A Brief Moment in the History of Photo-Energy: Walter De Maria’s Lightning Field

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“The land is not the setting for the work but a part of the work.”
—Walter De Maria

“Coming from the United States, I am a little uneasy discussing the ecological movement.” So begins Herbert Marcuse in his short call to arms, “Ecology and Revolution,” of 1972, explaining that this movement “has already by and large been co-opted.” Marcuse homes in on the complicated period directly following the escalation of environmental concern in 1960s America that culminated in the widespread public displays of the first Earth Day in 1970. During this period, ecology turned from being a topic of public protest to one of legislative action. And, Marcuse continues, by the early 1970s the attention of “militant groups in the United States, and particularly among young people,” was already shifting from ecological crisis—deemed always to be impending or triggered by unexpected disaster—to “the war crimes being committed” in Southeast Asia. As has characterized environmental reform throughout its longer history, ecology during the early 1970s departed from a genuinely encompassing view that would inscribe war and nationalist politics within the scope of the planet’s interconnected modes of production. Instead, its interests splintered into a set of directives, or what Arne Naess characterized as a division between a “shallow ecology . . . concerned with fighting pollution and resource depletion” and a “deep ecology movement . . . [with] concerns which touch upon principles of diversity, complexity, autonomy, decentralization, symbiosis, egalitarianism, and classlessness.” Against the tendency of politicians and consumers alike to narrow questions of environmentalism to isolated laws, pollutants, and profit margins, Naess formulated deep ecology in response to this administrative fracturing of ecological discourse, but did so by tipping the scale too far in the other direction. The widespread deep ecology movement that has since taken shape tends to champion a utopian ideal of wilderness and, as its many critics have noted, strips bare historical formations of class, gender, and geopolitics in favor of
conglomerating the mass of human behavior as singularly anthropocentric and therefore detrimental. Thus, while Marcuse and Naess reacted in differing ways to the condition of ecological discourse in the early 1970s and drew differing conclusions, both theorists help the present-day historian recognize a period of transition in which postwar environmentalism witnessed a rift separating a conceptually inclusive understanding of ecology from a host of emerging industrio-political fragments.

Within the history of art, this moment also falls just beyond the vital years of land art, which span approximately 1968 to 1972. For decades, critics of the practices variously labeled “earthworks,” “earth art,” and “land art” have noted the detachment of the period’s ecological concerns from the earliest large-scale projects by Walter De Maria, Michael Heizer, Robert Smithson, and Dennis Oppenheim. In 1969, for instance, Lucy Lippard asserted, with an appropriate dose of ambiguity, that “Earthwork artists (or geomorphologists) are . . . more or less concerned with ecology.” In 1976, Michael Auping more expressly maligned the “flagrant use of resources” in Heizer’s work, and, most recently, Suzaan Bøttger has stated that “in the late 1960s, ecological issues were not a direct source of Earthworks.” Anticipating—or, in the latter two examples, stemming from—the turn in 1970s ecological discourse, these positions all ascribe ecology to a kind of “environmentalist sensibility.”

I seek to complicate the relationship that emerged from the 1960s between ecological theory and praxis by examining one of land art’s seminal projects: De Maria’s *Lightning Field.*

As completed on a remote site outside Quemado, New Mexico, in fall 1977, *The Lightning Field* is at once one of the most popular and most misinterpreted works of land art. Many are familiar with its unusually restrictive policies. To see De Maria’s array of four hundred stainless-steel poles, one must prearrange a visit through the Dia Art Foundation, pay a significant entrance fee, travel with no more than five others to an outpost in Quemado, and stay on-site at the work for a full day, spending the night in a cabin adjacent to the *Field.* Less familiar, however, is the mutability of the work itself.
Consider, for instance, *The Lightning Field*’s staggered temporality and the range of media within its decade-long formation. This timeline begins in spring 1969, when De Maria exhibited the minimalist sculpture *Bed of Spikes* at Virginia Dwan’s New York gallery. The work’s composition of sharpened metal spikes arranged in rectangular grids would later be dramatically expanded and reinterpreted as the artist’s *Field* in New Mexico. In the meantime, however, his practice operated outside the traditional white cube, as he divided production primarily between photographic projects for magazines and outdoor earthworks. Furthermore, *The Lightning Field*’s chronology properly ends not with the site’s completion in 1977 but with its publication as a spread of photographs in *Artforum* in April 1980. Each of these media contributes to *The Lightning Field*’s place within the evolving state of ecology. The work is realized across the very divide identified by Marcuse and Naess and is thus a particularly telling project for the historian of art and ecological thought precisely because its development bridges the environmental movement’s apparent split from ecology’s supposedly authentic and radical values.

The co-optation identified by critics in the early 1970s was already present in the ecological imagination of the preceding decade, existing latently within an influential discourse that conceived the entire planet as an interconnected system of energy transmission. Thus, the development of *The Lightning Field* occurs across the period in which the alienation entrenched within the ecological thought of the 1960s was brought out or made manifest. To articulate the terms of this shift, we must take into account each of the *Field*’s media forms, including the site in New Mexico, the sculpture displayed at De Maria’s 1969 exhibition at the Dwan Gallery, and the published photographs of *The Lightning Field*. The emphatic role of lightning in the latter images prompts a consideration of the deeper history of light, or “photo-energy,” within the reception of late-1960s ecology. Energy has been greatly overlooked as a formative conceptual field in the history of ecological art, and the multiplicity within the development of De Maria’s work allows one to reexamine one of its most influential terms—*entropy*—as artificially split within ecological discourse between arguments concerning physical matter and those of media systems. Thus, naming *The Lightning Field*’s development as “a brief moment in the history of photo-energy,” I demonstrate how De Maria’s work internalizes a conflicted moment in ecology that turns on the relation of its sculptural elements and the function of lightning as a form of energy in its photographs. That is, my investigation addresses a persisting problem in the general reception of postwar environmental aesthetics: some four decades after it emerged as a coherent constellation of practices, land art is still trou-

