

## **Review of Alexander von Humboldt: Perceiving the World, West Lafayette, Indiana: Purdue University Press, 2023**

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## Review of *Alexander von Humboldt: Perceiving the World*, edited by Beate I. Allert, Christopher R. Clason, Niall A. Peach, and Ricardo Quintana-Vallejo. West Lafayette, Indiana: Purdue University Press, 2023. Pp. x + 272, index.

## By Laura Dassow Walls (William P. and Hazel B. White Professor of English Emerita, University of Notre Dame), author of *The Passage to Cosmos: Alexander von Humboldt and the Shaping of America* (Chicago 2009).

In the opening of this various and fascinating collection on the work of Alexander von Humboldt (1769-1859), we read that Humboldt "can be regarded as a prototype for any modern person of science" (1). Yet it's hard to see such a profoundly original and multifarious individual as a "prototype". The more Humboldt's genius unfolds, the more it staggers the imagination that any one person could have done so much, could have extended the vistas of knowledge so very far. So was he, finally, a "person of science"? Yes, of course: what other name can we give the person who studied the Earth's magnetic field, founded the science of plant ecology, documented Indigenous technologies and languages, hypothesized that rising levels of CO<sub>2</sub> would warm the Earth's atmosphere, protested against the environmental damage caused by deforestation, sketched the history of what he called "the great garden of the universe" (including the formation of planet Earth), and demonstrated the power of ocean currents to radically alter climates—leaving his name on one of them, the "Humboldt Current"? Yes, "scientist", a word invented in Humboldt's wake (13n2), is the only name we have for such a person. Yet science as we know it is hardly capacious enough to contain everything Humboldt did, from his earliest work in the coal mines of Prussia (where he invented a breathing mask to keep the miners, and himself, alive in the toxic atmosphere), to his restless explorations across Europe, the Americas, and Central Asia, to his prolific and often bestselling writings, some gorgeously illustrated based on his artwork, others featuring his precise and innovative cartography. Not to mention his wartime diplomacy, his labors to combat scientific racism and delegitimize slave economies, his extensive writings detailing the political economies of Venezuela, and Mexico, and Cuba, and his book-length history of the concept of "nature"-our first work of ecocriticism.

If this is science, then it is so in the largest possible sense of *scientia*, knowledge. Humboldt dedicated his long life to extending knowledge to both the nearest and the farthest reaches of the living world. He did so by demanding that knowledge be based on lived experience, and that experience embrace all the forces of the universe and all the beings of the world, organic and inorganic, human and nonhuman, with equal respect. As his own knowledge grew, so did the vibrancy and surprise of the worlds and beings he brought into view; his books

were neither simple accounts of experience nor compilations of facts, but demonstration projects in the very *method* of inquiry: how to plumb an infinitude of interconnections and bring them to life on the written page, how to create new worlds and generate the new kinds of persons—poets, artists, and scientists alike—who could, like him, revel in the astounding variety of life. It's been claimed, by Andrea Wulf, that Humboldt invented Nature. Perhaps, if "nature" means both the entirety of beings that exist in the universe, in all their reciprocal and multifarious interconnections, together with the sturdy filaments of knowledge that allow us to bring something of this vast complexity and beauty into our own lives. Yet by Humboldt's day, "nature" was already an ancient trope, which is how he could write a history of it, one that showed nature to be the most complex of human concepts, an intricate and infinite interlacing of human and nonhuman worlds. Humboldt himself was after something else, something without a name that pointed not to the past, but to the future. The name eventually given to what he actually did invent is, today, the watchword of our era: "Ecology".

