



Research Articles

Loren Eiseley's Substitution

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Abstract. The anthropologist and acclaimed essayist, Loren Eiseley, in the midst of recounting a vision in the conclusion of a draft of a 1960 composition, "Creativity and Modern Science," invoked Charles Darwin as the essay's animating spirit. Eiseley modified his draft the next year and published it in no less than three of his subsequent books. The most striking differences between his draft and published texts is the substitution of Darwin in the final moments of the narrative with Francis Bacon, a barrister and philosopher who died nearly two centuries before the famous biologist was born. Here, is crafted a rationale for this unlikely switch, to the extent that the intent of another can be uncovered, by closely reading Eiseley's psychologically charged work. Eiseley's own struggles as both a scientist and an artist, identities respectively epitomized by Darwin and Bacon, reveal how and why the writer permitted his foremost heroes to be substituted, one for the other.

Keywords: Francis Bacon, Charles Darwin, Loren Eiseley, Rachel Carson, Richard Nixon.

INTRODUCTION: EISELEY AND RACHEL CARSON

"If the world were lit solely by lightning flashes how much more we would see?" is the leading question in an 11-page typewritten essay called "Creativity and Modern Science" (hereafter CMS) by Loren Eiseley (1907-1977) dated 19 September 1960. Less light, see more? A compelling provocation. Here, I compare Eiseley's unpublished draft with the form of CMS in an autobiographical essay collection and two books about the philosopher of science and Lord Chancellor of England, Sir Francis Bacon (1561-1626).¹ My remarks confront the fidelity of ideas in the written word.

Eiseley's text is stored in the Rachel Carson (1907-1964) archive at Yale University.² Eiseley and Carson, born the same year, were arguably the most popular so-called Nature writers of their time.³ Eiseley's break-out book, *The Immense Journey* (1957),⁴ about human evolution, has been translated into at least a dozen languages. At the time of its publication, Carson already earned a wide following with her trilogy about the sea.^{5,6,7} After reading *The Immense Journey*, she wrote to Eiseley to express admiration for his "magical passages."⁸ Eiseley, in turn, reviewed Carson's landmark book, *Silent Spring* (1962),⁹ about the misuse of insecticides. Echoing Carson, Eiseley wrote that

many pests once thought to have been eliminated may return “to flourish in a sack of DDT and thus be twice as formidable... [We are] whetting the cutting edge of natural selection but its edge is turned against [us]...”¹⁰

Concern over the abuse of science and technology were already resonant with Eiseley. As a Cold War-era author, he trained one eye on the sky, ever wary of the missiles that might fall out of it. Even Eiseley’s meditations on his favorite subject, evolution, often foresaw an anthropogenic end of the process from which humans arise; isles where castaways could blossom under natural selection are being “flattened into the long runways of the bombers.”¹¹ “We have lived to see”, wrote Eiseley in CMS, “the technical progress that was hailed in one age as the savior of man become the horror of the next.” Bacon was likewise fearful, in his time before the bombers, recognizing that what we now call *sciences* have “an ambiguous or double use, and serve as well to promote as to prevent mischief and destruction, so that their virtue almost destroys or unwinds itself.”¹²

Eiseley grew up in Lincoln, Nebraska. It took him eight years during the Great Depression to earn a bachelor’s degree from the University of Nebraska. He spent some of that time riding the rails, recovering from tuberculosis, and collecting bones of huge mammals that once roamed the Badlands. Meanwhile, Eiseley searched for artifacts of ice-age humans, an occupation that strengthened his interest in the developing field of anthropology, the subject in which he ultimately earned a PhD from the University of Pennsylvania. All the while, he wrote poetry and short stories.

Eiseley became an assistant professor at the University of Kansas, moved to Oberlin College as department chair, and then returned to the University of Pennsylvania. When he wrote CMS, he was provost at Penn, an administrative position to which he, his friends, and his colleagues thought him ill-suited.⁸

Eiseley is not remembered best for his scientific discoveries, but rather for his books about natural history. He has been the subject of several biographies,^{8,13,14,15} and volumes of critical analysis.^{16,17,18} Christianson’s comprehensive biography is especially recommended,⁸ as is Eiseley’s autobiography.¹⁹

DISCUSSION

Creativity and Modern Science

In September, 1960, Eiseley presumably delivered an address based on the text of CMS, an essay that begins with a lightning strike and the inspiration that comes from a flash, whether a real bolt in a field at dusk dur-

ing a storm or the metaphorical flash that strikes the creative mind. CMS is about many things: the conformity of thought in modern society, the authoritarianism of science and its abuse by the state in search of power, and the decline of the personal essay, Eiseley’s chosen artform that he considered unsurpassed in its ability to express the unique cast of an individual mind. Regarding this last theme, Eiseley invoked the great English naturalists, among them Gilbert White (1720-1793), admired by the young Darwin:²⁰ “Even though they were not discoverers,” remarked Eiseley, “...one feels at times the great nature essayists had more individual perception than their scientific contemporaries.”² Eiseley aspired to be in White’s company, and he succeeded by all accounts.

