‘Welcome to the Atomic Park’: American Nuclear Landscapes and the ‘Unnaturally Natural’

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ABSTRACT

Atomic landscapes in the American West are typically understood as despoiled and irradiated territories. Nevada Test Site, with its grim medley of twisted military structures, bombed-out craters and radioactive desert, is an emblem of the nuclear age. By contrast, Yosemite National Park is a very different icon to hail from Western climes. Yosemite is legendary for its wild nature and monumental scenery. The two landscapes, Nevada Test Site and Yosemite National Park, have, on the surface, very little in common. However, in recent years, a number of nuclear and post-nuclear landscapes have been praised for attracting rare species of flora and fauna. A few nuclear sites have even become nature reserves. While aware that so-called atomic parks are hardly likely to become the Yellowstones and Yosemites of the late twenty-first century, this article explores a few of the unexpected links between two forms of landscape for so long considered extreme opposites.

KEY WORDS

Nuclear age, parks, American West, landscape

In 1962, Alfred Hitchcock filmed *The Birds* at Bodega Bay, a quiet fishing community fifty miles north of San Francisco. Hitchcock used the peaceful coastal village as a backdrop for a harrowing story of nature out of control. His depiction of a flock of seagulls terrorising small-town America won substantial acclaim as a natural disaster masterpiece. At the same time that Hitchcock faked an avian menace on the shores of Bodega, town residents rallied against a formidable nuclear presence. A major California electrical utility, Pacific Gas and Electric (PG&E), hoped to construct an atomic power plant on the wild

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reaches of Bodega Head peninsula. PG&E officials insisted that their nuclear project posed no threat to the region. A billboard on the perimeter of the inchoate construction site announced 'Welcome to Bodega Bay Atomic Park'.[1] The 'atomic park' promised an outlandish blend of high technology and primordial nature, public energy provision and coastal recreation. Yet some northern Californians remained unimpressed. Anti-nuclear campaigner David Pesonen distributed a pamphlet entitled 'A Visit to the Atomic Park' highlighting the less welcome features of PG&E's nuclear enterprise. According to Pesonen, Pacific Gas had misled citizens of Bodega as to the true nature of its project, with 'the use of the word "park" to describe a massive atomic complex' just one example of corporate unreasonableness.[2] A state park, rather than an atomic park, appeared the safer option for Bodega.

Competing visions of Bodega Head as an atomic park and a state park reflected the immense cultural symbolism attached to the park label in the latter half of the twentieth century. In post-1945 America, the 'park' emerged as a mass-produced icon of pleasure. Seeking a higher quality of life, US citizens found solace in the open spaces of city and state parks. Increased leisure time fuelled a boom in recreation, with the park promising redemption from the ills of congested, urban society.[3] Business magnates, recognising the cachet attached to the word 'park', renamed their manufacturing complexes 'industrial parks' and 'research parks'.[4] Walt Disney called his carnival-like fairgrounds 'theme parks'.[5] However, it was the 'national park' that most captivated the imagination of America in the 1950s and 1960s. In laden station wagons, middle-class Americans travelled to national parks on the weekends. The great outdoors attracted droves of vacationers. In 1965, Yellowstone National Park received two million visitors for the first time in its history.[6] The national park, with its rustic signposts and inviting picnic benches, represented the ultimate park – the archetypal outdoor recreational experience.

The atomic park was something else entirely. Both the atomic bomb and the national park were born in the American West. Yet the US park ideal, often celebrated as 'the best idea we ever had', shared little in common with dreams of artificial energy sources and unassailable military might.[7] National parks and nuclear sites represented disparate landforms and mindscapes. One represented the apogee of American conservationist thinking, the other highlighted the destructive potential of high technology. Test sites were treated as verbatim wastelands. While US citizens celebrated the national park as a repository of wilderness values, landscape gardening at nuclear plants conjured images of scientifically managed and modified plant life, artificial lawns in white, futuristic cities. At Bodega, PG&E employed the park motif in the hope of naturalising the atom, but failed to elaborate on the abstruse links between nuclear energy production and nature protection, of how the construction of reactor sites could practically service the preservation of wilderness. While initially receptive to claims of a clean, environmentally friendly energy source, conservationists grew

wary of atomic power, and became fearful of an accidental release of radiation into the biosphere. By the late 1970s, anti-nuclear activists had convinced the American public that there was nothing natural about atomic power.[8]

The axiomatic gulf between nuclear installations and nature preserves has traditionally barred any meaningful comparison between these two discrete forms of land use. However, exploring the history of the 'park' in its nuclear and preservationist incarnations suggests that apocalyptic and Edenic landscapes are not always polar opposites. The vigour with which nuclear lands have been derided, and nature parks exalted, owes more to entrenched social values than to any extensive consideration of the places involved. Nuclear landscapes have for too long been typecast as infertile no-mans-lands. Despite the irreverence of the comparison, the nature park offers a fresh perspective on atomic soil.

It is the intention of this article to explore the unexpected common ground between nature parks and nuclear landscapes. By considering how such lands were originally set aside, what practices (and attitudes) governed their early development, and what purpose they came to serve in the modern era, the 'atomic park' is intellectually set alongside more conventional park systems. Preservationist and military mandates are usefully compared. The term 'nature', employed in this essay to describe healthy biodiversity (usually due to a relative paucity of human impact), emerges as a complex, culturally laden, and idealistic reference point. In the light of what we know about radiation and its potential to cause genetic damage, it is hard not to think of atomic landscapes as 'unnatural'. In turn, the concept of the atomic park remains, at best, 'unnaturally natural'.

CHOOSING SUITABLE PARKLAND

In locating and appropriating land for atomic purposes, nuclear planners often followed rationales comparable to the motivations of early park stewards. This section considers how nuclear authorities searched for wild and remote regions for their projects, eventually coming into competition with the American conservation movement.

In 1864, Yosemite Park was set aside for 'public use, resort, and recreation'.[9] However, in contrast to city parks, Yosemite proved distant from white American communities and, at that time, inaccessible to all but the richest or hardiest travellers. Yosemite was located 'in nature'. The remoteness of the parkland, along with its unsuitability for settlement or farming, made public acquisition all the easier. Just as Yosemite was celebrated for its magnificent cliffs and waterfalls, preserved intact and 'inalienable for all time', it was also deemed 'worthless' by its marginal economic importance in terms of resource extraction.[10] Later parks, such as Yellowstone National Park (1872) and Death Valley National Monument (1933), were established according to a similar rationale. From the 1940s onwards, nuclear industrialists also laid claim to wild, remote,

and marginalised places. The desire for secrecy, allied to concerns over radiation, encouraged nuclear developers to search for territories on the periphery of mainstream American society. Nuclear projects were best situated on uninhabited and undeveloped land, far from major cities.

