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Résumé de l'article

Dans le chapitre « Printemps » de *Walden*, le portrait que brosse Henry David Thoreau d'un banc de sable, comme lieu de « chevauchement et d'enlacement », constitue une scène biosémiotique primale. Pour Thoreau, le langage lui-même est un agent de fusion transgénique qui découvre à toute occasion des racines imbriquées et des propriétés communes. Les jeux de mots de Thoreau anticipent des formes tardives et interdisciplinaires du bio-art en laboratoire; des matériaux métissés forment des calembours inter-espèces et des énigmes organiques; des phrases tirées de l'Ancien Testament et de Descartes sont traduites et encodées en paires de bases d'ADN pour être insérés dans des plantes et des bactéries; et l'épissage de gènes devient un acte créatif. Avec des gels de séquençage et des bioanalyseurs, des autoclaves et des échantillons de plasmides, l'art transgénique joue dans l'écart entre le code lettriste de nos gènes et la matière. Thoreau enjambe ce même fossé avec des calembours et des jeux de mots qui reflètent certaines des théories linguistiques les plus occultes de son époque.

'Overlap and Interlace': Thoreau's Thawing Sand- bank as Transgenic Artwork

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A Primal Scene of Flux

The whole bank, which is from twenty to forty feet high, is sometimes overlaid with a mass of this kind of foliage, or sandy rupture, for a quarter of a mile on one or both sides, the produce of one spring day. What makes this sand foliage remarkable is its springing into existence thus suddenly. [...] I am affected as if in a peculiar sense I stood in the laboratory of the Artist who made the world and me... sporting on this bank, and with excess of energy strewing his fresh designs about. I feel as if I were nearer to the vitals of the globe, for this sandy overflow is something such a foliaceous mass as the vitals of the animal body. You find thus in the very sands an anticipation of the vegetable leaf. No wonder that the earth expresses itself outwardly in leaves, it so labors with the idea inwardly. The atoms have already learned this law, and are pregnant by it. (*Walden*, Thoreau 1910 : 247-248)

In the “Spring” chapter of *Walden*, Henry David Thoreau’s portrait of a melting, thawing sandbank, as a place of “overlap and interlace”, is a bio-semiotic primal scene. Equally resembling inner organs, leaves, and written words, the shapes and figures formed by the slowly unfreezing sand-and-clay embankment of a railroad provide the observer with a trove of allusions and allegories. The *Walden*-wood sandbank is steeped in meaning because of its very steepness, ritually observed while Thoreau is sauntering from his cabin hermitage into downtown Concord. The downward slope of the “deep cut” of this ravine offers a subliminal pun on Darwinian “descent” : in contrast to the railroad track’s own parallel, repeating syntax, the sandbank is a study in non-linear Nature and its grammar of Transmutation and Flux.

While this scene has been productively read as an elemental drama-

tization of Charles Kraitsir's visionary, "glossological" linguistics, it can also be viewed as an early mode of transgenic bio-art. Kraitsir's work is an oddball anachronism from the perspective of contemporary linguistics and was an eccentric outlier even in its own era. It sought (and often forged) overlaps between a word's "original" etymology and the oral requirements for that word's enunciation, and endeavored to dissolve the line between a word's sensual, kinetic "recipe" and its semantic meaning. While ignored inside modern linguistic circles, Kraitsir continues to appear in discussions of postmodern Language poetry for his lettristic and materialist emphases. Inspired by the entanglements suggested by Kraitsir's theories, Thoreau's wordplay in the sand-bank scene is a page rehearsal for later forms of laboratory-assisted, genre-hopping bio-art in which cross-bred materials form inter-species puns and organic conundrums, phrases from the Old Testament and Descartes are translated via code into DNA base pairs and inserted into plants and bacteria, and gene-splicing becomes a creative act. Using sequencing gels and calipers, autoclaves and plasmid samples, transgenic art plays in the gap between our genes' lettristic code and manifested matter : Thoreau straddles this divide with puns and wordplay.

For Thoreau, language itself is an agent of transgenic fusion, finding interlinked roots and common properties at every turn. His depiction of the sandbank proceeds as if the "or" in "organic" were indeed an engine of alternatives and the liquid consonant l (monogram for "lobe" and "lung" and "leaf" and "lip") were a gene-pool held inside of a vertical, columnar flask. Sand and clay assume telling and teleological "forms" because of their "flowing down", as if gravity were a formative cradle in which all things recognize their common kinship. This soil comes in "every degree of fineness" (248), a chameleonic substance that can adopt any number of hybrid contours : what is granular goes laminar because it obeys "half way the law of currents, and half way that of vegetation" (247). "Sand" is a term of size for sediment particles in between gravel and silt, and so a liminal material, a silicate mineral ground down into microcosmic bits, even more democratically indistinguishable than Walt Whitman's grass-blades. Clay, "below" silt, is also a Protean and malleable substance, associated in language and legend with Adamic renewal and molding, and therefore a prime emblem for plasticity and conversion.