CMS, characterized as “one of Eiseley’s most vivid examinations of the limits of humanism and the limits of science,”¹⁸ closes with a terrifying recollection and a reappearance of the lightning motif from the start of the composition. As a young man lost in a “rural and obscure corner of the United States”, Eiseley was collecting insects, including “beetles with armored excrescences”. The “inbred” and “misfit” people of the unnamed region were like bugs themselves, evolved to their “odd niche.” Eiseley, a loner, wasn’t out to befriend these people. He enjoyed solitary work. One day, the sky suddenly darkened with rain. In an instant, he was overwhelmed with “one of those flame-lit revelations which destroy the natural world forever and replace it with some searing inner vision which accompanies us to the end of our lives.” In front of him was a “man high on a great load of hay” pulled by a team of horses thundering down the road. Anticipating a rescue from the storm, Eiseley stepped forward to ask for a lift.

Then, in a bolt of light that lit the man on the hayrick... I had seen a human face of so incredible a nature as still to amaze and mystify me....It was – and this is no exaggeration – two faces welded vertically together along the midline...One side was lumpish with swollen and inexpressibly malign excrescences [the same as the beetles he was collecting]; the other shone in the blue light, pale, ethereal, remote – a face marked by suffering yet serene and alien to that visage with which it shared this dreadful mortal frame...I saw the double face of mankind in that instant of vision...I saw man – all of us – galloping through a torrential landscape, diseased and fungoid, with that pale half-visage of nobility and despair dwarfed but serene upon a twofold countenance.

Eiseley saw this but imagined it at the same time. The drama of the lightning impressed upon Eiseley the realization that his mind was transformed what he saw so as to amaze and mystify.

[I]t is through our minds alone that man passes like that swaying furious rider on the hayrick, farther and more desperately into the night. He is galloping – *this two-fold creature whom even Darwin glimpsed* – across the storm-filled heath of time, from the dark world of the natural toward some dawn he seeks beyond the horizon. [Emphasis added].

Eiseley, forever haunted by this image of a terrified/serene creature uncontrollably galloping through the night, was striking in part because of its haunting intimacy. It recalled Jim Morrison's (1943-1971) ominous last recording which incorporates the sounds of thunder and rain into the vocal track: "Riders on the storm; Into this house we're born; Into this world we're thrown...If you give a man a ride..."²¹

The B-side of *Riders on the Storm* is called "Changeling", a favorite Eiseley word so often used it was like a tic. "I was loved," according to Eiseley, "but I was also a changeling."¹⁹ The last sentences of CMS are these:

Across that midnight landscape he rides with his toppling burden of despair and hope, bearing with him the beast's face and the dream, but unable to cast off either or to believe in either. For he is man, the changeling, in whom the sense of goodness has not perished, nor an eye for some supernatural guidepost in the night.

The similarities between Eiseley and Morrison – though no direct connection is implied as Eiseley surely eschewed rock-n-roll – did not inspire my sustained listening to Morrison's band, *The Doors*. Instead, I chose to read what else Eiseley wrote (he wrote a lot but not too much for a quarantine). CMS is strong, and I was motivated to make better sense of it, a guidepost in the night that I stumbled on by chance in the archives of another naturalist.

Eiseley's wrote CMS only months before the calendar turned to a new year, 1961, the four-hundredth anniversary of the birth of Francis Bacon. Eiseley was asked to lecture on Bacon's role as an educator in January at the University of Pennsylvania. The same speech was reprised shortly thereafter at the University of Nebraska. The latter presentation was accompanied by a \$1,500 stipend and the promise of a publication based on the oral remarks.⁸ However, Eiseley's manuscript, organized in two parts, was disappointingly slender when received by the University of Nebraska Press. The editors requested a third chapter. There followed delays and acrimonious correspondence.⁸ Three chapters were ultimately published as *Francis Bacon and the Modern Dilemma* (1962, hereafter *FBMD*).²² CMS, it turns out, is the second half of the third chapter *FBMD*. The first two chapters had been previously published in the *Saturday Evening Post*²³

and in *Science*,²⁴ respectively. Like chapter three, they were not original to *FBMD* but drawn from elsewhere. Regrouping existing pieces was a common tactic for Eiseley.

In 1971, the CMS lecture was published again in an essay collection, *The Night Country*.¹ Two years later, Eiseley added a leading biographical chapter about Bacon and published the enlarged work as *The Man Who Saw Through Time*, still containing CMS as it appeared in the earlier books.²⁵ In all, Eiseley published CMS in some form thrice. For him, it would appear to have been an important composition. This may be because his vision in CMS is an echo of a childhood memory, also published in *The Night Country*.¹ As a boy, Eiseley hopped on the horse-drawn wagon of a merchant who rode through the countryside under "the kind of eternal light which exists only in the minds of the very young." The wagon stopped at the big house of the Bishop of Lincoln which sat behind a black iron fence. Eiseley got off as a storm was approaching: "The thunder from the clouds mingled with the hollow rolling of the wheels and the crash of the closing gates before me echoed through my frightened head with a kind of dreadful finality." The CMS vision revisits these images and feelings. It is deep Eiseley history that he held tightly throughout his life.

