

left: An 1978 satellite radiometer image of the Eastern United States, captured as part of NASA's Heat Capacity Mapping Mission, an experimental satellite program that observed thermal conditions for two years. The images indicate temperature ranges from white (hottest) to black (coldest).

above: An early example of the digital terrain model, in which the "continuous surface of the ground" is represented by "a large number of select points with known xyz coordinates."

ger able to take up its position as an immutable datum, as the counter-referent by which other theories measure their own fitness—theories of "sustainability," of "performativity," or "biomimesis" (notions which have never been more than elliptical self-negations; birth-defects of primary scientization)—the epistemic collapse of naturalized nature takes with it an entire lexicon of terminology that, for want of its precious anchor, has been rendered so vague as to be theoretically useless: "All techniques are artificial; this banality, however, does not imply that techniques are metaphysically distinct from or opposed to [naturalized] nature in any ontological way."⁶

"It is not without penalty that the word 'ecology' is so ambivalent that everything from back-to-the-land sentiments to hyper-technologism can find a place and rank in it."⁷ Our penalty is non-sense. Our penalty is a circular and frail theoretical armature that lags badly behind, and scarcely understands, the very techniques it advocates. Our penalty is to have become either self-disillusioned or self-distracted parodies of ourselves.

Our language sows disenchantment within us, and mocks itself behind our backs—a condition that will persist so long as we demand that the modern concept of nature serve as the irreducible denominator beneath our reasoning, where it can do nothing more than distribute an obstinate emptiness beneath our most prized signifiers: most obviously environment and ecology, but also the entire domain of the supposedly unnatural: the social, artificial, built, constructed, and synthetic, as well as precious distinctions such as inside and outside, landscape and urban, organic and processed... The list recedes to the horizon, until a sad cycle of dissolution bursts forth, revealing at once the hollow thickness of our confident but self-referential language.⁸

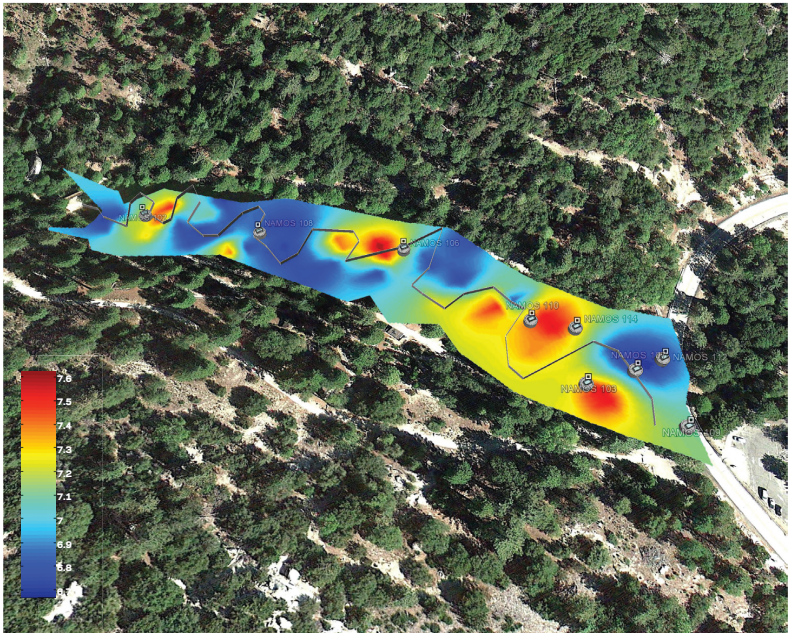
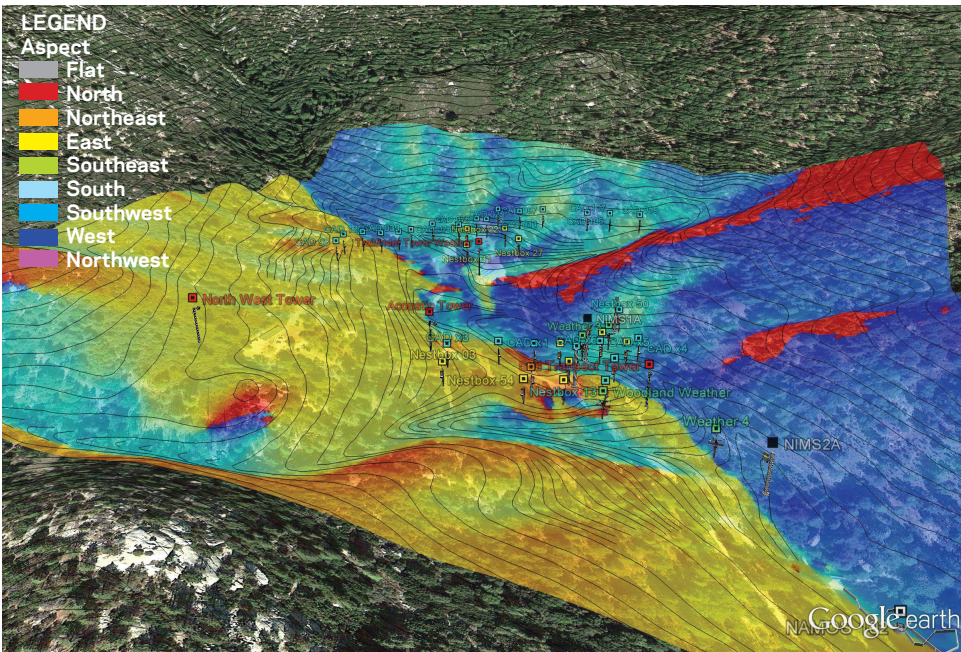
In the twilight of those idols there is only one thing to do, "and that is to go even deeper,"⁹ towards the recreation of a "philo-