Dissolving the Boundaries

Instead of cloud-gazing, Thoreau peers impressionistically into "accidental", temporary sand-and-clay formations and sees a bio-semiotic exhibition of natural principles and a semiotic riot at once. In a tellingly cyclic paradox, his use of the adjective "grotesque" refers to the grotto and yet subliminally hints at "grow" as well. The sandbank is a matter of "excrements of all kinds" (247), but also increments of a broad variety. It is a "cave...laid open to the light" (247), and so a subversion

of the more static presumptions of Platonism, allowing the warmth of a spring day to unravel the seams between the seemingly unrelated. In this passage, color-words are softened with suffixes into "yellowish" and "reddish", blurring the contours of our primary shades and shapes, as Thoreau emulates the sandbank's own example in order to "speak a diagonal between fluids and solids". (*Walden* : A Fluid Text Edition 2) His own actions, as observer and writer, are tellingly crossbred : midwifing, translating, projecting, and interpreting all at once while playing laboratory assistant to Nature's semi-articulate, quasi-verbal groping and fumbling.

Bio-artist Eduardo Kac claims that "the boundaries between carbon-based life and digital data are becoming fragile as a cell membrane" (19), a notion that Thoreau presages by demonstrating an inextricable knottiness between words and their objects. Kac's *Move 36* is a sand chessboard featuring a plant grown from a "Cartesian gene" deploying the phrase *Cogito ergo sum* translated into genetic code. Cartesian grids have long been used to map protein topologies, but that process is now reversible as a Cartesian motto is itself transfused into an organismic phrase. A century before the discovery of DNA, Thoreau similarly managed to treat linguistic code as living matter by treating letters as both signals and substances.

Thoreau uses wordplay and etymological parallaxes to achieve this fusion. "Hatch" is one such implied pun, between the cross-hatched pattern of a railroad's ties and a fetal swelling preparing to hatch into fertility. In a related pun, the train-track is itself a form of serial writing, with its ties and rails forming a horizontal "ladder" of repeating and rectilinear "letters" operating on a principle of linear progression. Thoreau takes this serial ladder (as well as the implied ladder of species evolution) and redirects it into a more omni-directional lattice by noticing relations occurring at every angle.

The notion of a lettristic code under Nature's swarming surface has its own anatomic equivalent in the genetic and evolutionary sciences, in which our chromosomes and proteins are treated as alphabetic substances. In *The Tangled Bank*, Stanley Edgar Hyman refers to Darwin's view on language as a mode of visceral metaphor and to the ways in which "rudimentary organs may be compared with the letters of a word" (143). Robert E. Abrams similarly observes a grotesque holism in Thoreau's writing, where words and objects "lifelike, dead, mammalian, reptilian, vegetative, and excremental all at once" are connected by entrails of correspondence, in a "collapse of primary categories and visual boundaries" (142). This transgression of boundaries links Thoreau, as an indirect influence, to several current movements in bio-poetic art : the artist who seems to stand (and squat, and saunter) outside of all movements and trends also prefigures 20th century bricolage by seeing Nature itself as a *bricoleur*. In Francois Jacob's 1977 article "Evolution and Tinkering",

the common metaphor of Nature as “engineered” is largely debunked in favor of a model of cumulative *bricolage* in which enzyme expressions and protein regulators edit and inflect genes every bit as much as genes “write out” our anatomies (1161-1166).

In her survey of biosemiotic thinking *Expecting the Earth*, Wendy Wheeler discusses the ongoing exploration of an “organic basis to human language” (170), a basis Thoreau parodically over-literalizes by seeing words resembling inner organs, a kind of verbiage made of viscera in which words possess not only botanical “roots” but tendons, ligaments, and differentiated tissues. Wheeler sees organisms “unfold in the process of reading” (170) from their genetic sequence’s assembly-options : Thoreau applies this active reading to “inert” sand in a gesture of animistic kinship, demonstrating how our geologic substrate follows and mimics certain vitalistic principles and how our self-privileged human bodies emulate “sub-human” geologic principles in one intertwining gesture. One of the primary biosemiotic contentions is that human sign-systems like Language emulate more elementally “natural” processes, but Thoreau gives us that contention in inverted form. If biosemiotics is indeed based on a dynamic ontology of ever-shifting “becoming”, Thoreau provides us with an ironic illustration based on seemingly inert sand (matter in an un-becoming state of geologic dissolution).