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Walter De Maria. *The Bed of Spikes*, 1968–1969. Stainless steel, five sculptures, each 13 ¼ in. × 41 ¼ in. × 6 ft 6 ¼ in. (33.3 cm × 104.5 cm × 198.4 cm). © Walter De Maria.
bled by its relation to “land.” From curator Willoughby Sharp’s diagnosis in the catalog of Cornell University’s influential Earth Art exhibition of 1969—“a new kind sculpture”—to critic Jane McFadden’s recent account of De Maria’s practice as “[producing] distinct space[s] of experience, whether on the page or in the field,” land art and De Maria’s work in particular are consistently taken as internally bound to both medium and site. As the artist’s own aphoristic statement at the opening of this article indicates, however, coming to terms with The Lightning Field’s environmentality involves unpacking the multivalence of “land” during its development. The Lightning Field is not only motivated by ideas of ecology but is itself riven by them.

Being On-Site
Five years before De Maria would realize The Lightning Field, a full-page photograph appeared in Artforum announcing a solo exhibition by the artist at Dwan Gallery in April 1969. Words in the photograph read, “DE MARIA DANGER DWAN.” Placed at the bottom of the page, these words appear between two parallel chalk lines that lead one’s eye upward to the prone body of the artist lying on the cracked desert floor of the Mohave. The lines enfaming his body—the ostensible subject of this photograph—constitute a seminal early land work De Maria had executed in spring 1968, The Mile-Long Drawing. In and of themselves, these two chalk lines frame a work of art to be experienced exclusively on-site in the desert. But with the addition of this photograph and the presence of the artist, static lines are turned performative, their framing edge absorbed within the framing edge enacted by the camera.

De Maria’s body lies on a cusp. Cast into the great expanse of the Mohave, he is enveloped within a vastness that might register as indistinguishably large, except for the presence of his drawing. Cutting into the photographic frame, these chalk lines provide a spacing, a module, in which the artist’s body can meaningfully exist within the surrounding waste land. At a ratio of two-to-one, The Mile-Long Drawing provides for just such a scale to situate De Maria within the larger field. Or, more specifically, photographic framing positions him thus. Counter to the notion that the phenomena of land art photography merely circulates neutral, “documentary” information about works that are ephemeral, remotely located, or both, the Artforum photograph articulates a model of spatial mediation between the on-site body of its embedded spectator and the surrounding environs.

Additionally, the corporeal presence inscribed within De Maria’s 1969 magazine advertisement advertisement, Artforum (April 1969). © Walter De Maria.
advertisement strongly anticipates the later on-site experience of *The Lightning Field*, which is a site that properly reveals itself only by direct encounter. While trudging through gnarled and spotty turf, weighty clumps of muck clinging like barnacles to the soles of Wellington boots, one realizes this collection of four hundred tall metal spikes interacts with light, metal, and one’s own spatial position more than spectacular lightning strikes. When lightning does occur, it must be observed from a distance, to the side, or in photographs. The *Field’s* foremost state, the work that viewers encounter the vast majority of the time, is a sculpture one inhabits and that unfolds gradually during the full diurnal cycle of one’s stay. De Maria’s work must be explored, traversed, perambulated.

The fundamental complication of *The Lightning Field* arises from the fact of its constructed, sculptural components and from variables presented by the local environment. With a two-inch diameter and an average height of approximately twenty feet, each pole creates a relationship of scale two to three times human height. This height is relative because pole length is calibrated to the topography of the land so that the tips of all four hundred poles establish a plane. Compositionaly, the work is arranged in a grid, twenty-five poles along the east-west axis by sixteen running north-south. Each point is spaced at an even two hundred twenty feet at right angles, producing a rectangle one mile by approximately one kilometer. The *Field’s* spacing results in each pole acquiring a quality of near sovereignty from those around it, rendering each, at times, as something to be experienced like an individual work of sculpture. When examined at close range, the sheen and surface quality of stainless steel claim a distinction from the scrubby ground in which each pole takes root. Thus, steel, shape, and scale delimit a sculptural form from its desert plain, but not to the extent of uncoupling one’s experience from the site entirely.

Ambient light most dramatizes *The Lightning Field* as a truly environmental work of art. When one arrives at the site in early afternoon, the sun is positioned nearly overhead, which all but diminishes any angle of displacement between rays of sunlight and the vertical ray of each pole. Within the *Field*, poles in close proximity to the visitor produce intense pockets of reflection, while those at a middle distance and beyond all but disappear into the distant horizon. De Maria estimates that “During the mid-portion of the day 70 to 90 percent of the poles become virtually invisible due to the high angle of the sun.” At this time, one experiences *The Lightning Field* as a continuum of individual poles that appear to extend interminably. At other hours of the day, when the sun approaches the horizon line, light illuminates the steel less brilliantly, allowing one to apprehend the poles as a field. In
raking light, the four hundred steel elements come into view as an entire entity, closed and discrete. Within such low-intensity luminosity, the poles operate with maximum visual drama, transforming from near white to shades of yellow and orange, playing in concert with late-evening hues shape-shifting through clouds in the sky.

Thus, during the course of a day, one’s firsthand knowledge of the Field shifts from perceiving a seemingly infinite array of singular, vertical poles to apprehending an enclosed space measured by regular points. On occasion, a bolt of light forking between land and sky also snaps the Field into a different sort of work—a receptacle for energy, a grand stage for dramatic display, and, not least of all, a distant spectacle. But at all other times, light filters through rather than strikes the Field, coordinating steel, bodies, and high-desert topography in a pulsation of visibilities. Consequently, the only unity to be found at The Lightning Field site must be embodied rather than perceived. The two modes of the work—the geometric rigor of measured steel versus the fluid movement of bounding edges and reflective surfaces—are less structurally integrated than joined through one’s presence on site.

