, but the utopian peace instituted by the new authority fails to account for the benefits produced out of investigations that also yield bombs and plagues. While there is no war under the Peace Authority, people die because no cures are developed for disease, and their communication is undermined by a transportation system limited to horse-drawn vehicles. The solution to the lockdown of the bobble-wielding authority is, the novel suggests, the inventive advancement of bobble technology itself, which can only occur when the best minds have been freed from short-term anxiety over what science is capable of producing. Published in the year that president Ronald Reagan's Strategic Defense Initiative Organization was set up, in large part to push beyond the doctrinal stalemate of Mutually Assured Destruction, *The Peace War* does not support defense spending, as such, but neither does it imagine the possibility of a regime of scientific innovation that is not already intrinsically a part of global geopolitics. In the end, the spin-off applications of bobble technology are seen to multiply possibilities for positive outcomes rather than close them down, and it is the creative deployment of the technology by brilliant scientists that removes the constraints imposed by vested interests. The invention of the bobble device does not prevent conflict but neither is it seen to cause it. Vinge is too invested in the utopian potentialities of innovation for that sort of conclusion, and *The Peace War*, in the end, has less to say about the management of applications derived from scientific discovery than about the limitlessness of those discoveries when science is allowed to follow its own nose.

The difference between Vinge's view and that of earlier Cold War writers lies in his unambiguous defense of what drives scientific curiosity. The profound skepticism toward establishment science evident in Blish and others during the 1950s and 1960s became, for many, the default position, as the sense of permanent nuclear standby eroded official postwar confidence in the capacity of scientific innovation to progressively ameliorate social problems. Reagan's defense spending hikes during the 1980s repositioned Big Science as the economic and military solution to years of American stagflation and, post-Vietnam, diminished geopolitical credibility. The rekindled optimism in science as an engine of liberation, especially as it found an increasingly commercial outlet in the efflorescence of Silicon Valley, allowed for a rapprochement of sorts between the scientific establishment and the countercultural fringe of Cold War technophilia. The frontiersman-spacehippie hybrid, championed throughout the 1970s in publications like Stewart Brand's *Whole Earth Catalog* (and discussed below), and the survivalist, small-government free-marketeer are perhaps not as incommensurable as they once appeared to be, since each, in its own way, represents a future-oriented libertarianism driven by a contradictory desire to escape the administered world that must, at the same time, provide the infrastructure that makes such

aspirations possible. What the Cold War bunker narratives, in both containment and emancipatory versions, make clear, is that survival is predicated on some sort of authoritarian control, both of the environment and its inhabitants; that what might be mistakenly construed as dystopian may, in fact, be an as yet underdeveloped utopia. The entrepreneurial, information-age applications of Cold War technologies such as the Internet lend credence to Vinge's assessment of the fluidity of scientific invention but do not necessarily provide solutions to the political implications surrounding how such innovations are managed and manipulated. The problem with the hard-science-fiction utopianism of Vinge and others is that their celebration of future possibility too often relies upon projections that either pay scant attention to the wreckage produced along the way or, just as worryingly, are all too comfortable with the enforcement of order by a technocratic elite. In a sense, the problem here is the inverse of that posed by dystopian writers like Dick who speak most often to the achieved domination of the life-world by an untouchable and largely unknowable phalanx of military-scientific forces. The best the bunker solution to catastrophe can offer is the survival of a few good men, if the presiding ideological frame remains stubbornly inflexible to any sort of collectivist reinvention.

Ascent

If going down usually implies a subsequent postcatastrophic resurfacing, a future reentry onto a radically transformed—perhaps purged—terrain, ascent conjures the possibility of a more thoroughgoing exodus, one that decisively leaves Earth behind, even though it may—ark-like—convey its potential as a cargo of biota or suchlike. We find one of the most extraordinary Cold War fantasies of ascent, and indeed planetary departure, in the space colonies idea promulgated by the Princeton-based high-energy physicist Gerard K. O'Neill during the 1970s.[1] Around 1960, Buckminster Fuller, the self-styled "comprehensive anticipatory design scientist" and patron saint of the *Whole Earth Catalog*—whose editor Stewart Brand would so enthusiastically embrace the space colonies idea—envisaged his Cloud 9 project. Here, Fuller imagined vast, floating, geodesic spheres containing cities borne aloft by the temperature differential between interior and exterior atmospheres. In the famous rendering that depicted the project, the spheres floated like planetary masses above a barren landscape that could as easily be Mars as Earth (Hays and Miller: 160, plate 144). O'Neill's idea similarly projected encapsulated habitats, "inside-out planets" as Brand would call them, but now they were displaced into orbit, beyond the limits of any external atmospheric condition (Brand 1977: 5). In formulating his proposal, he—by his own account—looked back to *Beyond the Planet Earth*, the novel by the Russian schoolteacher, writer, and scientist Konstantin Tsiolkowsky that, although published in 1920, had been in preparation as early as 1896 (Vorobyev 1960: 11). Here were anticipated many of the points that O'Neill would subsequently expound: plant cultivation in space through "greenhouses"; the mining of mineral-rich asteroids; and an alternative to the presumption, which Isaac Asimov termed "planetary chauvinism," that settlement in space would inevitably take place upon planets (O'Neill 1978: 35). O'Neill's colonies would have not only the advantage of constant sunlight, undiminished by atmosphere, but also the advantage of being free of the deep gravitational "well" of Earth.

