Until 1845, Humboldt was known in the United States mostly as an explorer and recorder of the exotic American tropics and one of Europe’s leading scientists. It had been nearly twenty years since a major new work by Humboldt had appeared in English. Then he began to publish *Kosmos*, and everything changed. A raft of book reviews alerted the intelligentsia that something new was afoot. Suddenly translations issued by both British and American publishers flooded the market: three competing versions of *Kosmos*, one cheap and pirated, one elegant and expensive, and one for the mass market; two competing translations of *Ansichten*; a new and updated translation of *Personal Narrative*, conveniently packaged in three trim volumes; Thrasher’s expurgated *Island of Cuba*; and two new biographies, all in the space of a decade, attended with a torrent of reviews and notices. Major new works on or by Humboldt continued to appear for another fifteen years or so, capped by the authoritative life-and-letters biography of 1873. In the United States, the 1850s were the decade of Humboldt, and his popularity approached cult status.

Humboldt’s *Kosmos* did important cultural work for America. Though the multi-volume book published in English as *Cosmos* is known today (if it is known at all) as a popular science book about stars, that’s a little like saying Darwin’s *Origin of Species* is a book about breeding pigeons. Such a view miscalculates the broad impact Humboldt had on American literature and art. In memorializing his friend, the political scientist Francis Lieber caught the developing tension when he protested that, while “high authority” stated that the works of Humboldt presented “Nature in her totality, unconnected with Man,” really Humboldt comprehends nature “in connexion with man and the movements of society, with language, economy and exchange, institutions and architecture.” Humboldt’s status as an icon was so great that for some years after his death a high-stakes game was played over how to define his legacy, and “high authority” made sure that what survived of Humboldt was safe, nonthreatening, and obsolete: his science, stripped of all its human connections. Cutting Humboldt down to size was a necessary move in the modernization of scientific knowledge, but it obscured the social and aesthetic dimensions of Humboldt’s thinking, and it invited later generations to assume that his turn to *Cosmos* was a retreat from the tortuous and repressive politics he found himself helpless to influence.

Humboldt did think of the study of nature as a kind of escape, to a zone of freedom where local discords were ultimately resolved into harmony. But this Utopian vision was not a retreat but an advance that drove his social critique, which went on unabated in the pages of *Cosmos*. For the study of nature was, for Humboldt, inseparable from the study of the mind in its material, social, and cultural context. This reflexivity of mind, society, and nature became his overriding argument in *Cosmos*, which...
was, for Humboldt, the culmination of one of his oldest ideas—indeed, the idea that had propelled him from war-torn Europe to witness the harmonies of nature in the New World, where European empires were dying and new nations being born. As he put it as soon as he returned, such studies “make us live in both past and present times, gathering around us all that Nature has produced in the various climes, bringing us into communication with all the peoples on Earth.” And from past and present such studies project us into the future as well, by enabling us to “erect forever the laws to which Nature submits. It is in undertaking these researches that we prepare ourselves for an intellectual delight, a moral freedom that strengthens us against the blows of destiny, and which no external power could possibly destroy.” In short, the study of nature creates and bonds the human community and gives us the strength to resist the social pathologies that would tear us apart.

That “moral freedom” was written into the very fabric of nature encouraged Americans, busy inventing themselves as “Nature’s Nation,” to think of themselves as the privileged inheritors of nature’s sublime power and beauty, which they cast, almost universally, into religious terms: in the United States, Humboldt’s Cosmos was made to glow with a penumbra of Providential national destiny, of prophetic vision, giving it a supernal beauty that wove science and poetry and art, religion and morality, together as expositors of the New World, God’s most exceptional Creation. Humboldt’s Cosmos seemed made for America, and Americans adopted it into their founding mythology.

Cosmos was born, Humboldt said, on the slopes of the Andes and first took shape in the 1805 Essay on the Geography of Plants that he dedicated to Goethe; but the idea had been with him since those formative years at Jena and Weimar and even before, in those heady conversations on the Rhine with Georg Forster. After this long foreground, the catalyst was a moment of crisis. Humboldt loved Paris, the center of the scientific world, where he was free to work as he pleased and love whom he pleased. But in 1827, his freedom ended when, having spent himself into poverty publishing his great scientific works, his King reminded him of his debt and recalled him to Berlin. After this long foreground, the catalyst was a moment of crisis. Humboldt loved Paris, the center of the scientific world, where he was free to work as he pleased and love whom he pleased. But in 1827, his freedom ended when, having spent himself into poverty publishing his great scientific works, his King reminded him of his debt and recalled him to Berlin. In Paris he had recently given a series of lectures to a circle of friends exploring the “reflective influence” nature exerted on the mind; when he arrived in Berlin (then, according to Alfred Dove, quite the cultural dustbin), he announced he would give a course of lectures on physical geography. From November 1827 through April 1828 he delivered a series of sixty-one lectures at the University of Berlin, speaking extemporaneously from a loose outline to a room so crowded that he soon announced a second series, which was held in a music hall before an audience of thousands, free to all comers. The reception was ecstatic. Initially skeptics had grumbled that Humboldt was so Frenchified he had probably forgotten his native German; for his part, Humboldt aimed his lectures at the heart of German provincialism, particularly what he saw as the corrupting flatulence of Hegel and the ignorant mediocrity of Schlegel. Goethe loved it: “The mighty conqueror of the world of science is perhaps the greatest orator,” he wrote; to a friend he mentioned “the great pleasure which Humboldt’s magnificently rich colloquium on the miracles of nature gave me.” To another friend he reflected that Humboldt made him feel “like an ancient mariner” who had spent his life skipping from isle to isle, but who now sees “that the immeasurable abyss has been fathomed … that the great work, beyond all belief, has been truly done.” Historians credit Humboldt’s lectures with jump-starting German science, which went on to surpass even the French in brilliance, and with demonstrating that the true value of science lay not in its coterie appeal to an elite few, but in its power to raise and educate the many.