Both nature park planners and nuclear industrialists imagined the landscapes about them. Gathered around a campfire at Madison Junction in 1870, members of the Washburn expedition articulated a desire for 'a great National Park' at Yellowstone.[11] Proponents envisioned a museum of natural curiosities preserved for public use, insulated from the worst excesses of private capitalism by arbitrary straight-line boundaries. Yellowstone duly became a national treasure, with the Madison campfire immortalised in popular memory as the birthplace of the American park idea.[12] The idea encouraged Americans to see land as virtuous due to its untouched and unpeopled status. Western regions were re-conceptualised. Park planners and nature preservationists mythologised spectacular mountain climes and plunging desert canyons as the pristine American 'wilderness'.[13] Meanwhile, Native American residents had no place in the virginal park scene. Like so many Euro-American concepts, the nature park ran roughshod over indigenous rights and customs. Remnant Indian nations were evicted from their ancestral territories.[14] Rather than primeval nature frozen in time, the park wilderness was an inherently modern construction, with its own destructive logic.

In *Savage Dreams*, environmental writer Rebecca Solnit described the assembly of 'physicists in the wilderness' at Los Alamos, New Mexico, in 1942.[15] Like park planners at the campfire, atomic physicists played out future scenarios in their heads, anticipating how atomic fires would transform both material and political landscapes. The Manhattan Project had brought nuclear science to the West. Seeking secret, remote and uninhabited terrain, military authorities had appropriated vast tracts of 'wilderness' for the manufacture of the world's first atomic bomb. Stretches of New Mexico and Washington were regarded as barren, unpopulated and readily available for atomic purposes. Like national park planners, atomic engineers superimposed their desires for vacant spaces onto the physical landscape. Native American nations and recalcitrant ranchers lost their lands during the expansion of military projects at Los Alamos and Hanford Engineering Works (Washington) in the early 1940s, and Nevada Test Site in the early 1950s. Lecturer in American Studies Valerie Kuletz labelled the process 'nuclear colonialism'.[16] In their capacity to annex Indian territories, atomic pioneers resembled Euro-American frontiersmen. Nineteenth-century homesteaders, miners, town developers and national park planners had all imagined the West to be theirs for the taking. The atomic imagination fed off prior misconceptions of landscape and lingering forms of racial prejudice.

In their search for land, park boosters and nuclear developers rarely competed for the same sites. However, in the 1960s, both conservationists and atomic industrialists fervently pursued the expansion of their respective territories.

FIGURE 1. The American West (selected nuclear sites and nature parks)

Recognising public support for outdoor recreation, conservationists campaigned for more state and national parks.[17] Meanwhile, the nuclear industry launched an ambitious reactor construction programme, tied to Eisenhower's promotion of 'Atoms for Peace'. Most conservationists at that time supported nuclear power as a preferred alternative to dam building. The American conservation lobby vilified hydroelectric projects as concrete behemoths threatening large-scale disruption of river ecosystems, while welcoming talk of ecologically benign, self-contained atomic energy facilities. However, support for the peaceful atom wavered when atomic developers chose sites of specific interest to the conser-

vation lobby. A relatively small number of environmentalists, concerned at the loss of valuable coastal scenery and the chances of radioactive accident, had clashed with nuclear enthusiasts in the early 1960s at Bodega Head. In the mid 1960s, Pacific Gas and Electric announced plans for another nuclear plant on the California coast, on the Nipomo Dunes, 65 miles north of Santa Barbara.

As a potential site for a nuclear park, PG&E rated Nipomo as 'good' in terms of 'local topography', 'isolation', and 'physical features'.[18] Meanwhile, conservationists valued Nipomo for its rare sand formations and aesthetic beauty, and vowed to protect the region from industrial encroachment. Atomic aficionados and nature lovers converged on the same location. 'Another Bodega Head' loomed on the California coastline.[19] However, in an unexpected turn of events, PG&E representatives and directors of the Sierra Club, a national conservation organisation, agreed to a land deal in summer 1966. In order to free Nipomo for state park purchase, the Sierra Club endorsed an alternative site for PG&E's nuclear project. Leading members of the Club professed no antipathy towards atomic power, and merely pressed for the plant to be placed in a more convenient location. The nuclear park was relocated fifteen miles north along the coastline, to Diablo Canyon.

Separated from the nearest town by a line of steep hills, Diablo Canyon was a remote and secluded spot on an undeveloped promontory. PG&E engineers judged the canyon to be 'excellent' in terms of 'geology, seismology, and foundation'.[20] Diablo represented prime atomic material. Diablo also turned out to be a wild stretch of California coastline with potential as parkland. In the rush to save Nipomo, directors of the Sierra Club had mistakenly cast Diablo Canyon as a 'treeless slot' bereft of ecological significance.[21] However, on discovering that the 'real' Diablo featured unsullied tide pools and record-size coastal live oaks, a number of renegade Sierra Club members challenged the agreement with Pacific Gas. Director Fred Eissler drew attention to a favourable National Park Service survey of the headland in 1959.[22] Sympathetic Club stewards presented the Diablo lands as 'California's Last Unspoiled Pastoral Coastland'.[23] Fearing the collapse of the 1966 deal, defenders of Nipomo insisted that Diablo failed to meet state park standards. Local conservationist Kathy Jackson argued: 'Diablo Canyon has not been wilderness since 1832. It is an overgrazed oak woodland and chaparral canyon'.[24] Directors Ansel Adams and William Siri declared Diablo 'prophetically named', growing 'out of the moving sands and rare flora of Nipomo to sow doubt and dissension'.[25] The ensuing controversy almost split the Club.[26]

The same qualities that marked Diablo an ideal location for nuclear development also confirmed its potential as a nature reserve. Remoteness, wildness, and an absence of humanity appealed to conservationists and developers alike. 'Save-Diablo' Sierra Club members duly admonished PG&E for its inability to avoid wild and cherished landscapes in its quest to build a state-wide energy system. 'With its almost magnetic attraction for the untouched site, the clean

sand and the blue water, [PG&E] selects a hitherto inviolated [sic] area, applies the blade of the bulldozer to it and then come tumbling down the ferns, the glens, the trees, the valley', commented one California Public Utility Commission staff member sympathetic to the 'Save-Diablo' cause.[27] PG&E rejected any claims that it was in competition with the state park system or conservationists. While corporate officials admitted that the Nipomo Dunes represented attractive parkland, Diablo Canyon was another matter entirely. As an 'undistinguished' headland of 'ordinary nature', Diablo was presented as worthless to all but hardy nuclear industrialists.[28] Once used as an argument *for* national parks in the late nineteenth century, worthlessness appeared on the side of the nuclear park system in the late 1960s. PG&E also reminded Californians of their increasing energy needs. The energy sufficiency of the whole state depended on a nuclear landscape at Diablo Canyon. By contrast, a nature park at Diablo promised an unwelcome return to the electrical dark ages.

