

# Tools of Transformation: Appropriate Technology in U.S. Countercultural Literature

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***Abstract:** This essay takes its cue from second-wave ecocriticism and from recent scholarly interest in the “appropriate technology” movement that evolved during the 1960s and 1970s in California and elsewhere. “Appropriate technology” (or AT) refers to a loosely-knit group of writers, engineers and designers active in the years around 1970, and more generally to the counterculture’s promotion, development and application of technologies that were small-scale, low-cost, user-friendly, human-empowering and environmentally sound. Focusing on two roughly contemporary but now largely forgotten American texts—Sidney Goldfarb’s lyric poem “Solar-Heated-Rhombic-Dodecahedron” (1969) and Gurney Norman’s novel *Divine Right’s Trip* (1971)—I consider how “hip” literary writers contributed to eco-technological discourse and argue for the 1960s counterculture’s relevance to present-day ecological concerns. Goldfarb’s and Norman’s texts interest me because they conceptualize iconic 1960s technologies—especially the Buckminster Fuller-inspired geodesic dome and the Volkswagen van—not as inherently alienating machines but as tools of profound individual, social and environmental transformation. Synthesizing antimodernist back-to-nature desires with modernist enthusiasm for (certain kinds of) machinery, these texts adumbrate a humanity- and modernity-centered post-wilderness model of environmentalism that resonates with the dilemmas that we face in our increasingly resource-impooverished, rapidly warming and densely populated world.*

***Keywords:** 1960s—appropriate technology—counterculture—ecology—ecocriticism—environmentalism—geodesic dome—hippies—literature—Volkswagen van*

Recent scholars of post-World War II American environmentalism have rediscovered the green movement's technology-friendly, progressive and pragmatic dimension. Responding to what William Cronon called "the trouble with wilderness," for example, historians William Kirk and Fred Turner have published books devoted to the "appropriate technology" or "whole earth" movement that evolved during the 1960s and 1970s in California and elsewhere from the efforts of countercultural engineers, designers and grassroots activists. In this essay, I consider how literary writers contributed to eco-technological discourse and argue for the 1960s counterculture's relevance to present-day ecological concerns.

"Appropriate technology" (or AT) refers to a loosely-knit group of writers, engineers and designers active in the 1960s and early 1970s, and more generally to the counterculture's promotion, development and application of technologies that were small-scale, low-cost, user-friendly, human-empowering and environmentally sound. AT is rooted in the work of William Morris, Mahatma Gandhi and Lewis Mumford, among others, and it emerged from the margins into the mainstream after a landmark 1968 conference in Oxford, England, co-organized by the German-born economist E. F. ("Fritz") Schumacher, who coined the term "intermediate technology" following a 1963 visit to India (Rybczynski 87-92). In their studies, Kirk and Turner especially privilege Stewart Brand's *Whole Earth Catalog* (1968-1980), which offered aspiring back-to-the-land communards and other environmentally conscious consumers access to a wide and eclectic array of low-impact and user-friendly technologies including do-it-yourself composting toilets, photovoltaic solar panels, windmills, welding equipment, wood-burning stoves, greenhouses, gardening tools, alternative health remedies, Moog synthesizers, calculators, pig-foot nippers and survival gear. Wishing to create a Sears Roebuck catalogue for the countercultural generation, the *WEC* editors scanned contemporary culture and society for products, plans, ideas, crafts and techniques that were "useful," "relevant to independent education," "high quality or low cost," "not already common knowledge" and "easily available by mail," as Brand put it in the foreword to the first issue (Brand et al.). Besides providing "access to tools," as the *WEC*'s subtitle promised, the countercultural access catalog pioneered a de-centered and de-centering information structure, inviting constant revision through user participation and feedback. Hence, Kirk, Turner and others highlight the *WEC* not only for epitomizing a specifically Western American entrepreneurial and "genuinely holistic and human-centered en-

vironmental pragmatism” (Kirk 2), but also for devising an “informational genre” (Turner 101) that provided an important stimulus to later developments like the personal computer and the world-wide web.