Publishers pressed Humboldt with offers, but he resisted, declaring that his off-the-cuff lectures were hardly fit for print. By 1834, though, he was ready: as he wrote to Varnhagen, “I begin the printing of my work (the work of my life). I have the extravagant idea of describing in one and the same work the whole material world—all that we know to-day of celestial bodies and of life upon the earth—from the nebular stars to the mosses on the granite rocks—and to make this work instructive to the mind, and at the same time attractive, by its vivid language.” The long introductory essay was finished and to his friend he outlined the rest, regretting that he could not concentrate the whole in one single “magnificent” volume. There was, though, the problem of what to call it. Already twenty years before, in the introduction to his Personal Narrative, he had worried over what name to give his new science: natural history of the world? Theory of the earth? Physical geography? None quite fit. With Varnhagen he fretted over the problem once again: all the obvious possibilities—“Physical Description of the Earth,” “The Book of Nature,” “Physical Geography”—were too vague or too narrow. He considered, and rejected, “Gaia” (now spelled “Gaia,” as
in James Lovelock’s “Gaia hypothesis”), which had been recently used by another author. So, taking a deep breath, he declared, “The title shall be ‘Kosmos.’” Yes, it sounded pretentious, but the ancient Greek word gave him what he needed, heaven and earth together, and Wilhelm, with his deep learning in classical languages, approved. So there it was. Would Varnhagen do him the kindness of a preliminary reading, kind but tough-minded? “And do also ease my mind as to the title.” Evidently Varnhagen agreed, for “Kosmos” it remained.5

The work grew as he wrote. It would gather together two generations of scientific research and discovery: into more than a dozen boxes Humboldt sorted his notes on scraps of paper, which he pasted together by their corners to form what his nineteenth-century biographer called “the most wonderful serpent-like structure of erudition.” Information came in from his hundreds of correspondents, from all over the globe: this was nothing less than the great in-gathering of the Humboldt Network, dispersed across the planet but united by Humboldt’s concentrated vision. The German scholar Petra Werner has recently “disaggregated and interrogated” the portion of Humboldt’s vast correspondence that went into Cosmos, showing “the extraordinary extent” to which he relied on friends and admirers; “In a real sense,” adds Niclaas Rupke, “Humboldt, in writing the description of the physical universe, acted as the editor of a large, international, collaborative team,” cajoling their cooperation by offering each of his correspondents in return “his much valued praise and patronage.” Humboldt was again at the center of the world, in his walk-up flat in the heart of Berlin, stacked with boxes, books, papers, maps, and mementoes. “Glorious old man!” exclaimed Richard Stoddard: “We love to think of thee and thy immortal task.” Next to “Glorious old man!” Humboldt would reply, “How has it happened that Kosmos is so popular beyond expectation?” He wondered to Varnhagen. It must be, he thought, in the imagination of the reader, or the fortuitous richness of the German language—as if the age itself were writing through Humboldt, making him its instrument.7

Humboldt had worked hard to capture the public imagination, and in his opening pages he mounts a defense of popular science, directed to both the general reader and to his colleagues in science who needed to be shown how to bind their research to society. The great Romantic traveler offers to lead his readers on a “journey” not to a far-distant land but “through the vast range of creation.” As we set out, we may “distrust . . . our own strength, and that of the guide we have chosen,” and indeed, he worries he may lose us in the jungle of dry details, or strand us on a mountaintop of abstractions. Like all guides who delight in leading others “to the summits of lofty mountains,” he fears he may have erred “in describing the path before us as more smooth and pleasant than it really is,” praising the view when all we can see is clouds. If so, blame, then, he begs, not the landscape of the sciences but “the unskillfulness of the guide who has imprudently ventured to ascend these lofty summits.” For the journey is worth the risk: “Nature is a free domain” that can be truly delineated only by “exalted forms of speech, worthy of bearing witness to the majesty and greatness of the creation.”8

To skeptics who doubted that the ignorant public could ascend to the heights of science, Humboldt answered that while they may not catch every detail, the journey itself will “enrich the intellect, enlarge the sphere of ideas, and nourish and vivify the imagination.” After all, detail itself will “enrich the intellect, enlarge the sphere of ideas, and nourish and vivify the imagination.” After all, detail was like scaffolding—it must be removed if the edifice is to have “a striking effect.” And it was the “effect” Humboldt was after. The reader struck with awe or moved by beauty will want to learn more. This had political consequences. Francis Bacon had said that “in human societies, knowledge is power. Both must rise and sink together.” But to
Humboldt this not that the powerful must claim knowledge but that knowledge must be “the common property of mankind.” Societies that shared knowledge across “all classes of society” would rise and prosper, strong and invigorated by their arts and sciences even if poor in natural resources. Conversely, societies that did not value public education would “diminish,” even though erected on mines of gold. For, Humboldt reiterated, “the knowledge that results from the free action of thought is at once the delight and the indestructible prerogative of man.” 9

Humboldt had a well-honed sense of how words and thought act on each other and how both in turn interact with wider society. Reintroducing an archaic word into the modern lexicon was an ambitious act, a deliberate intervention intended to change the intellectual and emotional landscape of modern knowledge. It would take Humboldt five volumes to fully define “Cosmos,” but he dropped a hint in his second paragraph, calling it a “harmoniously ordered whole.” When a few pages later he was ready to pull back the veil a little more, he addressed himself to citizens of the planet itself: his “science of the Cosmos recalls to the mind of the inhabitant of the earth” that his horizon is much wider than any nation or region: it embraces “the assemblage of all things with which space is filled, from the remotest nebulae to the climatic distribution of those delicate tissues of vegetable matter which spread a variegated covering over the surface of our rocks.” From the farthest nebulae to the lowliest lichens—in this way his “picture of the world may, with a few strokes, be made to include the realms of infinity no less than the minute microscopic animal and vegetable organisms.” No other existing word—universe, earth, monde, world—captured the reach of the harmonies observed from the heavens to the earth under our feet. Thus he will reintroduce the word that originated with Pythagoras and Aristotle: Cosmos “is the assemblage of all things in heaven and earth, the universality of created things constituting the perceptible world.” 10

