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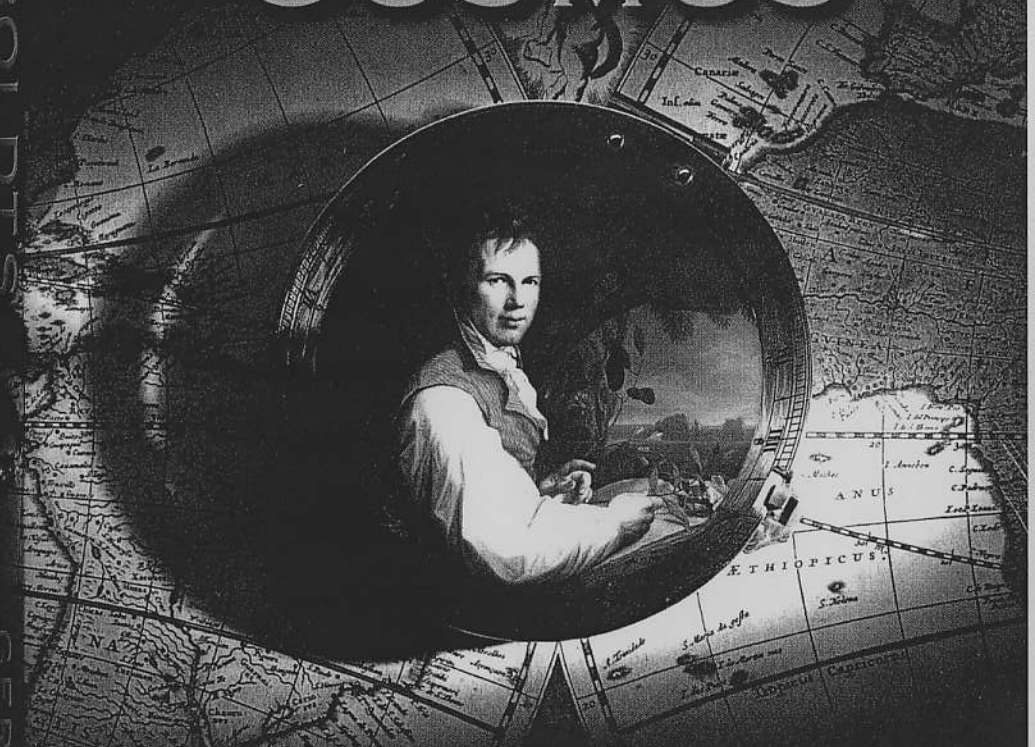

ALEXANDER VON HUMBOLDT AND THE LATIN AMERICAN JOURNEY THAT CHANGED THE WAY WE SEE THE WORLD

GERARD HELFERICH

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Everything is interrelated.

—ALEXANDER VON HUMBOLDT

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PREFACE

Humboldt's Ghost

THE PAN-AMERICAN HIGHWAY SOUTH OF QUITO IS A highway in name only. Indifferently paved, its two unmarked lanes are potholed in some places and awash with mud in others. But it is Ecuador's principal thoroughfare, and today the road is clogged with buses and trucks. The average speed is about thirty miles per hour, far less in some places.

We are tracing the route that Prussian scientist and explorer Alexander von Humboldt followed in 1802, but the countryside has been transformed in the intervening centuries. Strung out along the road now are a remarkable collection of structures in various stages of construction and decay. Mostly plain, cinder-block buildings with corrugated metal roofs, they include the expected gas stations (every third sign seems to advertise a *vulcanizadora*, or tire repair shop; apparently flats are a growth industry on the Panamericana). There are also places to sleep and to eat, but Motel 6 and Taco Bell they are not. How are the rooms, I wonder, at El Hotel Primitivo, hidden behind its raw cinder-block wall? And what is the specialty of the house at Café de la Vaca, a squat white building painted with exuberant black spots?

Gradually, the land becomes more rural, closer to what Humboldt would have seen. Commercial buildings give way to modest houses made of the rough local brick, with kitchen gardens sprouting behind them. Holsteins graze in the fields, and domestic pigs forage at will. Then the volcanoes appear on the horizon. It was Humboldt who named this region "the Avenue of the Volcanoes," and one can see why. The peaks come in quick, snowcapped

succession—Pichincha, Pasochoa, Atacazo, Corazón, Illiniza, Yanaurcú, Rumiñahui, Cotopaxi. Even Chimborazo is visible, some fifty miles to the south.