I first came to Humboldt back in 1988, in a graduate seminar on Charles Darwin. You can't understand Darwin, said our professor, until you understand something about the man who inspired him: Alexander von Humboldt. And with that, he plopped down copies of "Steppes and Deserts", the opening essay in Humboldt's most popular and endearing book, *Views of Nature*. By the end of the third paragraph I was hooked. For years I'd been seeking the model for Thoreau's distinctive blend of empirical nature study with art, poetry, and philosophy; and here it was, staring back at me from the seminar table. I went on to write my dissertation, and then my first book, *Seeing New Worlds* (1995), on Thoreau as a primary carrier of Humboldt's unique vision. Since then, I've been ringing the bell for Humboldt and for a handful of the many figures who were moved by his work to invent their own original careers. At some point, weary of fielding the tiresome question "Why should I care about Humboldt, since I've never heard of him?", I took a long detour from my field of American literature to write *Passage to Cosmos: Alexander von Humboldt and the Shaping of America* (2009)—a lengthy attempt at an answer.

Alexander von Humboldt: Perceiving the World offers an entire collection of rather shorter answers, all of them interesting and several of them important. It, too, was inspired by the classroom: six of the ten contributors took graduate classes with the lead editor and fellow contributor, Beate I. Allert, Professor of German, Comparative Literature, and Film at Purdue University. As the Preface states, Humboldt "triggered a spark among the writers of this volume that began with classes and individual study projects", which spiraled out into the "network of collaborations" whose reports fill these pages (ix). The book's contributors hail from the full range of the humanities, for, as the subtitle suggests, Humboldt was as much humanist as naturalist, as engaged with culture as he was with nature, for he refused to separate the "objective" world we perceive from the "subjective" world of the perceiver. As he insisted in his last great book, Kosmos, humans and their perceptions are just as much a part of the Cosmos as the rocks under our feet, the stars above, and the plants and creatures who compose the world around us. This distinctively Humboldtian insight defies the traditional bifurcation of a single reality into two distinct realms, objective and subjective, or what Whitehead called "the ultimate fact of an irreducible brute matter" and the "psychic additions" supplied by the perceiving mind (quoted in Debaise 9, 11). This bifurcation softened enough early in the nineteenth century, at least in some arenas, to allow Humboldt to flourish for some time; but after mid-century, as science professionalized into a disciplinary matrix of specialties, Humboldt's works dropped from favor and were increasingly ignored.

This volume thus contributes to a decades-long project of rediscovering Humboldt for the twenty-first century. It is dedicated to Peter Hanns Reill, Distinguished Professor Emeritus of History at UCLA, who, sadly, passed away in 2019, while these collaborations were still underway. Fortunately his plenary essay, "Alexander von Humboldt: Between Enlightenment Vitalism and Romantic *Naturphilosophie*", anchors this collection with a significant contribution to Humboldt scholarship, one that reclaims Humboldt with energy, insight, and erudition. Why, Reill asks, did Humboldt, who began his publishing career as a vitalist in search of a "life force", back away from vitalism—not into the usual alternative, mechanism, but into a third position between the usual dualism, a position that defies easy categorization? Reill begins with Humboldt's early research into galvanism via a series of experiments on frogs and other animals (including himself), which demonstrated that animal flesh

could actively generate electricity on its own, without the presence of metals. (Soon after, while in South America, Humboldt would conduct a field study of electric eels that became one of his most famous exploits.) For a time, Humboldt hypothesized the existence of a "galvanic fluid" unique to living animals (38), something like the intrinsic life force he had earlier invented for his allegorical essay "The Life Force, or The Rhodian Genius" (1795). But this still failed, in his view, to explain the difference between inorganic matter, with its static equilibrium, and organic matter, whose equilibrium was dynamic (40). No available solution met the criteria of Humboldt's experience.