Words as Chromosomes, Letters as Genes

In *On Growth and Form*, D’Arcy Thompson claims that “God always geometrizes”, but at Thoreau’s sandbank, “the Creator” is also always engaged in grammar, and the apparent full-stop of a grain of sand is only a portion of an ongoing ellipsis. Thompson (1860-1948), a Scottish zoologist, offered a classic attempt at an early “structuralist” alternative to evolution, which Thompson regarded as “overemphasized” as an engine of species change. Thompson instead focused on certain innate and algorithmic tendencies within plants and animals rather than the interface of Darwinian adaptation – his book never achieved any large degree of acceptance in the biological community but has been of much use to scholars of aesthetics and practicing artists for its dissolution between artifice and organism. For Thompson, the senescent sag of a wrinkle and pendulous dangle of a once-pert body-part are evidence of “gravitation’s slow relentless handiwork” (32), but for Thoreau, gravity can also pull objects into greater, more cohesive vitality, and sand can be a study in molecular self-assembly.

Just as certain phonemes attract particular sounds and repel others in the formation of English words, certain organic shapes are like attractors summoning their components into formation. Richard Rhodes refers to the “aural images” bred by a consonant cluster like *fl-*, both emanating and attracting words like “*fluxional*” and “*florid*”, “*flaming*” and “*flowing*” (276). Thoreau similarly sees parataxis and alliteration

as evidence of intertwined origins, as he treats root-words as ancestor genes moving along routes of lateral transfer and blends the radicals of a letter's contours with the radicles of a plant's sustaining tubers and rhizomes.

Thoreau proposed a genetic model of language decades before we understood the gene as a unit of transmission and heredity. While much of Thoreau's (and Kraitsir's) sense of words' sonic contours as direct outgrowths of their semantic germ-plasm are eccentric at best, they survive as poetic influences for their license to treat letters and phonemes as occult engines and sensual substances at once.

Thoreau's etymological wordplay views philological change as a mode of evolution. At his sandbank, the Indo-European root-words for "lobe", "leaf", "liver" and "lung" are seen as primeval shapes in fertile interplay, as if words both spoken and written were direct incarnations of their objects referred-to, with their appearance and pronunciation partaking of some underlying anatomic essence. Perry Miller claims that *Walden's* many revisions were an accumulating effort "to translate facts into form" (27), and in the sandbank passage in particular, Thoreau's verbiage takes on an especially concrete embodiment via a tracery of etymologies and root-quests.

As the sand and clay of the bank melts and swells into interrelated forms, the word and shape "lobe" is read as a linguistic and anatomic template for "lung" and "hand" and "liver" all at once, as the seemingly inborn grammar of thawing soil mimics all of these objects in turn. The objects of Nature are formed to receive and transmit organic energies, just as a word is an object whose enunciation on the tongue is contoured to receive and transmit kinetic force and lexical meaning. "Lobe", a word launching on a retroflexed tongue and ending on a bilabial pressing of lips, becomes a layered oral emblem in Thoreau's use.

This mode is rooted in Thoreau's interest in "glossologist" Kraitsir's vision of language as a kinetic collaboration between a word's muscular formation and its meaning, in which guttural sounds are guardians of our inner organs, labial and lingual sounds *lap* in order to evoke fleeting wind and water, and dentals *din* to evoke "enduring objects". Globular, guttural sounds are causatives in Kraitsir's schema: "get", "gain", "gobble", "grasp" all initiate on a hard g sound that spelunks our gullet's volume (32). As if to self-mimic its own layers, the word "globe" moves from a core, guttural *g* to a molten, liquid *l* to a bilabial, externalizing *b*. All of these examples gesture toward a conception of language in which oral enunciation is a cipher for a word's "inner" meaning.

A Poetics of Porosity

By treating phonemes as particles in a roiling drama, Thoreau presents a Nature that does not unfold in a linear manner but via oblique

tangents and skewed radii, scrambling all sense of center and cardinality. Prosa means “direct” but Thoreau’s prose is alluvial and meandering : “thaw” (a loosening of objects based on thermal influence) can also be read as the opposite of his hammer-wielding namesake “Thor” (the forcible bringer-together of elements). The “sandy rupture” is not only a breakage of inert matter into floral abundance but a disruption of ontological separateness, just as metaphoric language is a transgressor of categories-of-being. The oxymoronic coinage “sand-foliage” cross-breeds mineral and vegetable, and “spring” is not only a season but a helical, uncoiling motion, a pounce outward in all directions at once. The sand is “luxuriant” in its conversion of *lux* or illuminating heat and a “laboratory” capable of “sporting”, braiding together the workaday and the ludic.