As Christopher Gair suggests, literature’s importance for the counterculture has remained strangely underappreciated, “as if the hippie generation had no interest in books” (143). In the ongoing historicization of the counterculture and its cultural production, scholarly interest has revolved around non-fictional how-to catalogues, therapeutic self-help manuals and do-it-yourself tracts, “a publishing genre . . . brandishing advice on such matters as food preparation, the construction of dwellings, home provisioning, sexuality, collective living, athletics and health, recycling, solar and wind power, exercise, massage, ecology, cycling, jogging, crafts, mediation and spirituality, and hair and clothing” (Binkley 5). Yet members of the whole-earth movement used a wider array of discursive means, including images, symbols, metaphors and narratives, to challenge deeply-rooted cultural conceptions and synthesize countercultural, environmentalist and technological values. The movement’s unofficial prophet, Richard Buckminster (“Bucky”) Fuller, exploited the poignant trope of “spaceship earth” to capture his cybernetic vision of the planet as a self-enclosed system with limited resources and with modern man as its self-appointed pilot (Fuller, 1969, Anker). Stewart Brand showed similar deftness when he appropriated the first photographs of Earth from space, taken by NASA astronauts during the 1968 Apollo 8 mission. Brand recognized the striking quality of these “Earthrise” images, and by placing them on the covers of *WEC* volumes, he helped transform them into icons of environmental consciousness (Poole 147-151).

In this essay, I foreground literature’s role in American whole-earthers’ campaign to fashion a new countercultural sensibility at once technologically savvy and holistically attuned to the earth. In so doing, I bring into sharper focus a lesser-known “green” literature that runs counter not only to the rule of corporate and technological expertise that Theodore Roszak labeled “technocracy,” but also to the technophobic apocalypticism and wilderness romanticism that have often tended to characterize American countercultural protest writing. My essay takes its cue from the resurgent research interest in the counterculture evidenced for example by the 2008 launch of *The Sixties: A Journal of History, Politics and Culture* (Varon et al.). At the same time, my reading benefits from developments within literary ecocriticism, which has witnessed a shift away from the “first-wave”

preoccupation with wild and pastoral landscapes towards “second-wave” investigations that increasingly factor human problems and inventions into discussions of sustainability (Buell; Buell, Heise and Thornber). The literature that concerns me helps illuminate the complexity and variety of U.S. countercultural literatures and mentalities toward modernity, just as it interestingly contextualizes our own moment of rising environmental anxiety and our own increasingly anguished search for sustainable technological solutions to meet the challenges of the future. More specifically, I center my discussion on two roughly contemporary but largely forgotten texts—a lyric poem and a novel—that champion what hip San Francisco poet Richard Brautigan called “machines of loving grace.” These texts interest me because they present specific 1960s-era “appropriate technologies” as tools of profound individual, social and environmental transformation, synthesizing antimodernist back-to-nature desires with modernist enthusiasm for (certain kinds of) machinery.

## II

My first text is the poet and playwright Sidney Goldfarb’s “Solar-Heated-Rhombic-Dodecahedron,” which was first published in the collection *Speech, for Instance* (1969):

a man  
is blessed  
who assists  
in the building  
of a solar-heated-  
rhombic dodecahedron

I don’t mean  
To say technology  
Itself is holy  
(though that too  
may be  
an element)

I mean  
heat rises.  
Rocks preserve heat.  
Assymmetrical dwellings  
can stand by themselves  
if properly arranged.

No.  
 I mean the shovel  
 in my hands.  
 I mean  
 the cottonwoods  
 by the river.

I mean the dark  
 scent of dust  
 nudged up  
 by a few  
 new drops  
 of rain

Dammit!  
 What I mean is the cloudburst  
 (Which drenches us  
 and makes us huddle together  
 in the cold  
 Pickup our  
 only shelter.)

Goldfarb (b. 1942) is a poet, playwright and Professor of English at the University of Colorado at Boulder, where he has taught creative writing since 1973. Before commenting on the poem, I will situate it in its context. The poem's title and dedication ("to Steve Baer") associate it with the late-1960s counterculture of the American Southwest and especially with the short-lived artists' colony Drop City, which was founded in 1965 on six acres of scrubland near Trinidad in south-eastern Colorado.<sup>1</sup> Today Drop City is remembered for its signature architectural style and especially for its key role in popularizing a trademark symbol of the American counterculture: the geodesic dome. Invented in Germany in 1922, the geodesic dome was patented and tirelessly promoted by R. Buckminster Fuller, who by the mid-1960s was approaching the height of his fame. Having attended a Fuller lecture in 1965, the original Droppers set about constructing three geodesic domes using recycled materials including old telephone poles, tar paper, chicken wire and bottle caps. They were joined in April 1966 by

1 The name Drop City came from the practice of dropping painted rocks from windows to witness the effect on unsuspecting passersby. The Drop City inhabitant Peter Douthit wrote extensively about his experiences as "Billy Voyd," "Albin Wagner" and "Peter Rabbit." For some later accounts and perspectives, see Matthews; Miller; Sadler; and Scott 151-174.