At the town of Lasso, our bus turns onto a narrow lane. A few hundred yards farther on, we make another left and enter a set of stone-and-iron gates. Built in 1580, La Ciénega is one of the great historic haciendas of Ecuador, with a provenance including some of the country's most prominent families. The original land grant from the king of Spain stretched from Quito to Ambato, a distance of some fifty miles, but the vagaries of economics and politics have reduced the holdings to thirty acres, and instead of operating as a plantation, today the hacienda earns its keep as a *hostería*. But even in its reduced present, one can glimpse its glorious past, when the hacienda was the stopping place of presidents and kings—and Alexander von Humboldt, who, having already completed the first extensive scientific exploration of the Amazon Basin, was in the process of doing the same for the Andes.

Beyond the magnificent eucalyptus allée, we pass a faded picket fence and circle a grand fountain. The impressive stucco house has three stories, whitewashed walls, and thick stone columns flanking the door. We disembark from the bus and enter, suddenly feeling underdressed in our muddy hiking boots and dusty fleeces. Inside, a wide central hall extends through the house to a lovely patio with cobbled walkways, formal flowerbeds, and another fountain. In the hallway, on a pedestal against the wall, is a bronze bust of Humboldt. Depicting him in his later years, it captures his high forehead, wide mouth, and prominent nose. He has the tousled hair of an adventurer and the penetrating gaze of a scientist.

To the right of the door is a reception desk. Andrés, our guide on this hiking trip, scoops a stack of room keys from the counter and fans them for the group. One of us will be lucky, he announces in his charmingly accented English. Because one of these keys opens the Humboldt Suite, the set of rooms where the great explorer stayed in 1802 while exploring nearby Cotopaxi. Preserved much as it was in the baron's time, the suite is the largest, finest accommodation in the hacienda. But it is a mixed blessing, Andrés warns, for the rooms are said to be haunted by the baron's ghost. Though not burdened by a belief in ghosts, aristocratic German ones or otherwise, I feel an uncanny certainty as I examine the keys. The first to choose, I pluck the key marked *7* from Andrés's hand. I'm not surprised when he tells me that I have picked the Humboldt Suite.

Congratulating ourselves, my wife, Teresa, and I rush up the broad staircase with visions of a king-size bed, crisp sheets, and a luxurious bath. But as we open the ancient door, we see that the suite is not the den of luxury we had imagined. The first room is a cavernous parlor with faded pink-and-white-striped wallpaper, heavy colonial furniture, and dusty draperies. Beyond is the barrel-vaulted bedroom, sheathed in somber paneling. And as we step into the unheated chamber we are greeted by a mustiness that seems to predate the hacienda itself. No wonder the room is thought to be the province of ancient spirits.

After dinner, as we lie in bed reading with the covers pulled up against the Andean chill, the wide, low door separating the bedroom from the sitting room suddenly swings open with a creak worthy of Vincent Price. Teresa and I look at each other and laugh. The hacienda is over four hundred years old, after all. Who would expect the doors to be plumb? A little while later, we're still reading when my hiking pole jumps from the wall where I had set it—doesn't slide down in a languorous arc, mind you, but seems to leap away from the plaster as though called to attention by some unheard voice. We laugh again, but now with a self-conscious edge. And when the time comes to go to sleep, jaded New Yorkers though we are, we feel an irrational reluctance to turn out the light. We lie in the dark for a time, straining for strange noises, then eventually drift off—only to be awakened in the wee hours by unexplained voices coming from the steep tile roof outside our window.

That day we hike the barren páramo around Cotopaxi, the volcano that Humboldt pronounced "unclimbable." The sky is cobalt, and the sun, magnified by the high altitude and the low latitude, seems perilously near. Jutting through a ring of clouds, impossibly huge, is the mountain's snow-draped cone. Buried in ash, strewn with huge blocks of obsidian, cut by rivers of mud—all evidence of its tortured geologic past—the terrain below the volcano is forbidding but irresistible. Even today, two centuries after Humboldt's journey, it is country that begs to be explored.