Eiseley, Francis Bacon and Charles Darwin

CMS can be justified in a book about Bacon because it discusses the process of modern science, something Bacon is widely credited with having invented. However, except for a passing reference to a "Baconian Utopia," CMS has nothing in particular to do with Bacon. In order to incorporate CMS into a pair of books about Francis Bacon, Eiseley made a small, yet vexing substitution to the penultimate sentence, which I repeat here with the swap emphasized by a ~~strike through~~ and **bold** text:

[I]t is through our minds alone that man passes like that swaying furious rider on the hayrick, farther and more desperately into the night. He is galloping – this two-fold creature whom even ~~Darwin~~ **Bacon** glimpsed – across the storm-filled heath of time, from the dark world of the natural toward some dawn he seeks beyond the horizon.

After linking Darwin in CMS to his youthful, lightning-sparked insight about the human condition – hope and despair joined in a fraught search for something in the night – Darwin is unceremoniously unhitched from the wagon. He is replaced by Bacon in a part of the

argument so urgent and so vivid that such a casual substitution of one giant for another from a different century would have seemed impossible for an author of such precision as Eiseley.

Eiseley referred to his highly autobiographical writing as the art of the “concealed essay” whereby the personal is delivered under cover of some apparently objective disquisition on science or natural history, an integration of autobiographical material, scientific fact, and literary/historical allusions. This switch of Darwin for Bacon turned the personal essay, which Eiseley championed as a high form of human expression, into something uncharacteristically modular.

CMS rails against the prefabrication of American life of the 1950s, “the monotony of our great shopping centers” and “our mass-produced entertainment” where one size fits all or does not really fit anyone but will have to suffice. And yet, Eiseley forced Darwin and Bacon to shop at the same stores and watch the same movies. This switch of two of the most famous contributors to the program of modern science seemed to me to be a clue about something larger, something worth identifying.

In CMS, as originally drafted, Eiseley, collecting beetles while the sky darkens, strongly identified with Darwin; it is widely known that beetles were Darwin’s lifelong passion.^{26,27} When young Charles found more specimens than he could hold, he famously popped one in his mouth. “[N]o pursuit at Cambridge,” Darwin wrote, “was followed with nearly so much eagerness or gave me so much pleasure as collecting beetles.”¹⁹ Later, beetle-mania followed whenever the *Beagle* was docked in a new harbor. Among Darwin’s last scientific contributions was a description of a clam that had attached itself to a leg of beetle²⁸ (a specimen which he received in the mail from the grandfather of Francis Crick!).²⁹ Darwin saw this presumably unwelcome clamping as a mechanism for the biogeographical dispersion of species from their location of evolutionary origin. In CMS, Eiseley was doing the quintessential work of Darwin as the rider approaches in the storm. Eiseley put himself in Darwin’s shoes as a fellow beetle collector.

How could Eiseley so easily slip on Bacon’s shoes? In the original chapters of *FBMD*, “Bacon” is mentioned three times per page, but the part of the closing chapter corresponding to CMS drops “Bacon” just once every three pages. Eiseley, according to his biographer Christiansen, rarely let a piece of writing go unpublished. He never allowed his lectures to be audiotaped and never distributed texts of oral remarks because everything was “headed for the printer.”⁸ The third chapter containing CMS was solicited after the fact, and its completion

was strained. The switch of Darwin for Bacon appears to be an effort to shoehorn an existing essay into a work, *FBMD*, commissioned to celebrate Bacon, that needed to be fattened to satisfy Eiseley’s publishers.

Not surprisingly, some cobbling was necessary to make Bacon fit. Eiseley sprinkled in “Bacon” four times in an effort to mitigate the apparent inappropriateness of the CMS insertion in *FBMD*. For instance, a sentence of CMS is changed in *FBMD* with the addition of the underlined phrase: “We forget – as Bacon did not forget – that there is a natural history of souls...” This comes across as clumsy to any reader attuned to the problem that Eiseley was working out, the “Baconification” of CMS.

