"A Tough Bitch": Lynn Margulis and the Gaian Sublime[1]

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Abstract

This essay challenges Bruno Latour's elegiac pronouncement of the sublime's death in the Anthropocene, proposing instead a "Gaian sublime" emerging from Lynn Margulis's radical reconceptualization of planetary life. Analysis of Margulis's scientific nonfiction reveals how her work on microbial agency and symbiosis disrupts traditional sublime theory's emphasis on human transcendence and geological spectacle. The essay traces how sublime aesthetics, from Longinus through Burke and Kant to contemporary environmental thought, has historically reinforced racial hierarchies, gender binaries, and human exceptionalism. Margulis's perspective offers a crucial corrective by revealing Earth's smallest inhabitants as its most profound transformers, generating sublime experience not through nature's brute force but through recognition of life's collaborative creativity across scales and through deep time. This reframing moves beyond both conventional sublime theory and contemporary Anthropocene discourse, demonstrating how scientific understanding might enhance rather than diminish the capacity for awe and wonder. The Gaian sublime thus emerges as both aesthetic category and mode of attention, potentially enabling more ethically attuned relationships with our living planet.

Keywords: Gaia theory, Lynn Margulis, microbial evolution, planetary resilience, nonhuman agency.

Resumen

Este ensayo cuestiona el pronunciamiento elegiaco de Bruno Latour sobre la muerte de lo sublime en el Antropoceno, proponiendo en su lugar un "sublime gaiano" que emerge de la reconceptualización radical de la vida planetaria de Lynn Margulis. El análisis detallado de los escritos científicos de Margulis revela cómo su trabajo sobre la agencia microbiana y la simbiosis interrumpe fundamentalmente el énfasis de la teoría tradicional de lo sublime en la trascendencia humana y el espectáculo geológico. El ensayo rastrea cómo la estética de lo sublime, desde Longino hasta Burke y Kant hasta el pensamiento ambiental contemporáneo, ha reforzado históricamente las jerarquías raciales, los binarios de género y el excepcionalismo humano. La perspectiva de Margulis ofrece un correctivo crucial al revelar a los habitantes más pequeños de la Tierra como sus transformadores más profundos, generando una experiencia sublime no a través de la fuerza bruta de la naturaleza sino a través del reconocimiento de la creatividad colaborativa de la vida a través de escalas y tiempo profundo. Este replanteamiento va más allá tanto de la teoría sublime convencional como del discurso contemporáneo del Antropoceno, demostrando cómo la comprensión científica podría mejorar en lugar de disminuir la capacidad de asombro. El sublime gaiano emerge así como categoría estética y modo de atención, permitiendo potencialmente relaciones más éticamente sintonizadas con nuestro planeta viviente.

Palabras clave: Teoría de Gaia, Lynn Margulis, evolución microbiana, resiliencia planetaria, agencia no-humana.

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The sublime persists as a central paradox in aesthetic philosophy—at once visceral experience and elusive concept, immediate sensation and enduring theoretical problem. While conventionally associated with nature's grand spectacles—vast landscapes, towering peaks, furious storms—the sublime has undergone constant reinterpretation, from Longinus to Lyotard. These varied frameworks share a common thread: the sublime emerges in moments when human perception confronts overwhelming force, whether natural or conceptual. Yet in an era where anthropogenic change rivals geological agency, this traditional dynamic between human subject and natural power grows increasingly unstable. As we witness ourselves reshaping Earth's systems, the very grounds of sublime experience shift beneath our feet.

Bruno Latour, in his seventh Gifford lecture, later published in *Facing Gaia*, advances a provocative thesis about this destabilization: the sublime is slipping from our senses. For Latour, the traditional crucible of sublime experience—the stark contrast between nature's overwhelming power and human insignificance—dissolves as anthropogenic impact rivals planetary forces. "Never again," he declares, "will we be able to tamp down our hubris simply by contemplating the spectacle of grandiose landscapes." This shift transforms our position from passive observers of an immense and brutal nature to active agents under Gaia's constant scrutiny: "From now on, everything is looking at us." Thus, Latour's question—"How can we keep on experiencing the sublime in the Anthropocene?"—seems to answer itself: we can't. "The feeling of the sublime," he concludes, "has escaped us" (254). Yet this elegiac pronouncement, while compelling, may mistake transformation for disappearance.

The sublime is indeed undergoing a seismic shift—but rather than extinction, it faces evolution. I want to suggest that our understanding of the sublime is expanding beyond its conventional geologic and humanist frame through what I call the Gaian sublime. This mode of aesthetic experience, emerging from microbiologist Lynn Margulis's radical reconceptualization of planetary life, arises from recognizing two interconnected phenomena: the vast drama of deep-time evolution and the world-shaping agency of microscopic life. Where traditional notions of the sublime emphasize either human transcendence over nature or the overwhelming power of geological forces, the Gaian sublime foregrounds the intricate interplay of living and nonliving systems. It evokes awe not at nature's brute force but at the resilience, creativity, and interdependence of Earth's myriad life forms across multiple scales, from the microbial to the planetary. Paradoxically, our current fixation on the term "Anthropocene," despite its intent to shift paradigms, reinforces both an anthropocentric view of Earth and a restrictively geological framework, tethering our understanding of the sublime to a narrow, materialist conception of planetary evolution.