As Reill shows, Humboldt's answer was to extend Kant's organic theory: life was the result of the interaction of familiar materials and material forces which, in the living organism, were in constant reciprocal interaction as elements of one whole—a "co-operation' or 'congress of forces" in which each part, each organ, is reciprocally cause and effect of everything else, at once means and end (44). There is, therefore, no material first cause, because, in the organism, all causes and effects are relational; as Humboldt himself writes elsewhere, organisms, like "meteorological processes", are complex systems that spin themselves up out of a great number of "simultaneously active forces" (Views of Nature, ed. Jackson et al, 265-66). Reill concludes that Humboldt's science was always a "highly complex world of interrelated substances and forces all working on one another in complex and sometimes mysterious ways" (47)-which makes him unclassifiable in the terms usually offered by "Romantic" or "German biology". In the words of Michael Dettelbach, Humboldt was "neither a naïve empiricist, nor a Romantic idealist", but instead a free-range Enlightenment philosopher, engaged in redefining the very terms of discourse (quoted 41). The result was a scientist whose vision "ran counter" to the development of professional science, one who not only refused to do "boundary work", but who sought to dissolve those very boundaries into what we today may call "a transdisciplinary approach" (48). While Humboldt's method was strictly inductive, he was unafraid to make analogical leaps-as, above, from living organisms to weather systems-and he insisted on the fundamental role of the human imagination in every process of thought and feeling. Yet as Reill says, analogy can run away with itself, a temptation Humboldt kept strictly under control by his characteristic use of experimentation and precise measurement, two tools especially useful for detecting patterns-and loading, as I would add (with a tip of the hat to Bruno Latour), those patterns with reality.

In my own early work on Humboldt, I simmered his working method into a four-part mnemonic: Explore, Collect, Measure, Connect (Walls 98-100). Humboldt earned his international fame as the era's greatest explorer, popularized first through his own writings, then even more so by the flood of awed reports retailing his exploits for the popular press: capturing electric eels with stampeding horses; climbing Mount Chimborazo, thought to be the highest in the world; paddling up the Orinoco where he faced off with jaguars and consorted with cannibals. Humboldt's scientific collections were staggeringly large, helping force a reorganization of natural knowledge; his measurements resulted in the most accurate maps of his generation, and established such basic relationships as the connection of elevation with climate zones and ocean currents with global temperatures. The familiar weather-map isotherm was one of his many graphic innovations. His ability to make connections, to see patterns and formulate them into robust systems of natural knowledge, helped him untangle some puzzles in the geological history of the planet (he hypothesized continental drift and conducted pioneering studies of volcanoes)—and, among other things, allowed him to advance concepts of global and local plant distribution that opened the door to ecological insights crucial to substantiating Darwin's theory of evolution.

All of which is to say that Humboldt offers an astonishing range of fields and topics for further research. Accordingly, the contributors to this volume open a number of doors. Ricardo Quintana-Vallejo opens the volume with his essay "Indiana Reads Alexander von Humboldt", which introduces Humboldt by taking one small but revealing slice: a handful of contacts and connections between Humboldt and the residents of Indiana—including John Purdue, the founder of Purdue University (2)—to show how, even from so far away, he became "a pivotal point in Indiana's perception of the world" (31). The ways this came about track a characteristic set of movements based on Humboldt's vast correspondence—famously, he wrote thousands of letters a year to addressees around the globe—and his special fondness for Americans: as Humboldt said in the presence of Indiana Gov. Joseph A. Wright, then ambassador to Prussia, "I am half an American" (24). In 1858, Humboldt had written a letter of congratulations to the Indiana Board of Agriculture (which Wright had founded), praising their "intelligent sagacity". The board promptly named Humboldt as an honorary member, and Wright proudly carried their letter of appointment to Berlin to present to Humboldt in person. On his return to Indiana, Wright brought back several key Humboldtian ideas, including Humboldt's condemnation of slavery and his concern for the destruction of the natural environment. And this is just one of nine separate threads of connection traced by Quintana-Vallejo, evidencing how Humboldt's popular appeal and his diplomatic courtliness helped him spread his influence, multiplied thousands of times by such gracious exchanges all around the world.