New Mexican engineer and mathematician Steve Baer, who contributed his original design ideas. Baer would raid local junkyards, chopping up old vehicles and using sheets from the roofs of cars for metal roofing. Departing somewhat from Fuller's formula, Baer also devised a series of polyhedral structures based on the rhombic dodecahedron, which by combining the words "dome" and "zonahedron" he labeled "zomes." Unlike a dome, which is limited to a single spherical shape, a zome could be stretched out asymmetrically or joined to other zomes to build complicated free-form buildings. Because zomes allowed greater scope for experimentation, and because they permitted additions, extensions and subdivisions with superior ease, these post-geodesic buildings proved more congenial to the Drop-pers' sensibilities than stringent Fullerite geodesics.

A technology with complex and contradictory symbolic and ideological meanings, the dome/zome fused the values of the Space Age with those of the dawning Age of Ecology.<sup>2</sup> With its futuristic appearance, the geodesic dome provided a suitable emblem for an age when "[w]e are all astronauts" on "Spaceship Earth" (Fuller, 1969, 42). At the same time, and somewhat paradoxically, domes and zomes were assumed to help men and women connect to nature. Most domes were built in rural regions, distancing their inhabitants from the dissipations of capitalist urban consumer society. Countercultural domes were low-cost, human-scaled and could be built almost entirely of recycled materials and waste products. Thus, dome building focalized mounting concerns with energy efficiency, wise resource use and what Fuller called "ephemeralization" (doing more with less) (1971, 252-259). Covering a maximum of space with a minimum of materials, domes seemed perfectly suited for an impending age of scarcity, and perfectly consonant with the counterculture's general ambition to tread more lightly on the Earth.

At least as important as these practical concerns, for many geodesic converts, was the belief that domes and zomes by their very shape figured the possibility of growth towards a more authentic, balanced and centered being-in-the-world. According to Fuller, the geodesic dome had unique value for civilization because tetrahedra were the building blocks of the universe,

2 Among other purposes, Fuller's domes had been used to protect bomber airplanes, to shelter aerial radar installations and to advertise American business at international trade fairs. The history of the geodesic dome has been told repeatedly, though perhaps not as exhaustively as it deserves. Informative sources include Macy and Bonnemaïson 293-340; Sieden; Soojung-Kim; and Turner 94-97.

composing “the fundamental energy quantum” (1982, 335). Adopting and elaborating this argument, Fuller’s hip acolytes routinely contrasted rectangular with curved structures, the latter promising a much-needed realignment of human lives and the human spirit with the natural world. For Drop City spokesman Peter Douthit (aka “Bill Voyd”), for example, dome inhabitation equaled “not sheltering ourselves from our natural environment but learning to live with it”:

To live in a dome is—psychologically—to be in closer harmony with natural structure. Macrocosm and microcosm are recreated, both the celestial sphere and molecular and crystalline forms. Cubical buildings are structurally weak and uneconomic. Corners constrict the mind. Domes break into new dimensions. They help to open man’s perception and expand his approaches to creativity. The dichotomy between utilitarian and aesthetic, between artist and layman is broken down. (157-158)

From the countercultural perspective, domes were less reminiscent of ordinary houses than of churches, mosques or synagogues, organizing space and energy in such a way as to reduce artificial needs, foster healthy living habits and enhance holistic awareness:

Living in a spherical single unit makes us wholer people. We feel more whole and have our whole trip around us. We stay more in touch with each other and our friends also this wholeness has a healthy effect on our possessions, our wants and desires. Feeling whole and centered is crucially important, and domes surely can contribute to this. (Kahn, 1971, 247)

Domes, in other words, did more than provide home- and penniless drop-outs an affordable and convenient machine for living off the grid. By tapping the deep geometric logic of the universe, domes corrected the hubris of the 20th century and helped modern men and women resume their proper relation to the surrounding world. As Lloyd Kahn phrased it, “you were somehow in touch with the universe in building a dome” (1991, 109).