Clumsiness spotted in hindsight should not detract from Eiseley’s great skill. He was not so careless as to let a chapter of newly published prose stand as a crude reworking of an old piece like a middle school student submitting the same book report to two different teachers. In order to establish a finer link between CMS and Bacon, Eiseley added the following, brilliant, underlined segue: “How much more we would see, I sometimes think, if the world were lit solely by lightning flashes from the Elizabethan stage.”²² In reaching to Shakespeare (1564-1616), Eiseley seems to be drawing himself closer to Bacon, Shakespeare’s long-rumored ghost author. Unfortunately, this connective tissue is not sustained. When Eiseley wrote at the outset of CMS, “What miraculous insights and perceptions might our senses be trained to receive amidst the alternate crash of thunder and the hurtling force that give a peculiar and momentary shine to an old tree on a wet night,” he was referring to the stroboscopic cast the world would be given by real flashes of lightning. Towards the end of CMS, it is “a bolt of light that lit the man on the hayrick”. The young man’s mind flashes in response one menacing evening, but it is electric lightning throughout CMS, not theatrical lightning, that permeates the original essay. CMS does indeed dwell on the metaphorical lightning of a perfectly composed line of prose, or the metaphorical lightning of the inexplicable creative act, or the metaphorical lightning in the individual brain in which “there passes the momentary illumination in which a whole human countryside may be transmuted in an instant,” but CMS works so well because these themes are bracketed at the start and the finish of the essay by real lightning bolts. It is actual lightning that grounds Eiseley’s rhetorical flashes, “the light of the universe beyond our ken,”²² and which distinguishes the rare individuals who can best see beyond their experience, from the rest of us. Bacon and Darwin were these preeminent seers in Eiseley’s eyes.

In drawing his essay closer to Bacon through Shakespeare and the Elizabethan stage, Eiseley may also have been drawing himself closer to his father, an itinerant actor who recited Shakespeare to unsophisticated audiences in little Midwestern opera houses. Eiseley's father left his son a cherished, "thumbed copy of Shakespeare inscribed with his name."¹⁹

Bacon also was remembered warmly by Eiseley, even though this feeling was not universal in 1960. Lord Chancellor Bacon was convicted of accepting bribes late in his career, a scandal that led to the stripping of his official duties. During his last years, Bacon was a disgraced philosopher, writing alone. As Eiseley lectured on Bacon at institutions throughout the United States in 1961, he discovered a widespread animus directed at the memory of Bacon. Eiseley reflected in the volume that would last reproduce CMS, *The Man Who Saw Through Time*, that he found himself "embroiled...in sufficient controversy to make me wonder whether it was I who was threatened with the Tower and whether Parliament was in full cry upon my own derelictions."²⁰ Now, Eiseley, in his mind, is stepping squarely into Bacon's shoes.

The Slit

Time is preeminent theme in Eiseley's writing. At the outset of his autobiography, Eiseley is giving a lecture in a bright auditorium: "I started my speech. I was talking about time...All the sciences are linked by one element, time. It pervades them all."¹⁹

Time announced itself in "The Slit", the opening chapter of Eiseley's first book, *The Immense Journey*, that attracted of a broad audience.⁴ Eiseley described a ride on horseback over flat ground until he reaches a sandstone outcrop. Here, he wrote, "I came upon the Slit," a crevasse worn by an ancient torrent. Eiseley worked his way into the Slit, "a perfect cross section through perhaps ten million years of time." There, he came face-to-face with the skull of a "shabby little" rodent – Hamlet like – inspiring a meditation on time:

Perhaps the Slit, with its exposed bones and its far off vanishing sky, has come to stand symbolically in my mind for a dimension denied to man, the dimension of time...Out of it – forward or backward – he cannot run.

As Eiseley descended into the Slit, into the past, he looked up to see the sky becoming a narrower "slit [lowercase – not *the* Slit] of distant blue...already as far off as some future century I would never see." He impressed upon us that at any instant, we are forced to think about where we came from and where we are going. At any

instant we can dig up the past, while being indifferently propelled into an uncertain future that with each passing moment of life becomes harder to achieve.

Wedge in the Slit, Eiseley could not go backward or forward corporeally but only by the use of his imagination. The best time travelers, Bacon and Darwin, were first among Eiseley's heroes because they could access the hidden psychological dimension. They were ultimately so dear to Eiseley, innovators he would return to so often, because they could transcend "the wound of time...the ability of the mind to extend itself across a duration greater than the capacity of mortal flesh to endure."³¹ Darwin is the fossil collector, descending into the Slit, into the past, whereas Bacon is fixed on the crack of light belonging to the distant future. Darwin reckoned how we got here while Bacon foresaw the mechanics of modern science that would take humankind to unimaginable places. With the rat, Eiseley communed with Darwin and the flow of creatures "with little more consistency than clouds from age to age", while persevering on the blue-sky future belonging to Bacon, a future that fossilized Eiseley would never see.

Any association of Francis Bacon with Charles Darwin had already been made by Darwin himself. On the flyleaf of Darwin's *On the Origin of Species*,³² Darwin quoted Bacon from the *Advancement of Learning*:

[L]et no man...be too well studied in the book of God's word, or in the book of Gods works; divinity or philosophy; but rather let men endeavour an endless progress or proficience in both.³³

Darwin needed cover for work that he was certain would seem heretical to many. Bacon was a shield, but not only a shield. He was a model for challenging the prevailing epistemologies, ways of knowing. Bacon's less deft or less lucky contemporaries like Giordano Bruno (1548-1600) were burned at the stake for questioning those things that were created without room for dissent. Darwin and Bacon challenged the same God, one by looking backward and the other by looking forward, as did Eiseley, a self-described bone hunter who "spent a great deal of his life on his knees, though not in prayer."³⁴ Moreover, Darwin explained in his autobiography that his approach to natural philosophy was, in essence, an exercise in Baconian induction.