As Humboldt soon adds, Cosmos signifies both the “order of the world, and adornment of this universal order.” Herein lies his distinctive use of the word: there are two aspects of the Cosmos, “order” and “adornment.” The first speaks to the observed fact that the physical universe, quite independently of us, exhibits regularities and patterns that we can identify as laws. Beauty, “adornment,” however, is perceptual, literally in the mind of the beholder. This is the double side of Humboldt’s Cosmos: first, the physical universe exists quite apart from us; as Margarita Bowen says, “The concept of the pre-existing universe is essential to Humboldt’s philosophy.” But that is not the complete story: it exists as a Cosmos, both ordered and beautiful, through the human mind. Humboldt’s Cosmos is thus fundamentally developmental and dynamic. It emerges and grows as human conceptions of nature and the depth of human feeling about nature enlarge and deepen. As a narrative, Cosmos is still being written. Or, in Humboldt’s favorite metaphor, Cosmos is a “picture” which comes into being as we paint it and view it. Without art—taking the word in its broadest sense to include science, technology, exploration, literature and the visual arts, gardening and the painting of landscapes—there may be a perfectly fine universe, but there will never be a Cosmos.11

To represent this double-sided aspect of Cosmos, Humboldt divided his book into two parts, to be read stereoscopically, each in light of the other. The first volume (following his lengthy introduction) shoots into the outermost reaches of deep space then leads the reader gradually back to earth, visible now in the most profound way as a planet, one small globe spinning in pulsing, swirling, limitless space. The journey continues across the face of the planet and into its superheated interior, to show the earth, too, pulsing and swirling with energy; then concludes with the life on its surface, in all its astonishing multiplicity, including the races of men who, like all else, are united by virtue of their very diversity into the “one great whole . . . animated by the breath of life.” Once he has concluded this outer or “objective” journey through the external world of the senses, Humboldt next takes us, in the second volume, on an inner or “subjective” journey through mind, “the inner, reflected intellectual world.” He means not psychological exploration, but something more Wordsworthian, the emergence and growth of mind-in-nature, “the reflection of the image impressed by the sense upon the inner man, that is, upon his ideas and feelings.”

The Cartesian dualism that separates spirit from body, mind from matter, humans from nature, was in Humboldt’s day as now so dominant as to seem intuitive and inevitable. Humboldt’s history, though, integrates mind and material nature by showing how humans and nature together create the Cosmos.
Where the first volume journeys through space, the second journeys through time—historical time, from the earliest civilizations nestled in the Mediterranean basin, through the ramifying globalization of the sphere of the mind as nations launch onto the oceans or caravan across continents to meet, merge, mingle, separate, each era and each people contributing something to the growing Cosmos: words, poetry, gardens, concepts, the compass, rice and sandalwood, telescopes and paintings, ships, treatises, and scriptures. Born in awe and wonder before nature’s power and beauty, the human mind reaches out from itself to grasp nature through words and tools, and through the millennia nature and mind develop each other in an ever-diversifying historical process.

This was not quite like anything that had ever been done before, and Humboldt patiently clarifies what he is not doing. He is not, first off, writing “a mere encyclopedic aggregation” of the results of science. He is, rather, trying to find their unifying thread, “to show the simultaneous action and the connecting links of the forces that pervade the universe.” A contemporary reviewer caught the spirit of Humboldt’s work when he wrote that Cosmos was like “a burning-glass” that reflected the investigations of science “on the mind of the reader in a cleared state and united in an organic whole.” Nor is he writing “science” in the strict sense—that is, he has no wish “to reduce all sensible phenomena to a small number of abstract principles, based on reason only.” This is the distinction that Franz Boas would seize on for his own intellectual program: whereas science seeks laws, cosmography romances the phenomena.

At one point Humboldt put it this way: the spirit of his project, “physical cosmography,” “arises from the sublime consciousness of striving toward the infinite, of grasping all that is revealed to us amid the boundless and inexhaustible fullness of creation, development, and being.” “Grasping” the fullness of creation aspires to connection, to touch and hold and explore, and Humboldt worries about those who, in striving toward the infinite, abandon the physical world. This impulse has deluded seekers through the ages into thinking they have reached their goal, found the single great commanding principle that unifies all. But that, Humboldt ventures, will never happen. The sheer complexity and diversity of nature will always outrun the scientist: as Thoreau would say, “The universe is wider than our views of it.”

Thus—sounding a little defensive—Humboldt fends off his reductionist friends: “Devoid of the profoundness of a purely speculative philosophy, my essay on the Cosmos treats of the contemplation of the universe, and is based upon a rational empiricism,” or “facts registered by science.” Humboldt is drawing a crucial distinction here. Both science and cosmography, as Boas recognized, are empirical, based on facts; both share a conviction that the universe forms “one great whole,” and that human reason can aspire to understand the truths of that whole—but exactly where science then leaps beyond the physical to the abstractions of law and principle, Humboldt instead turns back to “contemplate” the staggering beauty of the Cosmos. His motion is thus parabolic, not linear. He wants his feet to burn on the steaming rocks of volcanoes, his soul to be riven by the bleak fierce llanos, his mouth to taste the Otomacs unctuous earthen baked clay, his heart to be moved by the song of the capirote. Here is his harmony, his song: not in the austerity of the laws of science, but in the way all these things seem to him to be one great thing, infinite and infinitely interconnected. In such a view, oneness cannot be seized by a law—only sung by a poet.