At first sight—and certainly in terms of the way in which they were presented—O'Neill's space colonies appear not properly postcatastrophic, but the relation is complex, not least with respect to the temporality implied by the term. Certainly, the space colonies idea was closely related to the burgeoning ecological discourses of the period, to which the photographs of the biosphere from space taken from the Apollo missions had imparted such momentum (Cosgrove 2001: 257–67; Poole 2008: 141–99), and was explicitly formulated within the shadow of the impending catastrophe presaged by environmental degradation, resource depletion, the nuclear arms race, and attendant sociopolitical stresses. Yet, at the same time, O'Neill's project sought a way of ameliorating planetary atrophication without disavowing the kind of ideology of individualism and commitment to ever-increasing expansion, both economic and territorial, that many saw as lying at the roots of the crisis it aimed to address. Indeed, the very structure of the proposal, as well as the insistence on the space colonies as self-sufficient environments for experiments in living—which made them sound rather like the communes that effloresced in the 1960s in the orbit of San Francisco, and elsewhere in California and the United States (Miller 1999; Boal et al. 2012)—suggested that the effect of the movement into space might have less to do with saving the planet than rendering it obsolete, or perhaps, at best, a destination for holidays made luxurious by the anticipated spending power of vacationing space colonists (O'Neill 1978: 9). More ominous still was the declaration by the visionary architect and urbanist Paolo Soleri, in a response to O'Neill's ideas solicited by Brand for his journal *Co-Evolution Quarterly*, that those who remained on Earth would become "living fossils" (Brand 1977: 56–60, 68). Moreover, O'Neill's suggestion that the rapidly expanding archipelago of space colonies might contain species endangered on Earth hinted at an ark-like character—and hence a logic of abandonment—of the kind that was being dramatized at the same moment in Hollywood films, such as Douglas Trumbull's *Silent Running* (1972).

It is noteworthy that in O'Neill's nomenclature the space colonies are consistently referred to as "islands" (Island One being the initial environment, from which the construction of the others begins), for this opens a way of conceptualizing their relation to the catastrophic moment. Here it is useful to turn to Gilles Deleuze's reflections on the agency of islands in the cultural imagination, in which their role as topoi of rebirth that are also places of self-creation is emphasized, a metaphorics within which space-colony rhetoric was deeply invested. As Deleuze points out, this inevitably entails an intimate connection between the island and catastrophe: "It is not creation but re-creation, not the beginning but a re-beginning that takes place. The deserted island is the origin, but a second origin. From it everything begins anew. The island is the necessary minimum for this re-beginning, the material that survives the first origin, the radiating seed or egg that must be sufficient to re-produce everything" (2004: 13). The logic of Deleuze's argument is thus that the obsolescence of the original—which is to say, the catastrophe—is consequentially instantiated at the very moment of rebirth: "[What is] first is necessarily compromised, born for renewal and already renounced in catastrophe. It is not that there is a second birth because there has been a catastrophe, but the reverse, there is a catastrophe

after the origin because there must be, from the beginning, a second birth" (2004: 13). It is a formation that Deleuze sees articulated in myths such as that of the deluge, in which the ark comes to rest upon a mountaintop.