Looking again to De Maria’s 1969 advertisement, the relationship of this photograph to the later Field does not end with a mere correspondence of site-specific experiences. The only work of art featured in Danger, the exhibition the image promoted, was the same stainless-steel Bed of Spikes from which De Maria would later fashion The Lightning Field. The Bed of Spikes comprises five platforms each measuring four by seven feet and upon which rise sharpened spikes uniformly eleven inches tall. The points increase in density according to near-arithmetic sequences along x- and y-axes: the first platform thus contains one row of three spikes; the next, three rows of five; then five rows of nine; seven rows of thirteen; and, for the fifth platform, nine rows of seventeen.

De Maria manufactured the bars of his sculpture as sharp, even hazardous, spikes. Reflecting the threat posed by each bed (and heightening it psychologically), Dwan Gallery required each visitor to sign an “Unconditional Release.” This form includes such officious declarations as: “I have been warned that the spikes exhibited contain sharp projections which I may not touch or approach and that guard rails and other devices to separate me from the spikes have not been employed in order to provide no distraction from the presentation of the works.” One can trace critical objections to “authoritarianism”
in De Maria’s reception from this exhibition onward. In her “New York Commentary” of June 1969, for instance, Dore Ashton describes the release form as “very elegantly printed but nevertheless [representative of] a coercive attitude that I find highly repellent,” adding, “In a country where we are always being asked to sign away our birthrights, it does seem ironic that even in the arts we cannot circulate freely.” Foreshadowing the later condition of The Lightning Field as an object criticized for its stringent policies but actually experienced in person by relatively few, Ashton concludes with the concession, “I am bound to report . . . I did not see [the exhibition].”

The substance of De Maria’s decision to show The Bed of Spikes in spring 1969 lies in this sculpture’s apparent divergence from the artist’s budding interests in land art. Though earth-related work would define his practice almost exclusively for the next decade, when presented with a prominent single-artist showcase at a premier New York gallery—his only solo exhibition with Dwan—the artist decided to feature serial, stainless-steel objects that smack of mid-decade minimalism. A telling ellipsis appears in the opening line of Dwan’s press release: “Walter De Maria, who has just returned from the Sahara Desert where he completed a one mile long sculpture, cut into the sand with a bulldozer, as part of his Three Continent Project . . . now presents a series of five stainless steel sculptures.” The Bed of Spikes offers a similar counterpoint to the ad circulated in art magazines. In continuing to develop the juxtaposition between the gallery and the desert as sites of display, the photographic advertisement should be understood as an absentee work in the show, a claim supported not only by the later role of photography vis-à-vis site at The Lightning Field but also by the fact that Danger served as De Maria’s last gallery exhibition for nearly a decade, during which his work was dedicated exclusively to land projects and photoconceptual works for publication. The repurposed photograph of The Mile-Long Drawing thus stands as both the earliest example of De Maria’s own conceptual magazine practice and a direct commentary on The Bed of Spikes, in that it situates the artist as if exercising the physical threat of the sculpture on his horizontal body.

Since his earliest plywood works of 1959–1960, De Maria’s sculptural practice had consistently operated between performative tasks and contemplative visual forms. In earlier works, a spectator might be asked to move a wooden ball or notch a metal chain, as with Ball Drop and Calendar, both circa 1961. That we encounter a similar tendency in The Bed of Spikes connects this sculpture to—or separates it from—an idea gaining particular clarity in 1969: that land art should be geographically isolated and experienced only in long durations of sustained attention and actual presence. As a case in point, consider De Maria’s Las Vegas Piece, created in the Tule Desert.
outside the city of Las Vegas immediately following the close of Danger in New York. The work was shaped by two mile-long cuts into the desert floor intersecting at a right angle, with two bisecting cuts of a half-mile each forming an inner square, like a baseball diamond with an enlarged infield and no outfield boundary. All cuts measured a consistent depth of eight inches into the desert floor, made by a single dozer’s blade. Anticipating the function of time that would appear later in The Lightning Field, Las Vegas Piece required at least a full day’s commitment from visitors, who first had to reach the work and then had to wander its three miles of shallow paths. With Las Vegas Piece the artist stipulated for the first time in his career that one of his earthworks was not intended for aerial photography. It was to be experienced principally by personal examination.

Awareness of the growing divide within De Maria’s work—between being on-site and accessing earthworks photographically—allows one to more fully appreciate the split enacted within the larger framework of Danger. In one sense, De Maria’s magazine entry operates as a user’s manual for the exhibition, rendering The Bed of Spikes at once more menacing (because it invites the participatory action of laying prone upon the perilous beds) and more feeble (because the artist’s actual body is substantially displaced from the gallery site). Between photograph and sculpture, however, the internal split within Danger also looks forward to the experience of being ecologically situated that would animate so much of the artist’s subsequent land art. In 1969, the idea of being within an environment had been conceptually cordoned off from visitors to Danger since the photographic component of the exhibition suggested that access to distant desert flats from within an urban gallery space was available only through layers of photography and magazine pages. A decade later, The Lightning Field would absorb the function of environmental presence as a primary knowledge open to any spectatorial body at the site, not simply that of the artist alone and no longer fractured in time and space. The apparatus surrounding The Lightning Field may control the viewer but this control also sustains a type of on-site encounter that promotes a deep sense of open incorporation into the work’s environs.