The poetry of Humboldt’s prose will not be evident to readers of English until better translations become available, and even then, Humboldt apologized repeatedly for his faults of style. Yet if he seldom managed to write like a poet, he always thought like one. The American nature writer John Burroughs recognized this when he wrote that Humboldt’s “poetic soul, shines out in all his works and gives them a value above and beyond their scientific worth . . . . His ‘Cosmos’ is an attempt at an artistic creation, a harmonious representation of the universe that should satisfy the aesthetic sense as well as the understanding.” To accept Humboldt as a poet means to view poetics, as Humboldt did, in the Aristotelian sense as poiesis, “making,” emphasizing the process of making over the finished product; and in the Romantic sense as original creation rather than imitation, an art that grows organically from an inner impulse that arises ultimately from nature. In this work, which he called in his subtitle a “sketch” of the physical universe, he first paints his own picture of the Cosmos (recalling his skill as a portrait painter and landscape artist), then outlines an historical narrative showing humans and nature “making” a Cosmos. In effect, he did in language what he had done long ago in his Chimborazo cutaway, his thumbnail Cosmos—used his double vision to give an aesthetically pleasing image of nature framed, literally, with the supporting reams of scientific data. In Cosmos, the imagination of the viewer—whether poet, artist, or scientist—fused information into a new and beautiful whole. As Kropotkin exclaimed, out of the confusion of facts and the fog of guesses, a “stately picture” emerges from their mist like an Alpine chain glittering under the sun; Kropotkin thought a copy of Cosmos should be given to every schoolchild. Humboldt too wanted this exhilaration not for the few but for the
many. The “contemplation of nature” makes self, nation, and nature into a coherent world, and is a necessary part of the “Bildung,” or growth and integration, of the self in the world. 15

Making that world, for Humboldt, had one very specific requirement: it must be based on accurate causal connections as established by modern science. The abuse of sheer reason or “speculative philosophy” had, he believed, misled the “noble but ill-judging youth” of Germany to worship and deification; then, awakening reflection allows the developing mind to separate ideas from feelings. “Vague presentiments” of nature’s harmonious union are no longer enough. The mind moved by awe and wonder succeeds to reflection, to understanding, to doubt and investigation—to science.17

Does science then turn on and kill the imagination that gave it birth? On the contrary, argues Humboldt: the prejudice that science must kill the feelings is wrong. The excitement of discoveries, of “mysteries to be unfolded” and the “inextricable net-work of organisms,” carries thought forward. Wonder and the pleasure of discovery feed the desire to know, and knowledge leads back to wonder, in an ascending spiral fed by imagination at every turn that ever enlarges and will never end. Nature is without limit, “ever growing and ever unfolding itself in new forms,” and even “when thousands and thousands of years have passed away,” the surface of the earth, its interior, its oceans, its atmosphere, will forever “open to the scientific observer untrodden paths of discovery.” As Thoreau wrote in the full flush of his excitement after reading Humboldt, “the sun of poetry & of each new child born into the planet has never been astronomized, nor brought nearer by a telescope. So it will be to the end of time. The end of the world is not yet.”18

It seemed to Humboldt that our feeling for nature has two different dimensions. First is the impact of the whole. Nature in its sheer allness, “the image of infinity” revealed by “the starry vault of heaven,” the “far-stretching plain,” or “the vast expanse of ocean,” awakens us to an intuition of “the order and harmony pervading the whole universe.” But there is also nature in its eachness, its individuality. Here Humboldt revels in his memories. His language turns to poetry, as he recollects:

the calm sublimity of a tropical night, when the stars, not yet sparkling, as in our northern skies, shed their soft and planetary light over the gently heaving ocean; or . . . the deep valleys of the Cordilleras, where the tall and slender palms pierce the leafy vail around them, and waving on high their feathery and arrow-like branches, form, as it were, ‘a forest above a forest;’ or I would describe the summit of the Peak of Teneriffe, when a horizontal layer of clouds, dazzling in whiteness, has separated the cone of cinders from the plain below, and suddenly the ascending current pierces the cloudy vail, so that the eye of the traveler may range from the brink of the crater, along the vine-clad slopes of Orotava, to the orange gardens and banana groves that skirt the shore.
In such scenes, the heart is moved not by nature’s general charm but by “the peculiar physiognomy and conformation of the land, the features of the landscape, the ever-varying outline of the clouds,” by the irreplaceable uniqueness of each place, each different way of being. In a deep insight into Humboldt’s language, David Kenosian observes that to him, “South American ecosystems were not so much unconnected sentences . . . as they were poems.”

It is this ‘physiognomy’ that most entrances Humboldt, for it is here, at this threshold, that nature interpenetrates mind. Painters casually refer to “‘Swiss scenery’ or ‘Italian sky,’” but Humboldt takes such phrases seriously and tries to identify the individual elements that compose these painterly impressions: “The azure of the sky, the effects of light and shade, the haze floating on the distant horizon, the forms of animals, the succulence of plants, the bright glossy surface of the leaves, the outlines of mountains, all combine to produce the elements on which depends the impression of any one region.” Yet how is it that such elements of sky and light and form “impress” themselves on nations, peoples, individuals? Why do we rejoice at the simple appearance of fields and woods? How does the look of vegetation influence “the taste and imagination of people,” and more, how does it impress “the soul of those who contemplate it”? Humboldt thinks that nature moves us, shapes us, creates us, in ways that art seeks to capture and repeat but that we have never really thought about. In his Essay on the Geography of Plants this insight opens a flood of questions:

What is the moral cause of these sensations? Are they produced by Nature, by the grandeur of masses, the contour of forms, or the haven of plants? How can this haven, this view of Nature more or less rich, more or less pleasant, influence the mores and, primarily, the sensitivities of peoples? Of what consists the character of the vegetation of the tropics? What difference in physiognomy distinguishes plants from Africa from those of the New Continent? What analogy of forms unites Andean alpine plants with those found on the summits of the Pyrénées? These are questions little broached to at present, and doubtless deserved to occupy the physicist.