sophical language within language,"¹⁰ in which the imposing cosmology of modern nature is rotated on its axis and reversed—made to run backwards, as it were—through a kind of inverted (or anti-) phenomenology that paces patiently through our instrumental worlds, looking all the while to describe both what lies beneath our reasoning and what kinds of beings we are becoming.

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The two figures above can serve as entry points. The figure on the left was published in late 1978, in an essay on the "Satellite Detection of Urban Heat Islands." Produced using a high resolution satellite radiometer, it portrays thermal fields across the Eastern United States in shades of gray ranging from black (warmest) to white (coldest).¹¹ There is nothing remarkable about this particular figure. It merely stands as an early example of a form of representation—imaging (by which we mean the conversion of the continuous visual field of lived experience into a statistical field comprised of discrete electrical charges)—that has not only come to dominate our conceptions of nature and ecology, but also has reoriented and restructured the entire scientific-bureaucratic apparatus that today takes 'the environment' as its object of concern.

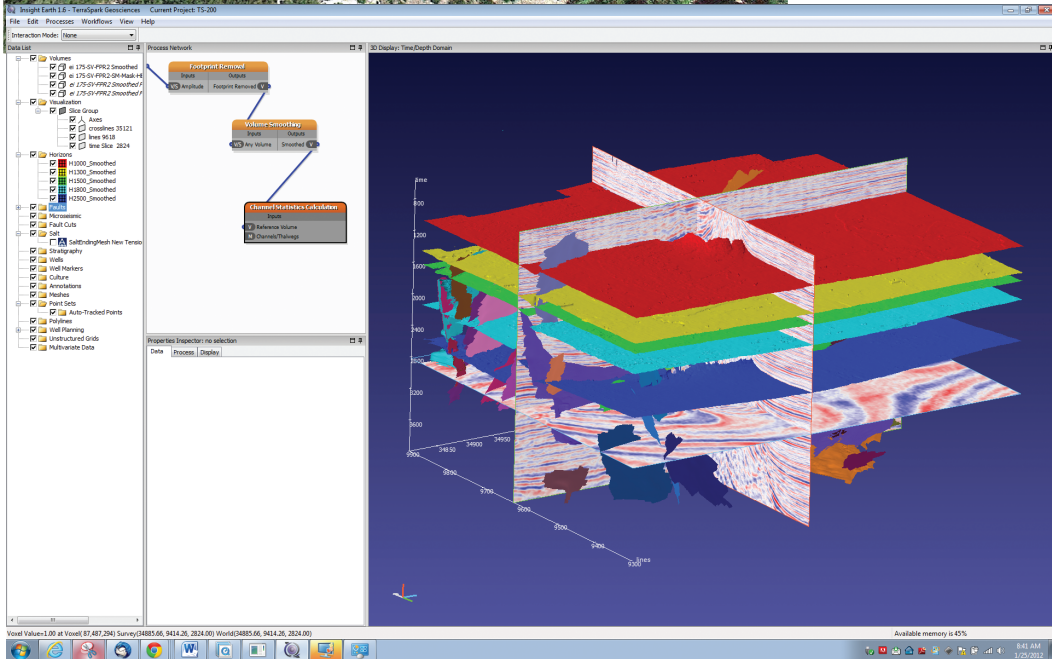
The second figure, on the right, also dates to the late 1970s, to an obscure technical report on "Production Mapping with Orthophoto Digital Terrain Models." It marks an early expression of certain instrumental arrangements crucial to the emergence of a fully automated electronic surface: "a statistical representation of the continuous surface of the ground, by a large number of selected points with known xyz coordinates." Noting that a convenient representation of the surface of the earth is a common requirement for engineering, scientific, and military problems, the report contends that such problems could be most efficiently handled by producing "terrain data in a form which the electronic



above: The James Reserve is an effort to integrate the biometric monitoring of a territory with its electronic simulation. GIS layers, shapefiles, and polygons outputted from programs such as ESRI's ArcGIS can be displayed in Google Earth. Topographical variables such as slope steepness and aspect affect micro climate conditions (for example, the red, north-facing areas receive less sunlight during the day). The use of basic GIS layers, and more complex ones (such as vegetation and soil-type maps) will "allow users to look at a variety of information types simultaneously." Topographic contour lines are shown in black, drawn as vectors in Google Earth.