Along with the utopian motif of the island, there was, throughout O'Neill's discourse, a recurring reference to the frontier. The latter featured most obviously in the title of his book *The High Frontier*, which recalled John F. Kennedy's 1960 speech to the Democratic National Convention in Los Angeles, in which Kennedy used the term *new frontier* and made explicit reference to space exploration, among other goals. Although O'Neill, following Tsiolkowsky, promoted the idea that space colonization would be established through multinational collaboration, the reference to the frontier inevitably situated the space colonies within a specifically American narrative of endeavor and expansion. In his book, for example, O'Neill spoke of "homesteading the asteroids" and provided an imaginary diary of an intrepid family, complete with an entry describing a Thanksgiving dinner, apparently inspired by a verse account written by one of his own ancestors "of a time when she had traveled with her seven sons across the plains of America in a covered wagon" (1978: 238). Equally notable was that O'Neill located his space-colony project under the sign of the US constitutional right to the "pursuit of happiness" (1978: 273), as well as the way Carl Sagan characterized the notion of proliferating colonies—which he preferred to envision as space cities—as "a kind of America in the skies," in which countercultural "affinity groups" would develop "alternative cultural, social, political, economic and technological life-styles" (see Brand 1977: 42). A specifically national interest was, furthermore, clearly in play in the discussion of the radiant energy that would be harvested by the satellite solar power stations (SSPSs) assembled within the factory complexes attached to the space colonies. Here, unlimited solar power became the key, in the wake of the 1973–74 oil embargo, to circumventing the oil geopolitics of the period and undermining the hegemony of the Organization of Arab Petroleum Exporting Countries (OAPEC) over energy supply. O'Neill quoted an economist who, at the 1975 NASA-Ames/Stanford University Summer Study on space settlements, declared, "We can put the Middle East out of business!" O'Neill himself was more cautious, but anticipated a future in which control of solar energy beamed via microwaves to Earth would lead to a collapse in oil revenues and allow the United States to reassume its hegemonic "traditional role as a generous donor of wealth to those in need" (1977b: 18).

While the high frontier was constructed as a notional border, the fantasy it supported was that its crossing would lead to the transcendence of all limits, thus opening to a new condition of plenitude. So O'Neill was prepared to write of "unlimited" material resources (mined from the moon and asteroids), "unlimited" low-cost energy (collected from the sun by satellites that are never in shadow), and "unlimited" new (constructed) lands, all of which, in turn, would permit a continually rising real income for space colonists.[2] Moreover, limitlessness was a condition that seemed to pertain to the very plenitude of "Free Space" itself, "the technical term for everyplace outside the Earth's atmosphere," Brand noted, and, at the same time, "a political term" (Brand 1977: 5). As an idea, it was intimately connected to the possibilities of zero gravity, itself a

kind of figuration of the suspension of limits, in this case those imposed by weight, thus allowing what would otherwise be massively heavy objects to be manipulated with ease in the factory zones of the space colonies (a suspension whose euphoric character was iconically expressed in Apollo 14 astronaut Alan Shepard's golf shot on the moon in 1971). These extra-terrestrial conditions of zero gravity and resource-without-limit converged with the dream that the departure from the biosphere would also be the escape from the zero-sum game of resource appropriation and consumption that obtained within it. And as resources would no longer be finite, this in turn opened a discourse of, as O'Neill put it, consumption "without guilt" (O'Neill 1977b: 13) and also of a benign colonialism that did not displace others and that—to judge from Edward S. Curtis's inner cover to Brand's *Space Colonies* book, which showed two native Americans looking to the sky, one saying "Good bye. Good luck," the other thinking "Good riddance"—might even be imagined to make some reparation, through its lancing of population pressure, for earlier misdeeds. Even so, there were some, including Carl Sagan, who objected to the colonial nomenclature, while the US State Department went so far as to forbid its use. With the limits of consumption transcended, so too were the "limits of growth," which O'Neill saw as rapidly escalating after the establishment of the first beachhead in space, Island One, with its population of ten thousand. This would establish the manufacturing facility that would then lead to the proliferation of further colonies. The scenario outlined by O'Neill was, in no uncertain terms, an expansionist vision underpinned by his commitment to a view of human character as essentially unmalleable and by his trenchant opposition to "stable state" social formations, which he viewed as inevitably authoritarian societies of personal abnegation and restriction. In the future he projected, space colonies became an escape route from the increasing environmental atrophication and resource depletion that could potentially lead to nuclear conflict, one that engineered a way out of the world-historical crisis precipitated by the industrial revolution without the need—as was pointed out by O'Neill's critics—for a radical transformation of social or political structures, or indeed a deviation from the trajectory of industrial modernity.