IMPLEMENTING THE DESIGN

Even wilderness regions such as Yosemite and Yellowstone are now acknowledged as (at least partial) constructions of the human psyche, with wood cabins and paved roads practical attestations of federal presence. Meanwhile, nuclear landscapes carry the physical scars of prolonged military tests and reactor building programmes. This section explores the making of two kinds of landscape, and reveals how themes of mastery over nature, outbreaks of fear, and national pride can bind places together, as well as separate them.

In implementing their design plans, both national park stewards and atomic authorities at times demonstrated reprehensible attitudes towards resident flora and fauna. In 1953, following a series of atomic explosions at Nevada Test Site, over 4,500 sheep died from radiation burns on surrounding ranch land.[29] Military personnel hid behind a cloak of secrecy and scientific jargon, insisting that the herbivores died of eating toxic plants or malnutrition. Ranchers had trouble believing what they were told. The sheep appeared neither thin nor diseased, nor did rifles or ravenous predators kill them. The military-atomic complex was the true culprit. Authorities apparently realised the cause of animal deaths in the locality, but failed to disclose such information to beleaguered ranchers. Such malversation helped ferment a popular understanding of nuclear landscapes as places of nefarious scheming and malign portent in subsequent decades. That flora, fauna, along with 'guinea pig' soldiers, emerged as victims of the atomic age gave credence to the idea of nuclear terrain as inherently destructive. Nuclear protesters came to associate the secret designs implemented at nuclear landscapes with the failure of responsible government.

National parks, as paragons of democracy and public accessibility, avoided such intense scrutiny. The National Park Service remained a highly respected

federal authority, with the public thankful for its transparent two-fold *raison d'être* of wilderness protection and recreational provision. While Americans expected the Nevada Test Site to have a woeful past owing to military exigencies, national parks were assumed to be in a pristine condition thanks to enlightened land stewardship goals practised by the Park Service. Yet, in a sense, national parks had their own secret past. Designs to protect 'nature' in early park systems (namely herds of local ungulates) entailed the premeditated killing of resident predators, with end results comparable to the radioactive sheep cull in Nevada in the 1950s. In national parks from the 1870s to the 1930s, hundreds of carnivores died from federal mismanagement. The United States Army assumed control of Yellowstone in 1886, and continued an anti-predator agenda inaugurated by early park stewards. Cavalry units also saw off any furtive enemies wandering Yosemite (1890), Sequoia (1890) and General Grant National Parks (1890). Sounds of gunshots and military patrols indicated that the first national parks began life as militarised zones. In 1916, the National Park Service, backed up by scientific dogma, institutionalised annual killing sprees. The grey wolf was one of the unfortunate species to be classified as a 'threat' to park ungulates and nature's balance. Just as likely to be killed inside as outside park borders, *Canis lupus* faced a torrent of prejudice. By the 1940s, the wolf had been extirpated from the continental United States.[30]

The burnt Nevada sheep and the castigated American wolves were the victims of large-scale human experiment. Military and park authorities relished exercising dominion over their respective territories. Federal officials sought absolute control of their surroundings. Destruction was tied to the creative process, with the laying of strychnine and the spread of plutonium part of the making of landscape.

Although at the time hidden from view, the scale of transformation that accompanied the nuclear age proved far-reaching. Manhattan Project engineers shaped vast expanses of the American West to match their World War and Cold War intentions. The Manhattan Project was huge in every way, from budgetary expenditure, to public deception, to the western lands appropriated for atomic testing. 'Secret' cities were constructed.[31] The wild western landscape was refashioned to meet an orderly military remit. Art historian Peter Hales located the Manhattan Engineering District as psychologically 'somewhere between an army base and a utopian social experiment'.[32] The Nevada Test Site, meanwhile, provided a 'massive outdoor laboratory' for the advancement of scientific knowledge.[33] Close to ground zero, army personnel packed beagles, mice, hogs and monkeys into wire cages to register the effects of atomic blasts, not realising that they too were 'experimental' animals. Nature incarnate represented the canary thrust into the mine as a meter of danger. In the 1950s, Project Plowshare took the nuclear experiment a stage further. Project proponent (and eminent nuclear physicist) Edward Teller insisted that atomic energy could be used to improve on nature's design. Grandiose plans included forging commercial ports,

melting polar ice caps, and transforming deserts into lush green paradises with the aid of nuclear explosives.[34] Whole ecosystems seemed ripe for redevelopment. Atomic energy promised the transformation of place on an unlimited scale, with the nuclear physicist assuming the al fresco role of landscape gardener.

Albeit on a far smaller scale, national park wardens similarly operated by an ethos of management, control and scientific advancement. Plant and animal populations were stringently monitored to meet park guidelines. Most wildlife biologists regarded intervention as necessary to keep nature in 'perfect' balance. Yet scientific knowledge of ecological systems proved far from flawless. In the early twentieth century, park officials encouraged ungulate numbers in excess of ecological capacity, with disastrous results.[35] Natural fire was artificially prevented in national parks until the 1970s.[36] Authorities, meanwhile, shaped their dominions to meet public expectations. At Yosemite in the 1920s, bears and mountain lions were kept in cages so that tourists could view nature 'red in tooth and claw' without having to stray from the safety of the park village.[37] Roads, railroads, hotels and stores were all initially welcomed into the 'wilderness'. State and national parks signified constructed landscapes.

Branching roads and animal culls aside, park authorities remained committed to the protection of wild nature in principle, if not always in practice. National parks denoted the crown jewels of the American homeland, majestic sequoias and rock formations cast as nature's cathedrals to rival European stone spires. Park staff defended such places from ruination, protecting America's natural heritage from unscrupulous developers. National pride inspired the safeguarding of natural assets.

Systematically exploding more than a thousand bombs on western soil, nuclear pioneers lacked such noble land stewardship goals. Nevertheless, the work of the nuclear establishment was still tied to the defence of American territory. In 1953, the *Las Vegas Review-Journal* declared, 'We like the AEC [Atomic Energy Commission]. We welcome them to Nevada for their tests because we, as patriotic Americans, believe we are contributing something, in our small way, to the protection of the land we love'.[38] Crater sites, irradiated atomic veterans, and burnt beagles were a small price to pay for national security. The military-industrial complex protected the whole of the United States, including state and national parks, from the 'red enemy'. Park authorities meanwhile experienced their own territorial skirmishes with Native Americans and industrial capitalists. In Glacier National Park (1910), Montana, park staff engaged in a perennial battle with the Blackfeet regarding indigenous user rights on the Eastern slopes of the preserve, while neighbouring oil and gas operations threatened the ecological integrity of the park.[39] Both atomic and park landscapes concerned the protection of 'America the beautiful'.