left: Model overlays of fluormetry (measure of aquatic floral density) created from in-situ sensors and robotic transect data. As 'data streams' from sensor systems are directly entered into a common database, 'spatial modeling' and statistical biometrics will be simultaneously generated for the Google Earth interface.

below: "Platforming" across discrete seismic data sets towards a unified model.



An extraction well at Fresh Kills. Hundreds such wells are deployed throughout the “remediated park” in an effort to capture and contain the methane gas emitted by the decomposing waste just below the surface. Systemic monitoring takes place within a centralized database.



ric “communication among the parts.” It concerns the mode of regulation specific to the managerial surface. Infrastructural interventions dealt with uncertainty by designing for maximum and minimum thresholds (as with, say, river channelization, which involves establishing the periodicity and range of a known flood corridor). The managerial surface aims to tailor its responses to uncertain events on a drastically reduced time scale: again, ideally in ‘real time,’ which is first and foremost the time of the series.²³

In this sense, and in stark contrast to primary-modern infrastructuralism, the managerial surface is probabilistic rather than deterministic, statistical rather than geometrical, inductive rather than deductive. It is for want of this instantaneous (viz., statistically-significant) response rate that the principle of automation ceases to require justification, achieving instead the status of a truth within the moral register of the managerial surface, which relies on the coordination of sensitive automata for its very existence as a possible interventionist strategy.

For an even more fully realized example of the managerial surface, look to the example of Fresh Kills landfill on Staten Island. More precisely, consider the ongoing project of “rehabilitating” Fresh Kills landfill as an urban landscape. What mode of environmentalism—described in the official project literature as a process of “in situ management over time”—now governs Fresh Kills? That is, divorced from the questions surrounding the real efficacy of this restoration project, how are its imagined goals being pursued?