Doubtless they do, but as he added some years later, while science can measure and tabulate and compare, it cannot by these means communicate the character of nature. “What speaks to the soul, what causes such profound and various emotions, escapes our measurements, as it does the forms of language.”

Here, then, where it matters the most, science must necessarily fail. Thus Humboldt turns to art. Where science must weigh and measure, abstract and bring away, art can make present to the senses and the imagination the fundamental experience of contemplating nature in its wholeness, generating a similar emotional impact. As Joan Steigerwald explains, Humboldt uses his measurements “as instruments of judgment” which translate the phenomena of the natural world into a total impression, seeking, in reconciling “the opposing requirements of scientific precision and painterly effect,” a new figurative vocabulary, “a new graphic form of representation.” When it came to fine art, he encouraged the artist to become a cosmographer, analyzing the whole into its component parts: “in the sphere of natural investigation, as in poetry and painting, the delineation of that which appeals most strongly to the imagination, derives its collective interest from the vivid truthfulness with which the individual features are portrayed.”

Here is the heart of Humboldt’s aesthetics: art can incorporate and surpass science in conveying the perceptual truth of the whole, but only if the artist paints the truth of particulars. By truth Humboldt means natural historical truth. The artist cannot paint just “plants,” but must become botanist and know each species, its growth and habits; clouds are not puffs of pigment but studies in meteorology; mountains are visual embodiments of geological principles, water of hydrology. Landscapes become not static portraits but dynamic historical ecologies. Literature, too, acquires life as it approaches individual truthfulness: just as a painter must first sketch in the field, Humboldt felt his Orinoco journal, “written while the objects we describe are before our eyes,” had a more vital “character of truth.”

In Views of Nature he further generalized his literary aesthetics: “Speech acquires life from everything which bears the true impress of nature, whether it be by the definition of sensuous impressions received from the external world, or by the expression of thoughts and feelings that emanate from our inner being.” Write what you know, he might have said, whether your gaze turn outward or inward. In his artistic and literary realism, accuracy and imagination will not cancel out but reinforce each other, resonating together, and the higher the subject, the simpler and more truthful must be the writing. As he concludes, the poet who “knows how to represent with the simplicity of individualizing truth that which he has received from his own contemplation, will not fail in producing the impression he seeks to convey; for, in describing the boundlessness of nature, and not the limited circuit of his own mind, he is enabled to leave to others unfettered
To Hold: Sustainability of the Cast

COLLEEN LYONS

A whisper and snap as the line slices and whips the air. The hush, as the dry fly gently lays upon the water, attempting to lure a fish to the surface. A fish. Pure anticipation sublimes the work-a-day rhythm of casting and stripping. The glorious jolt of a strike is a sweet interruption. Casts are not discreet acts but transform into a lineage, priesthood, of a single metaphysical cast, transcendent of space and time. Before the Seventh Day, the Anglers song began in a whisper, crescended in a snap and tapered to the dust of a kiss in a perfectly presented fly.

The Anglers song has spawned enough casts to circle the globe, again and again. Enough line to five times lasso the tip of the crescent moon, ending in a neat little clinch knot. A gentle tug at each wrap, tips the moon, ever so slightly. Tides stutter, fish gasp and wonder, for a moment. The man-boy perched on the south horn of the crescent, tugged and flicked off balance, falls from sky to earth, morphing into gold dust, setting creeks and oceans to shimmer.

Indeed, fly lines and crescent moons are a whimsical notion. Yet, there is little whimsy in climate change and no romance in dead streams. The environment is an extraordinarily complex matrix of physical and abstract dependencies and its scope burdens the imagination. Healthy streams and rivers, the home for our beloved fish, are an essential part of a flourishing environment. Prudent management of these waters requires a passion for patience in nudging their appropriate evolution. As a result, humility, brutal science, mystical art and a dose of courage are crucial to cultivating natural resiliency in ecosystems. The polemics of politics and our occasional, collective inability to address the environment writ large has inhibited a satisfying policy outcome. The time is well past for phronesis—practical wisdom—in environmental policy.

Colleen Lyons is a fly fishing novice who loves the look and feel of the sport and greatly appreciates the patient guidance of authentic fly fishermen. When not on the water, she can be found wading in the weeds of business and bioethics.
looked, whatever he looked at, he saw spatial patterns of distribution and change pointing back in an unbroken continuum through human history to the deep geological and even deeper astronomical past. This was the lesson he urged across the pages of his last volumes. All this could be “read” in the present by those who knew the language of nature, that most ancient of storytellers. The face of the land told its own story, its features “animate the scenery by the associations of the past which they awaken, acting upon the imagination of the enlightened observer like traditional records of an earlier world. Their form is their history.”23

Wilhelm had seen his historical method as a logical extension of his brother’s scientific method. Now Alexander turns the tables by calling his own method a kind of “historical composition,” citing his brother Wilhelm. Where the physical scientist can discount “accidental individualities, and the essential variations of the actual” in his attempt to reduce all to a “rational foundation,” the historian/cosmographer must turn to and treasure exactly those individualities and variations, as Boas had recognized. But there is yet another dimension to the telling of history: it is, in Humboldt’s word, a “composition,” not a transparent transcription of Truth but a selection made from a particular and necessarily limited point of view. As Humboldt realized in his moment of bedazzled frustration on the sides of Teneriffe’s volcano, what lies around us is a jumbled chaos of apparently isolated facts. Some facts and connections are easy to see, others are cryptic or obscured, others still are lost forever and cannot be traced. None of them assemble themselves into a narrative in any obvious way: this is the work of the teller of stories. As the historian Michel-Rolph Trouillot observes, “history” has in this sense a double meaning: “In vernacular use, history means both the facts of the matter and a narrative of those facts, both ‘what happened’ and ‘that which is said to have happened.’”24 Human beings, not nature, write histories, and human authors cannot simply transcribe revolutions—planetary or political—onto the page. They must select, foregrounding some elements, silencing others, teasing out of the chaos a meaningful pattern, a causal narrative.