The Gaian sublime both emerges from and critically extends recent developments in Anthropocene discourse. Scholars like Bruno Latour and Donna Haraway have drawn productively on Gaia theory to highlight the complex entanglements of social and ecological systems, challenging simplistic narratives of

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human dominance. Yet even as this discourse grows more nuanced in its acknowledgment of biospheric agency and its critique of dualistic thinking, it often fails to capture the visceral experience of encountering Earth's living systems. The Gaian sublime addresses this crucial gap by offering a way to affectively engage with the planet's vast web of agencies. Where traditional sublimity emphasized nature's overwhelming power, and early Anthropocene narratives inverted this to focus on human geological agency, the Gaian sublime locates awe in the creative force of Earth's myriad life forms working in concert across scales and through deep time. This reframing resonates with recent work by scholars like Dipesh Chakrabarty on situating human history within planetary evolution, while insisting that such understanding must be not merely intellectual but visceral—a felt recognition of our embeddedness within Earth's living systems.

The Gaian sublime thus emerges not merely as critique but as a reorientation in how we experience and understand our relationship with Earth. While the Anthropocene narrative remains fixated on human impact and geological traces, the Gaian sublime attunes us to the awe-inspiring, often invisible processes that sustain planetary life. This perspectival shift builds upon Latour's call to "face" Gaia's agency as a complex, self-regulating system. Indeed, as Claire Sagan shows, Gaia theory itself encompasses competing visions of planetary agency: James Lovelock's conception of Earth as a fragile "old woman" requiring human intervention stands in stark contrast to Lynn Margulis's vision of Gaia as a "tough bitch"—a robust, self-regulating system fundamentally beyond human control. The Gaian sublime, grounded in Margulis's perspective, invites us to experience awe not at human agency but at the vast web of living processes that have long shaped—and continue to shape—planetary evolution, processes that both precede and exceed human influence.

As Bruce Clarke argues in *Gaian Systems*, Margulis's crucial intervention in Gaia theory lay in her insistence on viewing Earth's present through "the sublime Gaian backdrop of deep evolutionary time" (173). Where Lovelock remained focused on currently observable systems, Margulis developed a unified narrative spanning roughly 3.6 billion years—a temporal expanse that renders the entire history of complex animal life a geological instant. This vast temporal perspective, coupled with her emphasis on microbial agency, provides precisely what the Anthropocene narrative needs: a framework for experiencing sublimity that transcends both human timescales and human-centered agency. By reframing Earth's evolution as a microbial drama, Margulis's vision disrupts traditional sublimity's emphasis on human transcendence, repositioning humanity as a peripheral player in what Clarke terms Earth's ongoing story of "autopoietic immortality" (173)—not the immortality of individual organisms, but life's persistent ability to recreate and maintain itself through bacterial innovation and adaptation across deep time.

While current strands of ecocritical sublime theory emphasize reengagement with Earth's "material existence" (Murphy), the Gaian sublime demands we recognize something more profound: our planet's holistic agency, resilience, and moral indifference to the prospect of (non-microbial) extinction. This recognition

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necessitates abandoning naive narratives of "protecting" or "saving" Earth in favor of learning to sensitize ourselves to Gaia—that planetary-scale, protean force that currently sustains our species—with the pragmatic aim of maintaining habitability. By foregrounding the agency of Earth's living systems over their materiality, the Gaian sublime enables an affective recognition of planetary aliveness that transcends conventional Anthropocene discourse. This visceral understanding, once grasped, compels us to seek more nuanced ways of relating to Earth's ongoing story—a narrative in which microbes remain the principal actors. Far from escaping us, as Latour suggests, the sublime instead reemerges through engagement with the liveliness that both engenders and envelops us. It asks us to look beyond immediate perception and human timescales to recognize the wiggly invisible world that has been creating and maintaining planetary habitability for billions of years.

Awe-Struck yet Short-Sighted: Examining the Legacy of Sublime Theory

The genealogy of sublime theory reveals how deeply current frameworks remain indebted to their historical antecedents. Longinus, in the first century BCE, established the concept's foundational connection to transformative experience, arguing that "the sublime inheres in the extraordinary adequacy of words and rhetorical structures, which provoke amazement and wonder as well as influence" (Shapiro 19). Edmund Burke's eighteenth-century intervention expanded this framework by uprooting the sublime from its purely rhetorical context. Burke's key innovation lay in his theorization of the sublime as "delightful horror"—a paradoxical response emerging from the safe contemplation of terror, which "produces a response that is neither pleasure nor pain" (Peters 782). This reconceptualization not only extended the sublime's domain from language to nature but also established a crucial link between terror and human transcendence. For Burke, confrontation with the awesome and terrible produces not cowering but "swelling"—a psychological expansion where the soul stretches to match nature's grandeur. His rhetoric of "triumph," "glorying," and "inward greatness" (Doran 160) transformed the sublime into a mirror of human potential, where survival of terror enables the harnessing of power. Burke extended this framework beyond natural phenomena to human labor, allowing the rising bourgeoisie to find sublimity in work itself. This expansion transformed "the taste for the sublime" into what Emma Clery identifies as "a moral foundation for economic individualism" (175).