Goldfarb’s “Solar-Heated-Rhombic-Dodecahedron” poeticizes the counterculture’s optimistic (and naive) belief that domes built from “the garbage of America” (Voyd 156) could enhance communitarian connect-edness and advance ecological right living. In a manner reminiscent of Richard Brautigan, the poem’s speaker struggles to find appropriate words, starting over repeatedly and constructing his argument through a series of revisions, qualifications and denials: “I don’t mean/.../though;” “I mean;” “No./I mean;” “I mean,” “I mean;” “Dammit!/What I mean.” Besides creat-

ing a humorously self-deflating and informal tone, the speaker's awkward, halting discourse in these lines mimics the tentative, experimental and improvisational quality of dome-building projects as outlined by Baer, Kahn and others. When embarking upon projects, dome builders typically made things up as they went, working in shifting ad-hoc groups with whatever materials could be acquired by "creative scrounging" (Wagner 233). In *Drop City*, said Peter Douthit, "[w]e lead a day-by-day existence, functioning within a loose structure . . . that is always growing and shifting and changing as we change" (Voyd 158). Hip dome building and dwelling entailed a rejection of square values such as stasis, teleology and closure, and a corresponding embrace of movement, variety and open-endedness. By letting his speaker weave circles around himself before he can strike the correct note, Goldfarb incorporates the geodesic rejection of linearity into the structure of his poem.

Written during the first wave of dome construction, "Solar-Heated-Rhombic-Dodecahedron" highlights, self-consciously queries and ultimately affirms the counterculture's tendency to invest geodesic and quasi-geodesic structures with redeeming, almost sacred value. While he rejects traditional Christian meanings ("I don't mean/To say technology/Itself is holy"), Goldfarb's speaker plays with religious language and chiliastic imagery in a way that situates this minimalist free verse poem within "the American literary-religious tradition that includes calls for awakenings and revivals, simplified lives, from Jonathan Edwards to Henry David Thoreau" (Jones 188). In Goldfarb's poem, however, transcendence is achieved not despite technology but by way of technology. In the first three stanzas, the speaker launches a series of abortive attempts to explain the zome, its special qualities and its effect on those who build it. Rhombic dodecahedra, it is said, possess special properties including an extreme durability that makes supporting walls redundant. They can be equipped (as Baer's were) with natural solar collectors that absorb heat during the day and release it at night. Those who assist in building such structures partake of their "holy" aspects and may in some sense consider themselves "blessed."

The somewhat theoretical nature of these protestations leaves the speaker dissatisfied, however, so the second half of the poem rejects telling in favor of showing. Instead of explaining the unique quality of domes in abstract terms, the speaker lets blessedness be dramatized in a sensuously loaded epiphanic moment. Working on the dome heightens the speaker's perceptiveness, enabling him to see, feel, smell and hear what the world means and



how he is connected to it. It is as if the dome, because of its uniquely powerful geometrical structure, intensifies, simplifies and purifies the speaker's awareness of his own self and his surroundings. In the shadow cast by the rhombic dodecahedron, man-made objects (the shovel, the pickup) and elements in the landscape (the cottonwoods, the river) become interwoven and strangely meaningful.

The last lines of the poem combine humor and seriousness, as the culminating rainstorm sends the speaker scurrying for a different kind of "shelter," thus ironizing his earlier dome-idealism somewhat. Rain is a conventional symbol of rebirth, however, and the word "cloudburst" has an apocalyptic resonance that connects to the millenarianist discourse of "holiness" and "blessedness." Thus, with the "cloudburst" that brings the "new drops/of rain," countercultural geodesic man confronts the ending of the old world and the promising beginning of a new consciousness, moving him closer both to other humans (the huddled workers in the car) and to the elemental environmental realities of water, earth and rock.

"Solar-Heated-Rhombic-Dodecahedron" helps inscribe the whole-earth counterculture's peculiar mix of mysticism, optimism, pragmatism and irony with regard to very specific kinds of technology. It also helps establish geodesic innovators and entrepreneurs like Steve Baer as heroic pioneers busily constructing the frameworks for new breakthroughs in holistic thinking and lifestyle. Nature and *techné* are not at odds, the poem insists, for it is precisely appropriate technology that can enable a keener and more authentic apprehension of the world around us. Domes and zones may not bring salvation in the strict Christian sense, but they promise to help fashion a new American selfhood and a new sense of belonging.