In the evening, as we sip the traditional *lazos* in the bar of the hacienda with Andrés and his brother Nelson, the talk turns to

Humboldt. I'm struck by how knowledgeable they are about him—his itinerary, his scientific contributions, his liberal politics, even the speculations about his sexuality. Throughout Latin America, everyone knows Alexander von Humboldt, they tell us. He is a pan-national hero, like Simón Bolívar, with streets, schools, hospitals, even babies, named in his honor. The obvious affection is impressive, considering Humboldt visited this hemisphere for only five years, two long centuries ago.

When Teresa and I confess the previous night's events in the Humboldt Suite, Andrés and Nelson betray no surprise. Neither do they share our facetiousness. Many other guests have reported strange happenings in the rooms, they tell us. Nelson himself spent one sleepless night there, troubled by a foreboding presence, and now avoids them. I feel my puckish skepticism begin to slip—and we still have another night in the rooms ahead of us.

That evening, we take sleeping pills to forestall any further apparitions.

TODAY, HUMBOLDT'S SPIRIT is felt far from La Ciénega, and even beyond Latin America. From 1799 to 1804, Humboldt and his traveling companion Aimé Bonpland accomplished what has been called "the scientific discovery of the New World," blazing a six-thousand-mile swath through what is now Venezuela, Colombia, Ecuador, Peru, Mexico, and Cuba. The expedition was even longer and more ambitious than Lewis and Clark's renowned trek across North America, which began the year that Humboldt and Bonpland ended theirs. And, whereas Lewis and Clark enjoyed the backing of the United States government and were accompanied by a thirty-man corps of discovery, Humboldt financed his expedition himself, and he and Bonpland traveled alone except for local guides and friends they met along the way.

Beyond its seminal role in the exploration of the Americas, the journey shaped scientific history. Humboldt lived in an age when the interior of every one of the world's continents save their own was terra incognita to European naturalists. And of all these vast landmasses waiting to be explored, none was more wild or exotic than the mountains and jungles of South America. The list of Humboldt's discoveries there—in anthropology, botany, geography, geology, geophysics, oceanography, physiology, and zoology—would fill a college catalog.

The first scientists to explore the Amazon Basin extensively, Humboldt and Bonpland collected some sixty thousand botanical specimens throughout Latin America—including more than three thousand species unknown in Europe—and made the first inventory of native American plants. They also greatly enhanced naturalists' knowledge of exotic New World creatures such as the monkey, alligator, and electric eel. By becoming the first to systematically study the effects of physical factors like altitude and geology on plant life, Humboldt gave birth to a new branch of science known as plant geography. He revolutionized geology by helping to resolve the controversy over how new landmasses are created and volcanoes are formed. He was instrumental in focusing scientists' attention on the need for accurate, systematic data collection, and his meticulous observations of the atmosphere and seas laid the cornerstones of climatology, meteorology, and oceanography. A pioneer in geomagnetism, he confirmed that the earth's magnetic field changes with latitude, located the planet's magnetic equator, and was the first to observe magnetic storms. He literally remade the maps of Latin America by fixing the latitude and longitude of hundreds of places (including Lima, Acapulco, and Havana) and by charting the courses of the Orinoco, Negro, and Casiquiare rivers. He even solved the riddle of how the new continent had come to be called America, and not Columbia. Keenly sympathetic toward Native American peoples, he introduced Europe to the glories of the Inca and Aztec cultures and suggested that American Indians had originally migrated from Asia. In his later years, Humboldt was an unstinting supporter of scientific talent and an important early advocate of international scientific collaboration. Today, more places are named after Humboldt than any other figure in history, including eleven towns in the United States and Canada, a mountain range in Antarctica, and even a sea on the far side of the moon.

During his lifetime, Humboldt was universally recognized as a genius. But his tremendous influence extended far beyond his unparalleled success as a data collector. As a great popularizer of science, Humboldt tirelessly promoted the appreciation of nature, from both a rational and an aesthetic viewpoint. In this he was no doubt animated by his own love of natural history. But he was also moved by humanitarian and political concerns.