Immanuel Kant's intervention in sublime theory marked a decisive shift from Burke's empirical psychology to transcendental philosophy. Rejecting Burke's assertion that "the experience of the sublime is necessarily accompanied by fear or terror" (Mellor 88), Kant insisted that mere psychological or emotional responses could not adequately explain the sublime's transformative power. His *Critique of Judgement* relocated the sublime's essence from bodily sensation to rational cognition, specifically to moments when consciousness confronts its own limitations in comprehending nature (Doran 229). This reframing generated Kant's influential

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bifurcation of the sublime into mathematical and dynamical forms. The mathematical sublime emerges in confrontation with absolute magnitude—endless stars or boundless oceans—where imagination fails but reason triumphs in its capacity to conceive infinity (222). The dynamical sublime, by contrast, arises from encounters with overwhelming power—violent storms or towering mountains—where physical vulnerability gives way to recognition of our moral autonomy, "putting us directly in touch with the supersensible realm of freedom" (221). This realization, Kant suggests, "gives us courage to be able to measure ourselves against the seeming omnipotence of nature" (91). This transcendence requires aesthetic distance—a theatrical position that enables contemplation while ensuring safety. Through such calculated detachment, nature's voice is muted so that we might hear what Latour and Hache term the "little music of morality" within ourselves (Latour & Hache 325).

These foundational theories of the sublime did more than establish frameworks for aesthetic experience—they actively constructed and reinforced racial hierarchies that would shape centuries of philosophical thought. Burke's theory racialized the sublime through its treatment of blackness, most notably in his deployment of a "horrifying" Black woman as exemplar (Peters 786). This rhetorical move implied an inherent connection between dark skin and sublime terror, providing theoretical scaffolding for racial oppression during slavery's expansion. Kant's framework proved even more explicitly racist, linking sublime experience to European cultural superiority and systematically excluding "racially and culturally inferior peoples from access to the sublime" (Battersby 73). Together, these theoretical moves reveal how sublime aesthetics helped construct modern racial hierarchies, as both philosophers "sought to define sublimity by using images of racial others as deficit models" (Shapiro 43).

The sublime's power dynamics extended beyond race to manifest rigid gender hierarchies. As Philip Shaw demonstrates, the concept has consistently encoded masculine ideals of power and reason, while relegating beauty to a feminized realm of passivity and emotion (10). Feminist scholars, however, have not merely critiqued this gendered binary but reconceptualized the sublime itself. Barbara Freeman's theorization of the "feminine sublime" offers a radical alternative that "does not attempt to master its objects of rapture" (3), instead advocating for an aesthetic of receptivity and "taking up a position of respect in response to an incalculable otherness" (11). This reframing of sublime experience as receptive rather than dominating provides crucial theoretical groundwork for understanding how the Gaian sublime might operate beyond traditional gender hierarchies.

Through its association with European masculinity, whiteness, and human exceptionalism, sublime theory thus became a sophisticated philosophical apparatus for justifying multiple forms of dominance. This theoretical development paralleled and legitimized technological progress, as sublime experience gradually transferred from natural phenomena to human achievement. The twentieth century's emergence of what David Nye terms the "technological sublime" marked a decisive shift, as industrial and mechanical marvels usurped the reverential status once reserved for

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natural phenomena. As artificial wonders increasingly commanded sublime response, the concept's original connection to natural phenomena attenuated, threatening to sever what remained of Western culture's visceral connection to nonhuman agencies.

Christopher Hitt's intervention in sublime theory marks a crucial attempt to reclaim the concept for environmental thought. His argument that the "rapidly increasing impact of technology on the world has only heightened the urgency of the need to reconsider the sublime" (618) directly confronts the concept's compromised history. While acknowledging how "technology has assumed an integral role in the ideology of the sublime" (619), Hitt undertakes a strategic recuperation of sublime experience for ecological purposes. His "ecological sublime" reconceptualizes the aesthetic category as a potential bridge between human and natural worlds rather than a reinforcement of their separation. This theoretical move explicitly rejects technological solutions, arguing that "contrary to Kant, reason can never master nature" (619–620). Yet his framework, while advancing beyond traditional formulations, remains tethered to conventional scales of perception and agency.

The persistence of both traditional and technological sublime frameworks becomes particularly evident in Lovelock's formulation of Gaia theory. Lovelock first conceived of Gaia at NASA's Jet Propulsion Laboratory in 1965, when data about Mars's CO_2-dominated atmosphere led to a revolutionary hypothesis: Earth's living organisms must actively maintain conditions suitable for life through complex feedback loops. While his conception of Earth as a self-regulating system appears ecological, his consistent advocacy for geoengineering betrays an underlying commitment to technological mastery. Claire Sagan's analysis exposes this contradiction, noting how Lovelock ultimately "fantasizes further about a future in which Gaia will shed her organic layers in favour of her technological ones" (11). His characterization of Earth as a vulnerable "old lady" requiring "dialysis" unconsciously reproduces the traditional sublime's gendered assumptions, while his techno-utopian vision reduces planetary processes to "informational bits." Sagan's critique of Lovelock's "imperialist, militaristic, medical and masculine language" (11) reveals how his framework perpetuates a problematic pattern: feminizing planetary processes while reserving transformative agency for masculinized technological intervention. Thus, Lovelock's interpretation of Gaia remains captured by the very power structures it supposedly challenges.