Although O'Neill was at pains to dissociate his projection from the history of utopian speculation, it was clearly deeply invested in it, as it was equally in—by turns—exodus myths, frontier ideology, and phallocentric imaginaries (the seed-like space colonies ejaculated from the planet inevitably recalling Charles Fourier's notion of the aurora borealis as a seminal fluid invested with epochal creative potential). Indeed it is striking the extent to which, in O'Neill's discussion, the space-colony idea frequently seemed to elevate utopianism to a higher power rather than to dissolve it. Thus when he wrote, referring to the Pilgrim fathers, of the utopian impulse to "escape from outside interference," of "pulling up stakes," he distinguished space colonies from the "Classical Utopians" by virtue of what would be their ability to enact a more radical and successful form of escape (O'Neill 1978: 234). O'Neill's text was equally indebted to utopian literature, most notably in its epistolatory style, whereby a fictional character who has "witnessed" the other society is solicited to relate it (in Thomas More's *Utopia*, the narrator relays the story he has been told by the traveler Raphael Hythloday, who

is pictured in the lower left of the famous emblematic frontispiece pointing to the map of the island as he testifies to another figure). In the first chapter of *The High Frontier*, we find a letter from some space settlers (Edward and Jenny) to prospective colonists (Brian and Nancy), describing their mode of life. This passage is strikingly redolent of earlier epistles within the long utopian tradition, such as the letter written in dialogue form by the Elizabethan courtier and scholar Sir Thomas Smith in order to stimulate interest in his colonial scheme for Ireland. Possibly the first printed piece of publicity for any commercial venture in England (Quinn 1945: 551), it was published in 1572, a little over fifty years after More's text and was deeply informed by it (Utopia itself being, of course, a colonial culture, prepared to send colonizing parties to the adjacent mainland, whose inhabitants are driven away unless they agree to submit to the Utopian ways of life). Notably, at the end, the promoter, ostensibly Smith's son, who is to lead the colonizing party and has been pressing his case upon the hitherto skeptical adventurer, declares with a flourish: "Have I not set forth to you another Eutopia?" (Smith 1572: n.p.). Of matters of government, our correspondents in space write of an overseeing authority, the Energy Satellites Corporation (ENSAT), who, however, do not intervene, provided that industrial productivity and profits remain high ("I don't think they want another Boston Tea Party"), a "loose rein" that then becomes a pretext for social diversity, experimentation, and self-organization (O'Neill 1978: 7–8).

Thus a libertarian and antiauthoritarian discourse becomes smoothly nested inside one that eulogizes the advantages of space for industrial production, coordinated under a centralized, however laissez-faire, administration. Indeed, we learn that one of the benefits of space colonists being able to control their own hours of sunlight and darkness—being able, in other words, to establish their own "time zones" ("We keep Canaveral time, but the two other communities near us are on different time zones")—is that incessant industrial production at the same location becomes possible without anyone ever having to work a night shift (O'Neill 1978: 7). The thematics of self-realization and choice, together with the distaste for any form of social or political constraint, that infuse the space-colony discourse signal its affiliation with the US counterculture's enthusiastic embrace of technology in the 1970s as a vehicle of emancipation and the development of "personal power."[3] As Brand—who wrote in the introduction to his *Space Colonies* book that "Gerard O'Neill's vision of Space Colonies" allows people to suddenly "see Space as a path, or at least a metaphor, for their own liberation" (1977: 5)—had asserted in the manifesto for his *Whole Earth Catalog*: "We *are* as gods and might as well get used at it . . . a realm of intimate, personal power is developing—power of the individual to conduct his own education, find his own inspiration, shape his own environment, and share his adventure with whoever is interested" (1968: 3). It was an ideological alignment clearly visible in material such as the "World Biogeographical Provinces" map, reproduced on the inside cover of the *Next Whole Earth Catalog* publication in 1980. Presented as a "guide to locating the kind of country in which you feel at home" (Dasmann 1980), it formed Spaceship Earth's counterpart to O'Neill's proposal that "as colonists from various countries of Earth arrive to settle the many communities in space, there will be a great variety in the ways in which land area will be used. . . . With many new communities

to choose from, the emigrants from Earth will settle in those they like best" (O'Neill 1978: 69).