Three additional essays tease out other specific lines of connection. In "The Meeting of Two Alexanders: Causes and Consequences of Humboldt's and Pushkin's Mutual Admiration", Andrew Kroninger investigates Humboldt's meeting with Pushkin in St. Petersburg in 1829, near the beginning of Humboldt's expedition across central Asia. "Fascinating speeches just gush from his mouth", exclaimed Pushkin (81); but, as Kroninger asks, what could connect "the German polymath and a hotheaded Russian poet" thirty years his junior? Not, as it appears, a direct line of influence, for little is known about what transpired at this meeting. Yet in tracing the many congruences between the two Alexanders—both were political dissenters against empire, including against racism (Humboldt) and class injustice (Pushkin); both warned against the exploitation of nature, and expressed feeling for a symbiotic relationship with the natural world; both were fascinated with nature's unseen forces—one can learn much about what made them "politically, socially, and rhetorically effective". If mutual influence was not direct, they were both certainly "products of each other's influence" more generally, showing the need for a "multidisciplinary approach to studying scientists and authors" (91-92). As someone who started her own career tracing the unlikely influence of Humboldt on the occasionally hot-headed poet Thoreau, I fervently second Kroninger's words.

Christopher R. Clason offers a more direct tale of both influence and critique in "Alexander von Humboldt and Peter Schlemihl: The Image of the Scientific Explorer in Early Nineteenth-Century German Literature". Clason opens by pointing to Goethe's enthusiasm for a young Humboldt, who, in Goethe's words, "sets in motion everything that can interest me from so many aspects" (qtd. 55). From the time of their first meeting in 1794, Humboldt offered to Goethe a new kind of scientist, not the brooding Faust confined to a dark laboratory, but the hands-on observer who seeks authentic experience out in the natural world. Five years later, when Humboldt embarked on his travels to the Americas, his international reputation as the era's most important "man of science" was launched (the word scientist was not yet invented, nor were women yet accorded this status). A decade after Humboldt's return to Europe in 1804, Adalbert von Chamisso published his popular novella "Peter Schlemihl's Marvelous Tale" whose protagonist travels the globe in his "Seven-League-Boots" allowing him to walk immense distances in a few steps, devoting his life to botany in a redemptive effort to do good for humanity-a fresh image of the scientist, poles apart from Mary Shelley's twisted Frankenstein. Similarly, one of E. T. A. Hoffman's tales borrows Chamisso's Humboldtian scientist to recount a meeting with the odd, bootwearing "Enthusiast" who bears strange flowers fresh from the slopes of Chimborazo-on the far side of the planet—right to Berlin's Jägerstrasse, the very street on which stood Humboldt's childhood home. Such imaginative literature shows Humboldt forging the public image of the early nineteenth century scientist (68).

Joseph D. Rockelmann's "Alexander von Humboldt's Lonely Parrot in *Views of Nature*" recounts Humboldt's encounter above the Atures Rapids of the Orinoco River with the sole remnant of an extinct tribe, a lonely parrot who spoke in their language—the last known words of a language that, with its speakers, was now also extinct. As Rockelmann explains, one of Humboldt's goals in *Views of Nature* was "to lay to rest the stereotype that [Indigenous peoples] were barbaric and animalistic" (129). Accordingly, when one of his friends penned a poem recounting the haunting story of the lonely Atures Parrot, Humboldt included it in his book. The poem emphasizes the richness of the parrot's once-living Indigenous world and "the tragic, but enduring, absence of its human companions" (131); even more remarkably, Humboldt transcribed the parrot's forty words, which were

recently used in an art installation—in effect, keeping the language alive (134; 139n16). As Rockelmann reports, Humboldt's objective was never to facilitate the colonization of Indigenous peoples; he treated them with respect, both individually and collectively.