Margulis's interpretation of Gaia disrupts these persistent binaries and hierarchies. Her vision reimagines the sublime by recognizing a systematically overlooked truth: that microscopic life forms have been the primary agents of planetary transformation since life's emergence on Earth. This shift in perspective does more than simply add another voice to Gaia discourse; it reconfigures how we might experience and theorize sublime encounters with planetary life.

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Small Players, Big Impact: Margulis's Microbial View of Earth

Margulis's Gaian view shifts our perception of Earth-life relationships. While she developed the framework in dialogue with Lovelock, her version emphasizes the primary agency of microbial life in orchestrating Earth's systems. Her theoretical contribution emerges from what Donna Haraway characterizes as her interdisciplinary mastery: "an adept in the study of microbes, cell biology, chemistry, geology, and paleogeography, as well as a lover of languages, arts, stories, systems theories, and alarmingly generative critters, including human beings" (60). This synthesis allowed Margulis to challenge conventional wisdom about both evolution and planetary processes. Central to her reimagining of Earth is a radical reassessment of microbial life that transforms bacteria from pathogens into sophisticated agents of planetary change. Microbes, she argues, possess capacities and exhibit behaviors that not only underpin evolution but continue to shape Earth's systems. "Our ancestors, the germs, were bacteria," Margulis insists, confronting a persistent cultural myopia that obscures a crucial truth: these disparaged "germs" not only preceded but "germinated all life" (96).

The sheer temporal and operational scope of bacterial existence poses a fundamental challenge to traditional theories of the sublime. Where Burke and Kant located sublimity in immediately perceptible manifestations of nature's might, Margulis uncovers a more profound source of awe in the microscopic realm. "The book of life," she insists, "is written in neither mathematics nor English: it is written in the language of carbon chemistry. 'Speaking' the language of chemistry, the bacteria diversified and talked to each other on a global scale" (Symbiotic Planet 108). Her research reveals how bacteria, through their sophisticated "nanotechnology, metallurgy, sensory and locomotive apparatuses" (Hird 22), have functioned as Earth's primary innovators and transformers since life's emergence. This microbial ingenuity operates across a radical spectrum of scale: individual bacterial cells perform sophisticated feats of chemical transformation that, when multiplied across billions of years and trillions of organisms, fundamentally reshape planetary systems. The Gaian sublime thus emerges from this dramatic rescaling of agency and impact—a theoretical move that collapses conventional distinctions between the infinitesimal and the infinite, between immediate perception and deep time.

Margulis's microbial ontology fundamentally subverts the Kantian sublime's celebration of rational mastery over nature. Instead of celebrating human transcendence, her work reveals how Earth's smallest inhabitants have engineered its most profound transformations. "We animals, all thirty million species of us, emanate from the microcosm," she asserts, reminding us that "the microbial world, the source and wellspring of soil and air, informs our own survival" (14). Her detailed accounts of how bacteria mastered substance conversion and invented fundamental processes like photosynthesis and aerobic respiration, generate an alternative sublimity—one that derives not from nature's brute force but from its capacity for creative transformation across scales and through time. This bacterial sublimity

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reveals how microscopic life forms have functioned as Earth's premier innovators, developing sustainable solutions that outshine our technology in efficiency, sustainability, and global impact. This reframing not only topples conventional hierarchies of life but suggests our most prized traits and capacities have bacterial roots, prompting a radical rethinking of all "simpler" life forms. Margulis thus suggests that our best solutions might lie in synergizing with natural processes rather than attempting to dominate or transcend them.

Beyond challenging Kantian transcendence, Margulis's framework reconstitutes the relationship between consciousness and planetary life. Where Kant located moral elevation in reason's triumph over nature, Margulis proposes a more expansive view of mind and consciousness rooted in evolutionary history. Her assertion that "our sensibilities come directly from the world of bacteria" emerges from her systematic analysis of life's deep interconnectedness, evidenced in observable patterns of bacterial sophistication where "cohabitation succeeded in some with great perseverance through the ages." This Gaian perspective suggests that our moral sensibilities emerge not from transcendent reason but from life's long history of coevolution and adaptation. Her claim in "Prejudice and Bacterial Consciousness" that bacteria "invented consciousness" (Dazzle Gradually 37), while provocative, represents a calculated rhetorical move—an attempt to dislodge anthropocentric assumptions about mind, agency, and morality. This reframing suggests that ethical thinking requires not transcendence of our biological nature but fuller recognition of our embeddedness within Earth's complex web of life.

Margulis's expansive view of bacterial capabilities thus generates a distinct dimension of the Gaian sublime—one arising from the recognition of life's collaborative interconnectedness. The diversity and sophistication of biological innovations reveal evolutionary dynamics that transcend conventional narratives of competition and individual fitness. In *Microcosmos*, co-authored with her son Dorion Sagan, Margulis articulates an alternative paradigm of life's development: "Life did not take over the globe by combat, but by networking. Life forms multiplied and complexified by co-opting others, not just by killing them" (29). Her theory of endosymbiosis provides the empirical foundation for this perspective, demonstrating how certain organelles within complex cells—including mitochondria and chloroplasts—originated as free-living bacteria that formed permanent symbiotic relationships with their hosts rather than being digested when engulfed. The resulting sublime experience stems from recognizing our own bodies as living testimonies to ancient bacterial collaborations; as fundamentally symbiotic assemblages. As Donna Haraway observes, the "core of Margulis's view of life was that new kinds of cells, tissues, organs, and species evolve primarily through the long-lasting intimacy of strangers" (60). This recognition—that "in the arithmetic of life, One is always Many" (Margulis and Guerrero 51)—starkly contrasts with Western culture's emphasis on individual prowess and competition.