American pride proved integral to both institutionalised landscapes. Park and nuclear boosters rallied to win over the American public to their respective projects. Rail tracks and luxurious hotels attracted the rich and influential to

Yellowstone and Yosemite. The Atomic Energy Commission announced bomb blasts at Las Vegas hotels, inviting gamblers to temporarily leave behind the neon lights of their casinos for other bright sights across the desert. The *Nevada Highways and Parks* magazine for late 1953 used pictures of 'Doom Town' at Nevada Test Site to promote tourism, the beleaguered irradiated buildings offering a novel portrayal of state accommodation compared to the usual motel fare.[40]

Both the eruption of Old Faithful geyser at Yellowstone and the rise of giant mushroom clouds across Nevada drew outbursts of pride, wonder and horror from onlookers. Watching Yellowstone's Mud Volcano, Nathaniel Langford, member of the Washburn Party, wrote how 'The sensations inspired in me today, on again witnessing its convulsions, and the dense clouds of vapor expelled in rapid succession from its crater, amid the jarring of the earth, and the ominous intonations from belief, were those of mingled dread and wonder'. Yellowstone was deemed 'unnaturally natural'.[41] In *The Big Picture*, a 1950s military film, a chaplain described an atomic explosion: 'you look up and you see the fireball as it ascends into the heavens. It contains all of the rich colors of the rainbow, and then as it rises up into the atmosphere it assembles into the mushroom. It is a wonderful sight to behold'.[42] Observers claimed to have found god in the glow of ground zero and within the 'cathedrals' of Yosemite.[43] Nuclear tourism was never as explicit as nature tourism, but Americans were able to find divine beauty in both landscapes. The sublime inhabited both nuclear and natural domains.

What differentiated the nuclear park from the nature park was the level of fear assigned to it. Nature parks had successfully transformed the 'wilderness', once considered primeval by Euro-Americans, into a goodly and spiritual landscape. National parks were new Edens, providing honest pursuits for wholesome Christian families. By contrast, nuclear landscapes were insalubrious, malfeasant places, where invisible evils lurked. The nuclear priesthood readily sacrificed their lands in the pursuit of forbidden knowledge, the secrets of the atom. Meanwhile, atomic uses amplified, rather than wiped clean, lingering notions of the taboo and the unwelcome. Seeping radioactive barrels strengthened popular perceptions of arid lands in Nevada and California as desolate wastelands. The new nuclear wilderness had its roots in soil already deemed unfit for life.

For environmentalists, the barrenness of ground zero indicated the destructiveness of humanity and a fast approaching ecological doomsday. Nuclear landscapes signified tortuous practice grounds for a forthcoming holocaust. The spring 1971 edition of *The Living Wilderness* detailed 'The nuclear sword of Damocles', 'the greatest threat to the continuance of animal, vegetable and human existence', declaring 'not only the wilderness but the whole world is in peril'.[44] Released during the same year, saturnine science fiction movie *Silent Running* explored the possibility of life devoid of wilderness. With Planet Earth (and, more importantly, the United States) denatured to the point of supporting only the human species, American spaceships carried the 'last forests of our once

FIGURE 2. Old Faithful geyser, Yellowstone (US National Park Service photograph)

FIGURE 3. ‘Nancy’ tower shot, Nevada, 1953 (US Department of Energy photograph)

beautiful nation' in giant bio-domes, with the distant hope of re-establishing the 'parks and forest system'. However, budget cutbacks led to the abandonment of the space project. All but one of the domes was destroyed using nuclear explosives. The last forest survived thanks to an extrovert nature enthusiast disobeying orders. He then taught two friendly robots to look after the wilderness. *Silent Running* reflected popular concern over environmental collapse and nuclear destruction, and made an emotional plea for better land stewardship.[45]

Fearing a rise in public opposition, the nuclear industry attempted to reconnect atomic sites with natural landforms in the 1960s and 1970s. Corporations located nuclear plants amidst newly created 'nature reserves', hoping that local wildlife would freely congregate alongside reactors and thus show their support of the atom. One industry advert proclaimed 'Go Play in the Atomic Park', alleging that children could safely play in nuclear landscapes without fear of fallout.[46] A number of movies suggested that radioactive decay was not altogether bad for the world. Bizarre post-apocalyptic utopias were expected to rise from the ashes of nuclear Armageddon. Film historian Joyce Evans explained the 'attraction' of 'nuclear war' as 'like a cloth that wipes away the accumulated ravages of history and allows a clean, fresh world to be reborn'.[47] Movies such as *Genesis 2* (1973) predicted a return to the virgin wilderness, with 'man' as survivor, an atomic Daniel Boone, with his ragged clothes testament to the abandonment of former cultural excesses.[48] Meanwhile, radiation mutants, savage and predatory, replaced the bears and serpents of the original wilderness.

THE MODERN PARADOX: THE POST-ATOMIC PARK?

This final section details recent debates surrounding the setting aside of former nuclear lands as protected park areas. While atomic aficionados put great store by the abundance of species to be found at testing grounds and reactor sites in the American West, environmentalists struggle to make sense of unfolding events. The true meaning of the 'post-atomic park' remains open to interpretation.

In the 1990s, many nuclear projects were downscaled or decommissioned. Nuclear energy had proven itself uncompetitive in the marketplace, while the end of the Cold War abruptly halted the nuclear arms race. Attention gradually turned to the ecological costs of the atomic era. While the scale of radioactive spoilage defied public expectations, equally shocking was the survival of nature in atomic 'wastelands'. At ground zero, native vegetation had reclaimed Trinity. Ravens nested in the plugs of former underground nuclear tests.[49] The 'nuclear wilderness' of the 1990s was far less 'alien' than depicted in the movies. If there were any radioactive mutants, they were kept secret and well hidden.

Those responsible for cleaning up atomic sites welcomed signs of natural recovery. The presence of endangered species testified to a healthy rather than terminally polluted landscape. Wild flora and fauna also bolstered nuclear

FIGURE 4. Nevada test site
(US Department of Energy photograph)

tourism. Tour guides for Nevada Test Site stressed the natural legacy of the nuclear age. The Department of Energy proudly spoke of the 6000 acres surrounding Rocky Flats plutonium processing plant northwest of Denver, 'home to many species of animals and plants'.[50] The land had assumed a dual purpose, preventing nuclear contamination from reaching human settlements while protecting wild nature from increasing urbanisation and tourism. In May 1999, US Energy Secretary Bill Richardson announced the setting aside of 800 acres of Rocky Flats as Rock Creek Reserve, thus protecting 'a unique habitat that has been untouched by human development for 25 years'.[51]

Authorities stressed their commitment to preserving nuclear and post-nuclear wilderness. At Yucca Mountain, proposed site for high-level radioactive waste storage, and, as such, a nuclear landscape in the making, officials monitored the endangered desert tortoise and 'indicator species' such as the long-tailed pocket mouse for early warnings of environmental impact.[52] Just like national park rangers, nuclear authorities regretted their past record of land mismanagement, and vowed to make amends. Portland General Electric, as a gesture of 'responsible environmental stewardship' offered land occupied by Trojan nuclear plant to the state of Oregon for park use.[53] The atomic plant, dubbed 'Oregon's Trojan horse' due to its poor operating performance, was in the process of being decommissioned. Featuring 500 acres of woods and wetland, including 200 wildlife species and one concrete nuclear sarcophagus, the *Hanford News* commented, 'As far as parks go, it would indeed have a bit of everything'. The newspaper's headline read 'From nuclear to state park?'[54]

The gulf between the atomic park and the nature park appeared to be closing. Tennessee Valley Authority dams, along with other huge industrial adventures, had been accepted in the past for their accompanying picnic sites and boating lakes.[55] The atomic industry offered similar fringe benefits. The National Park Service assumed responsibility for a number of nuclear missile silos next to Badlands National Park as newly appointed national historic sites.[56] Park employees also restored the McDonald Ranch at Trinity Test Site, after rain (rather than atomic blasts) damaged its tin roof and mud brick construction.