Untouched by our twenty-first-century ambivalence toward "progress," he saw the advancement of science as a purely positive force that would benefit all mankind. Scientific knowledge was "the common property of all classes of society," as he wrote in the Introduction to *Cosmos*, an equalizing influence that would augment national prosperity and advance the republican ideals that he held dear.

Moreover, throughout his life Humboldt championed a particular way of viewing the natural world, one that sought to cut through the apparent dissimilarities among phenomena in order to lay bare the underlying unity of all nature. The advancement of this science, which Humboldt (who wrote primarily in French) called *la physique générale* and considered "one of the most beautiful fields of human knowledge," became the great quest of his life. And that quest began in earnest in the wilds of South America.

But Humboldt's scientific genius explains only part of his tremendous influence. By combining a love of travel and a flair for danger with his passion for discovery, Humboldt became the very prototype of the scientific adventurer. Lugging their instruments and boxes of specimens across the continent, he and Bonpland slogged through unmapped jungles and over some of the tallest mountains in the world. Tracing the course of the Orinoco in native canoes, they barely escaped treacherous cataracts. Attempting to climb the volcano Chimborazo, they reached a height of over nineteen thousand feet, setting an altitude record that would stand for nearly three decades and inspiring scores of mountaineers who followed, including the climbers who eventually conquered the Alps and the Himalayas.

Humboldt's expedition through Latin America was one of the great journeys of history, and it was his spirit of adventure as much as his love of science that made the young Prussian such a compelling figure among his contemporaries. His exploits, reported in the American and European newspapers (based on letters sent to friends and family en route) enthralled readers the same way that the adventures of Robert Scott, David Livingstone, and Charles Lindbergh would captivate future generations. At the conclusion of the journey, President Thomas Jefferson, who had just launched Lewis and Clark on their own journey

of exploration, entertained Humboldt at the White House and Monticello.

On his return to Paris, Humboldt was welcomed as an international celebrity, drawing crowds to his lectures at the Institut National and to exhibits of his botanical specimens at the Jardin des Plantes. He was invited to Napoleon's coronation gala in the Tuileries. His books, especially *Aspects of Nature* and the monumental *Cosmos*, were snatched up by eager readers and translated into many languages.

Writers such as Honoré de Balzac, Victor Hugo, Lord Byron, Gustave Flaubert, and François-René de Chateaubriand all expressed their admiration. "One can truly say he has no equal in information and lively knowledge," wrote his friend Goethe. "Whatever one touches he is everywhere at home and overwhelms one with intellectual treasures." Emerson was even more laudatory: "Humboldt was one of those wonders of the world, like Aristotle, like Julius Caesar, like the Admirable Crichton [Scots scholar James Crichton, renowned for his intellectual acumen], who appear from time to time as if to show us the possibilities of the human mind, the force and range of the faculties,—a universal man."

Humboldt's books inspired American artists Frederick Church and George Catlin to journey to South America to paint. Latin American intellectuals and revolutionaries acknowledged his inspirational role in the eventual liberation of the Spanish colonies, and Simón Bolívar stated, "Alexander von Humboldt is the true discoverer of South America." It has been said that in the first half of the nineteenth century, Humboldt's fame throughout Europe was second only to that of Napoleon himself. During those years, in the judgment of paleontologist and author Stephen Jay Gould, "Humboldt may well have been the world's most famous and influential intellectual."

Humboldt was well loved in the United States as well. When he died in 1859, the event was reported in all the New York newspapers. His obituary in the *Times* ran more than a full column. The *Tribune* wrote, "His fame belonged not only to Europe, but to the world." The *Herald* was even more effusive, splashing the obituary in the center of page one and lauding Humboldt as "one of the greatest men of this age or of any other." A decade

later, on the centenary of his birth, *The New York Times* devoted the *entire front page* (plus a continuation) to a description of the myriad festivities commemorating his legacy. Across the country, Humboldt's hundredth birthday was a cause for celebration, as speakers, citing his humanitarianism as well as his scientific perspicacity, hailed Humboldt as a citizen of the world and a benefactor of all mankind.