Citing Buckminster Fuller's notion that the creativity of a culture is dependent on some kind of unadministered Outlaw Area of experimentation, Brand proposed that if, in an earlier epoch, the hitherto smooth space of the seas had been able to play this role, then today it was necessary to look instead to zero-gravity Free Space in order to find an "Outlaw Area too big and dilute for national control" (Brand 1977: 5–6). It was a theme echoed in commentaries by Carl Sagan;[4] by Eric Drexler, who argued that the political structures needed to address contemporary global problems (nuclear weapons, etc.) inevitably tended toward a singular, monolithic, and restrictive administrative form that was not able, unlike the "Many Worlds" promised by space colonies, to "properly fulfill human destiny" (Brand 1977: 108); and, of course, by O'Neill himself, who saw the autonomy of the space colonies, their independence from long-distance chains of service and supply and hence their decentralizing effects, as inevitably tending toward diversity.[5] But, perhaps unsurprisingly, the teleology of space-colony existence turned out to be a kind of Hegelian-inflected version of the countercultural mantra of self-realization, albeit one in which—at this "end of history"—art returns to the fore. Thus, in his "most speculative assumption of all," O'Neill projected a future in which the arts would come to surpass science, the latter being programmatically exhausted having answered all the "merely physical questions." In the wake of this, O'Neill wrote, "I would expect that our most talented individuals . . . would turn their attention to the arts, or to the greatest intellectual problem that is now imaginable to me: the riddle of consciousness" (O'Neill 1978: 192). Among the responses to O'Neill's ideas, this line of thinking found its most extreme form in Soleri's eschatological ruminations, in which the departure from the planet was understood to open onto the "enhancement and impregnation of the cosmos by conscience-spirit" within a horizon of the redemption of matter, which is to say its "resurrection" or "becoming-spirit" (Brand 1977: 59).

And yet despite this rhetoric of diversity and countercultural experimentation, the specific propositions that were made for the kind of environments that would be constituted inside the space colonies were overwhelmingly normative, reiterating—as they did—favored terrestrial landscapes, which then took on the dimensions of so many "earthly paradises." O'Neill imagined the reconstruction of the California coastline around Carmel, which he noted, perhaps not coincidentally, was a favored haunt of artists and writers (1978: 85). As he wrote: "A colony would be big enough to model some of the most desirable areas of the Earth. A portion of the island of Bermuda, or a section of the California coast like Carmel, could be easily fit within one of the 'valleys' of a Model III colony" (1977a: 10). Representations of colony interiors produced at the time fully accorded with such visions. Don Davis's 1972 painting, for example, reproduced on the cover of Brand's *Space Colonies*, shows a verdant reiteration of the Bay Area, complete with suspension bridge and yachts. If the allusion to space had acted in the architectural discourses of the 1960s to deterritorialize Earth-bound structures, reorienting them in relation to different concerns (lightness, atmospherics, etc.), it is striking the extent to which, once we are actually in space, the terrestrial becomes definitively reasserted, albeit in idealized

terms. Many, however, remained skeptical of the fantasy. In his commentary, Steve Baer, founder of Zomeworks, envisaged something decidedly less euphoric: "Once on board, in my mind's eye I don't see the landscape of Carmel by the Sea as Gerard O'Neill suggests. . . . Instead, I see acres of airconditioned Greyhound bus interior, glinting, slightly greasy railings, old rivet heads needing paint—I don't hear the surf at Carmel and smell the ocean—I hear piped music and smell chewing gum. I anticipate a continuous vague low-key 'airplane fear' " (Brand 1977: 40). This was a wry, deflationary response that posited the extraterrestrial colony as nothing so much as the epochal point at which—to use Rem Koolhaas's (2002) term—junkspace became blurred into spacejunk.

On the Ground

In the end, what fundamentally unites utopian imaginaries of descent and ascent is their status as strategies of separation, and—more specifically—strategies that intensify separation to a degree that goes beyond anything that might be induced by horizontal movement. If the classical utopia is an island that is laterally displaced, one to which we must voyage across the flat expanse of the sea, the postcatastrophic utopia is necessarily to do with the vertical. And if it is found on the terrestrial surface, it is one so radically transformed that it has entered in its totality into a condition of otherness, thus negating the meaning and possibility of any lateral movement as a journey to difference. The radical form of separation manifested by postcatastrophic utopias is the direct counterpart of the condition of the catastrophe itself, especially its absolute character, there being no such things as "minor catastrophes." The catastrophe produces a force that, in effect, drives material upward or downward, which the technocultural environments that come to endure at its limits either witness or anticipate. Its logic inverts previously normative geographies of inhabitability, such that transportation into zones unable to support life (either deep underground or beyond the atmosphere of the planet) becomes the condition of possibility of its endurance. In this way, life becomes displaced beyond "nature," which is necessarily superseded by technologically engineered and maintained systems of life-support. Such environments thus inevitably tend to take on an enclave-like character, both in terms of their spatial and atmospheric encapsulation and their administrative organization and control. Here, with the prospect of engineered self-determination, the dystopian anxieties provoked by containment culture fold into the technocratic utopias whose promise is to dissolve them. As we have seen in, for example, the space-colony proposal, the much-vaunted plurality of constructed worlds takes place within the parameters conferred by the disciplinary logic of industrial production. It is hardly coincidental that the factory zones of O'Neill's space colonies physically sit outside the fantasmatic simulated environments of the dwelling areas, for, in this apparent world without limits, it is here that we encounter the real, albeit unarticulated, limits of the proposal, insofar as they form the support upon which the idyll is predicated. From this perspective, the radical environmental manipulation (physically adjacent time zones, etc.) available in the colonies comes into focus primarily as a technology of labor management and control.