### III

My second text, Gurney Norman's novel *Divine Right's Trip*, connects even more closely with the whole earth counterculture, having first appeared on alternate pages throughout *The Last Whole Earth Catalog* (June 1971).<sup>3</sup> It also more obviously than "Solar-Heated-Rhombic-Dodecahedron" uses literary discourse to forge a new spirit of pro-technological earth-connected-

3 After graduating from the Stanford University writing program in 1961, Norman (b. 1937) divided his time between his native Kentucky and the San Francisco Bay area. For an account of his involvement with Brand and the WEC, see "Gurney Norman: A Conversation."

ness. Norman's novel follows its hero David "Divine Right" (or "D.R.") and his girlfriend Estelle on an LSD- and marijuana-addled trek across America, a trip illustrating the rootlessness and aimlessness of the counterculture following the 1967 Summer of Love. When Estelle abandons him, D.R. learns that his uncle Emmit is terminally ill and heads for his family's home in the Appalachian mountains of eastern Kentucky. His home town of Trace Fork turns out to be wrecked by depopulation, unemployment, poverty and environmental pollution but replete with human kindness and neighborliness: "the loveliest place to be that I've found in a long time" (187). On a decrepit subsistence farm amidst a landscape all but ruined by strip mining, D.R. nurses his uncle through his final illness. After Emmit's death D.R., taking to rural ways, sets about restoring the farm to working order. Learning through hands-on experience, and tutored by a friendly neighbor who provides an inspiring example, D.R. embarks on reclaiming the land from the ravages of the strip mining companies, "a bunch of goddam criminals out tearing up the world" (193).

*Divine Right's Trip* offers revealing insight into many aspects of the counterculture, touching upon hip gender politics, sociolects, dietary practices, drug habits, spiritual beliefs, musical tastes and social and sexual mores. Multifaceted, playful and obscenity-laced, the novel includes elements of the picaresque road novel, the spiritual quest narrative, the regionalist yarn, the mythopoeic men's romance, the environmentalist protest tract, the bohemian *bildungsroman* and the self-reflexive meta-novel.<sup>4</sup> Like contemporary works by the California Beat poet Gary Snyder and Norman's fellow-Kentuckian friend Wendell Berry, *Divine Right's Trip* critiques the counterculture from within, plotting the exploration of new ways of life through small-scale grassroots projects and local reinhabitory initiatives.<sup>5</sup> Norman specifically wanted to alert readers of the *WEC* to the possibilities for back-to-the-land homesteading that had opened up in Appalachia with the closing down of mining and logging industries. Hoping to revitalize his dilapidated home region, he aspired to initiate a wave of reverse colonization by a new generation of long-haired Daniel Boones.<sup>6</sup>

4 For different critical perspectives on the novel, see Accardo; Arnold; Coveney, Urch and Shenefeld; Dunn; Joyner; and MacFarlane 161-175.

5 Berry was a frequent co-contributor to the *WEC* during the early 1970s.

6 Norman's hopes for the region are expressed in the essay "Appalachia," published in the September 1970 *WEC* (Brand et al.).

Not surprisingly, considering the novel's genesis, Norman's narrative is also deeply interwoven with the do-it-yourself tool-using and problem-solving discourse characteristic of the *WEC* as a whole. Norman's writing doubles back upon itself in a way that seems almost "postmodern" (Accordo 39), when D.R. laments the state of his "*Whole Earth Catalog*" because he "was going to order some stuff out of there" (15). In other instances, D.R. activities and experiences resonate with specific discussions and recommendations featured in the catalog. The fall 1968 issue of the *WEC* endorsed the *I Ching*, or ancient Chinese *Book of Changes*, as a "brilliant problem-solving device" because it afforded users a way to break destructive patterns and discover new existential options (Brand et al.). It is therefore no accident that the *I Ching* also figures prominently in Norman's narrative, as D.R. consults (or "throws") the text whenever he faces a decision or tries to divine an answer to a difficult question. Similarly, after settling on Emmit's farm D.R. resumes his uncle's scheme to refertilize the land, which has been ruined by erosion and chemical pollution, by using earth worms and rabbit manure to create new layers of topsoil:

If Estelle would come, they would convert one whole end of the barn into a house, and live there together by the rabbits and the worms and near the garden. They would get up early every morning and work to improve their place. If they wanted to, they could have a hundred hutches full of rabbits, and a million worms a year. They could have five hundred hutches full, and ten million worms at work in their manure, if they wanted to. If they wanted to, they could have a thousand hutches, one standing on every square yards of that old ruined mountain, shitting pure worm food onto the ground, creating perfect lettuce beds and comfrey stands, and alfalfa fields galore. (222)

The method is efficient but time-consuming: In a year's time Emmit has redeemed land for a small garden with "short single rows of lettuce, carrots, turnips, cucumbers, potatoes, beans, tomatoes, and comfrey, and two longer rows of beans" (221). D.R.'s "scheme to save the world with rabbit shit" (201) strikes a utopian note. But as it happens, such techniques of composting, land reclamation and organic homesteading had already been promoted vigorously by the *WEC* in several features including the March 1970 article "In Celebration of Worms" (Brand et al.).