But in the vast army of those who felt Humboldt's impact, perhaps one stands out above the others. He was a young, dreamy British naturalist who was so moved by Humboldt's accounts of his journey that he committed whole passages to memory and longed to make a similar voyage one day. When he was offered a post aboard a ship of scientific discovery in 1831, the young man quickly accepted, packing in his seabag his copy of Humboldt's *Personal Narrative*. The ship was the *Beagle*, the young man Charles Darwin. Throughout his own epic voyage, Humboldt's text was his constant companion and guide. In *The Voyage of the Beagle*, Darwin cited Humboldt no fewer than seventeen times. After his arrival in Brazil, he wrote, "I formerly admired Humboldt, now I almost adore him; he alone gives any notion of the feelings which are raised in the mind on entering the Tropics."

Darwin was indebted to Humboldt for more than just the itch to travel. The German also inspired him to devote his life to science. In his autobiography, Darwin wrote, "During my last year at Cambridge, I read with care and profound interest Humboldt's *Personal Narrative*. This work and Sir J. Herschel's *Introduction to the Study of Natural Philosophy* stirred up in me a burning zeal to add even the most humble contribution to the noble structure of Natural Science. No one or a dozen other books influenced me nearly so much as these two. I copied out from Humboldt long passages on Tenerriffe, [*sic*] and read them aloud. . . ."

The Briton also made use of some of Humboldt's myriad data in constructing his revolutionary theory of natural selection. In marshaling his evidence in *On the Origin of Species*, Darwin makes two arguments from nature. The first is that the (admittedly incomplete) fossil record shows that older species have, over huge expanses of time, been supplanted by newer species. This conclusion stems from his reading in geology, including Charles Lyell's monumental *Principles of Geology*, which he had also

packed in his seabag (and which itself borrowed from Humboldt's work).

Darwin's second argument draws more directly from Humboldt, who had previously shown that differences in climate alone were not enough to explain the diversity of species that were seen from place to place. After all, most continents had hot areas, cold areas, and areas in between. So why was the kangaroo found only in Australia and not in the deserts of North America? Why did apes live in Africa but not in the rain forests of South America? Darwin's solution was migration followed by long isolation: A species wandered into new territory, was cut off from its brethren, and over a vast period, breeding only among itself, evolved into what was eventually recognized as a unique species. Besides providing the conceptual starting point for this part of the argument, Humboldt, by discovering thousands of plant species unique to South America, also provided copious evidence of exactly the process that Darwin was describing. In the midst of this discussion, in fact, Darwin cited "the illustrious Humboldt" for his contribution.

But it wasn't just Humboldt's inspirational example and his powers of observation that had such an effect on Darwin. It was also his worldview. Like Humboldt, Darwin was a synthesizer, one of those iconic figures who propel science forward through their compulsion to create order (*cosmos*) out of the apparent disarray (*chaos*) of natural phenomena. The result in Darwin's case was *On the Origin of Species*, which, as biologist and writer Steve Jones points out, single-handedly propelled the science of biology from a collection of disparate facts into a "system of knowledge." Though the crucial insight of natural selection was Darwin's, the synthesizing impulse behind it owed a debt to Humboldt. In fact, considering the profound influence he exerted on the young Briton, it's arguable that without Humboldt there would have been no Darwin. Or, as Darwin himself put it: "I shall never forget that my whole course of life is due to having read and re-read as a youth [Humboldt's] *Personal Narrative*."

Yet, luminary that he was during his lifetime and immediately beyond, Humboldt's celebrity has been eclipsed over the past century and a half by his scientific successors. Instead of his all-encompassing *physique générale*, science today is the province of ever more narrowly focused specialists. Even the

Humboldt Current, the cold upwelling along the Pacific Coast of South America that he studied, is now apt to be called the Peru Current. Although many North Americans have a vague sense of Humboldt's name and a hazy recollection that he had something to do with Latin America and perhaps the Avenue of the Volcanoes, most would be hard pressed to give particulars—as I had been before visiting La Ciénega.

WHAT KIND OF MAN would travel thousands of miles to strike into a wilderness where no European had ever ventured before? How does a person develop such an eclectic, obsessive curiosity, ranging from the distribution of the dragon tree, to the origin of basalt, to the grammatical structure of ancient Indian languages? Was Humboldt driven by hubris and self-centeredness (as his brother, Wilhelm, and sister-in-law, Caroline, suspected), or by something more altruistic and heroic? Where did he find the incredible resilience to sustain such a journey for five years, and to accomplish so much during that period? And why was he showered with adulation during his lifetime and immediately after, yet all but forgotten in recent decades?