The word “sand” is phonemic container of “-and”, an engine of grammatical continuum, just as “bank” can mean to bounce or carom, and meaning is indeed deflected as well as advanced here. Thoreau’s bank is a precipice and a place-of-stored-value at once, where a tidal currency roams downward to undermine any strict division between nomenclatures. This flux is exposed by sand and clay that are as tawny-colored as an amber fixative or a half-frozen sap-resin, momentarily suspending and exposing its objects in a blooming decay. Thoreau’s Deep Cut is a pastiche of organs-as-words, where consonants are chromosomal spindles holding together the germ-plasm of vowels.

Thoreau, who recurrently called his cabin-housed self-exile an “experiment”, also sees his sandbank as a timescale in cross-section and an accelerated evolution in which the transition from “bird’s foot” to “leopard’s paw” is a transgenic leap of association. Suitably, the leopard is an animal whose camouflaged pigment is a script emulating its environment, and birds are animals whose walk-patterns are read by diviners as auguries and omens. In Thoreau’s ontological avalanche, “leopard’s paw” and “bird’s foot” are not tracks impressed *on* sand, but eternal icons expressed *by* sand.

For Robert D. Richardson, the sandbank records a victory of “foliage over fossil, natural fact over historical relic” (312), as a seemingly dead mineral debris transforms into vital new shapes. This victory is frequently a matter of lettristic recombination : granular “bank” is one letter-shift away from shingled “bark”, as sand mimics the patterns of woody tree-skin. The word “lung” is one silent but transformative vowel away from “lunge”, and is but one pivot-place in a series of genetic hops and hurdles.

Language is compared to a vegetable “coral” – punning on massed-vocal “chorale” and on the coral fissures and pleats of the language-issuing brain. Soils, like lungs, need “porosity” to respire, and so Thoreau’s mineral fragments are also emblematic of a porosity between substances. Material reality “expresses itself in leaves” from flower to frost to flame, evidence of a cross-species, inter-organ continuum, and

Thoreau's word-issuing tongue is itself a wind-propelled leaf, a parcel of human flesh reveling in its kinship to vegetable life.

Thoreau also underscores this relation between organic form and semantic term by suggesting a mimesis between body-parts and words' lettristic profiles. Thawing soil releases an Indo-European root-word's coiled, compressed history at the sandbank, as the phonemes of such words provide a guide to their semantic inclinations. Much of this impressionistic philology hinges on the liquid *l*, which serves as a center-post of verbal formations. *Leben* is "to live" in German, and practically spells out a life-span acoustically, from liquid "l" (whose fluidity evokes the primal, amniotic sea) to bilabial "b" (iconically, our upper-case "B" has been likened a pair of nurturing breasts) to a final, closing dental "n" whose arched shape suggests a completed span. This connection between the optic/oral instantiation of a letter and its inner service to a word was much in the New England air during Thoreau's time, and helped provide a vein of influence on the Transcendentalist interest in "correspondences" between natural and spiritual facts. These correspondences, which ranged from arbitrary poetic analogies to observed overlaps in biological function, in turn presaged much of biosemiotics' current interest in "emergence" and "autopoiesis". If Transcendentalism was an early attempt at not only deciphering but more literally "reading" the scansion of Nature, bio-poetic art is an effort at co-writing the elements via a nano-scale manipulation of elemental codes and properties.

The Fine Print of Sediment

Elsewhere, Thoreau claims that "Much is published, but little printed" (146) in Nature, and yet sand can form into an alternative, elemental print. Thoreau aspires to write sentences that "lie like boulders on the page" but also treats humble and miniscule sand-grains as a primal source of reading. In a soil so eroded that Thoreau's hand cannot harvest from it, his eye and imagination do the reaping and find an alphabet trapped and trembling to emerge from the ground. The author who claims to have traveled epically and widely inside the confines of a single town notices how ontologically far the very soil under his feet can travel as it assumes new incarnations under the influence of vernal heat.