If histories are “compositions,” does this mean they are fabrications, mere fictions? As Trouillot points out, this claim itself has a long history, but Humboldt would have rejected it. He required his cosmography to follow strict rules of evidence: just as landscape artists should not make up fantastic or stereotyped plants but portray real ones, so must the cosmographer be constrained by truth. Not everything his correspondents sent him went into Cosmos, only what Humboldt judged would deepen and refine our understanding of the causal interconnectivity of the universe. And while no one was more fascinated by the marvelous, Humboldt wanted his marvels to be real, not isolated pointless curiosities but causally connected to the great whole: a man who gives milk, a people who can live on dirt, Amazon warriors, eels that electrify their prey, all were woven into his causal narrative, “accidental individualities” that yet evidenced something important. He applied the same standards to historical questions: Had this valley once been a lake? Had these fossil seashells high in the Andes been deposited on the ocean floor? Had the Indians of the Americas migrated from Asia? The standards of science constrained his conclusions, and he took care to make those constraints visible: yes, I think so, and here are the reasons why. Constrained, then, by truthfulness, he nevertheless assumed the freedom to tell his narrative in his own distinctive way, and his frequent self-conscious reflections on the way he is constructing his narrative show he understood his alliance with poiesis: truth is made, not transcribed. And this includes the scientist.

As Trouillot points out, no one actually remembers history, for no one living now experienced it: “the collective subjects who supposedly remember did not exist as such at the time of the events they claim to remember.” Sadly, no one can really remember the Alamo, or Wounded Knee, or slavery, and soon, no one will remember the Holocaust. What we do remember is what we were told: we believe Columbus discovered America because that is the narrative we hear from childhood onward. Insofar as we all do believe that narrative, we constitute ourselves as a collectivity, a people who share a common past and identity and sentiment of destiny. As Trouillot continues, “the past” is thus a creation of the present, and “their constitution as subjects goes hand in hand with the continuous creation of the past. As such, they do not succeed such a past: they are its contemporaries.”25

If Trouillot is correct, then the writing of the past is not innocent: it has tremendous consequences. If resurrecting the ancient word “Cosmos” was calculated to make the concept of Cosmos thinkable, actionable—real—then telling the history of Cosmos was another calculated intervention. The Cartesian dualism that separates spirit from body, mind from matter, humans from nature, was in Humboldt’s day as now so dominant as to seem intuitive and inevitable. Humboldt’s history, though, integrates mind and material nature by showing how humans and nature together create the Cosmos. In effect, Humboldt is trying to rewrite history as ecological history—or as historical ecology. If science had thrown out history, as Boas would argue, Humboldt would put it back. How we tell our story about nature constitutes who we are as a people. If we tell it as dualistic, violent, and exploitative, we revalidate
those qualities as our essential truth. But if we can learn to tell it as integrated, cooperative, and sustainable, we will advance our rough-edged and imperfect civilization to a higher level.26

In Humboldt’s experience, the edges were rough indeed: he lived with warfare, reactionary politics, stark exploitation and brutal inequalities, even as he had grown up with utopian ideals of peace, liberty, equality and cosmopolitan brotherhood. He pours those ideals into his telling of the Cosmos: “Nature is a free domain,” he asserts, and “the view of nature ought to be grand and free, uninfluenced by motives of proximity, social sympathy, or relative utility”—it must start, in other words, from the viewpoint of the stars and the planet earth, not our petty “human interests.” Where humans constrain and limit, that which is most wild is most free, like the capirote, “which no effort has been able to tame, so sacred to his soul is liberty.” In a society that assumes—as we still do—that only humans speak while nature is silent, Humboldt revels in the voices of nature, whether the heartrending song of the capirote, the raucous jungle chorus that awakes him at night, or the silence that only seems:

Yet, amid this apparent silence, when we lend an attentive ear to the most feeble sounds transmitted by the air, we hear a dull vibration, a continual murmur, a hum of insects, that fill... all the lower strata of the air. Nothing is better fitted to make man feel the extent and power of organic life. Myriads of insects creep upon the soil, and flutter round the plants parched by the ardour of the Sun. A confused noise issues from every bush, from the decayed trunks of trees, from the clefts of the rock, and from the ground undermined by the lizards, millepedes, and cecilias. These are so many voices proclaiming to us, that all nature breathes; and that, under a thousand different forms, life is diffused throughout the cracked and dusty soil, as well as in the bosom of the waters, and in the air that circulates around us.