Nevertheless, the role of photography in this equation complicates any simple binary between abandoning the urban gallery and embracing the open West, or of simplistically framing The Lightning Field as a splint for the fractured relationship of sculpture and site enacted by the Danger exhibition. De Maria’s use of photography provides no straightforward relay between such poles. Instead, it functions to dramatize the stakes of his practice—a role that would take yet another twist in The Lightning Field’s photographic publication.
Lightning

Similar to the account of “nature” in modern, Western culture as a separate homesite to which one takes flight from civilized life, the escapist, immersive aspect of *The Lightning Field* as a kind of prism for environmental experience addresses itself directly to the empirical encounter, seemingly bypassing the environmentalist rancor and embattled legislation transpiring in distant coastal cities at the time of the work’s completion. This idea of the *Field* has contributed to long-held assumptions that the large, sculptural earthworks of the 1960s and 1970s sought to evade both the art world and developed civilization in general.

However, both assumptions ring hollow in light of a more complete understanding of *The Lightning Field*’s network of media. Just as the form of *The Lightning Field* can be traced to De Maria’s 1969 *Bed of Spikes*, the relationship of photography to site for the *Field* as a whole expands upon and complicates the sculpture/photograph dichotomy created in the *Danger* exhibition. The *Artforum* photographs of *The Lightning Field* constitute an almost complete visual account of how the work has been depicted in publication. Upon completing the site in 1977, Dia Art Foundation and De Maria hired a photographer to communicate and advertise the *Field*. Along with De Maria’s *Vertical Earth Kilometer* in Kassel, Germany, it was the first work funded and maintained by the newly formed foundation. The photographer, John Cliett, lived at and photographed the *Field* for several months in summer 1978 and again in 1979. From the large archive of photographs he produced, only a small fraction would appear in *Artforum*. Most have never been seen by the general public because Cliett’s contract stipulates that De Maria retain copyright. The *Field*’s distribution in print has thus been marked by a degree of control similar to that maintained over the site. All visitors to the site, for instance, must sign a waiver rescinding the right to take photographs. As a consequence of this policy and the scrutiny placed upon circulating Cliett’s photographs, the half-dozen works printed in 1980 have assumed uncommon weight as representative images of De Maria’s most important work of art.

The published version of *The Lightning Field* has largely governed the work’s reception. In a 1981 polemic on De Maria’s and Dia’s stranglehold on the images and access to the site, John Beardsley underscores the role of the *Artforum* spread:

The number of photographs, the exclusive use of color, the number of editorial pages—De Maria was given the cover plus five pages at the centerfold—is unusual, to say the least, for *Artforum*’s artists’ pages. But particularly offensive was the use of blank gray pages separating De Maria’s photographs from the thereby implied dross of the remainder of the issue. Evidently caught between their desire to see the work published and the artist’s excessive demands, *Artforum*’s staff was complicit in the mystification of the *Lightning Field* and the exaggerated claims made for it.23

While his language is strong to the point of severe, Beardsley is not inaccurate in noting the atypical aspects of De Maria’s entry. Citing an interview with the magazine’s associate publisher, he observes, for instance, that *Artforum* deemed the layout an artist’s work, allowing De Maria to personally design the pages. As such, this publication holds particular significance as a vital facet of *The Lightning Field* and is therefore unlike other notable reproductions of the work.24 Only De Maria’s *Artforum* spread fundamentally extends the Field in the domain of photography.

Looking more closely at the six photographs selected, one observes a frequent and even overwhelming presence of lightning. Despite the improbability of witnessing a direct strike during a visit to the Field, De Maria nonetheless selected its location in part for its relatively high incidence of electrical activity. He estimates, “The observed ratio of lightning storms which pass over the sculpture has been approximately 3 per 30 days during the lightning season” of “late May through early September.”25 While comparatively frequent when measured against most other places on earth, the presence of lightning still does not constitute the abiding on-site experience of the Field, whose design is not driven exclusively or even primarily by the conduction of electrical current. Although the poles are grounded for electrical charge, they are not standard, manufactured lightning rods, but two welded pieces of type 304 stainless steel, a material most notable for its resistance to oxidation. Though the poles are effectively lightning rods, their design speaks more to guarding against the appearance of time than to the capture of lightning. Conversely, of the six photographs published in 1980,
four feature dramatic lightning strikes. As conceived in the magazine, this photographic Lightning Field is both violent and immediate—existing through a disconnected series of powerful, fleeting eruptions of energy—and, as such, utterly dissimilar to the open and slowly measured experience that most visitors encounter in New Mexico.26

What, then, to make of the prevalence of lightning in these photographs? De Maria had previously shown an interest in conceptualizing exchanges of energy in an open series of thin, stainless-steel bricks begun in 1966 and each inscribed, “HIGH ENERGY BAR.” While the bars exhibit their putative energy symbolically—the edges of each bar flex outward in a subtle entasis, as if caging a force incessantly trying to escape its solid matter—the Artforum spread articulates a more direct correspondence. The emphasis on lightning in the photographic Lightning Field suggests a likeness in the transfer of light between object and celluloid and the transfer of ionic charge between sky and steel. That is, the photographic Lightning Field admits a structural parallel between lightning and photography, each a form of conducting photo-energy. In the case of The Lightning Field, photographic processes are called upon to record such transfers, because one remains unlikely to experience atmospheric electricity on site. This relationship suggests that actual lightning at The Lightning Field properly befits photo-energetic media.

**Photo-Energetics**

I use the term photo-energy instead of light because it foregrounds the former’s material quality against the latter’s allegorical associations of illumination and enlightenment. The concept of ecological energy—or, bioenergetics, as this discourse is also called—became pervasive in the environmental imaginary during the extended period of The Lightning Field’s creation.27

Coined as recently as the late-nineteenth century by the German naturalist Ernst Haeckel by combining the Greek roots oikos (household), and logos (knowledge), the term oekology (soon, ecology) gained notable traction in the following century, especially after the Second World War. At this time, researchers across numerous fields combined an all-embracing sense of interconnected life on earth with systems and computational thinking emerging from the culture of postwar research labs. Two influential theorists in this respect were brothers Eugene Odum and Howard Odum, who adopted energy as the singular currency or form of data connecting living systems with an earth imagined metaphorically as a kind of mainframe computer. The Odums solidified this sense of bioenergetics for a generation by publishing the first (and for decades the leading) textbook in the field, entitled Fundamentals of Ecology.28 In their totalizing view of the environment,
cycles of energy are distributed throughout the respective levels of all food chains in a normative, repetitive, and ultimately predictable manner. They thus construe the regularity of ecosystems as free of fundamental disruption by either time or space. To the bioenergetist, the same principles preside over the balance in Walden Pond as in the Atlantic Ocean and, likewise, over the course of one week or one hundred years. In short, a scalar grid of universally reiterating modules of energy exchange governs the maintenance of life.