Spring's release of sand from its frozen suspension forms an elemental and genetic graffiti of suitably liquid phonemes. Thoreau also detects variations on the Indo-European *leubh-* ("to love") jostling from the depths of his sandy bank. The Old English *lufu* (for "love") is suitably binary and internally rhymed (like a flowing, sandy "lava"). The archaic adjective *lief* (for "beloved", and an anagram for "life") connects "love" to "leaf", all in a dense and radiant cluster of alliteration. *Leubh-* also calls up the "loops" used in cursive writing, suggesting written characters as tied-off lariats snaring their semantic prey. *Lassen*, "to let" in German, suggests "lasso", a tool of catching (not-letting), itself

deriving from an Old French term for “lace”. *Leip-* (from which “leaf” derives) means to adhere or to stick, and so serves as a verbal insignia for nature’s libidinal glues.

The downward undulation of sand-and-clay currents is serpentine, tidal, spermatic and groping all at once, with all of its various implications adhering to each other. The Indo-European *leup-* refers to a peeling or a breaking-off, even as it suggests “loop” as recurring spiral. “Peel” is also “leap” rotated backward, and Thoreau’s peeling wordplay uncovers various leaps of semantic and acoustic association. To peel is to form a “flap”, which can refer to a verbal dispute in which agitated language is a matter of hectic labial action. The lips’ apparatus engages in labor as a word’s “lumpish grub” eventually finds its fully labial wings and flies into airborne, vocal meaning. The word “leaves” (which derives from the same *lipo* as “lips”) refers to departures and to blooms. Likewise, to “lapse” is to autumnally “fall”. If the tinted leaves of Thoreau’s later career are tokens of America’s fall from aboriginal grace, the Law of Leaf in his bio-poetic art is a leave-taking of former limits, a giddily a-historical adventure down shared organic veins and tributaries.

Erosion and Organism

Thoreau the walled-in cabin-dweller brings down the walls between brains and lungs and livers and cilia and vacuoles, imagining all organs to stem from some common ur-substance. Thoreau wages a poetic warfare on our anatomy’s division of kinetic labor : his claim that “(t)here is nothing inorganic” is of course untrue chemically (many objects of nature bypass the need for carbon in their composition), but true in the sense that all objects are portions of some larger, more comprehensive organ. In Thoreau’s account, sand is a singular, geologically alienated monad yet again pulled into organic formation, a seedling whose womb is winter and whose birth is thaw. Like snow, sand is a “great revealer” of natural details, as its granular composition gives us an array of bits like a gene-matrix from which to read.

Instead of personification, viewing sand as it clumps and coheres into entrails and guts is a quite literal “organ”-ization, in which shapes that evoke our own bodily organs emerge from a winter’s freeze, alongside of leaf-shapes and letter-shapes. As revealed on the sandbank, the nose is a “congealed drop” of a stalactite, like a protuberance grown downward from the upper vault of Plato’s Cave, while the ear is a form of umbilicus as well a “lichen” that can be “likened” any number of other forms. According to this logic of genetic similitude, our palm-frond of a hand can applaud its proven kinship with aquatic fins and aerial wings, and our umbilicus figuratively plugs us into a switchboard connecting once-separated species.

Indeed, Thoreau claims that “under a more genial heaven”, (249) our human bodies would grow into even more expansive and eclectic

forms. In this same passage seems to predict that "more heat" could melt our mortal frame to unfold more freely, into entities with increasingly pronounced resemblances to our fellow creatures, causing human beings to evolve into new and extended post-human forms. Today, this heat is supplied by Bunsen flames and laboratory radiation and substances boiled beyond their temperature of saturation, allowing silicon and carbon (and the virtual and the vegetal) to intermarry. On the gene-matrix of the sandbank, these resemblances are not only illustrated but embodied : wing, ear, fin, lip, and finger are all variants on the leitmotif Leaf, as spatulate nodes on a cross-species index, where all organic objects are elements in some common Surge.

According to Thoreau's sandbank revelation, this Surge dissipates the lines between the visceral, the vegetative, and the verbal. A collective object (and mass noun) like "sand" is matter at a baseline state of eroded decomposition beginning its arc and pivot back toward newly amalgamated items. Just as flocks of birds and schools of fish engage in a seemingly extra-sensory communication when darting and banking as one, Thoreau's sand-grains, embedded with the principle of Leaf, all ooze in unison, mutually engaged in a paraverbal communication concerning some larger project of formation.

In Thoreau's treatment, sand is also an abraded, and so able to gnaw at the line between living and unliving, allowing a collapsing of the long series of evolution, a crumpling of the Book of Life into a fractal wad, and a removal of several key links from the Great Chain of Being. The Adamic act of animal-naming is undone, as word-parts and animal-parts wriggle and intertwine in the dissolved grit of eroded soil. Frank McShane's "*Walden and Yoga*" sees the downward current of the side-sloping sandbank as a miniature Ganges carrying dead materials toward purgation and resurrection (322-343) : the very word "river" is a near-palindrome, hinting at all manner of non-linear renewal.