The remaining five essays are all exceedingly ambitious, each one aspiring to show Humboldt overturning entire paradigms. Melanie Swan's "Alexander von Humboldt's Environmental Holism" sees Humboldt as, in her words, "a marquee example of a systems-level thinker" who leaves us a "structural blueprint" for tackling the complex challenges of today (120). In detailing what Susan Faye Cannon called "Humboldtian Science", Swan points especially to Humboldt's use of "ekphrasis", bringing text and images together into a single visual/verbal representation, as in his isomaps or his "multisensory" writings, directed both to the sciences and the arts, as in the aesthetic principles popularized by John Ruskin. This kind of "environmental holism" points to Humboldt's systems-level theory of knowledge, which brings together "range comparison" across the full extent of a phenomenon, the development of "new theories" (such as plant geography and continental drift), and an "ethics of holism" which requires both completeness (rather than cherry-picking), and a "principle of congruence" according to which a system should be understood on its own terms, from within. Swan places Humboldt in the broader context of theories of knowledge, including Martin Jay's scopic regimes and Foucault's epistemes. As she notes, Humboldt is concerned not just with the practice of science, but with "the theoretical constitution of knowledge as well", in ways that compare with Michel Serres and Bruno Latour. This key insight, not developed here, could be the basis for a substantial book, especially if Swan expands her knowledge of Humboldt to embrace his lengthy, influential, but largely ignored political essays, which counter some of her criticisms and beg for a Latourian analysis.

A similarly ambitious essay comes from Ralph M. Kaufmann, a professor of mathematics at Purdue: "*Beseelte Natur*: Alexander von Humboldt and Data-Driven Paradigm Segues". Kaufmann opens by observing that, during an era when the explosion of new data forced the reorganization of knowledge, Humboldt didn't merely explore worlds; he changed the perspectives of the world, for himself, his time, and posterity. Humboldt's new framework, which Kaufmann calls "data-driven paradigm segues", combines three factors. First is the "(big) data cycle", to which Humboldt responds by inventing the *Naturgemälde*, "a painting of nature, as well as that which nature paints", through his portrayal of the relationships of interlinked phenomena, which "speak to the soul" of the reader as well (171-75). Second is the "unity principle", which holds that the mind can grasp nature because it is part of, hence bonded to, nature's larger unity, nested in a complex of feedback loops. Third is the "kernel of truth" based on Herder's insight that "all progress happens historically", such that earlier truths can be retained as knowledge progresses along a dynamic path of growth. As Kaufmann observes, Humboldt seeks out "classical sources to bring about paradigm transitions" (184), as seen in his final work, the multi-volume synthesis *Kosmos* (1845-59). And as Kaufmann concludes, a model of paradigm transition, inspired by Humboldt and modeled after his insights, can serve as "a basis for discussion of paradigm changes occurring in current times" (191).

Christina M. Weiler also takes up Humboldt's *Kosmos* in her essay "Alexander von Humboldt beyond Planet Earth: Exploring the Infinite and Unreachable in *Kosmos*". Humboldt designed *Kosmos* to lead the reader from the farthest reaches of outer space back to the fragile and beautiful marvel that is our own planet Earth. (Some readers will recognize this as the inspiration for Carl Sagan's popular PBS series *Cosmos*). Accordingly, Weiler's interest lies in how Humboldt uses the "cosmic" not as his destination but as his point of departure, moving from astronomy to the terrestrial to present "Earth as a *particular*, signaling a movement away from geocentric thought", even as he connects our knowledge of our own planet "with that of cosmic phenomena in order to capture the universe as a complex unity" (207). The key to capturing this unity lies in Humboldt's use of our sensory perception, our haptic "grasp" of the distant and remote by way of our own direct senses and our scientific instruments, which Humboldt theorizes as extensions of the human sensorium—a mode, therefore, of mediated experience, even as analogy can serve as a mode of imaginative experience. Humboldt thus challenges the boundaries between textual and visual, scientific and aesthetic, bridging the familiar and the unreachable in an adventure that combines the synthesis of natural knowledge with individual fulfillment and personal freedom. Neill A. Peach's remarkable essay, "Re-Rivering New Spain", brings us not only solidly back to Earth, now seen as a fragile planet interlaced by a multitude of waterways, but also to the political arrangements that turned Indigenous lands into sites for imperial control and colonial settlement. Peach builds on Walter Mignolo's argument that water cuts across the Eurocentric, geopolitical "circuits of knowledge production", in order to highlight Humboldt's perception of the fragility of colonial power and water's capacity to preempt the Spanish empire's totalizing claims to control. Oceans and empires have been associates at least since Columbus, and following the flow of the Atlantic into its tributaries takes one into the heart of imperial history. Humboldt's detailed attention to water—oceans, rivers, ports, and canals—as the medium of power both implicates him in colonial structures, and allows him to push against the colonial will to dominate. This is seen, for instance, in Humboldt's long account of the drainage of Mexico City, which erased not only the Indigenous culture but also Indigenous knowledge of how to contend with floods, which, as Humboldt acidly points out, now plague the city the Spanish built with the ruins of the Aztec civilization they destroyed. As Peach concludes, "Humboldt shows how water interrupts imperial politics of control in colonized territory", linking water systems to the fragility of the colonial system and upsetting the binary of human superiority over nature (160). One can own the land, but not the water that flows over the riverbed, an insight that should reshape the entirety of colonial politics.