Environmentalists, ranchers, farmers, real-estate developers and Native Americans all competed for stretches of the Hanford Engineering Works. Only five percent of the reservation had suffered plutonium contamination, leaving 530 acres of 'prime habitat'. In June 2000, Hanford Reach National Monument, home to bald eagles and peregrine falcons, was set up as a shrub-steppe reservation. Battelle-Northwest biologist Larry Caldwell elaborated on the importance of Hanford, explaining that 'in a state that is losing thousands of acres of wildlife habitat each year...We're sort of an island, sort of a last bastion of sagebrush-dependent species'.[57] With many more acres to be freed for purchase, environmental hopes centred on expanding the post-nuclear National Monument.

While nuclear landscapes received unexpected plaudits, national parks came under fire from wilderness purists. The vulnerable ecology of nature parks had been meddled with and trampled on for too long. Park authorities were encouraged to manage humans, not nature. While the National Park Service appeared receptive to environmentalist pleas, they struggled with a sizeable tourist problem. At Yellowstone, recreational vehicles roared across park landscapes in the summer months. Snowmobiles invaded in the winter. Yosemite village was famous for its neon shopping experience. The 'wilderness' experience appeared in danger of devolving into a vacuous retail industry.

Nuclear landscapes had yet to be tarnished by consumer capital. Trinity Test Site, open to the public twice a year, featured only a few gift sellers. Neither was

FIGURE 5. Traffic jam, Yellowstone (US National Park Service photograph)

overcrowding a problem. Rebecca Solnit found the unpopulated zones of Nevada Test Site preferable to the claustrophobic Yosemite, shocked to discover 'this country's national Eden so full of disturbing surprises and its Armageddon so comparatively pleasant'.[58] Solnit was not the only one to favourably compare nuclear lands with traditional park areas. One wildlife biologist claimed PG&E's Diablo property was in far better ecological condition than Montana de Oro State Park, its northerly neighbour.[59] Plans were put forward to protect Diablo Canyon following plant decommissioning.[60] While nature parks suffered from their own recreational success, nuclear lands, mostly off-limits to the nation, often resembled their pre-nuclear countenance. Buffer zones, as no-mans-land, had served as enigmatic wildlife refuges. Rather than national parks, nuclear parks boasted the human-less 'frozen' wilderness.

The nuclear wilderness nevertheless had its fair share of critics. Colorado environmentalists rejected claims of a 're-natured' Rocky Flats. The 'Rocky Flats Horror Picture Show', with over 170 contaminated hotspots, hardly qualified as wilderness.[61] Nor were its land stewards well-trusted nature lovers. One environmentalist described the Department of Energy as 'so focused on public image that they cast aside safety'.[62] The 'rebirth' of Denver's Rocky Mountain Arsenal (RMA), former chemical warfare site turned wildlife menagerie, was equally regarded with suspicion. According to the Army Corps of Engineers, the territory featured 'the most contaminated square mile on Earth'.[63] Reports of tumble mustard tree groves flourishing on Rocky Mountain soil seemed unlikely given the prodigious manufacture of mustard gas and other lethal concoctions. Attempting to bypass the issue of human access, unconscionable authorities had merely discovered 'a way to do less clean-up' by proposing wildlife reserves.[64] Even more suspect was a plan to make RMA part of a 'Central Park of the West'.[65] Both the Rocky Mountain Arsenal and Rocky Flats represented dubious additions to the US park system. Environmentalists fervently pushed their own 'toxic tours' of the sites surrounding Denver, showing a landscape connected by pollution, not protection.[66]

For several decades environmentalists had vilified atomic energy as an enemy of ecology. While clean-up authorities promoted stories of natural recovery and benign experimentation, anti-nuclear activists preferred to keep with their well-established narratives of environmental ruin. Along with cancer-suffering atomic veterans, nuclear and post-nuclear landscapes provided material proof of radiation damage. For vehement critics of the nuclear age, the landscape was itself a story of secret holocaust and the slow death of nature. 'Atomic photographers' in the late 1980s and early 1990s captured scenes of nuclear devastation in western territory. Carole Gallagher photographed brave but sickened residents of Utah and Nevada, and cloudy, contaminated landscapes.[67] Richard Misrach shot pictures of dead animal corpses and nuclear desolation in the desert.[68] The overwhelming image was one of needless human sacrifice and creeping ecocide.

Photographs situated the 'nuclear west' as a social creation, a landscape forged by atomic device. Unlike huge canvas paintings of national parks, or early portraits of the 'Great American desert', where humans were noticeably absent, the nuclear vista was an 'irrevocably social landscape' moulded by nefarious sapient endeavour.[69] To help magnify themes of poisoning, nature was often cast as a powerless victim of atomic 'progress' or a gloomy, deathly backdrop. Celluloid scenes of the nuclear landscape drew on deep-rooted fears of both atomic energy and harsh terrain. The tortured animal bones immortalised by Misrach resembled the buffalo skulls in classic paintings of the West by Charles Russell one hundred years earlier.[70] The myths of the American desert, 'wasteland' and 'wilderness', death and beauty, coincided. While tourists captured on film freakish geysers and the 'unnaturally natural' at Yellowstone, atomic photographers documented poisoned waterholes, misshapen military machinery, and the 'naturally unnatural' at Nevada Test Site. Nuclear industry pictures of healthy wildlife thriving in atomic spaces were fake and timid by comparison.