Howard Odum offered these conclusions to a general readership when he published the volume *Environment, Power, and Society* in 1971. In accord with the popular account of ecology articulated a few years earlier by R. Buckminster Fuller in his influential *Operating Manual for Spaceship Earth*, Odum expanded bioenergetics to the scope of a “world system . . . considered in energy terms.” Making plain ideas that had been implicit throughout much environmental discourse of the 1960s, *Environment, Power, and Society* portrays an ecology for which “Energy diagramming helps us consider the great problems of power, pollution, population, food, and war free from our fetters of indoctrination.” With energy as its common currency, social, biotic, and technical production were imagined to be inseparably linked or, rather, hardwired to the same planetary machine. To wit: “The eccentric behavior of the birds, bats, and blooms is really the outer manifestation of preprogrammed computer units that control the timing of the whole ecological system.”

Drawing upon this interpretation of energy flow as an independent global behavior, the photographic *Lightning Field* similarly thematizes ecological energy exchange through the vehicles of photo-media and lightning. While no evidence indicates De Maria was explicitly aware of the Odums’s work, his artistic output is symptomatic of both the large-scale interest in energy systems to arise alongside the work of the Odums after the Second World War and a recuperation of these interests in the history of light-based media during the 1960s and 1970s. Thus, as exemplified in the historical purview of bioenergetics, De Maria’s photographs exclude all subjective action and experience from their depicted environment. Cliett captured lightning strikes with a sensor, which from the start freed on-site visual perception from the photographic process. In the resulting images, whether of dramatic lightning strikes or more-placid ambient light, the *Field* consistently appears absent of people. Thus, as a system of photo-energy, this account positions lightning and photography of the *Field* as internally self-sufficient. By rendering energy flow itself as a series of constants—poles and sky, object and camera—the photographic *Lightning Field* maintains a sense of ecology that forecloses subjective presence or influence.
In this respect, the relationship between one's on-site experience of The Lightning Field as situated, perceptual, and durational and the immediacy and detachment of the photographic version of this work presents a conundrum for piecing together the larger dynamics of ecology during the period. We cannot admit both the condition that ecosystems are subject to temporal change and that bioenergeticism operates in closed, entirely self-serving cycles. This contradiction, however, is not exclusive to the media of The Lightning Field; it is writ large throughout one of the major thematics of energy in advanced postwar art—the concept of entropy.

Entropy and Beyond
The prevailing account of energy aesthetics to filter down the lines of historical reception from the 1960s centers on the concept of entropy, or the steady leveling out of energy distribution deriving from the second law of thermodynamics. In art circles, entropy—thanks primarily to Robert Smithson’s widely acclaimed, if idiosyncratic, land art practice—has been understood as a muddying up of matter. Consider, for instance, Smithson’s series of rundowns, his Partially Buried Woodshed (1970), or his sandbox divided into halves of black and white sand that becomes uniformly grey in the long run of active play. In the extensive attention paid to Smithson’s work, critics and art historians have lost track of much thornier distinctions in the conceptualization and application of entropy in concurrent practices.

A divide, or at least a perceived divide, separates the entropy of matter from the entropy of information. The position on matter, reflected in views of Smithson’s art, is as grim as it is straightforward. Following from the conjunction of the first two laws of thermodynamics—the first, that energy can neither be created nor destroyed; the second, that work expenditure consistently breaks down energy into forms capable of doing successively less work—the entirety of creation is on a slow but inevitable path toward heat death. The capacity of stored energy will gradually diminish to a condition in which no further work is possible. This entropy of matter imagines an endgame of no movement, no creation, total saturation, and utter blankness. All will become, to use Smithson’s metaphor, grey sand.

However, within the field of information theory, particularly the influential wing Norbert Wiener named cybernetics, entropy is imagined to be counteracted by the generation of new, creative content. Cybernetics followed from the idea that human thought and computerized information systems operate according to the same rules, an idea Wiener developed in his wartime occupation of predicting the decisions of combat pilots. From efforts to create a computational system that could analyze real-time data and ultimately
predict the actions of human agents, he concluded, “the physical functioning of the living organism and the operation of some of the newer communications machines are precisely parallel in their analogous attempts to control entropy through feedback.”37 If, entropically, the energy of all systems trends toward even dispersion—the most probable condition in the distribution of energy—then organized information trends against this order; it attempts, by what Wiener called “the negative of entropy” (or negentropy), to sustain the orderliness of current systems by transferring nonprobable information, or in other words, ideas. “[T]he more probable the message, the less information it gives. Clichés, for example, are less illuminating than great poems.”38

By this logic, if one’s creative output is powerful enough, entropic ruination can be deferred, if only temporarily.