[I]t appeared to me that by following the example of Lyell in Geology, and by collecting all facts which bore in any way on the variation of animals and plants under domestication and nature, some light might perhaps be thrown on the whole subject. My first note-book was opened in July 1837. I worked on true Baconian principles, and without any theory collected facts on a wholesale scale...²⁰

Scholars have pointed out that Darwin was not purely Baconian.³⁵ Darwin tried, as he was collecting new facts, to fit all the pieces into preexisting ideas, some of which were discarded and replaced by others. Today, of course, we recognize that scientific invention, like essay writing, is messy.

The Ring

The solution to the mysterious substitution of Bacon for Darwin, a seemingly desperate act of an overcommitted author, is that for Eiseley, the time travelers Bacon and Darwin were twins merely facing in opposite directions along the dimension denied to ordinary philosophers. Eiseley's own flyleaf for *FBMD* captured the pairing of Bacon and Darwin, an acknowledgment, it seems to me, that what he wrote about Bacon was originally applied to Darwin.

Sir Francis Bacon, the English philosopher and author, once spoke of those drawn into some powerful circle of thought as 'dancing (with)in little rings like persons bewitched.'³⁶ Our scientific models do simulate a sort of fairy ring, which, once it has encircled us, is hard to view objectively. In Charles Darwin's youth, the magic circle of fixity and that of organic novelty began to interpenetrate. The dancers bewitched by stable form discovered a new truth: evolution.²²

FBMD is not about Darwin. Why should Charles be dancing on the front matter of this book?

Darwin appeared in a new way in the preface of the enlarged *FBMD*, the Bacon biography *The Man Who Saw Through Time*. Eiseley compared Bacon's efforts "to project for the masses a new definition of culture and inventiveness extending into the remote future" with the theory of natural selection, "as difficult a task as Darwin was later to encounter."³⁰ Of all the comparisons to Bacon's gaze into the future, Eiseley chose Darwin's gaze, two and one-half centuries later, into the past. Meanwhile, the "magic circle of fixity" passage, written for *FBMD*, appears on the opening page of Eiseley's posthumous book about *Darwin and the Mysterious Mr. X* (1979).¹¹ Why should Bacon also turn up as the leadoff batter in a book about Darwin, mirroring Darwin's cameos in the books about Bacon? None of it makes much sense until you realize that it didn't matter much to Eiseley, or his time travelers, for whom probity didn't matter much either.

Eiseley had already identified Bacon in *Darwin's Century* (1958),³⁷ written in advance of the centenary of *The Origin of Species*, as one of the first philosophers to articulate the idea of the survival of the fittest. He quotes Bacon and Darwin in sequence:

Bacon: And it hath seldom or never been seen that the far Southern people have invaded the Northern, but contrariwise. Whereby it is manifest that the *Northern Tract* of the World, is in Nature the more Martial Region: Be it in respect of the Stars of that Hemisphere; Or of the great Continents that are upon the North, whereas the *South Part*, for aught that is known, is almost all Sea; or (which is most apparent) of the Cold of the Northern Parts, which is that which, without Aid of Discipline, doth make the Bodies hardest, and the Courages warmest.

Darwin: I suspect that this preponderant migration from the north to the south is due to the greater extent of land in the north, and to the northern forms having existed in their own homes in greater numbers, and having consequently been advanced through natural selection and competition to a higher stage of perfection, or dominating power, than the southern forms.

Eiseley: My intention in aligning these two quotations is not, of course, to derive Darwin's biology from Bacon, but to give at least a glimpse of the antiquity of some of the ideas which needed only to be developed and elaborated in order to take a legitimate place in an evolutionary system of thought."³⁷

Even more germane are Bacon's "evolutionary overtones" that Eiseley quoted in a passage in *FBMD*, not quoted in *Darwin's Century*.

The transmutation of species is, in the vulgar philosophy, pronounced impossible, and certainly it is a thing of difficulty, and requireth deep search into nature; but seeing there appear some manifest instances of it, the opinion of impossibility is to be rejected, and the means thereof to be found out.²²

Eiseley applauded Bacon for articulating such open-mindedness before properly extended geological time was appreciated.