Environmentalists recognised that the 'nuclear park' ideal drew attention away from serious problems at atomic sites involving decontamination and waste storage issues. As well as supposed nature reservations, Rocky Flats and Hanford were also federal Superfund sites. Established by Congress in 1980, the Superfund program was designed to clean up the most polluted sites in the country, under the guidance of the Environmental Protection Agency. Peter Hales described 'the atomic spaces of the Manhattan Engineering District' as 'legendary deserts of toxic horror'.[71] Meanwhile, working uranium mines continued to spew toxins into the air and ruin neighbouring communities. The nuclear age was about pollution not preservation. Radioactive particles from more than a thousand nuclear tests had travelled the biosphere, tainting the Earth with poison. There was, in fact, no untouched wilderness thanks to atomic engineering. Even national parks fell victim to passing radiation clouds in the 1950s.[72] In the popular consciousness, nuclear landscapes remained the antithesis of the hallowed recreational paradises of Yosemite and Yellowstone. According to

FIGURE 6. Wild horses at Nevada test site (US Department of Energy photograph)

the *New Atlas of the West*, nuclear landscapes were the quintessential 'ugly west', despoiled lands marked by 'atomic leftovers'.[73] While park landscapes testified to wholesome recreation and fondness for wild nature, nuclear and post-nuclear landscapes manifested destruction and deception. The most revealing 'nuclear park' was to be found just a half-mile from Lawrence Livermore National Laboratory, a nuclear weapons research centre east of Berkeley, California. To the shock of Livermore personnel, plutonium particles had been found at Big Trees Park, popular destination for local parents and children, not to mention birds and wildlife. The *San Francisco Examiner* renamed it the 'Plutonium Park'.[74]

REINTERPRETING ATOMIC SPACES

At Bodega in the early 1960s, any useful discussion of the atomic park had been cut short by the discovery of the San Andreas Fault directly beneath PG&E's groundbreaking plant. A natural, seismic threat put paid to any chances of a nuclear park on the headland. Pacific Gas was forced to withdraw its plans. The land set aside for nuclear status passed into state park ownership, with the shaft dug for the atomic plant (known by locals as 'the hole in the head') claimed by birds as a duck pond. The nature reserve gradually covered up all traces of PG&E's atomic aspirations. Nature had been saved, and the full ravages of the nuclear landscape avoided. The choice had been between an atomic park and a state park, industry and despoliation or nature and recreation. A journalist, recounting events at Bodega Head, declared 'It's a park alright, but not an atomic one'. The difference appeared self-evident.[75]

Over a period of fifty years, nuclear landscapes served as popular icons of danger and destruction. Hanford Engineering Works and Nevada Test Site represented sacrifice zones, Armageddon wastelands where humans experimented with deadly materials. Unlike US national parks, set aside to preserve wild scenery, lands appropriated for the nuclear cause were subject to exploding bombs and the annihilation of nature. In the 1990s, nuclear lands taken over for clean up or decommissioning were expected to bear testament to their deadly purpose. Decomposing waste barrels were the anticipated legacy of the nuclear era. However, a bunch of coyotes hanging out at ground zero told a slightly different story. Battered and irradiated, nature had survived the holocaust. Just as national park managers had partly crafted the 'virgin wilds', natural forces had maintained an influence on the man-made nuclear landscape.

Nature's survival was treated as something of an enigma. While bears wandering in Yosemite symbolised a wild American landscape cherished by its keepers, the presence of wildlife at Nevada Test Site hardly matched with the destructive mandate of military authorities. Puzzling over how to interpret the atomic park paradox, commentators turned to effete narratives of the nuclear era.

Pro-nuclear industrialists took credit for natural recovery, while environmentalists remained sceptical. Nuclear lands were inescapably tied to partisan interpretations of the nuclear age. In 1995, the Smithsonian revised a major exhibition on Enola Gay and the dropping of the atomic bomb to placate war veterans.[76] In 1994, New Mexico officials, fearing 'gatherings of peaceniks', rejected a request by thousands of US children for a peace park at Los Alamos, although a Missile Park at White Sands Missile Range Museum continued to attract its fair share of war technology enthusiasts.[77] The nuclear age, ended or not, had lost none of its controversy. American society and landscape still appeared gilded by their brush with atomic physics. Perhaps not the oxymoron that it first appears, the 'atomic park' is part of this contested territory. Just as US national parks remain fiercely controversial landscapes, subject to divergent interpretations, and imperfect monuments to America's past, nuclear parks are similarly contentious places.

Reaching a steadfast verdict on the ecological costs of the nuclear age is thus likely to remain out of reach until a scientific and intellectual common ground emerges. The advent of 'post-atomic parks' will need to be set alongside the trials encountered in burying mountains of nuclear waste. Despite a very different charter, Hanford Reach Monument shares its history with Yucca Mountain. Atomic landscapes need to be reinterpreted, and the nuclear story rewritten, to take into account themes of natural loss and recovery. This entails a greater role for environmental history in nuclear history, and perhaps a diminished role for studies based on Cold War mentalities.

Equally, nuclear issues have much to add to our understanding of environmental history, especially in regard to prominent terms such as 'nature' and 'park'. From this article, it is clear that much of the allure of the park rests on its wilderness imagery, of a landscape untouched by humanity, while nuclear landscapes are repugnant due to their overt military exigencies, and concomitant lack of naturalness. Situating nuclear landscapes and park territories as polar extremes reflects the influence of two important cultural paradigms, one asserting the nuclear age as intrinsically destructive, the other positing the conservation era as productive and praiseworthy. On a more profound level, nuclear landscapes are meant to symbolise the danger of human dominion and control, while parks embody idealistic notions of nature pure and unsullied by culture. However, the specific landscapes set aside as totems of cultural decay or biotic resurgence rarely conformed to their mantles. From abandoned, military vehicles to bustling concessionary stores, signs of human impact pepper both nuclear and national park landscapes. Meanwhile, nature (as a description of floral and fauna agents) fails to abide by the absolute definitions we foist on it. Endangered species rebound at nuclear wastelands, while grizzly bears struggle to maintain numbers in protected areas such as Yellowstone. Neat stereotypes disregard the complex interactions between nature and culture. Once a term used to describe the geologic curiosities of Yellowstone, today more appropriate to post-atomic wilderness, the 'unnaturally natural' remains not only a paradoxical phrase, but also leads to a sticky quagmire over how best to interpret the modern landscape.