In the relation between photo-energetic media and site-specificity established by The Lightning Field one encounters a similar dilemma to that of entropy’s split between discourses of matter and information. We cannot frame the photographs as energy events solely on the side of disembodied information. But we likewise cannot claim that The Field, as printed matter in a widely circulated magazine, is a solitary object disconnected from social ecologies of production and waste. Similarly, we arrive at what has become an unjustified division in the reception of photoconceptualism between documentation and dematerialization. Whether photographing remote earthworks or ephemeral performances or experimenting with the medium of photography itself, photoconceptual works of art are sometimes understood as a trace of the real event that transpired before the camera and other times as a direct conduit to textual description. The one version renders the photograph an archival object; the other, a disembodied representation.39 While we have no definitive account of photography’s documentary capacity, this current has persisted throughout the technology’s history, ranging from Oliver Wendell Holmes’s formative criticism in the mid-nineteenth century to the lifework of Bernd Becher and Hilla Becher beginning in the mid-twentieth. Dematerialization, in contrast, arises from a specific source, the now seminal essay “The Dematerialization of Art” by Lucy Lippard and John Chandler. Attempting to account for the increasing importance of text-, photo-, and performance-based work at the close of the 1960s, they identified the appearance of “an ultra-conceptual art that emphasizes the thinking process almost exclusively,” thereby disconnecting the long-heralded skill of the artist’s hand from critical judgment.40

Or so went the utopian impulse of conceptualism in the late 1960s. As Julia Bryan-Wilson argues in her recent account of art and labor during this period, the idea of “dematerialization” was entrenched in a larger transition in
America’s macroeconomy from manual to intellectual labor. Dematerialization was called on to describe not only art-making practices but also, and more problematically, the processes of capitalization and reification that typify artistic objects within the marketplace. As Lippard would later reflect:

It seemed in 1969 . . . that no one, not even a public greedy for novelty, would actually pay money, or much of it, for a Xerox sheet referring to an event past or never directly perceived, a group of photographs documenting an ephemeral situation or condition, a project for work never to be completed, words spoken but not recorded; it seemed that these artists would therefore be forcibly freed from the tyranny of a commodity status and market-orientation.

Conceptual art avoided neither fate. Its matrix of practices was instead caught between the horns of a dilemma similar to the contemporaneous debate on entropy: (falsely) imagining information to have loosened itself from matter, dematerialized ideas from objectification. In turn, the difficulty of reckoning with the ecological worldview of the 1970s necessitates that one account for the following distinction: the sublation of “information” promoted by the marriage of bioenergetics and cybernetics ultimately runs counter to a truly ecological understanding of interconnected production across biological and cultural spheres. Their related accounts of energy, information, and negentropy make sense only as a fantasy of a fully dematerialized world.

Marcuse provides a helpful counterpoint to such a worldview for environmental art. A cultural critic invested in both postwar dematerialization
and aesthetics, he portrays this pseudo-wing of ecology as a “second nature.” In An Essay on Liberation (1969), he connects the related capitalist desires of “possessing, consuming, handling, and constantly renewing” with a “second nature of man which ties him libidinally and aggressively to the commodity form.”43 In Marcuse’s view, the dematerialized work of art has no means of circumventing humankind’s second nature so long as it still exists within it. For Marcuse, actual social change occurs first and foremost at an ecological level, allowing one to reestablish an integral and nonaggressive relationship to living cycles of production and consumption. Only then, he concludes, “[can] development tend toward a sensuous culture. . . . [And] socially necessary labor would be diverted to the construction of an aesthetic rather than repressive environment, to parks and gardens rather than highways and parking lots, to the creation of areas of withdrawal rather than massive fun and relaxation.”44

One is tempted to offer The Lightning Field site as an example of what Marcuse means by an “aesthetic” environment. However, I would not claim that this environmental sculpture revolutionizes its (or our) biological conditions. Nor can one ignore the heavy carbon expenditures—of airplane and automobile travel involving “highways and parking lots”—required for visitors to experience the work. Rather than defeating a second nature, The Lightning Field, conceived more holistically among its media, positions its spectator within the very interstice of a primary and secondary ecology. Recalling Marcuse’s claim that American environmentalism had been co-opted by the advent of the 1970s, we can now more fully interpret this statement as addressing the two kinds of alienation that attend entropy as well. At one level, ecological recuperation had been parsed into fragmented missions to conserve resources, preserve discrete locations, and “save” environments from particular pollutants. At a deeper level, the ecological world described by information theory and bioenergetics had removed the ethical actions of living beings from environmental impact altogether. In this conceptualization of the environment, true ecological action is futile. If one accepts, on the one hand, that energy stores will inevitably decline and, on the other, that ecological cycles are impermeable to long-term change, then any attempt to intervene in environmental conditions is rendered ineffectual in advance.

A more comprehensive view of The Lightning Field’s material engagement with ecology serves to bridge such conceptual barriers. Instead of starkly dividing De Maria’s Field between a site that reveals itself only to visitors walking the grounds and energeticist photographs given to the immediacy of lightning strikes, these media are better understood as structurally related systems of distributing photo-energy. The photographic system is circulated
for instantaneous access and legibility. The other is given to a modulated distribution of reflected sunlight within a large and evenly spaced grid. When taken together as coupled versions of photo-energy, both aspects of the work do not so much displace the alienation of ecology dating from the late 1960s or even enact its alternative. Between these limit conditions, *The Lightning Field* site and photographs collectively offer a means of internalizing the increasingly disparate worlds of sensuous and conceptual ecology within the crucial years of the 1970s. That is, the different levels of authoritarianism within this work—the material one of controlling physical access and the energeticist version of human exclusion from long-term ecological variation—each reveal a mode of alienation in environmentalist thought that is present but does not define the overall integrity of De Maria’s work. As in ecological systems themselves, light pervades the media forms of *The Lightning Field*. Consequently, this work does not create a more environmentally sound mode of being in the world; instead its profound compromise lies in prompting us toward one.

**An Energy Field?**

What recommends *The Lightning Field* to discussions of environmentalism in the 1960s and 1970s is that its various media—from its antecedent in *Danger* in 1969 through to the publication of De Maria’s *Artforum* spread in 1980—span both decades in different forms. The late 1960s imaginary of an ecosystem is essentially a bubble, a capsule, a closed system. As this worldview began to splinter in the early 1970s, *The Lightning Field* took shape with one foot in this discursive world and the other planted firmly in the ground of a high desert plain, which appropriately situates the work amid a range of splitting vectors: sculpture and photography; location and circulation; artificial unity and material expanse.