To those who deny animals intelligence or even agency, as if they were no more than wound-up machines, Humboldt depicts the deep intelligence of mules: “When the mules feel themselves in danger, they stop, turning their heads to the right and to the left; the motion of their ears seems to indicate, that they reflect on the decision they ought to take. Their resolution is slow, but always just, if it be free; that is to say, if it be not crossed or hastened by the imprudence of the traveller.” The mule-drivers, unconfused by metaphysics, know this well: “Thus the mountaineers are heard to say, ‘I will not give you the mule whose step is the easiest, but him who reasons best;’ la mas racional. This popular expression, dictated by long experience, combats the system of animated machines, better perhaps than the arguments of speculative philosophy.”27

Where humans believe themselves to be separate from or above nature, Humboldt constantly uses metaphors of permeation: “the mind is penetrated by the grandeur of nature”; natural scenery leaves an “impression” on the mind; the physical world “is reflected on the inner susceptible world of the mind,” in a “mysterious communion with the spiritual life of man”; the physical “influences” the moral world, in “a mysterious reaction of the sensuous on the ideal”; clarity and serenity of mind “correspond with the transparency of the surrounding atmosphere”; we are “moved” with emotion; majestic scenes of nature “mingle with all our feelings of what is grand and beautiful.” The body of the world has stolen through our senses into the deepest recesses of our mind, where it shapes our thought and language at the most fundamental level.28

The variety of landscapes and seascapes under every-varying clouds opens the imagination’s creative powers in a free play of mind: “Impressions change with the varying movements of the mind, and we are led by a happy illusion to believe that we receive from the external world that with which we have ourselves invested it.” In Coleridge this insight provoked a mood of despair: “O Lady! we receive but what we give, / And in our life alone does Nature live.” But this is not quite what Humboldt is saying. Where Coleridge collapses nature into mind, imprisons himself in an unhappy illusion that all nature is no more than a screen on which he projects his despairs and desires, Humboldt escapes this trap by insisting on difference, on the very fact that nature is not human. It is that very independence that allows nature to “impress” us so deeply. Only difference can “impress,” like the bite of the printers’ plate pressing the receptive paper. Humboldt’s mentor Georg Forster put it this way, in recalling their travels on the Rhine: “the object, whatever it may be, that exists without the cooperation of man, that is, and was, and ever will be independent of him, impresses itself deeply upon the mind with a clear and sharply defined image.” In some moods Humboldt found this power, this difference, shading into an indifference to the human. When he turned away from the tombs of the extinct Atures Indians, his dark thoughts gave him a curious kind of hope: “Yet when every emanation of the human mind has faded—when in the storms of time the monuments of man’s creative art are scattered to the dust—an ever new life springs from the bosom of the earth. Unceasingly prolific nature unfolds her germs,—regardless though sinful man, ever at war with himself, tramples...
beneath his foot the ripening fruit!”

By asserting that nature is independent of humans in a difference that is profoundly generative, Humboldt is trying to bridge the impasse reached by Kant, who had deepened the Cartesian dualism of mind and nature into an unbridgeable abyss by arguing that the non-human or “noumenal” world could never be reached or conceived. We could see only its phenomenal shadow, the mask, what little was open to the human senses. As Margarita Bowen details, Humboldt bridged this Kantian impasse by showing how humans developed their concepts over time, in a historical process by which they “are generated, tested and incorporated into the sphere of ideas.” Through this historical process, ideas forged in the crucible of physical nature made the world of thought part of the process of nature. As Bowen observes, Humboldt sees the very gulf between mind and nature “as the locus of the sciences.”

We are back, many pages later, standing on Humboldt’s bridge, spanning the gulf between mind and nature. Humboldt wrote that while nature may be opposed to intellect, “as if the latter were not comprised within the limits of the former,” and while nature may be opposed to art “when the latter is defined as a manifestation of the intellectual power of man,” these “contrasts,” though reflected “in most cultivated languages,” must not be allowed to stand. We must not “separate the sphere of nature from that of mind, since such a separation would reduce the physical sciences of the world to a mere aggregation of empirical specialties.” This was the very point at which Boas felt science had in fact arrived, by 1887: fragmentation into a variety of scientific specialties had abandoned the crucial problem of their union, which to Boas was not reductive but perceptual: we see that nature forms a whole, though science in its fragmentation no longer allows us ways to approach that sense of wholeness. Boas’s solution was to resurrect Humboldt’s “cosmography” because Humboldt started from the very perspective that science had eliminated in order to professionalize and specialize: the subjectivity of the observer. Humboldt thus ran exactly counter to the developing ideology of science, the objectivity which had created.

Humboldt has returned here to his analogy with language: thought is to language as mind is to nature. Language both interprets thought and paints the objects of the world, mediating intellect and nature. At the same time, “it reacts . . . upon thought, and animates it, as it were, with the breath of life. It is this mutual reaction which makes words more than mere signs and forms of thought.” Words push back on wordless thought, animating it with unexpected energies; nature too pushes back on mind, enabling and limiting it, shaping and “animating” it even as we invest it with qualities that we then imagine were there all along. The process is recursive, reactive, reciprocal—as Charles Sanders Peirce would discover when he put down his Humboldt and took up semiotics. Humboldt’s point is simpler: thought, feelings, language, nature, are all inseparable. Language is the medium of thought, as nature is the medium of mind. The teller is part of tale she tells, a truth from which the scientist is not exempt. We are all standing on Humboldt’s bridge, fishing into the gulf below, casting thought into words, casting words out into the world and reeling back what they have captured, even if it is only, as Thoreau says, “some horned pout squeaking and squirming to the upper air.” Humboldt himself, rather less poetically, recruits a phrase from his nemesis Hegel: “External phenomena . . . are in some degree translated in our inner representations.” Or as Humboldt continues, “The objective world, conceived and reflected within us by thought, is subjected to the eternal and necessary conditions of our intellectual being.” Science might cast out subjectivity in its search for truth, but cosmology would bridge and build exactly on the abyss that science had created.