Also, insofar as they represent utopian new beginnings, second origins, or rebirths, the encapsulated and airlocked spaces of the ascendantal and

descendantal take their place in a history of technologies of incubation and cultivation and, inevitably, of a biopolitics of generation. If the enclave is to be the seed of the future, then the question of who is to be admitted to it comes to the fore. Implicit in bunker and space-colony projects is one means or another of filtering occupants, either through the practical requirement that inhabitants have the requisite scientific or technical capacities, or because of equally instrumentalized issues regarding the perpetuation and future character of the species. That the opportunity to select a survivor population gives carte blanche to eugenicists was not lost on some commentators during the shelter debates of the early 1960s, including Langston Hughes, who has a character in one 1961 story complain that "If I was in Mississippi, I would be Jim Crowed out of bomb shelters" ([1961] 1997: 211).[6] It is no coincidence that the narrative arc of Kubrick's *Dr. Strangelove* (loosely based on Peter George's thriller *Red Alert* [1958]) begins with the paranoiac fantasy of a US Air Force base commander that, through fluoridation of water, the Soviets are compromising American body fluids, and finishes with Strangelove's phallocratic bunker-utopia in which top US military and political personnel descend with multiple breeding-partners, selected for sexual attractiveness, from whose couplings the repopulation of the devastated surface will, in due course, occur.

What the bunker and space-colony projects rarely reckon with is, of course, a community that is fundamentally unamenable to administration by the structure, perhaps an indication of how far the military-industrial sensibility—whose model citizen is a slide-rule compliant civilian solider—saturates even the most countercultural of such enterprises. Yet even if we allow for the possibility of a *Star Trek*–like Great Society underground or in space, the enclaved environment remains haunted by the shadow of the carceral. The administration of utopia starts to anticipate the neoliberal containment of the planet, whether through the ever-increasing pervasiveness of the global surveillance of everyday life, the selective deployment of labor through outsourcing, or the technological modification of habitat by agribusiness. If the space-colony idea reconfigured Fuller's "Earth as spaceship" into "spaceship as Earth"—and, in so doing, articulated a nascent neoliberal utopia of production freed from the entanglements of history and released from limiting constraints—then the new prospective epoch of geoengineering now promises to collapse these into one another through the technological manipulation of the planetary environment itself at a macro scale. Here, the space colony returns home and merges with the bunker in the figure of Earth itself, an Earth engineered to deliver maximum return through increasingly efficient means by the deterritorialized agents of global capital.

Notes

1. For a contemporary assessment of O'Neill's projects, see Heppenheimer 1977. More recently, O'Neill's work is discussed at length in Kilgore 2003 and McCray 2012.
2. O'Neill does insert the caveat that "Nothing in our solar system is truly unlimited, of course" (1978: 33).
3. On the counterculture's relationship with computer technology, see Turner 2008.
4. See Sagan, quoted in Brand 1977: "The earth is almost fully explored and culturally homogenized. There are few places to which the discontent cutting edge of mankind can emigrate. There is no equivalent of the America of the 19th and early 20th centuries" (42).
5. See O'Neill, quoted in Brand 1977: "Suppose

all of those essentials were obtainable over a distance of only ten miles, and by a population which was as small as ten thousand or a hundred thousand. I would think that in the long run, the tendency toward community diversity, the diversity of governments, diversity of the ways people choose to live, the kinds of architecture they choose to have, and so on, would be enormous" (28).

6. On civil defense and segregation, see also Sharp 2007, ch. 11.

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