Nodes of Connection : Vines and Veins

The teetotaling Thoreau prefers his flowing-yet-granular sandbank to any "vineyard" because of its promises of renewal and reconnection. He sees connective vines and veins and blood-vessels formed by once-alienated but now-copular sand-motes : at the embankment, all of Natural matter seems "turned wrong side outward", making a display-case of innards, a trail-map of entrails where punning is language turned inside out, with its connotations and etymologies on bare display.

This act of verbal observation is also a wittily self-reflexive subversion of the act of writing itself, as it observes elemental quasi-words formed mutely and mindlessly by the soil underfoot. The artist need only "dabble" because Nature itself is already self-creating and self-altering, via our globe's troping spin on its axis and its resemblance to a planetary potter's wheel. Nature "*rushes to make her report*" (*Journal IV* :

174) to the poet's mind, in freshets, streams, and spuming cascades of ever-transforming matter that refuse any ultimate distinction between inanimate and animate. If Lucretius' swerving *clinamen* of atoms in the void has become an unstable icon for Nature's random motion, Thoreau's amalgamating sand-grains are figurative atoms bent on composing larger and more expressive bodies. Over a century later, but along a similar bio-semiotic lineage, cell-artist, cybernetician, and *assembleur* Roy Ascott refers to "a moistmedia substrate where digital systems, telematics, and genetic engineering" (111) all meet – in his coinage, Bits, Atoms, Neurons, and Genes add up to the acronym BANG. This particular bang is not a cosmogonic eruption outward of compressed ur-matter, but an intersection of components at the level of their similarities.

Sand itself can be figuratively viewed as bits, atoms, neurons or genes when viewed through the various lenses of informatics, particle physics, anatomy, and genetics. As a literary material, it is a riot of associations defying any ultimate delimiting. Jorge Luis Borges' short story "The Book of Sand" sees a script made of granules as a figure for what is infinitely uncountable, and Thoreau's sandbank likewise undermines any final tallying. The word "calculate" derives from a Latin word for "pebble", but sand is often used as a mockery of calculation and symmetry and definition. Punning again assists with such mockery in Thoreau's usage: to try to pin "foliage" down is "folly", especially where vacating "bowel" is near-kin to gestating "bower" and every "atom" is "Adamic" in its possibilities.

On the level of species punning, bio-artist Joe Davis' "infogenes" encode and insert messages into bacteria, converting letters into phase values and then into nucleotide sequences. His modular approach to conversion allows pixels, voxels, genes, and bit-code to interact. Decades before this practice, Thoreau used sand's atomism to similar metaphoric ends. Recurrently, his wordplay and letter-play underscore his theme of genetic flux and plasticity. A leaf is forever "leaving", de-parting from its assigned part or role to translate into some new conduct. In nature, offal is constantly being switched back on, and death throes are also birth pangs. Effluvia is seminal, germination is scatological, and the "baldest brow" sends out follicles because sterility (as well as "demise") is a fiction on the swaddling gallows of the sandbank. Wind and water "round" clastic particles like sand into spherical motes, and Thoreau deploys these motes as icons of a circular evolution.

Naturalism and Nominalism

Thoreau's own personal and professional evolution, when taken in linear and teleological terms, is said to be from poet to scientist, but this model is flawed because both "halves" of his vocation remained in correspondence across his career. As a naturalist, Thoreau was an obsessive fact- and sample-collector, breaking Nature into a personalized

amalgam of leaf-samples and spore-prints and seedlings, all of which became illustrations of Nature's metaphorical and material convertibility. His interest in forest "succession" learned to accommodate oblique digression and atavistic regression as well, foreshadowed by his sandbank vision, in which Nature's motion radiates outward and collapses inward at once.

Thoreau lambasted museum taxonomies for their frequently random categorization of natural objects, and for often allowing a single phenotypic feature to prematurely define and delimit an organism's essence. He characterized a botany manual as a mere, relic "keepsake" because it militarily "presses" (flattens *and* conscripts) wild objects into a rhetorical rank and file ("Logging in Concord" : 253). As an affront to such a method, when sand can imitate a "vegetative leaf", the lines between the inert and the "ert" have been breached because every nascent kernel of seemingly "dead" matter eventually flutters, either as fin or feather or flame. In Thoreau's gene-hopping portrait of a flowing ravine, the word "sappy" implies a sapience or vegetable intelligence, fading "ebb" counterpoints rising "egg", and oxygen-eating "flame" is mirrored by oxygen-respiring "flower".