What we find at a place like Fresh Kills, residing just beneath its grassy slopes and bird sanctuaries, is a telemetric monitoring apparatus so dense that there is in fact no location within the

project that escapes the possibility of being cataloged, supervised and regulated. “Highly engineered,” shot through with “sophisticated systems in place to collect and treat...byproducts and to protect both public health and the environment,” it is a surface that escapes the ocular-centric history of landscapes and joins instead a gathering contemporary psychopathology of postindustrial oneirism:

“It is anticipated that it will take a minimum of thirty years before gas production and settlement associated with decomposition cease and leachate fully drains from the site. As these processes occur, there will be a continuing need for regular maintenance, monitoring and evaluation of the site and systems that have been put into place—primarily the final cover, landfill gas (LFG) and leachate systems, and the extensive network of monitoring wells. It is essential that access to these systems be preserved during this time for inspection, maintenance and repair.”²⁴

Managerial discourse of this kind—which revolves around the adaphoric vagaries of so-called mitigation strategies and actuarial risk assessments—secretly and unintentionally discloses the fact that Fresh Kills, like the rest of life (Fresh Kills is merely the opening wedge of more generalized tendencies in our professions) now sits both within and once-removed from modernity. It no longer feigns at managing or solving the initial pressures of modernity confronted by the nineteenth century city (demographic, juridical, epidemiological, sanitary, etc.), but rather is oriented around the sudden need to now manage the most substantial consequences of our prior methods of “successful” management—all the nega-

tive externalities of the modern managerial posture (waste, toxicity, byproducts, pollution) which are being continually expelled by modern infrastructures, and which have in truth always outpaced our strategies of confinement and concealment.

This shift marks a decisive conceptual change in what it means to manage an environment, and distances us finally from all previous disciplinary considerations of that practice, which did not (or could not) foresee its consequences for the design fields.²⁵ It corresponds to the increasingly reflexive character of modernity more generally, and constitutes the third and perhaps most fundamental general feature of the managerial surface: that the environments produced through its logic are quite well aware of modernity's catastrophic tendencies, precisely because it is their prescribed task to somehow compensate for those self-produced failures.²⁶ Their charge, by design, is to somehow extend, under any circumstance, the limitless expansion of so-called civilization, and for that reason they must somehow be made to dream in the language of solutions while remaining wide-awake to the historical absurdity of that very discourse. Deployed under the banners of remediation and restoration, the inevitability of failure underlies their carefully planned births, and adds to their joyous inaugurations an actively repressed sense of disappointment and dread.

A continual telemetric exchange between emergent techniques of electronic representation and networks of electronic intervention, aimed at harnessing and marshaling ever greater material-mechanical control, against the background of technoscientific instrumentality and beneath the alibi of statistical reasoning: this is the managerial surface; this is what it means today to manage an environment.²⁷ Can we now grasp the extent to which all of modern environmental logic has in fact become a kind of *autoenvironmentalism*?

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But what is the logic of this new environmentalism? What does it want? In the first place it is a novel compulsion towards synthesizing a kind of universal format into which the continuity of lived experience might be forever divided into discrete, measureable, manageable units. It asks that we seek out the interstices between as-yet disparate control surfaces—some raster, some vector, some in situ—that we might fashion statistical-electrical sutures across them. This platforming process involves first finding, in statistical-representational space (code), the seams in various kinds of data sets and file formats, and then developing algorithms to ultimately automate as far as possible the translation of those discrepancies into a single model, or at least into ever-fewer models.

At the same time, it is a logic that entails the fabrication of ways of life complicit with this idealized model. Through an ever-quickenening movement among statistical operations that coordinate the distribution of matter in real time, populations and topographies are massaged towards the perfection of their own simulations at an exponential rate. Far more than simply a species of "logistics," the managerial surface is a conditioning of possibilities that preauthorizes logistical reasoning by naturalizing its facticity, by arranging, in advance of any logistical intervention, whole families of historical a priori that will come to constitute the field within which those processes take place. Smoothing the malleable pathways between life-as-organized-matter and its

discernable potentials, managerial logic does not concern itself with establishing the (epistemological) legitimacy of our contemporary "statistical view of nature"²⁸—on this point it is more or less agnostic—but simply aims instead to discover avenues by which that form of reasoning can be made factual; avenues along which life can be opened up, rearranged, and made to conform to certain kinds of goals.