Nevertheless, while the Field might speak to the condition of environmentalism following the 1960s, its continuing purchase on such issues came to be eclipsed during the period of its own construction. Over the course of the 1970s, a series of energy crises, from the oil spill off the coast of Santa Barbara in 1969 to the global oil crisis in 1973–1974, began to enact a toll on the closed circuitry of ecological energetics. For all of the violence it conducts and portrays in the flash of lightning strikes, *The Lightning Field* provides no index of the industrially induced environmental disaster. Such disruptions exceed its ecological horizon of visibility. Not surprisingly, when disasters on the scale of Three Mile Island, Bhopal, and Chernobyl arrived in appalling succession in the late 1970s and mid-1980s, earthworks and energy aesthetics from a decade earlier began to appear disconnected from the latest ecological
imperatives facing the planet. The ensuing moment in the history of energy—a moment we still inhabit—may extend beyond the purview of *The Lightning Field*, but it should not obscure the important historical ties linking ecology and energetics in the first generation of large-scale land art.46

A second point of conclusion arises as a corollary to the first and concerns the role of ecology and environmentalism not only in land art but in advanced postwar art more broadly. The scope of ecology in the 1960s and beyond cannot be reduced exclusively to ethical imperatives for the sustained health of the biotic world. While underestimating these has been—and continues to be—a problem of staggering historical consequence, we also must bear in mind that the rise of ecological thinking has shaped an expansive conceptual scaffolding for addressing questions central to the history of art. The status of objects and of light-based media draws significantly upon this emergent discourse. Just as *The Lightning Field* makes clear that we must revise long-held assumptions about the relative reclusiveness of first-wave land art, so too must questions of environmentality be extended beyond the narrow frame of “land” or “eco-art” to the status of the work of art as, by necessity, ecologically immanent.
Notes
This article draws from various chapters of my dissertation, “Land Is Not the Setting: The Lightning Field and Environments, 1960–1980” (Stanford University, 2011). I would like to thank Pamela Lee for her support and intellectual inspiration throughout the development of that project, and also David Breslin, Edward Vazquez, Samuel Johnson, and Grey Room editors Tom McDonough and Felicity Scott for their valuable comments on earlier drafts of this essay. Its publication was supported by a grant from the Graham Foundation for Advanced Studies in the Fine Arts.

7. This phrase is drawn from Boettger’s most recent discussion of Nancy Holt’s land art, where she explains, “In the era of the anthropocene, spatial environments have evolved . . . and being overtly engaged with both scientific and political ecology, are more precisely distinguished as ‘environmentalist’ art. The current presence of this ecological consciousness is


10. Any notion of “environmentality” is always a historically contingent construction that is equally mutable in the ways it intersects with the conditions and exigencies of environmental politics at a given time and place. A good selection of essays that unpack this approach to environmentality through the work of Michael Foucault can be found in Eric Darier, ed., *Discourses of the Environment* (Malden, MA: Blackwell, 1999). De Maria’s quotation and all subsequent statements from the artist about *The Lightning Field* derive from a page he authored, titled “Some Facts, Notes, Data, Information, Statistics and Statements,” which appears alongside the Field’s published photographs. Walter De Maria, “‘The Lightning Field,’” *Artforum* 18, no. 8 (April 1980): 58.

11. De Maria’s Danger advertisement was not the artist’s only multimedia return to *The Mile-Long Drawing* in spring 1969. He also refashioned a version of the work to be used as mise-en-scène for the film *Two Lines Three Circles on the Desert,* which was shot by Gerry Schum and included as one of eight films in the latter’s broadcast “exhibition” *Land Art* for his and Ursula Wevers’s Television Gallery Gerry Schum. *Land Art* premiered on Berlin’s SFB television station on April 15, 1969, and is the first instance of the term *land art* being used in place of earthworks or *earth art.* See Gerry Schum and Ursula Wevers, eds., *Fernsehausstellung Land Art: Long, Flanagan, Oppenheim, Boezem, Smithson, Dibbets, De Maria, Heizer* (Berlin: Fernsehgalerie Gerry Schum, 1970).

12. Due to *The Lightning Field*’s fixed module, the work actually measures one mile by one kilometer and six meters.

13. As Grace Glueck notes in her review of Danger, De Maria also showed “a group of less menacing [epigrams] in an adjoining room.” These “epigrams,” as she calls them, were an extension of the artist’s series of *Invisible Drawings,* which he had first exhibited at Paula Johnson Gallery in 1965 and which would carry through to the axiomatic statements littered throughout his 1980 text on *The Lightning Field* in *Artforum.* Grace Glueck, “New York Gallery Notes: Trends Down, Sales Up,” *Art in America* 57, no. 2 (March/April 1969): 119.


15. The most widely cited essay regarding De Maria’s close control of his work is John Beardsley, “Art and Authoritarianism: Walter De Maria’s Lightning Field,” *October* 16 (Spring 1981): 35–38; but Beardsley also treats De Maria’s works in accounts that do not address authoritarianism both preceding and following the essay in *October.* See John Beardsley, *Probing the Earth: Contemporary Land Projects* (Washington, DC: Smithsonian Institution Press, 1977), 20–21; and John Beardsley, *Earthworks and Beyond: Contemporary Art in the Landscape* (New York: Abbeville Press, 1984), 62–63. On aggression in De Maria’s sculptural work, see also Anna C. Chave, “Minimalism and the Rhetoric of Power,” *Arts Magazine* 64,

17. The Three Continent Project was a work De Maria had planned as early as 1967–1968; it involved fashioning a mile-long bulldozer cut running north-south in the Sahara Desert, another east-west cut in India, and a mile square in the United States. After photographing each cut from the air, he intended to collage the final version of Three Continent Project as a superimposed photograph combining the lines cut into all three continents. In January 1969, he executed the first of the desert cuts in the Sahara, but Algerian police seized his film and other photographic documentation on suspicion of international espionage. No other segments were completed. “Press Release,” in folder 24, box 3, Dwan Gallery Records, 1959–1971, Archives of American Art, Smithsonian Institution.