These connections portray a prodigal, teeming Nature overflowing with vitality, but also hint at grimmer and more viral realities. In his darker moments, the tuberculosis-destined Thoreau believed that disease was the "rule of existence", (*The Heart of Thoreau's Journals* : 56) and a certain ontological unease prevails on the sandbank, enflamed by a vocabulary insistent on language's genetic turmoil and flux. Charles Ives claimed that Thoreau "let nature put him under her microscope" (54), alert to the ironies of his own bodily bioregion finding its mirror in the soil it was destined to rejoin. This secular reincarnation, also a major theme in Whitman's "This Compost" (in which the "foul liquids" of the "sour dead" eventually result in the "resurrection of the wheat") (285) is a promise of a certain kind of ongoing existence, but also an invasion of our sense of personal cohesion, with the Self a merely momentary amalgam of parts doomed to be eventually dismantled and scattered.

The Self as Continuum

Still, this sense of the Self as part of an ongoing (if undermining) continuum has its giddy and liberating aspects as well. Transgenic art, by inserting poems into organisms, plays on the "communalizing" powers of code : Thoreau, for all his personal aloofness, demonstrates a similar unifying force in his torrid, tropic puns. Despite his stolid, ascetic dryness of temperament, Thoreau is nonetheless a poet of telling moistures, teasing the "rain" out of a sand's "grain" and hinting that "soil" is but a single vowel-swap away from "soul". Reveling in his close relation to kindred plants, "The poet sings how the blood flows in his veins", but also how his sap ascends his trunk, how the sun feeds his petals, and

how the manure kindles his roots. Sharon Cameron claims that Thoreau is our chronicler of a Self not “empowered by nature [but] converted to nature” (88-89), a writer who revels in his relations to the non-human when he compares himself to a “vegetable mould” and aspires to be “the corn and the grass” in the act of composition. Thoreau decried the “inhumanity of science” (*Journal VI* : 311) and would have presumably been troubled by some of the post-humanity and intra-humanity of current biological research, but he was undeniably intrigued by the epochal implications of all of Life’s “stemming” from a common soil. The turning-over of new leaves is not a mere self-improvement bromide for him, but a study of undersides and unseen relations.

At his sandbank, Thoreau the Surveyor is pulling up stakes rather than laying them down : for all of his solitary self-exile he is a practitioner of a “neighborly” science because “Nature is one and continuous everywhere” (*A Week on the Concord and Merrimack Rivers* : 175). His “ode to morning” is also a paean to shared, macromolecular beginnings in which the transit from one season to the next, like the evolutionary segue from one species to the next, dramatizes a continuum. The sandbank inspires Thoreau to a rare moment of deism (with his reference to a capitalized “Creator”), but also moves him to a kind of ontological anarchism. The compound noun “sand-foliage” quivers at its hyphen because all of organic matter is hyphenated and entwined. “Sediment” phonemically contains “said” and “meant” and Thoreau’s obliquely tuned ear hears a murmuring song of mimicry inside such soil.

Raised to a certain pitch, Thoreau can be read as a pioneer of the post-humanities : despite his own Luddite resistances, he can be imagined as a bio-artist, attentive to a seed’s telos and mutability, to a leaf’s status as a transponder, to sand’s willingness to coagulate into quasi-verbal forms. Eventually, “land art” like Robert Smithson’s *Spiral Jetty* (pantomiming the helical coil of our DNA) would require a bulldozing and a remaking of terrestrial features, but the Deep Cut is a more autotelic artwork, born of its own inward code. Thoreau is a dual inheritor of the doctrines of signatures and correspondences propounded by Amerinds and Emersonians, in which matter and spirit are mutually reflecting, but also a precursor to bio-poetic artists.

Today’s transgenic art operates on principles of assisted mutation and only semi-natural selection, and Thoreau’s pen similarly coaxes its objects over several species transoms. The sandbank is a genetic hologram in which a “vessel” is both a current of blood and a vehicle that floats atop such a current. The “operations of Nature” can indeed be surgical, because melting soil is a “finger, feeling its way slowly and blindly downward” (249), toward some primeval site of blended, transgenic origin where all substance was once “commonly mixed”. When treated as an artwork looking for its genre, the sandbank is a found-art installation and a site-specific assemblage whose site recurs season-

ally, a half-made readymade whose completion is dependent on an observer's intervention. This notion that sand thaws "toward" particular target shapes that in turn resemble visceral organs also looks forward to the "teleological" purposiveness of Nature resurrected in a book like Victoria's Alexander's *The Biologist's Mistress*, which contends that the Enlightenment program to discredit the idea of an "intentionality" within the materials of Life has never been entirely successful in certain creative and philosophic quarters.