Within this vision, the techniques of environmental management are designed not around the limitations of life, but rather precisely the opposite: life itself is made operational (the managerial surface is an operational theater) and brought in line with other kinds of demands: quality control, local epidemiology, just-in-time delivery, labor overhead and refrigerated shipping costs. Unlike the geometrical infrastructures of the nineteenth and twentieth centuries, which were tasked with "regulating the naturalness of [a] species within an artificial milieu,"²⁹ today our managerial posture demands that all of life be displaced to a condition *beyond* the natural and the artificial, to an ontological plane where such distinctions no longer make sense, and can no longer interfere with the choreographing of matter. In this way it reveals a more sophisticated grasp of the auto-antonymic character of environmental reasoning than that found in our present theoretical postures.

One goal, then, of the managerial surface, if only implicitly (if only automatically) is to drive that regularity and predictability down below the population, into the processes of individuation, by refashioning (according to a drastically reduced timeframe) the beings of which it is comprised. For this reason we can point to a certain disappearance of management as it moves from the older, geometrical forms into a domain of ascalar surfaces.³⁰

The sublimation of managerial tasks, their imbrication within the fabric of life itself, involves a movement away from geometrical methods in two directions simultaneously. Management has become at once infinitesimally small and imperceptibly large, simultaneously molecular and global—a twin disappearance into a being and nothingness expressible only through ones and zeros. Through its reciprocal deportment it now resides simultaneously in the species and in its milieu, comprising through this double movement a new, universally formatted habitat for the living.

For proof, one can look to contemporary agribusiness, where the geodesic and the genomic are actively merged with astonishing efficacy. Precision farming (the aim of which is to "optimize plant growth and farm profitability by adjusting treatments to suit the variable biophysical conditions that occur within the agricultural field") brings an entire suite of technologies and data stacks—GPS satellite positioning and automatic guidance sensors, geospatial information data, yield-monitoring and variable-rate sensing equipment—to bear upon "the field," transforming that object into a metastatic tableau utterly resistant to primary ocular comprehension.

Within this absurdly regulated terrain, we find the ontological ends of our newly topological representational prowess. The egg-to-death time of the common poultry chicken has now, through genetic modification and breeding strategies, been reduced to roughly six weeks, down from the more than twelve weeks previously conferred by its "naturalness." Each individual is electronically marked at birth so that its growth, health, and eventual position in the supply chain might be closely supervised. In the

technique referred to as robotic weed control, we encounter an even more purified set of control loops. Sensorimechanical field hands, able to differentiate among various species according to their (extra-ocular) spectral signature, dispense variable doses of toxins in discrete locations, eliminating not only weeds but in some cases serving to “purify” the stock species by selecting out only the most genetically-desirable individuals.

Genetic identification and georeferenced location, brought side-by-side with close electronic coordination among genetic experimentation, atmospheric regulation, and biotic monitoring; localized managerial intensities, fit with increasing perfection within their scalar opposite: the regional, the territorial, the global.³¹

The managerial surface carries with it a metaphysics all its own that fantasizes of the moment in which that old, soon-to-be-forgotten, pre-modern conception of nature—“primordial nature,”³² inexplicit, willful, wild, impulsive: not merely uncomprehended but (for its blindness to being) wholly incomprehensible—is finally effaced, forever refracted into the tranquility of regulated discontinuity. Constantly forming and reforming new ways of being-in-the-world (ontologies that will by definition confirm our probabilistic conjectures and subsequent measurements), the managerial surface does not so much cause as it engenders these ways of life, inseminating them, arranging their preconditions, and then supporting them on all sides, bringing certain ways of life to the foreground while pushing others to the disposable periphery of modernity.