NOTES

[1] A picture of the billboard can be found in Wellock 1992, 192.
[2] David Pesonen, 'A Visit to the Atomic Park'. The pamphlet reprinted articles published in the *Sebastopol Times* during autumn 1962. Held at the Bancroft Library, University of California, Berkeley.
[3] See Hays 1987, 23–4, 86–7.
[4] Eminent Western historian Richard White remarked how developers established 'park-like' industrial sites in Western states during the post-1945 era. Stanford Industrial Park, founded in 1951, was the first university-sponsored industrial park in the country. See White 1991, 547 and Findlay 1992, 117–59.
[5] For further insight into Disney landscapes, see Findlay 1992, 52–116.
[6] Yellowstone National Park received 2,062,476 visitors in 1965. Haines 1996 [1977], 480.
[7] Novelist Wallace Stegner is credited with having described the US national park system as 'the best idea we ever had' in 1983. Noted in Milstein 1996, 8.
[8] Throughout the 1970s, anti-nuclear protesters highlighted themes of radioactive contamination and even mutation, while offering solar power as a natural alternative energy source. Following the accident at Three Mile Island nuclear power plant, Pennsylvania, in 1979, mainstream American society adopted a critical stance towards atomic energy production, although nuclear weapons were still accepted as valuable 'peacekeepers' to counter the 'Soviet threat'.
[9] Yosemite Park Act, June 30 1864, U.S., *Statutes at Large*, 13 (1864), 325. Yosemite was expanded to become a National Park in 1890.
[10] Ibid.; See Alfred Runte's discussion of national parks as 'worthless lands' in Runte 1979, 48–64. California senator John Conness described the Yosemite bill as 'a grant of certain premises located in the Sierra Nevada mountains, in the State of California, that are for all public purposes worthless, but which constitute, perhaps, some of the greatest wonders of the world'. Runte, 48–9.
[11] Washburn expeditioner Cornelius Hedges is said to have first raised the idea of 'a great National Park'. See Milstein 1996, 39.
[12] Milstein 1996, 39. The origins of the park idea may alternatively be traced to events surrounding the establishment and operation of Yosemite Park (1864). See Runte 1990, 26–7, 33–5.
[13] For a study of the re-evaluation of wilderness in the late nineteenth century, see Nash 1982 [1967], 108–21.
[14] For park policy towards Indians, see Spence 1999 and Keller and Turek 1998.
[15] Solnit 1994, 136.
[16] Kuletz 1998, xiv. Solnit discusses Shoshone title to the Nevada Test Site in *Savage Dreams*, 28–30. For land issues at Hanford, see Ken Olsen, 'At Hanford, the real estate is hot', *High Country News*, 28/1, 22 Jan. 1996; for Los Alamos, Barbara Ferry, 'Homesteaders sue over ancestral land', *High Country News*, 32/6, 27 Mar. 2000.
[17] In 1956, the National Park Service also announced Mission 66, an extensive plan to expand the park system and attendant visitor services. Hays 1987, 117.
[18] PG&E, 'Summary Comparison of Sites for Nuclear Power Plant, South Coastal Area', Sierra Club Collection (henceforth SCC) 71/295c, box 189, file 30, Bancroft Library.
[19] In correspondence dated March 6, 1963, Sierra Club member Frederick Eissler suggested, 'There is every reason to believe that the Nipomo Dunes is another Bodega

Head', SCC 71/103c, box 78, file 13. The Bodega analogy was later applied to controversies surrounding a nuclear plant at Diablo Canyon. In early 1967, the *San Francisco Chronicle* detailed events at Diablo, commenting 'once again, as at Bodega, a good power plant site was also a good park site'. *San Francisco Chronicle*, 12 Feb. 1967.

[20] PG&E, 'Summary Comparison of Sites'.

[21] Sierra Club Board of Directors, Minutes of the Annual Organisation (May 7–8, 1966), 8, SCC 71/103c, box 4, file 5.

[22] For example, memorandum 'To Board of Directors from Fred Eissler', (September 8, 1966), SCC 71/103c, box 110, file 1. Eissler first referred to the Pacific Coast Recreation Area Survey (1959), published by the National Park Service, at the May 1966 Club meeting.

[23] 'The Diablo Canyon Area: *California's Last Unspoiled Pastoral Coastland*', signed by David Brower, Polly Dyer, Jules Eichorn, Fred Eissler, Martin Litton, Daniel Luten, David Pesonen, Eliot Porter, and Georg Treichel, *Sierra Club Bulletin*, 52/2 (February 1967), 7, author's personal copy.

[24] Kathy Jackson, 'Correction: John Muir Would Vote No', (February 1969), SCC 71/103c, box 123, file 11. The letter was part of a cantankerous battle between members regarding how John Muir (1838–1914), co-founder and 'patron saint' of the Club, would have voted on Diablo if alive in the 1960s.

[25] William Siri and Ansel Adams, 'In Defense of a Victory: The Nipomo Dunes', *Sierra Club Bulletin* (February 1967), 4.

[26] See Schrepfer 1992, 212–37 and Wellock 1998, 68–94.

[27] William Bennett quoted in *Ramparts*, February 15, 1968, SCC 71/103c, box 117, file 33.

[28] PG&E, 'Special Report of Diablo Canyon', *PG&E Life* (June 1967), 15, SCC 71/103c, box 113, file 40. In the Aleutians off the coast of Alaska, Atomic Energy Commission officials similarly downplayed the natural worth of Amchitka Island to bolster support for nuclear testing in 1971. See Coates 1996, 22, 33.

[29] Keith Schneider's foreword in Gallagher 1993, xvii. The incident is discussed more fully in Hacker 1998, 157–75.

[30] Wolves survived in Alaska. For an overview of National Park policy towards *Canis lupus*, see McIntyre 1993.

[31] For more on the construction of nuclear cities, see Abbott 1998, 90–115.

[32] Hales 1997, 2.

[33] Here I use the Department of Energy's description of Nevada Test Site as a 'massive outdoor laboratory,' at http://www.nv.doe.gov/nts.

[34] However, Project Plowshare promised far more than it could ever possibly (let alone safely) deliver. The American public remained wary of radiation side-effects, while the test grounds of Nevada and White Sands, marked by dusty craters and military ditches, were hardly the best indicators of what nuclear engineering offered. For insights into a few of the controversies surrounding Project Plowshare, see Coates 1989, 1–31, O'Neill 1994, and Krygier 1998, 311–22.

[35] In the 1910s and 1920s, the National Park Service killed predators in order to encourage huge elk herds. However, the herds overgrazed suitable range, and vast numbers died during harsh winters. This led to more protection for elk, and the cycle repeated itself until policy revisions in the 1930s. For a highly critical look at Yellowstone National Park management and elk overpopulation problems, consult Chase 1987, 19–24.

[36] Yosemite and Yellowstone park employees endorsed natural-burn policies for the first time in 1972: Chase 1987, 70 and Runte 1990, 216. The seminal work on the use of fire

through time remains Pyne 1982. On the 'creation' of national park landscapes, see McClelland 1998.

[37] Runte 1990, 133–4.

[38] *Las Vegas Review-Journal*, 21 May 1953. Cited in Fradkin 1989, 19.

[39] On the Blackfeet issue, see Warren 1997, 126–51 and Spence 1998, 29–49. On gas threats, see Buchholtz 1976, 78. On dangers to national parks in general, see Freemuth 1991.

[40] *Nevada Highways and Parks* magazine (June–December 1953). See Fradkin 1989, 103–4.

[41] Milstein 1996, 39.

[42] Gallagher 1993, xii.

[43] Upon witnessing the first atomic explosion at Trinity Test Site in July 1945, Los Alamos Laboratory director J. Robert Oppenheimer quoted a passage from the *Bhagavad Gita*, while the appropriately named 'Cathedral Rocks' and 'The Cathedral Spires' have been a source of inspiration for Yosemite visitors for decades.