He continues,

[F]or the next two hundred years men allied in international societies originally foreseen by Bacon would make innumerable observations upon the strata of the earth, upon fossils, and upon animal and plant distributions. Heaps upon heaps of facts collected and combined by numerous workers would eventually lead to Darwin's great generalization."²²

In part, Eiseley saw Bacon as having given Darwin necessary tools, and Darwin having reached back to acknowledge the debt – a virtuous, intellectually comprehensible ring. On the other hand, the ring, while it drew together favorite Eiseley themes, often came undone. Closing it was a lifelong aspiration. In setting up the switch of Darwin for Bacon in *FBMD*, Eiseley added a quote from Shakespeare absent in *CMS*:

Within my soul there doth conduce a fight
Of this strange nature, that a thing inseparate
Divides more widely than the skie and earth.³⁸

Eiseley leaned again on Shakespeare to do some more heavy lifting:

Sir, in my heart there was a kinde of fighting,
That would not let me sleepe.³⁹

Like Hamlet, Eiseley's soul was also split and its components battled with one another:

[T]here was only the ebb and flow of this formidable force, the creature which I could neither retreat from nor successfully confront. Through years it continued, a silent unseen duel...the conflict at the root of my being.⁸

One reviewer summed up Eiseley's autobiographical writing in this way:

[It] is the record of the artist trapped inside the scientist. That sets up a unique struggle...the artist relating intensely personal, emotional, illuminating experiences that he perceives against the cold enormous edifice of scientific thought, which in turn is seen in relief against the overwhelming superstructure of time.⁴⁰

Eiseley dedicated his first book about time, *The Immense Journey*, to his beloved father Clyde "who lies in the grass of the prairie but is not forgotten."⁴ Eiseley's mother, Daisy, by contrast, is not remembered fondly. She was deaf and frequently howled, gesticulated urgently with her hands, or stamped her feet to communicate. Clyde, wrote Eiseley, "was a good man who bore the asperities of my afflicted mother with dignity and restraint."¹ Eiseley was fearful of Daisy's behavior, evidence of serious mental illness that haunted her side of the family and that might emerge in him someday. "My brain was so scarred," Eiseley recalled of his upbringing, "it is a wonder I survived in any fashion."¹⁹

It seems that Eiseley's solution to his "unseen duel", his professional self-expression, rooted perhaps in a divided household, was to defend the writer, Bacon, while killing off the scientist, Darwin – even though he admired Darwin immensely – so that he could let the writer thrive within. Carlisle hinted as much when he said that Eiseley's unique literary science "require[d] him in a way to renounce his scientific heritage."⁴¹ This renunciation and the ensuing battle are displayed in Eiseley's work. Eiseley was the man on the hayrick, two halves uncomfortably welded together.

Inosculate

Eiseley, like Bacon, was known for his writing rather than his scientific discoveries. William Harvey (1578-1657), the discoverer of blood circulation, dismissively said that Bacon wrote like a Lord Chancellor. Harvey, according to Eiseley, thought Bacon was "a literary man who need not be taken seriously by historians of science".¹ It may have been that Bacon's masterpiece, *On the Dignity and Advancement of Learning*, "the first great prose work on a secular subject...in the English tongue,"⁴² sounded too odd to Harvey's ears. Eiseley defended Bacon,

That [he] was a writer of great powers no one who has read his work [except Harvey] would deny. He exercised, in fact, a profound stylistic influence both upon English writers who followed him and upon the scientists of the Royal Society. To say, for this reason, that he is of no scientific significance is to miss his importance as a statesman and philosopher of science...

Here, Eiseley is slipping between a defense of Bacon and of himself, also a writer of great powers "incapable of writing a dull or inelegant sentence."⁴³ In CMS, Eiseley recounted a visit by a serious young scientist who, "With utter and devastating confidence...had paid me a call in order to correct my deviations," following the publication of *The Immense Journey*,⁴ "and to lead me back to the proper road of scholarship. He pointed out to me the time I had wasted – time which could have been more properly expended upon my own field of scientific investigations."² The young man stood for all those who gave Eiseley, the writer, a mixed reception. "Eiseley's literary accomplishments", according to his editor, "may have overshadowed his scientific endeavors and often confused those who did not understand what errand he was on."⁴³

In time, Eiseley no longer wanted to continue writing technical papers. The spark of his transformation to a full-time essayist was an ear infection in 1956 that left him deaf for a prolonged period, albeit not permanently like his mother. The experience of having walked in his mother's shoes pushed him to cast off other burdens that he no longer wished to carry. During his silent year, Eiseley's decided that "from then on I would do and think as I chose."⁴⁴ Eiseley chose to write as he pleased, and he also chose to wage a battle against Charles Darwin.

As *Darwin's Century* went to press in 1958, Eiseley made some additional observations that could not be accommodated in the book. These observations were published in 1959 in a long, provocative essay in the *Proceedings of the American Academy of Arts and Letters*, "Charles Darwin, Edward Blyth, and the Theory of Nat-

ural Selection.³⁴⁵ Eiseley charged that the theory of natural selection was foremost the insight of Edward Blyth (1810-1873), an amateur naturalist, and that Darwin knew of Blyth's insight but schemed to hide his knowledge of it.