The Gaian sublime achieves perhaps its most radical expression in Margulis's extension of symbiotic interconnection to planetary scale. Her assertion with Sagan

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in *What is Life?* that "Earth, in a very real sense, is alive" (23) generates sublimity through the recognition that planetary habitability itself emerges from microbial agency. From the ancient cyanobacteria that oxygenated Earth's atmosphere to contemporary microbes, bacteria regulate the planet's essential gas cycles. Through their management of carbon, nitrogen, sulfur, methane, and oxygen flows, living systems manifest an endless capacity for self-renewal through bacterial innovation. Margulis and Sagan capture this paradigm shift through a decisive analogy: "Earth is no more a planet-sized chunk of rock inhabited with life than your body is a skeleton infested with cells" (24). This formulation collapses distinctions between body and planet, microscopic and macroscopic, revealing symbiotic processes operating across all scales of existence.[2] Their vision presents Earth as a dynamic entity pulsing with the collective "breath" (35) of innumerable organisms, whose "geophysiological" (*Symbiotic Planet* 155) activities maintain conditions for life. Crucially, however, this planetary self-regulation emerges not from conscious design but from what Margulis identifies as "an emergent property of interaction among organisms, the spherical planet on which they reside, and an energy source, the sun" (149)—a description that reconfigures traditional notions of agency and intentionality.

Through her Gaian framework, Margulis dismantles traditional notions of nature as a delicate balance vulnerable to human disruption. Instead, she presents Earth as a resilient system that has endured countless perturbations throughout its history. Her characterization of Gaia as "an ancient phenomenon" and "a tough bitch [that] is not at all threatened by humans" (149) deliberately challenges both conventional environmental discourse and the gendered assumptions embedded in sublime theory. By figuring Gaia as a "tough bitch" (149), Margulis reframes planetary agency not through the traditional trope of passive mother nature but as a dynamic, self-directing force. While this characterization challenges passive feminine tropes, the phrase itself remains deeply gendered and warrants closer examination. The term "bitch" historically functions as a misogynistic slur, yet has been strategically reclaimed in feminist discourse to signify female power and resistance to patriarchal control. Margulis's deployment of this loaded term thus performs multiple rhetorical functions: it maintains feminine coding while rejecting traditional nature-feminine associations of nurturing passivity, and it provocatively positions Gaia's indifference to human concerns as a form of resistance to masculine-coded attempts at domination. Yet this linguistic choice also risks reinforcing gender binaries even as it attempts to subvert them, highlighting the persistent challenge of articulating planetary agency outside patriarchal frameworks.

Her description of "Gaia, in all her symbiogenetic glory" as "inherently expansive, subtle, aesthetic, ancient, and exquisitely resilient" emphasizes Earth's complexity and dynamism, transforming the static spectacles of traditional sublime

[2] This scaling between microscopic and macroscopic dimensions resonates with David Nye's recent theorization of the environmental sublime in *Seven Sublimes* (2023). Nye argues that experiencing the environmental sublime requires attention to multiple temporal and spatial scales, from microscopic processes to panoramic views, as they interact in "complex relationships slowly unfolding" (132).

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landscapes into recognition of ongoing, often invisible processes (160). Moreover, Margulis inverts conventional narratives of brutality, relocating it from nature to anthropocentric excess. She positions humans as the true brutes, characterized by our "brazen, crass, and recent" nature, even as "we become more numerous" (160). Through this contrast between Gaia's ancient symbiotic processes and human temporal and scalar myopia, Margulis challenges the progress-oriented perspectives dominating Western thought. Her intervention extends beyond scientific discourse to re-evaluate anthropocentric and gendered frameworks for understanding planetary life, a reframing that compels us to consider Earth's systems beyond human timescales, interests, and power dynamics—recognizing instead the complex, resilient processes within which humanity remains embedded.

Margulis substantiates her vision of Earth's resilience through compelling empirical evidence: "Fossil evidence records that Earth life […] has withstood numerous impacts equal to or greater than the total detonation of all five thousand stockpiled nuclear bombs." Her analysis reveals how catastrophe functions as an evolutionary catalyst: "Life, especially bacterial life, is resilient. It has fed on disaster and destruction from the beginning. Gaia incorporates the ecological crises of her components, responds brilliantly, and in her new necessity becomes the mother of invention" (151). Yet this planetary resilience carries profound implications for human futures: "It's not the Earth that's in jeopardy, it's the middle-class Western life-style." While acknowledging that "soil erosion, loss of nutrients, methane production, ozone depletion, deforestation, and the loss of species diversity may all be Gaian processes," she warns that human activity has "accentuated them to the point of near catastrophe." Though life will persist beyond the Anthropocene, our actions may "stress the system to such an extent that the earth will roll over into another steady-state regime, which may or may not include human life" ("Living by Gaia" 76). This Gaian perspective thus reframes environmental crisis: rather than threatening some imagined natural balance, anthropogenic changes function as evolutionary provocations—catalysts for adaptation within life's continuing narrative, though not necessarily with humans as protagonists.