[44] Lenore Marshall, 'The Nuclear Sword of Damocles', *The Living Wilderness* (Spring 1971), Papers of David Hartsough, American Friends Service Committee, San Francisco office.

[45] *Silent Running* (Universal Pictures, 1971).

[46] A copy of the advertisement can be found in Gofman and Tamplin 1973, 182–3.

[47] Evans 1998, 137.

[48] *Genesis 2* (TV movie, 1973) written and produced by Gene Roddenberry (of Star Trek fame), is brimming with atomic references. The post-nuclear war story (set in 2133) features a mutated race of humans (the Terranians) living underground, who depend on an arcane nuclear generator for their electricity. The surface has meanwhile become wild. Dylan, suspended by cryogenic experimentation in the 1970s, awakes into this bizarre world. While initially upset at losing his local highway and airport to wilderness, he soon comes to admire the beauty of blue skies and clean water, exclaiming, 'it's like the earth has been given a second chance'. On behalf of a remnant (and enslaved) human population, he destroys 'Terrania' with a nuclear missile left over from the Third World War. Other nuclear movies posted an anti-survivalist message, such as *Massive Retaliation* (Massive Productions, 1984).

[49] Journalist James Abarr related on a visit to Trinity how 'Ground zero at Trinity offers strong testimony to the recuperative powers of nature. Radiation levels are virtually nil, and the once-blackened and scorched land has fully recovered from the nuclear devastation of a half-century ago. Plants, grass, soil and wildlife have all returned…'. James Abarr, 'The Legacy of Trinity', *ABQ Journal.com*, 28 Oct. 1999. According to one Nevada Test Site tour guide, a raven annually nests atop the plug of a crater caused by Bilby, a 1963 atomic test. Bilby has become a 'drive through' crater on tours of the test site, a modern-day version of the drive-through redwood at Yosemite National Park. Solnit 1994, 208.

[50] Department of Energy, 'Rocky Flats Closure Project: Rocky Flats Overview', http://www.rfets.gov. The DOE similarly declared that land use restrictions at Nevada Test Site assured that 'biotic communities are in a relatively natural balance', in 'Nevada Test Site: National Environmental Research Park', http://www.nv.doe.gov/nts/researchpark.htm.

[51] Department of Energy, 'Energy Department – U.S. Fish and Wildlife Partnership Creates "Rock Creek Reserve"', press release, 17 May 1999, copy available at http://www.rfets.gov. The agreement was reached between the US Fish and Wildlife Service and the DOE.

[52] Such details are noted in the 'Environmental Program' posted at the Department of Energy's Yucca Mountain website, http://www.ymp.gov.
[53] 'From nuclear plant to state park?', *Hanford News/Tri-City Herald*, 15 Aug. 1999. The article is posted at http://www.hanfordnews.com/1999/aug25.html.
[54] Ibid.
[55] The Tennessee Valley Authority, established by Congress in 1933, is responsible for the economic (and, in turn, social) development of the Tennessee River drainage basin. Alongside huge industrial projects (including over 30 dams), the TVA has also created campgrounds, beaches and parks. For further insight into TVA's industrial and natural legacy, see Wilson 1992, 259–66.
[56] 'Strangelove park', *High Country News*, 26/13, 25 July 1994.
[57] John Stang, 'Hanford habitat key to survival', part of a series on Hanford, entitled 'A matter of habitat', *Tri-City Herald*, 25–28 Feb. 1996.
[58] Solnit 1994, 367.
[59] Conversation with Sue Benech, biologist, Diablo Canyon, 21 Aug. 1997.
[60] David Sneed, 'Water board working to preserve PG&E land', *The Tribune*, 17 Aug. 1999, and Sneed, 'PG&E supports Diablo preserve', *The Tribune*, 3 Oct. 1999. *The Tribune* was formerly the San Luis Obispo County *Telegram-Tribune*.
[61] Michael Fumento used the phrase 'Rocky Flats Horror Picture Show' in the as titled 'Rocky Flats Horror Picture Show: Rocky flats Plutonium-Processing Plant', *National Review*, 5 Nov. 1990.
[62] Sierra Club member Susan LeFever, quoted in Camille Colatosti, 'A "Toxic Tour" of Denver: Working for environmental justice at the grassroots', *The Witness* (July–August 2000). A copy of this document is available at http://thewitness.org/archive/julyaug00/toxictour.html.
[63] Cited in Wilson 1992, 281.
[64] Colastosti, 'A "Toxic Tour" of Denver...'
[65] Governor Roy Romer put forward the idea of a 'Central Park of the West'. See Mark Obmascik, 'Arsenal Billions Away from Being Picnic Site', *Denver Post*, 14 Feb. 1987, reprinted in Cronon 1995, 65. Maria Streshinsky included the RMA in a list of 'Five fabulous makeovers for Mother Earth', in 'From Blighted to Beautiful' *Via Online* magazine (November 1999), available at http://www.viamagazine.com/top_stories/articles/environment99.htm.
[66] The Colorado People's Environmental and Economic Network (COPEEN) offer toxic tours. See Colatosti, 'A "Toxic Tour" of Denver...'
[67] Gallagher 1993.
[68] Davis 1999, 341–5 briefly discusses the work of Richard Misrach. A useful article on pro-nuclear photography is Kirsch 1997, 227–55. Kirsch argues that AEC photographs were 'designed, quite literally, to take the place out of the landscape', (229) so that the public felt no attachment to areas used for testing.
[69] Davis 1999, 347.
[70] For a brief discussion of Russell's work, see Dippie 1994, 692–4.
[71] Hales 1997, 5.
[72] Downwind of the Nevada Test Site, Zion National Park (Utah), Bryce Canyon National Park (Utah) and Grand Canyon National Park (Arizona) inevitably received fallout from aboveground nuclear tests during the 1950s.
[73] Riebsame 1997, 134. Details of 'A Nuked Landscape' are located in a chapter looking at the so-called 'Ugly West'.

[74] Jane Kay and Erin McCormick, 'Bay's nuclear leftovers', *San Francisco Examiner*, 25 Nov. 1997.
[75] Simone Wilson, 'How Bodega Bay Nixed the Atomic Park', *Albion Monitor*, 3 Dec. 1995. A copy of this document is available at http://www.monitor.net/monitor. See also 'Bodega's Bird-Dogs Saved Town', *San Francisco Chronicle*, 23 Dec. 1997.
[76] On the controversies surrounding the Smithsonian exhibition on the Enola Gay, see Kai Bird's article 'Silencing History', *The Nation*, 20 Feb. 1995.
[77] 'Peace Gets No Chance', *High Country News*, 26 Dec. 1994. The peace park was planned as a 'sister memorial' to the Hiroshima Memorial Peace Park.

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