One specific piece of engineering, however, plays a special role in helping D.R. find his way back to nature: his battered, unkempt and brightly painted 1963 Volkswagen van. Not coincidentally, the first paperback edition of *Divine Right's Trip* (1972) featured on the title page a drawing of a VW van with the title painted on its hood. Not coincidentally, too, *Divine*

*Right's Trip* opens with a first-person prologue spoken by "Divine Right's bus, Urge":

I was a fairly straight '63 microbus till Divine Right got me, a good clean red-and-white seven-passenger job with five new recapped tyres and near-perfect upholstery. . . . Two days on a car lot is a long time when you're not used to it. It was hot and damn boring, so even though this guy Divine Right looked pretty weird, I was so eager to get on the road again I felt grateful to him for buying me, although it did piss me off when the dealer let me go for only five hundred and fifty dollars. Divine Right paid the man with cash he'd got from a big grass score that morning, and if I could whistle I'd have whistled when we drove away. (1)

Cars play important roles in many modern American novels, from F. Scott Fitzgerald's *The Great Gatsby* (1925) to Jack Kerouac's *On the Road* (1957) and Don DeLillo's *Americana* (1971), but *Divine Right's Trip* is the only novel (to my knowledge) in which the car speaks. That Urge is given name, voice and personality, and is playfully allowed to introduce the novel, is indicative of his status in the novel and of the VW van's status within alternative culture more generally. For members of the 1960s counterculture, the VW T1 and T2 vans acquired a special iconic status because of their affordability, robustness, spaciousness, user-friendliness and fuel efficiency. The VW van had ambiguous origins in Hitler's Third Reich and the post-war West German *Wirtschaftswunder* (business boom), but like the geodesic dome the VW bus was loosened from its moorings and infused with redemptive significance. The VW "anti-car" (Frank 67) satisfied the counterculture's competing (and contradictory) materialist and anti-materialist impulses, promising the pleasures of freedom and mobility along with the joys of a simpler, easier, friendlier and greener lifestyle. Celebrated in texts like John Muir's do-it-yourself classic *How to Keep Your Volkswagen Alive! A Manual of Step by Step Procedures for the Compleat Idiot* (1969), the quirky-looking VW van was a "technology with a human face" (Schumacher 146-159), a product of economic abundance that pointed beyond the age of acquisitiveness towards the promise of a post-materialist society (Burnett; Spence).

In *Divine Right's Trip*, Urge becomes the vehicle, both literally and metaphorically, for D.R.'s quest for a better way of life than that offered both by mainstream consumerist America and the drugged-out subcultures of the East and West Coast metropolitan centers. D.R. *drives* back to his "homeplace" (206) in the mountains, towards a new identity that is at once individual, social and ecological.

First of all, Norman combines a Biblical epigraph—"A double-minded man is unstable in all his ways" (James 1: 8)—with multiple archetypal references to explore questions of psychic fragmentation and wholeness. D.R. has several names because he is internally split, which is attributable both to his troubled upbringing and to the conditions of modern society, where "nobody's a native anymore . . . nobody's got real roots" (73). D.R.'s road trip, however, returns him to his "roots," becoming a therapeutic journey of personal growth, maturation and self-discovery. After suffering an emotional breakdown in a psychedelic scene replete with mythological overtones (156-166), D.R. sheds his childish ego and emerges as a more compassionate and responsible individual ready to resume the legacy of his forgotten ancestors. D.R.'s picaresque journey to the mountains triggers painful childhood memories, and the recovery of these helps him accept the death of his parents, integrate the split halves of his personality and see his life's journey as meaningful.