In (In-)Conclusion

The bio-semiotic practice of marrying the limpid, malleable matter of Life with the virtual and therefore similarly malleable matter of Language has major implications for genetics and poetics alike. If poetry is that quantum place where rampant association allows for a more unbroken view of reality, bio-science is a further implementation of such continuum, where new forms of "sentience" can be written out as a matter of molecular "sentences" and imagery can be implanted as well as evoked.

Thoreau himself is an invigorated cross-breed : equally post-Puritan and proto-ecological, ascetic and epicure. The implied pun on *Walden* as "Walled-in" plays on the idea of a "cellular" dwelling and casts the self-made hermit as a cell-bound anchorite and a cell-intrigued amateur botanist. His wedding of the sedimentary and the floral is advanced to an even more uncanny extreme in bio-art's marriage of living material and reductionist code, taking the bit-composed database of his sandbank into more digital terrain. Where his pantheist predecessor William Blake saw a teeming universe "in a grain of sand" (171), Thoreau sees an innumerable horde of sand-grains assembling into collective masses that defy their solitude. Where his namesake Thor wields a hammer that "only breaks in pieces", Thoreau wields a pen that forges disparate items into an ontological current.

Thoreau's dream of "a poem not printed on paper" is perhaps best embodied in the sandbank, but has also been inherited by bio-poetic artists writing on every mode of matter imaginable. "Extragenetic" material like the English language can now be contained in genetic form, just as nucleic acids can be custom-made and human-formed protocells can serve as containers for laboratory RNA. Thoreau foreshadowed this blending of the biological and the semantic when, in an 1842 journal entry, he compared a "well-built sentence" to "a modern corn-planter, which furrows out, drops the seed, and covers it up in one movement" (*H.D. Thoreau : A Writer's Journal* : 11). He also wrote of his desire to compose a book so wild it would roam free from its allotted space on a bookshelf, presumably a volume whose marks and meters would eventually merge with those of its elemental surroundings. He denounced the vertically accumulated "leaves of a book" for the radiating "leaves of

a tree", again hinting at moving beyond the linear format of pages and aspiring toward bio-semiotic artworks that emulate the more prodigal processes of organic growth.

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Abstract

In the "Spring" chapter of *Walden*, Henry David Thoreau's portrait of a melting, thawing sandbank, as a place of "overlap and interlace", is a bio-semiotic primal scene. For Thoreau, language itself is an agent of transgenic fusion, finding interlinked roots and common properties at every turn. Thoreau's wordplay is a page rehearsal for later forms of laboratory-assisted, genre-hopping bio-art in which cross-bred materials form inter-species puns and organic conundrums, phrases from the Old Testament and Descartes are translated via code into DNA base pairs and inserted into plants and bacteria, and gene-splicing becomes a creative act. Using sequencing gels and calipers, autoclaves and plasmid samples, transgenic art plays in the gap between our genes' lettristic code and manifested matter : Thoreau straddles this same divide with puns and wordplay based on some of the more occult linguistic theories of his day.

Keywords : Henry David Thoreau; Transgenic Art; Biomorphism; Lettrism.

Résumé

Dans le chapitre "Printemps" de *Walden*, le portrait que brosse Henry David Thoreau d'un banc de sable, comme lieu de "chevauchement et d'enlacement", constitue une scène biosémiotique primale. Pour Thoreau, le langage lui-même est un agent de fusion transgénique qui découvre à toute occasion des racines imbriquées et des propriétés communes. Les jeux de mots de Thoreau anticipent des formes tardives et interdisciplinaires du bio-art en laboratoire; des matériaux métissés forment des calembours inter-espèces et des énigmes organiques; des phrases tirées de l'Ancien Testament et de Descartes sont traduites et encodées en paires de bases d'ADN pour être insérés dans des plantes et des bactéries; et l'épissage de gènes devient un acte créatif. Avec des gels de séquençage et des bioanalyseurs, des autoclaves et des échantillons de plasmides, l'art transgénique joue dans l'écart entre le code lettriste de nos gènes et la matière. Thoreau enjambe ce même fossé avec des calembours et des jeux de mots qui reflètent certaines des théories linguistiques les plus occultes de son époque.

Mots-clés : Henry David Thoreau; art transgénique; biomorphisme; lettrisme.

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