Through Margulis's analysis emerges an existential challenge: "Have we the intelligence and discipline to resist our tendency to grow without limit?" (160). While microbial life will undoubtedly persist, the fate of larger species and ecosystems remains precarious. Yet from this recognition emerges a new form of sublime experience: not the traditional sensation of separation and transcendence, but a visceral awareness of our embeddedness within Earth's living systems. The Kantian sublime's promise of a "supersensible realm of freedom" thus transforms, drawing us not toward transcendent reason but rooting us deeper into our planetary entanglements. Even as Margulis emphasizes Earth's fundamental indifference to human survival, she evokes a profound sense of connection to life's ongoing drama: "Our deep connections, over vast geological periods," she insists, "should inspire awe, not repulsion" (4–5). This reorientation moves us beyond narrow considerations of human impact toward a more capacious understanding of our place within Earth's

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evolutionary epic.

The Sublime Shift: From Victorian Deep Time to Anthropocene Urgency

Margulis's etymological observation in *Symbiotic Planet* reveals a crucial tension in Earth science: while "the ancient Greek word for 'Mother Earth,' Gaia, provides an etymological root for many scientific terms, such as geology" (147–148), the discipline has mostly diverged from this holistic origin. Despite its nominal connection to Gaia suggesting "an organismlike body in which geology and biology are […] intimately linked" (148), the field has historically developed through practices of fragmentation and objectification. This methodological trajectory has systematically "matterized" both planet and inhabitants, transforming living systems into inert objects of study. This scientific reduction of life to matter represents more than a methodological convenience; it reflects and reinforces a broader conceptual framework that continues to shape how Western culture approaches questions of planetary agency and life.

Kathryn Yusoff's *A Billion Black Anthropocenes Or None* reveals how geology's reductive materialism intertwines with colonial and extractive practices. Her analysis demonstrates how geological frameworks have systematically transformed both Earth and its diverse inhabitants into non-agentic resources available for exploitation. Central to this process is what Yusoff identifies as "the inhuman," a category that operates across conventional distinctions between life and nonlife within "the indifferent register of matter" (5). This conceptual framework enabled and justified specific historical violence: geology's involvement in processes of racialization and the inscription of racial logics within "the material politics of extraction" created devastating parallels between "matter as property" and the dispossession of both land and persons. This parallel became particularly evident in slavery's transformation of racialized individuals into "inhuman matter"—mere commodities stripped of agency. These practices consolidated what Yusoff terms the white geology of the Anthropocene: "an extractive axis in both subjective and geologic (or planetary) life" that undergirds "the twinned discourses of geology and humanism" (5). This geological worldview thus performs a double violence: while reinforcing racial and exploitative ideologies, it simultaneously obscures the agency of the living world, rendering invisible the complex, interconnected systems that Gaia theory seeks to illuminate.

Naturally, the materialist reduction of planetary life extends beyond scientific discourse to structure broader cultural frameworks. As Amitav Ghosh demonstrates in *The Great Derangement*, even "serious" (9) literature manifests this limitation, particularly in its persistent failure to engage meaningfully with climate change. Modern literary fiction, he argues, often excludes environmental crisis as too extreme or improbable for realist narrative—a limitation that stems from what he identifies as a deeply embedded cultural commitment to gradualism. This perspective, which has shaped both scientific and literary conventions since the nineteenth century,

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assumes "in both fiction and geology, that Nature [is] moderate and orderly." Ghosh reveals how geology and the novel developed in parallel, each relegating catastrophic change to the "un-modern" margins of respectability (22). This mutual development of scientific and literary conventions reveals how thoroughly gradualist assumptions have structured Western ways of perceiving and representing planetary processes.

While geological science has ultimately been forced to acknowledge the reality of sudden, catastrophic events, Ghosh argues that modern literary conventions remain trapped within gradualist assumptions. He identifies a profound irony in "realist" novels: "the very gestures with which it conjures up reality are actually a concealment of the real." Literary fiction, in its commitment to probability and moderation, "has never been forced to confront the centrality of the improbable" (23). This limitation has produced a telling cultural division: narratives engaging with extreme events or vast forces find themselves relegated to "lesser" genres like fantasy, horror, and science fiction, excluded from the realm of serious literature. Yet the Anthropocene fundamentally challenges these generic divisions, demanding engagement with what Ghosh terms "insistent, inescapable continuities, animated by forces that are nothing if not inconceivably vast" (62). The global scope of climate change, affecting diverse regions simultaneously, introduces a new reality where geological and meteorological forces assert themselves with "relentless directness" (62)—a reality that defies both gradualist assumptions and conventional narrative frameworks.