Secondly, *Divine Right's Trip* hopefully envisions a new social alliance between members of the counterculture and the rural poor. Unlike other countercultural writers, Norman grants dignity and value to unhip but kindly older Americans—characters including the gun-loving "Lone Outdoorsman," who befriends D.R. and Estelle on a camping trip; D.R.'s mechanic brother-in-law Doyle, who helps him maintain his van; and the salty Appalachian farmer Leonard, who lends D.R. equipment and tutors him in elementary farming techniques. According to Norman, countercultural "freaks" (121) and dispossessed mountain people bear a common grudge against big business and centralized authority, just as they have (or ought to have) a shared interest in building small-scale sustainable communities. Countercultural hopes that appropriate tools like the VW van could help forge a new spirit of communalism become reality in *Divine Right's Trip*. The novel's ending lets D.R. marry Estelle in a festive finale that joins the sturdy agrarian folk of Trace Fork with D.R.'s California-based hippie cohorts. According to Norman, the counterculture needs to be re-rooted in place and tradition, just as America's aging farming communities urgently require a transfusion of youthful energy. Subtitled both *A Folk Tale* and, in later versions, *A Novel of the Counterculture*, *Divine Right's Trip* comically imagines hip and square Americans coming together to express their shared love of the land.

Thirdly, and no less importantly, these questions are tied up with D.R.'s growing recognition of ecological connectedness. Assuming responsibility

for his uncle's rabbits and worms helps D.R. appreciate how living creatures depend on each other for sustenance:

This afternoon I stuck my head in one of the hutches and breathed awhile with the old momma and her litter. . . . We looked deeply into one another's eyes a time or two. I'm her bringer of food. That's my whole function in the world as far as she's concerned. As a matter of fact, it's my function in the world as far as I'm concerned too, except that what I know that she doesn't is that there's this whole larger scheme going on. What I know that she doesn't is that her produce—the manure; those thousands of little pellets that gather beneath her hutch—is food too, in this amazing scheme that my uncle started before he died, and that I'm now in the process of expanding. (224)

The ecological vision underpinning *Divine Right's Trip* could be characterized, in Wendell Berry's terms, as one of "environmental stewardship" and "right livelihood" (Berry 293-304). The strip-mined Kentucky highland to which D.R. returns is anything but a bucolic haven; rather, it is a postindustrial toxic wasteland that must be cleansed and reclaimed inch by inch. Working with nature amidst these surroundings proves strenuous and frustrating for D.R., yet it also assures him that "[t]he Lord has sent me to a cool place at last" (201). Like Berry, Norman valorizes inhabited agricultural landscapes over wild and romantic ones. Satisfaction stems not from pastoral dwelling with unspoiled nature, if such can be imagined, but rather from the kind of patient and responsible work that seeks to repair the damages of the past and ensure the long-term wellbeing of man and nature. Technology is essential to this work, for only by mastering the appropriate skills, techniques and tools can the D.R.s of the modern world hope "to make this old hillside bloom" (225).

#### IV

The "making of a counterculture" (Roszak) and the "greening of America" (Reich) brought to the fore disagreements about the role and significance of technology vis-à-vis environmental deterioration and reform. On the one hand, in the years around 1970, American environmentalism took a turn towards what Frederick Buell calls "environmental apocalypticism" (viii), as prominent analysts including Rachel Carson, Paul Ehrlich and the Club of Rome members diagnosed how the forces of modern "progress" had already stressed biological systems to the breaking point. In the shadow of DDT, the 1969 Santa Barbara oil blowout, the Vietnam War and the nuclear doctrine of mutually assured destruction, countercultural techno-skepticism

sometimes amounted to a “paranoid neo-Luddism” (Jones 177) condemning technology as a ubiquitous and insidious force of evil that had insinuated itself into every aspect of modern life. Yet apocalyptic “ecodystopianism” (F. Buell 229) was only one among a wider spectrum of countercultural and environmentalist stances towards “the machine.” Not to be forgotten are those members of the counterculture who did not disdain technological modernity *in toto*, but who responded to social and environmental crisis by laboring to envision more optimistic and forward-looking applications of human technological reason.

A similar schism runs through cultural and literary production of the long sixties period. In the context of the first Earth Day celebration (April 22, 1970), apocalyptic images of runaway technology, pollution and overpopulation seeped into culture, appearing in science fiction films like Richard Fleischer’s *Soylent Green* (1973) and popular songs like Joni Mitchell’s “Big Yellow Taxi” (1970) and Marvin Gaye’s “Mercy Mercy Me (the Ecology)” (1971) (F. Buell x-xi; Phull 103-117). In Ken Kesey’s *One Flew over the Cuckoo’s Nest* (1962), the first-person narrator “Chief” Bromden dimly perceives an anti-natural, universally repressive and all-comprehensive apparatus that he names “the Combine.” And the probably best-known American environmentalist novel of all time, Edward Abbey’s *The Monkey Wrench Gang* (1975), shows Vietnam-era America already in the deadly grip of a “technological juggernaut” (64) waging an all-out war on nature. Dedicated to the 19th-century English machine breaker Ned Ludd, Abbey’s western calls for uncompromising (though non-violent) opposition to the “megalomaniacal megamachine” (167).