Over the course of my research I have come to see Humboldt as a unique commingling of the Enlightenment and the Romantic Era, of intellect and feeling, of contemplation and action. I have also come to see him as a surprisingly modern figure, with quirks and enthusiasms and concerns similar to ours. There is a great deal to admire in him—his intelligence and curiosity, certainly, and his reverence for nature and respect for cultures different from his own. Above all, there is his courage—not just the physical courage required on the journey but the even greater courage needed to leave home in the first place. The courage to give up a responsible profession and comfortable circumstances in order to chase one's dream, the courage to believe that it's never too late to reinvent oneself, to discard doubt and convention and to pursue one's true calling—the courage to become the hero of one's own life. It was perhaps his individuality and audacity, as much as his scientific prowess and his enlightened politics, that underlay Humboldt's tremendous popularity. Devouring his *Personal Narrative*, teachers, shopkeepers, clerks could also leave their everyday life behind and ship out for South

America, if only for a while. And perhaps they would return from that vicarious journey a bit changed—a little more adventurous, a little more trusting of their own internal compass. Along with Humboldt, I, too, felt "spurred on by an uncertain longing for what is distant and unknown, for whatever excited my fantasy: danger at sea, the desire for adventures, to be transported from a boring daily life to a marvelous world."

In the two centuries since Humboldt's visit, the former Spanish colonies have become independent nations. Slavery has been abolished. The population of metropolitan Mexico City, which Humboldt called "the City of Palaces," is approaching twenty million—and palaces aren't necessarily the first impression of the visitor. Yet many things remain unchanged. Snow-cloaked Chimborazo still towers above the Andean Highlands, and the coastal fog still shrouds Lima from May through October. Though Spanish rule is gone, the sad legacy of colonial misgovernment and malfeasance lingers. Areas of crushing poverty remain, especially among the Indians. Mexico City is still the largest metropolis in the New World, just as it was in Humboldt's day. Much colonial architecture has been preserved there and elsewhere, and Humboldt would instantly recognize today's zócalos in the Mexican capital, Lima, Quito, and many other cities. Mexico's La Valenciana silver mine, which once produced a fifth of the world's supply of the precious metal, is still in operation, and the fabulous eighteenth-century church built from its wealth, boasting three huge gold altars, still attests to the riches that came out of the earth on the backs of the native people. Humboldt's world may have passed, but tantalizing traces remain. And even today his spirit is very much alive throughout Latin America—in the respect for cultural heritage, in the striving for modernity, in the spirit of social progress.

The fact is that Humboldt helped to shape the world as we know it, and his influence is still felt around the globe, even where his name is not widely recalled. The product of a rich intellectual tradition stemming back to the ancient Greeks and encompassing such disparate titans of the Enlightenment as Francis Bacon, Isaac Newton, René Descartes, and Immanuel Kant, Humboldt passed that tradition to his own successors in science, including Charles Darwin, Albert Einstein, Max Planck, and

Edwin Hubble. Humboldt's *physique générale* is a link in the conceptual chain comprising such touchstone theories as evolution, relativity, quantum mechanics, and the Big Bang.

Even amid today's rampant scientific specialization, Humboldt's search for "the unity of nature" not only survives but thrives, still yielding some of the most provocative areas of contemporary investigation, such as superstrings, complexity, emergence, and the elusive "theory of everything." In his brilliant, ambitious book *Consilience*, E. O. Wilson takes the synthesizing impulse to the ultimate, arguing that all tangible phenomena, including human behavior and culture, are ultimately reducible to the laws of physics. "I have argued that there is only one class of explanation," he says. "It traverses the scales of space, time, and complexity to unite the disparate facts of the disciplines by consilience, the perception of a seamless web of cause and effect." Though Humboldt's approach to science differed from Wilson's in fundamental ways, the peripatetic Prussian undoubtedly would have applauded this latest effort to discover the ultimate "unity of nature."

HUMBOLDT'S COSMOS