18. Speaking to Paul Cummings in 1972, De Maria’s only extensive, published interview, the artist clarified his relationship to conceptualism and print media by identifying a series of “conceptual works I did this year which would appear in books. Not announced as work, I mean, just that’s my contribution to the New York art world. I’m having no gallery show this year in New York, but my contributions are the photos of the six dealers, twelve photos of my loft which appeared in Avalanche this summer, and then my self-portrait and the cover of Arts magazine in which my name appeared on the cover and three photos appeared inside.” Oral history interview with Walter De Maria, 4 October 1972, in Archives of American Art, Smithsonian Institution. The projects to which the artist refers include Gregoire Müller, ed., The New Avant-Garde: Issues for the Art of the Seventies (New York: Praeger, 1972), 150–157; “Walter De Maria,” Avalanche 4 (Spring 1972): 52–63; and “Conceptual Art,” Arts Magazine 46, no. 7 (May 1972), cover, 5, 71–73. To this list should also be added a full spread he contributed to the June 1973 edition of Artforum in the advertising section.

19. In a September 30, 2011, email to the author, Virginia Dwan confirmed De Maria’s collaborative role with her in fashioning these advertisements. Boettger notes other provocative uses of photographic advertisement by the Dwan Gallery, citing the elliptical images of tracks and scattered dirt for Earth Works of fall 1968. See Boettger, Earthworks, 133–134.

20. The literature on Las Vegas Piece disagrees about the width of the cuts. Franz Meyer lists the work at eight feet in Walter De Maria (Frankfurt: Museum für Moderne Kunst, 1991), while Beardsley has it at six feet in Earthworks and Beyond. The width was determined by the size of the bulldozer blade that fashioned Las Vegas Piece. Because the blade has disappeared the work’s exact dimensions cannot be confirmed.

21. Although I focus here on magazine advertisements that feature De Maria within The Mile-Long Drawing, a second photograph ran as a promotion for Danger. Both images feature The Mile-Long Drawing, but the latter does not show the artist within the frame, a fact that strengthens the claim made here that Danger and its pendant magazine advertisements operate around issues of bodily absence and presence. Identical photographs of the artist lying within The Mile-Long Drawing appear in the April 1969 issues of Artforum 7, no. 8; Arts Magazine 43, no. 6; and Studio International 177, no. 910. The only photograph to show the lines without De Maria was published in Art News 67, no. 12, which ran a scathing review of Danger in its May 1969 issue.

22. Although the images selected for publication in 1980 dramatize the work, Cliett recalled in a recent interview that the published pictures were from a secondary group left over from a
primary collection originally chosen for Life magazine, a deal that ultimately fell through. Cliett also described a plan to place one of the splashier photographs on a billboard in New York’s Grand Central Station, but that proposal, too, failed to materialize. Instead, the “primary” photographs of The Lightning Field would appear in the German magazine Stern in an edition that has been mostly overlooked in De Maria’s American reception. However, the German publication is not solely dedicated to the Field and, with the addition of an essay by a German critic, does not maintain the same position (i.e., as an artist’s work within his oeuvre) as De Maria’s 1980 Artoforum piece. See Jeffrey Kastner, “The God Effect: An Interview with John Cliett,” Cabinet 3 (Summer 2001): 90–92; and Annegret Grosskopf, “Kunst mit Blitz und Donner,” Stern 31 (24 July 1980): 24–42.


24. In addition to the publication in Stern noted above, other examples include a special issue of Art Journal on “Earthworks: Past and Present,” guest edited by Robert Hobbs in fall 1982, whose cover features a version of the same photograph used for the Artoforum cover. More recently, Robert Hughes selected a cropped version of this same nighttime lightning strike for the cover of his American Visions: The Epic History of Art in America (New York: Knopf, 1999).


26. Capturing lightning was, from the beginning, a motivating factor in Cliett’s commission. In interviews he has spoken of traveling with De Maria to obtain a high-speed camera trigger designed by the U.S. National Aeronautics and Space Administration for studying lightning at Florida’s Cape Canaveral launch site. See Kastner, 91. De Maria elaborates on this in his Artoforum spread: “Photography of lightning in the daytime was made possible by the use of camera triggering devices newly developed by Dr. Richard Orville, Dr. Bernard Vonnegut and Robert Zeh, of the State University of New York at Albany.” De Maria, “The Lightning Field,” 58.

27. The term bioenergetics is borrowed from Gregory Bateson, specifically his summation of ecological discourse circa 1970: “Ecology has currently two faces to it: the face which is called bioenergetics—the economics of energy and materials within a coral reef, a redwood forest, or a city—and, second, an economics of information, of entropy, negentropy, etc. . . . that deals with the budgeting of pathways and of probability.” Bateson, “Form, Substance, and Difference,” in Steps to an Ecology of Mind (New York: Ballantine Books, 1972), 460–461.


33. On the history of photography, energy, and theories of light in the nineteenth century, see my forthcoming essay, “Atmospheric Cameras and Ecological Light in the Landscape Photographs of Eadweard Muybridge,” *Photography and Culture*. In addition to De Maria, other major artists to develop a materially energetic understanding of the photographic image in their artwork during the 1960s include Giovanni Anselmo, Alice Aycock, Robert Barry, and Michael Snow.


35. As a rejoinder to this characterization, Smithson revised his working definitions of entropy throughout his career. He discusses various models, for instance, in a late interview with Alison Sky, “Entropy Made Visible” (1973), in *Robert Smithson*, ed. Flam, 301–309.


38. Wiener, 21.