By contrast, Goldfarb’s “Solar-Heated-Rhombic-Dodecahedron” and Norman’s *Divine Right’s Trip* document the persistence of other more upbeat techno-narratives even at the height of apocalyptic anxiety. Illustrating countercultural environmentalism’s fundamental ambivalence towards technology, these texts testify to the enduring attractiveness of tropes like Leo Marx’s “middle landscape” and David Nye’s “American technological sublime.” Since the romantic period, a powerful aesthetic ideology has aligned literature with essential human and organic values, enlisting it as a “counter friction to stop the machine” (Thoreau 25). In “Solar-Heated-Rhombic-Dodecahedron,” however, the speaker engages in a double process, constructing the poem along with the building that names it. Gurney Norman and Stewart Brand sent a similar message when they decided to place *Divine Right’s Trip* in *The Last Whole Earth Catalog*, alongside dis-

cussions of solar panels, windmills, greenhouses, mail-order moccasins, camping gear and carpentry tools. In the whole earth movement, that is, literature became part and parcel of the countertechnological revolution linking human innovation and environmental awareness. Working with rather than against “the machine,” these lesser-known American writers of the late 1960s and early 1970s imagined the writer as a tinkerer and the literary text as a countercultural tool.

The new millennium has brought a renewed focus on environmental change, resource scarcity, population growth and energy insecurity, an array of concerns uncannily reminiscent of the late 1960s and 1970s (Brand, Ehrlich and Ehrlich; Gore). These parallels underline the need for a more thorough, balanced and respectful treatment of the 1960s and 1970s experiments in alternative living, building and designing (Mortensen). AT’s legacy is highly ambiguous, inspiring both Al Gore’s can-do environmentalism and the neoliberal techno-utopian “California ideology” of Silicon Valley, *Wired Magazine* and Steve Jobs’ Apple Inc. (Turner; Barbrook and Cameron). AT’s proponents focused on individual lifestyle rather than comprehensive social change, but they never articulated consistent criteria for deciding precisely which “tools” are “appropriate.” Yet while their proposals were often whimsical and unrealistic, in some cases downright bizarre, countercultural environmentalists raised questions about our industrial system that we today ignore at our peril. Nothing is easier than mocking the utopian zeal and quasi-mystical discourse of 1960s-era dome enthusiasts, but perhaps we should understand AT less as a cautionary tale of folly than a missed chance to curb runaway industrialism and reclaim technology for sustainability. At the very least we can benefit, as Mirko Zardini suggests, by “retrieving those experiments that a large group of people who ‘thought differently’ produced over three decades ago, and that were once so hastily and thoughtlessly cast aside” (49).

Volkswagen discontinued the production of the signature Transporter van in 1979, moving on to produce lines of sleeker vehicles. Geodesic domes proved notoriously difficult to waterproof, furnish, subdivide or just inhabit in any meaningful way. Vacated in 1973, Drop City’s zones fell into disrepair and were finally demolished by the municipal authorities in 1978 (Matthews 201). The geodesic dome and the VW van have not stood the test of time, whereas other technologies touted by appropriate technology proponents (windmills, solar panels, composting toilets) still retain unfulfilled potential. Yet the whole-earth movement and literature’s most enduring legacy should be found, I suggest, not in their advocacy of specific



solutions but in their general dissent from dark green environmentalism's "technophobic declensionist narrative" (Kirk 6) and their overall willingness to visualize possible successful outcomes to modernity's technological adventure. Instead of succumbing to romantic despair about "the end of nature" (McKibben), "tool freaks" like Brand, Goldfarb and Norman deserve our interest because they disputed the discourse of technological alienation prevalent among romantic environmentalists, and because they recognized that human innovation is central to any vision for an environmentally sustainable future. Endeavoring to understand the mounting environmental crisis as a series of problems that could be addressed and at least in part resolved by technological solutions, appropriate technologists labored not only to reduce humanity's harmful environmental impact, but also to reimagine and reconfigure technology as an agent of positive environmental, social and political change. They adumbrated a humanity- and modernity-centered post-wilderness model of environmentalism that resonates with the dilemmas that we face in our increasingly resource-impooverished, rapidly warming and densely populated world.

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