In a society that assumes—as we still do—that only humans speak while nature is silent, Humboldt revels in the voices of nature...

sought to purify science by removing subjectivity altogether. Ironically, in Humboldt’s view, eliminating subjectivity to render nature as pure object actually rendered true science impossible: “Science begins where the mind takes hold of matter and attempts to subject the mass of experiences to a rational understanding; it is mind directed toward nature.” One simply cannot take mind out of the scientific equation. The external world exists for us only in the image reflected to mind by the senses, and so, “as intelligence and forms of speech, thought and its verbal symbols, are united by secret and indissoluble links, so does the external world blend unconsciously to ourselves with our ideas and feelings.”

Humboldt felt he had not finished this work—had really only begun, offering “a first imperfect attempt” that would incite rather than satisfy. But he did hope that his science of the Cosmos would someday unite “both spheres of the one cosmos—the external world, perceived...
by the senses, and the inner, reflected intellectual world.” This has not happened, for the path which Humboldt indicated remains to be explored. When it is, we will better understand Humboldt’s home truth, that the products of our “spiritual labor belong as essentially to the domain of the Cosmos as do the phenomena of the external world.” Humboldt is reaching here to a concept we are just beginning to grasp: as Ian Hacking observes, “philosopher and historian alike are part of the ecosystem that has been transformed by bearers of that vision in their interactions with nature as they saw it.” Gregory Bateson wrote of this insight as the “ecology of mind,” and Margarita Bowen calls it the “ecology of knowledge,” which acknowledges that “all knowledge occurs not only in society but in the dynamic space-time context of the earth ecosystem; the observer—and the scientist is no exception—thus must be considered always as part of the system being observed, the ideas and actions that issue from such observation are themselves incorporated in the dynamic system, to become part of the future environment.” As Bowen concludes, if as Humboldt says thought is really part of the Cosmos, it too has a carbon footprint: “the act of reading these words can be considered then as part of the carbon cycle,” the complex system of energy flow that links the organic and inorganic worlds. (The man who paused in his discussion of meteorology to point out that the air every animal breathes also carries speech and thus thought, “maintaining social intercourse,” would have gleefully agreed.) Bowen continues, “Humboldt’s concept of nature incorporated human thought and culture; continuing that tradition, the ecology of knowledge affirms that all knowledge occurs within the functioning ecosystem and itself forms an integral part of that system, at least while mankind survives.”

We might not—as Humboldt reflected when he turned away from the graves of the vanished Atures. The Cosmos offers no guarantees. What humans have helped build, they may wholly destroy. High in the Andes, in the privacy of his off erings, no guarantees. What humans have helped build, they may wholly destroy. High in the Andes, in the privacy of his

### Notes

16. *Cosmos* 1:76, 162-63. Humboldt is referring to his associates, some of them his friends, in the German school of *Naturphilosophie*, with which he is sometimes erroneously categorized.
17. PN 3:90-91; *Cosmos* 1:37-38. Humboldt did worry about offending Schelling and Hegel, as his letters to Varnhagen made clear; he intended his aspersions for their followers, the sort who would practice “Chemistry, without so much as wetting one’s fingers,” and write such delicious nonsense as, “The diamond is a pebble arrived at consciousness” (101-07).
20. Humboldt, *Views* 217-18; Humboldt, *Essay on the Geography of Plants* 55; PN 4:133-34. In *Views* Humboldt notes an interesting example of bioregional imprinting on personal character: on his first sight of a pine forest, Montúfar, who had been born in Quito and had therefore never seen needle-leafed trees, felt that the trees were leafless, “and because we were journeying towards the cold north, he thought he recognised already, in the extreme contraction of the organs, the impoverishing influence of the pole” (*Views* 328-29).
21. Steigerwald, “Figuring Nature” 69-70; *Cosmos* 1:34; PN 4:419; *Views* 192; *Cosmos* 1:81. Many commentators presume a connection between Humboldt and the similar precepts of the British art critic John Ruskin. However, when asked if he had drawn on Humboldt’s *Cosmos*, Ruskin huffed defensively that he had glanced at it and tossed it aside: “certainly I owe it absolutely nothing.” (*Modern Painters*, 5 vols. [London: George Allen, 1897], 3:361). Ruskin in general found American landscapes too historically shallow to be interesting, Tropical landscapes struck him as grotesque, incapable of developing the mind or heart: “It would be difficult to conceive of groves less fit for academic purposes than those mentioned by Humboldt, into which no one can enter except under a stout wooden shield, to avoid the chance of being killed by the fall of a nut” (*Modern Painters* 5:151-52). Bernard Smith makes a case for the influence of Humboldt on Ruskin in *European Vision and the South Pacific* (New Haven: Yale University Press, 1985), 205-6.
26. There is a scientific field called “historical ecology,” which according to one of its founders, William Balée, “seeks a synthetic understanding of human/environmental interactions within specific societal, biological, and regional contexts. In other words, the focus of historical ecology is a relationship, not an organism, species, society—not a ‘thing.’ ” As the name of the field suggests, its practitioners follow changing ecological relationships, putting humans as key ecological actors at the center of explanations of ecological change across historical time. Its pioneers have done much of their empirical work in Humboldt’s old haunts, the Amazon and Orinoco river basins, and they trace the roots of their field to Boas and, at least implicitly, to Humboldt. For an overview, start with William Balée, ed., *Advances in Historical Ecology* op cit; the quotation from Balée appears as an epigraph on p. 213.
31. *Cosmos* 1:76; first quotation as translated by Bowen, *Empiricism* 257 (nowhere than in this passage is the need for a modern translation of *Cosmos* more evident). I have treated the problem of Humboldt and scientific objectivity in “The Birth of the Two Cultures,” *Alexander von Humboldt: From the Americas to the Cosmos*, ed. Raymond Erickson et al. (New York: Bildner Center, City University of New York online publication), 247-58.


Laura Dassow Walls is Professor and John H. Bennett, Jr. Chair of Southern Letters at the University of South Carolina. In 2007 she was a Visiting Scholar at the Center for Humans and Nature.