The Anthropocene compels us to confront vast planetary forces echoes a previous epistemological rupture: the Victorian encounter with geological deep time. Vybarr Cregan-Reid reveals how this earlier crisis emerged through the profound entanglement of geological science and sublime aesthetics: "Geology and the sublime have been linked since their inception in Western culture" (9). This connection, far from incidental, proved instrumental in shaping Victorian conceptions of both history and human temporality. Nineteenth-century geology's introduction of "deep time" fundamentally challenged prevailing biblical chronologies, generating what Cregan-Reid identifies as a profound paradigm shift: human understanding suddenly had to accommodate temporal expanses that defied comprehension (18). This cognitive challenge required new aesthetic frameworks, transforming how Victorians perceived Earth's features. As Cregan-Reid observes, "mountains, which had once been seen as despicable excrescences that ruptured the natural and classical beauty of the landscape, came later to be regarded as objects of awe, terror and sublimity" (9). This transformation reveals how aesthetic categories like the sublime become crucial tools for processing radical shifts in scientific understanding.[3]

Our historical moment requires recognition of another paradigm shift, manifested in our growing preoccupation with the term "Anthropocene." Unlike the

[3] In *How the Earth Feels*, Dana Luciano similarly demonstrates how "geological fantasy" operated through aesthetic categories to make the "hard truths" (6) of deep time comprehensible and meaningful. As she argues, imagination was central to geology's popularity, bringing "the embodied subject into the drama of alien landscapes and bizarre life-forms" (8).

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Victorian confrontation with deep time's backward expansion, we now face temporal collapse—a future rushing inward with unprecedented velocity. Where nineteenth-century geology rendered Earth's past newly comprehensible, the science of Gaia makes our conventional gradualist assumptions about the future increasingly untenable. This epistemic rupture generates its own sublimity, one born from simultaneous recognition of life's vast history and the possibility of rapid, system-wide transformations that will alter human futures. This dual temporal consciousness—contra Latour's elegiac pronouncement of the sublime's death—actually intensifies sublime experience in the Anthropocene. The Gaian sublime, as articulated through Margulis's work, asks us to confront both the probability of imminent catastrophe and the awesome resilience of planetary life, lending new urgency and existential weight to our encounters with Earth's living systems.

The challenge of communicating planetary-scale phenomena through human-scale experience has a rich scientific history. Paul White demonstrates how the sublime aesthetic proved crucial in early nineteenth-century geological discourse, particularly in Charles Darwin's work. Darwin's strategic deployment of sublime rhetoric—comparing the earthquake-ravaged Chilean city of Concepción to ancient ruins, for instance—made geological processes simultaneously comprehensible and emotionally resonant. This rhetorical strategy enabled Darwin to "manage the emotions of fear, excitement, and wonder that the earthquake inspired," while situating catastrophic events "within a larger process of change, producing a new moral landscape, a sense of interconnectedness with the deep past, and of humility before the power and age of the earth" (50). Yet White identifies a crucial limitation: Darwin "rendered the earthquake a sublime experience only insofar as it was linked to human loss," insisting that to fully observe such events, "one had to witness its effects on human life and emotion" (56). This anthropocentric framing of sublime experience—while effective for Darwin's purposes—reveals the persistent challenge of representing planetary processes that exceed human scale.

Contemporary environmental communication faces an even more complex challenge: articulating catastrophic events whose scope encompasses both human and nonhuman worlds while avoiding the reductive frameworks of either white geology's "inhuman matter" or what Ghosh terms our "great derangement." This challenge requires forms of literacy that integrate scientific understanding with ecological and ethical imagination; forms that reimagine how we perceive, articulate, and respond to our entanglement with Earth's living systems. Scientific nonfiction emerges as a crucial genre for engaging these complexities. Building upon but transcending Darwin's strategic deployment of sublime aesthetics, such hybrid writing can mobilize aesthetic experience to render complex scientific concepts both accessible and affectively powerful. This approach cultivates a new mode of sublime experience that encompasses both the awe-inspiring and unsettling dimensions of rapid planetary change. These texts thus perform essential cultural work, helping to attune moral consideration to nonhuman agencies and bridging what Ghosh identifies as modernity's great epistemological divide.

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This necessary expansion of moral consideration toward planetary scale finds theoretical articulation in contemporary philosophical discourse, particularly in Latour and Émilie Hache's reconceptualization of environmental ethics. Their article "Morality or moralism?" introduces sensitization as a framework for extending moral consideration beyond conventional human boundaries. They argue that modern science's reduction of life to matter has artificially severed nature from moral consideration. Through etymological analysis of "response" (*respondeo*), they demonstrate how genuine responsibility emerges from increased sensitivity to diverse forms of being. This insight enables their crucial distinction between "moralism"—which acknowledges different types of beings while remaining deaf to their appeals—and true "morality," characterized by growing attunement to the living world's multiple voices (312). Their framework thus provides theoretical grounding for the kind of expanded moral awareness that engagement with the Gaian sublime might enable.

Latour and Hache develop their theory through a crucial engagement with Michel Serres's philosophy of response. They position Serres in explicit opposition to Kant, who "against his own cognitive appetites, set aside his knowledge so as to experience the sublime" (320). Where Kant insisted on separating knowledge from aesthetic experience, Serres's framework suggests that scientific understanding actively enhances moral and aesthetic engagement with the world. As they explain, "if a rock ultimately has meaning (or value), it is not in spite of what the sciences say about it but thanks to scientific knowledge," precisely because "the sciences teach that rocks are linked to us through an extremely complex history […] in which human subjects and the objects of their world are reciprocally constituted and in which all the interesting realities are situated between those two poles" (320). Their section "How to teach ourselves to respond to Gaia" argues that this responsiveness requires fundamentally "reopen[ing] basic questions about the sciences," since "the fact-value distinction is possible only if one embraces a conception of nature that empties the world of morally consequential yet nonhuman beings" (320–321). The very act of naming Earth as Gaia or recognizing it as alive thus performs crucial theoretical work, allowing us to "reopen the question of the range of beings to which we might be led to respond" (312).