Eiseley aligned various proofs that Darwin was dishonest in his presentation, "making unacknowledged use of Blyth's work."⁴⁵ First, Eiseley claimed that Darwin excised key pages from his first notebook on the species question that presumably acknowledged Blyth's idea. Second, Eiseley claimed that Darwin was intentionally misleading by suggesting that Thomas Malthus (1766-1834) was an inspiration for the idea that struggles in nature led to the persistence of advantageous variations. Rather than taking Darwin at his word, Eiseley insisted that Malthus was a deliberate foil behind whom Blyth was made to disappear. A third smoking gun is Darwin's telltale use of an unfamiliar word, "inosculate", that supposedly he had never used, until reading Blyth. Eiseley insisted that we, contemporary readers and students of science, by neglecting to acknowledge Blyth, and likewise Eiseley, are collectively "falsifying science history", preferring instead the easy narrative of an "inspirational flash" of a solitary genius.⁴⁵ This is a contradictory position for Eiseley who in CMS later prized the inspirational flashes of the solitary genius as the greatest lightning of all.

In October 1836, the *Beagle* returned to England after a four-year voyage of discovery, bracketed by two of Blyth's publications in *The Magazine of Natural History* of 1835⁴⁶ and 1837.⁴⁷ Eiseley showed with Darwin's own notebooks that the famed naturalist had received the 1835 *Magazine* when the *Beagle* docked in Peru. Darwin's own surviving 1837 *Magazine* contains annotations of Blyth's paper. Eiseley then reexamined Darwin's writing with Blyth in mind, something, he suggests "no one, it appears, thought of actually" doing.⁴⁵ Eiseley showed that Darwin frequently cited Blyth's prodigious knowledge of natural history, but suspiciously never the 1835 and 1837 papers. Eiseley believed that Darwin was hiding his knowledge of these papers.

In fact, the papers show that while Blyth discussed the transmutation of species, he was not an evolutionist, but rather a conservatist. Species adapted to environmental pressures, according to Blyth, so that "Providence [could] keep up the typical qualities of a species," a sentiment that Eiseley actually quoted.⁴⁵ "No notion of 'natural selection'" criticized Stephen Jay Gould, "could be more precisely contrary to Darwin's own."^{48,49} Other critics of Eiseley's prosecution of Darwin had their say, emphasizing the failure of Blyth to see the creative potential of natural selection. There is a consensus that Eiseley got it wrong in broad strokes.^{50,51,52}

There is no need to rehash this debate here. Much has been said already.⁵³ Rather, I emphasize that while Eiseley may or may not have been misguided with respect to the intentions of Blyth and Darwin, he was definitely wrong in the particulars. The smoking guns enumerated in the preceding paragraphs, it turns out, were cool.

1. *Notebook pages*. In 1960, the year of CMS, DeBeer and coworkers reassembled Darwin's notebooks after having relocated the missing pages.⁵⁴ There is no indication that Darwin conceded the paternity of natural selection in these pages to Blyth.⁸ Darwin did not hide these pages, he cut them out and refiled them, as he was want to do in the course of his research.
2. *Malthus*. Subsequent research on the origins of *The Origin* showed that Darwin's alleged stimulation by Malthus, and others besides, was indeed earnest, not a smokescreen. Schweber⁵⁵ pinpointed the day, 28 September 1838, that Darwin read Malthus' *An Essay on the Principle of Population*.⁵⁶ When late in life²⁰ Darwin cited his inspiration in Malthus from October of that year, he was close enough. Perhaps it took a few days for the message to sink in.
3. *Inosculate*, according to Eiseley, is "[a] rare and odd word not hitherto current in Darwin's vocabulary suddenly appears coincidentally with its use in the papers of Edward Blyth...The rare and mildly archaic character of this word suggests that Darwin acquired it from his reading of Blyth." Blyth was fluent in the so-called quinarian taxonomy that was popular at the time, in which related organisms were grouped in rings intertwining or "inosculating," in the words of its inventor, to indicate the relationships of groups to one another. The quinarian system may have inspired Eiseley's Ring imagery. *Inosculate* is indeed rare and archaic to modern ears. Only a pedant would use it today in place of *intertwine*, a serviceable synonym, but at the time the *Beagle* returned to England, "inosculate" and "intertwine" were used with about equal frequency, after which insoculate began a steady decline. Google can now make such statements quantitative (Figure 1). Moreover, it was later shown that Darwin, in fact, had used inosculate in a letter of 1832.⁵¹ *Inosculate* is not, as Eiseley contended, a word never in "wide circulation and which is not to be found in Darwin's vocabulary before this time."¹¹

Nevertheless, Eiseley clung to the premise that Darwin stole from Blyth, even when Eiseley's key pieces of evidence no longer could be supported, and he reiterated his charge in several other places,^{57,58,59} lastly in his auto-

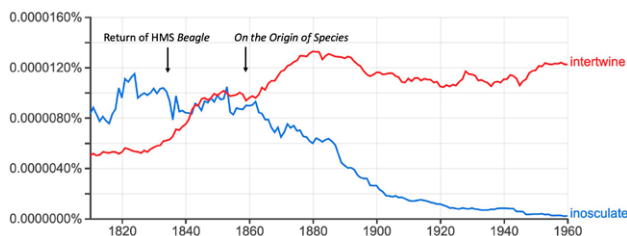


Figure 1. Google N-gram word frequency in % for “inosculate” and its synonym “intertwine” in British English from 1810-1960. Google smoothing function = 8.

biography: “Faintly the words of young Blyth whisper in our ears...”