If our lives appear ever more amenable to statistical modeling, it may be due in part to the fact that the world is being quite literally refashioned by statistical processes. “We are being remodeled...”³³ Or, more specifically, being is being remodeled—inwardly and outwardly—through processes that expose the confidence of our delusional engineering bravado to an unsettling proposition, whispered in the minor philosophies of ‘skeptical fools’ since the beginning: that “perhaps science and technology have always had far more to do with exploiting potentials than revealing essences.”³⁴

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Design today knows all too well the tremendous capabilities of the managerial surface, precisely because it is genealogically related to the mode of representation that reigns sovereign in our daily practices. Despite its triumphal disciplinary pervasiveness, the electronic control surface does not in any way belong to architecture. Precisely the opposite: contemporary “digital design”—no matter its stylistic or ideological pronouncements—belongs to it. The architectural control surface is an infinitesimal slice of an enormous and expanding panorama of feedbacks, all reconfiguring the practices and demands of management and control around a probabilistic worldview.

From the first moment of contact, there has been a curious comingling of scalar experimentation, wherein architectural production has become decidedly topological in character, while treating the landscape as a tooled and uniformly scripted object. (The collapsing of scale within design methodology being merely a symptom of the technical disdain with which that concept is treated by control processes more generally.)

What this rough genealogy reveals is that the seemingly disparate approaches to architectural production mentioned at the outset—including the two most dominant schools of thought

within current practice, which have in fact sparred over the past four decades regarding the proper role of architectural practice with respect to larger, external conditions—are of course today unified at a most fundamental level: within the very composition of their disciplinary subjectivity, which rotates around and is more or less constituted through an intense experimentation with the electronic control surface.

Statistical-electrical control perforates and invests (both theoretically and materially.) It is a process of investment, and it has invested our discipline and our practices so thoroughly, and so neatly, and in so many quiet places, that we neither see it nor see past it, but rather see with it.

Tooling, scripting, performativity: the passive neutrality of such language conceals anxieties surrounding the fact that just as design has had to acknowledge its complicity in the aesthetics of warfare, it must now come to terms with an aesthetics of management, whose archive—which constitutes the very essence of modern environmentalism—is no less beautiful or brutal.³⁵ This task has nothing at all to do with the refutation of false advertising of a cynical public relations campaign, dispensing, ad nauseam, the dull ecstasy of green consumption: unadorned common sense can guide that activity.

Rather it consists in examining the intimate psychohistorical relation of modern managerial-scientific representation to that which is silently posited in it: the principle that life itself is best conceived not so much as the fragility of being, or the enigma of desire, or the rich mystery of existence, but instead simply as a function of the organization of matter. It involves uncovering, in the spatial politics of neoliberalism, an ongoing transposition of the obsessive-compulsive underside of bureaucratic desire into the concepts of environmental management, whereby all space becomes a theater of war; whereby the desire for speed, efficiency and control exist as unquestioned values; whereby “the Earth became the common enemy.”³⁶ Specific to our own recent disciplinary history, it involves discerning the points of contact between the concepts of autonomy and automation.

Urbanists, automatists, and professed environmentalists: partners in a politics of aesthetics that once animated architectural theory, but which has now been electrochemically value-engineered into an abyss of reflexive anachronism. Today they remain, playing a discursive shell game, concealing a fact that lobotomizes their shared language: that the potentiality of the managerial surface, the sum of its telemetric possibilities, has become the silent epistemological backdrop for all design practice. Its genealogy now entwines and binds design reasoning down beneath perception, within the mundane but consequential details of disciplinary subjectivity. Claims to difference are summarily upended by their implication in an instrumental lineage that has engulfed them, guilty by association with a family of technologies that are today only regarded unhistorically and apolitically.

Nature—or more specifically, the question of what is natural—has always been primarily a matter of representation. Our techniques have reconfigured the space of representation beneath our reasoning, and our mode of intervention in the world has undergone a fundamental change. We can no longer assume any distance or delay between life and its representation. Nor can we be confident, however, that the reduction of that gap, or the