Margulis's Gaian perspective, emerging from rigorous scientific investigation of Earth's myriad agencies, transforms how we might respond to planetary life. Her work does more than document bacterial agency; it enables new forms of attunement to the complex interplay of living systems that shape our world. This approach extends far beyond her stated mission to "put the life back into biology" (*What Is Life?* 2), ultimately reanimating our entire conception of Earth's aliveness. By revealing the sophisticated agency and profound interconnectedness of the planet's diverse life forms, her work opens unprecedented possibilities for moral consideration and ecological awareness. As Latour and Hache observe, "Change your conception of science, and you become sensitive to appeals of a kind different from any you have experienced before" (321). The Gaian sublime thus emerges not merely as an

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aesthetic category but as a mode of attention that might enable more responsive relationships with the living planet we inhabit.

From Spectators to Attuned Participants: Evolving with Gaia

Latour's June 2013 address at the Holberg Memorial Prize Symposium, delivered just four months after his Gifford lecture pronouncing the sublime's demise, offers a striking reconceptualization of human-planetary relations. This lecture, "Which Language Should We Talk with Gaia?" (later published as "Agency at the Time of the Anthropocene"), reveals how traditional modes of scientific objectivity have become inadequate to our moment. Even seemingly neutral data—"at Mauna Loa, on Friday, May 3, the concentration of CO2 in the atmosphere was reaching 399.29 ppm"—now reads as narrative, as "drama," as what Latour calls "the plot of a tragedy" in which "human actors may arrive too late on the stage to play any remedial role" (11). This transformation signals a fundamental inversion of Western philosophy's "most cherished trope": where human societies once positioned themselves as active subjects observing passive natural objects, we now find ourselves reduced to "the role of the dumb object" while planetary processes assume center stage as active subjects. The resulting temporal distortion proves particularly unsettling: human history appears to freeze while natural history accelerates to what Latour terms "a frenetic pace" (11–12).

This inversion of subject-object relations calls for more than the Anthropocene narrative's simple acknowledgment of blurred boundaries between human and natural histories. It requires fundamental recognition that we have never been the world's sole agents of change—indeed, that nonhuman agencies operate at temporal and spatial scales our culture struggles to comprehend. Moving beyond purely geological frameworks opens new possibilities for environmental engagement. While terms like "Anthropocene" and "matter" serve important descriptive purposes, they often obscure what Margulis's work reveals: the deep-time creativity and ongoing responsiveness of Earth's living systems, whose collective agency has shaped both planet and ourselves since life's emergence. This recognition requires modes of attention that can track between scales—from bacterial metabolism to atmospheric transformation, from momentary chemical reactions to evolutionary innovations spanning billions of years. Neither conventional scientific observation nor traditional aesthetic contemplation alone can capture these dynamic intersections of scale, agency, and time.

Margulis's Gaian perspective, I've argued, offers a crucial corrective to these limitations. Yet as Zakkiyah Iman Jackson demonstrates in *Becoming Human*, we must scrutinize the very language and metaphors through which we articulate life's interconnections. Jackson's analysis of how Margulis and Sagan occasionally deploy racially charged terms like "miscegenation" to describe cellular merging reveals the persistence of problematic hierarchies even within ostensibly revolutionary scientific frameworks (153–154). This critique illuminates how any reconceptualization of the

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sublime must confront not only questions of scale and agency but also scientific discourse's historical entanglement with racial and colonial power structures. A genuinely transformative vision of the Gaian sublime must therefore actively dismantle the racial and species hierarchies that have structured Western thought about nature and evolution, while maintaining critical awareness of how we frame relationships between different forms of life.

This critical awareness enables recognition of how "matter" and "living" function not as opposing forces but as intimately entangled aspects of Earth's evolution. This recognition of Earth's complex systemic interplay compels us to attend to what might be called the planet's grand experiment. Rather than maintaining the stance of detached observers or reducing ourselves to abstract geological forces, we must attune our scientific and cultural sensibilities to Gaia's manifold expressions—from the subtle activities of atmospheric microbes to the dramatic signals of planetary shifts. This sensuous expansion directly addresses this essay's central concern: how the Gaia narrative might fundamentally transform sublime experience. Margulis's vision enables a mode of awe that privileges the world-shaping presence of the biosphere over what Yusoff terms the "indifferent register of matter," generating affective recognition of planetary aliveness. The possibility of *wise* participation—of attentive engagement with Earth's living systems—thus requires we rethink sublime experience itself, replacing the traditional aesthetic of distant contemplation with an evolutionarily-informed practice of responsive attunement.

"Gaia," as Latour insists, "is not the same character as nature" (12). She transcends conventional categories—neither pure subject nor mere object, neither inert matter nor transcendent life force. Despite her name's mythological resonance, Gaia remains resolutely non-divine: we cannot appeal to her benevolence or expect her protection. Our attempted extrication from her systems—however persistent—remains impossible. Yet precisely this inescapable embeddedness within Gaia creates the possibility for enlarging our moral sensitivity. While transcendence proves impossible, we might learn to evolve with her, following the path that bacterial life has traced for billions of years. Gaia's fundamental indifference to human futures presents us with a profound challenge—one that could radically reconfigure our understanding of our planetary position, if we develop the capacity to sense its sublimity.

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