The volume concludes with Beate I. Allert's wide-ranging and remarkable essay "Art and Aesthetics in Alexander von Humboldt: The Subterranean Tree and Other Images". Allert cuts through the science vs. art debates with a sweeping declaration: "it is precisely [Humboldt's] existence as an artist that defines his scientific approach" (228), an assertion she eloquently defends by pointing to Humboldt's "enormous influence" on American art and culture, but more, to the many aesthetic qualities of Humboldt's writings. Art, as she points out, was the original impetus of Humboldt's longing to travel, starting with his early training and success as an artist. His aesthetic was distinguished by his "aletheic" gaze, context-oriented, non-intrusive and unforced; as Peach also argues, while Humboldt was constrained to work within the parameters of colonial powers, his own gaze was "noninvasive and nonabsorbing", attentive above all to patterns of light, energy, and movement. He did not think in terms of binaries, but worked across multiple scales, gradually building a layered, inclusive, and relational mode of thought; his interest was not in product but in process, as in his famous *Naturgemälde*, whose visual perception drew readers into a process of interaction with densely interconnected environments. He was especially attentive to downward, underground dimensions, such as the "subterranean tree" of her title (referring to young Astorpilco's story of a buried Inca tree of gold, which Humboldt tells in *Views of Nature* as a lesson in Indigenous wisdom).

Allert observes that later in life, his explorations behind him, Humboldt challenged the notion that any medium can provide transparent access, attending instead to the way various media literally mediated, or filtered, perception, an insight that turned him into a highly experimental writer, one who worked with the ekphrastic power of language, often in fluid and fragmented forms—yet who always insisted that, as Allert says, "Thinking and research are necessary to extend the perceptible into the realm of the thinkable and the imaginary" (241). His visual strategies thus fit poorly with the usual categories of his time, or those imposed upon him; this makes him uniquely available to us, in our time, especially given Humboldt's ethical orientation. As she concludes, Humboldt suggested "that we better attain more sensibility and awareness for seismic shifts and our very fragile environments", which make human exploration necessary, yet warn us to beware of the "precarious interventions that adversely alter our inhabitable cosmos" (245).

Anyone with at least some familiarity with Humboldt will find much to ponder in this book, given its diversity of concerns and multidisciplinary approaches. One slight quibble is the authors' insistence on offering their own translations of Humboldt rather than referencing those available in English, whether the inadequate but widely-used translations from the nineteenth century, or the recent, deeply-informed critical editions of Humboldt's major works by Vera Kutzinski and Otmar Ette (*Political Essay on the Kingdom of New Spain*, Vol. 1, 2019), Stephen T. Jackson and Sylvie Romanowski (*Essay on the Geography of Plants*, 2013), and Jackson, Walls, and Mark Person (*Views of Nature*, 2014). This creates obstacles for English-language readers who wish to explore

Humboldt's works for themselves. That said, one hopes for a wide readership for this volume. Each essay offers something new and valuable, and several of them recover a Humboldt who will be, for most readers, nothing short of a revelation, revealing the "alternative modernity", as Ette says (quoted 49), which was refused by the nineteenth century, but today offers an extraordinary model for the thinking that must come, and soon, if we are to survive the twenty-first.

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