[I] hope that this endeavor will induce some naturalist, more competent than myself, to follow out this intricate and complicated subject into all its details...Be at peace, Edward. The man you sought came...I, who unearthed your whisper from the crumbings of the past, have been here and there excoriated by men who are willing to pursue evolutionary changes in solitary molar teeth but never the evolution of ideas.¹⁹

“Mere words,” contended Eiseley in his dual defense of Bacon and self, which underlines his assault on Darwin, “can sometimes be more penetrating probes into the nature of the universe than any instrument wielded in the laboratory.”^{22,30}

In 1968, Eiseley was interviewed about the charges he leveled against Darwin, and he was asked in particular why Blyth stands in Eiseley’s estimation as so far above the many other forerunners to the idea of evolution from whom Darwin might have taken inspiration,⁶⁰ including Darwin’s own grandfather, Erasmus. The interviewer reported that “Eiseley was silent...[and gave the impression that he] did not keep abreast of new Darwin research”.

As the evidence steadily accumulated that Darwin’s discovery of natural selection was complex and was determined by many authors – and that Blyth’s influence was unexceptional – Eiseley simply kept on stating that it was Blyth who held the ‘vital keys’...⁶¹

Eiseley was demonstrably wrong about three pillars of his argument, but he would not allow for the possibility that he was misled in other ways. He was inflexible. His protracted battle against Darwin – and he loved Darwin – was entangled with questions of his own identity, and human beings will go to extremes to preserve – and maybe sometimes destroy – our identities.

CONCLUSION. EISELEY AND RICHARD NIXON

By 1969, Eiseley was no longer provost. That year Penn, like many American universities, was rocked by anti-Vietnam War protests. The activism was unsettling to Eiseley. His *alma mater* had become unfamiliar. Eiseley remarked that his thesis advisor would have “died of frustration if he had had to face the students of the sixties.”¹⁹ In a letter to *Science* called “Activism and the Rejection of History”, Eiseley characterized “an extremist minority” on campus deliberately abandoning history at the expense of an “absurd, degrading, and irrelevant” moment. Eiseley composed another letter, unearthed by Christianson,⁸ “pleading” to President Richard Nixon: “[M]any people, particularly the young, are the more or less innocent dupes of unseen elements making use of the mass media for the purposes of propaganda” and he urged Nixon to “retard the uncomfortable ebbing away of our power and purpose.”⁶² Eiseley was on “the wrong side of the generational tracks” according to one historian.⁶³ The next year, as accolades continued to accumulate for Eiseley, he was invited to be the commencement speaker at Kent State University in Ohio. The ceremony was canceled after the National Guard, on 4 May 1970, fired upon student protesters, killing four and wounding ten others. Eiseley was quoted in the *Philadelphia Inquirer* of having said to a friend of the protesters: “They got what they asked for.”⁶⁴

I was shocked to read this reported comment from a writer known for his grace. This was the dark side of his (our) twofold countenance. The dismissal of slaughtered students, among those he had been scheduled to send into the world with bright words, was a sentiment that is at odds with the empathy that Eiseley could direct at the skull of a long dead Paleocene rat.⁴

Eiseley’s opinions over his career are riddled with contradiction. When a Japanese-American friend faced discrimination in the run up to World War II, Eiseley told his companion, “If one man can apologize for a nation, his nation, I apologize.” In the next breath, he laments a “menacing and mocking” new third world in the United Nations. His friendship is contrasted to later experiences with “embittered and truculent minorities.”¹⁹ The conflicting sentiments in just one book are sometimes head spinning.

That said, Eiseley was aware that he was a citizen of his time: “A man [or woman] comes into life with certain attitudes and is inculcated with others of his time. Then some fine day, the kaleidoscope through which we peer at life shifts suddenly and everything is reordered.”¹⁹ Eiseley, the author who wrote of Bacon and Darwin sailing through the ages in their minds, couldn’t even put himself one generation into the future.

Naturally, there are things that are always easier to recognize in others than in ourselves. That's obvious, but urgent enough in the present moment of social change that it is not redundant for the illustration. "[I] do not pretend to have set down, in Baconian terms," Eiseley wrote,

a true and consistent model of the universe. I can only say that here is a bit of my personal universe, the universe traversed in a long and uncompleted journey. If my record, like those of sixteenth century voyagers, is confused by strange beasts or monstrous thoughts or sights of abortive men [the "double face of man," "diseased and fungoid"²⁴], these are no more than my eyes saw and my mind conceived.

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