The Ghosts I Do Know: Rhythm, Dickinson, Crane

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Abstract

This paper will examine poetry and rhythm in relation to biological and evolutionary models in order to develop a hypothetical methodology by which certain aspects of literature may be examined through an evolutionary lens. It is by no means an attempt at a finalizing or totalizing way of examining literature, but as such attempts have largely been ignored or assaulted, there is a rather large niche to fill. Hence this article will attempt to redefine literature as a ‘Third Level Darwin Machine’ and parallel the science/culture/Theory[[1]](#endnote-1) debate with that in physics/string theory and then it will connect poetry to Boyd’s idea of ‘rhythm and attention’ along with 'motor resonance', mirror neurons and music theory. It will then look at the influence of Emily Dickinson’s rhythmic and metaphoric compression on the poetry of Hart Crane as a mimetic function following Boyd’s notion of attention, pattern and play as functions of a Third Level Darwinian Machine which will be the operative foundation for a naturalized (but not totalized) account of poetic effect and its relation to the human species’ evolved history.

Key Words: Emily Dickinson, Hart Crane, Brian Boyd, poetry, evolution, rhythm

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 Locating analogous structures that exist between humans and other animals is both a tantalizing clue to our shared heritage as evolved primates and to our unique ability –alone in the cosmos, as far as we know- to self-consciously ascribe meaning to our actions, past and present, especially in symbolic value exchanges like literature, art and other abstract representational forms of communication. Yet, analogous structures alone are not smoking-gun evidence that there is a direct line of absolute correlation between, for example, the basic use of sounds and grunts by vervets to identify predators[[2]](#endnote-2) and the complex words systems employed by humans. Darwin notes, “The framework of bones being the same in the hand of a man, wing of a bat, fin of the porpoise, and leg of the horse, -the same number of vertebrae forming the neck of the giraffe and elephant,’ and innumerable other such facts, at once explain themselves on the theory of descent with slow and slight successive modifications.” What Darwin points to here are analogous structures in animal phenotypes that indicate a shared evolutionary history. This is nothing new or surprising. When it comes to things of taxonomy or something benign like bone structure, few people have any quarrel with evolution.

However, when it comes to the brain and behavior, the timbre changes dramatically, especially among modern proponents of Theory. The human brain is an evolved organ, taking millions of years and generations to evolve its abstract language capacity, pattern recognition ability and its general knack for adapting to extremes of environment. If being human is to be part of a natural continuum, then it should follow that the humanities would take more interest in their namesake, that is to say, those sciences capable of giving a full account of the origins of the species. Yet, the natural sciences have been largely demonized or ignored in the humanities, and literary studies most specifically. E. O. Wilson says: “[Literary journals’] content consists largely of historical anecdotes, diachronic collating of outdated, verbalized theories of human behavior, and judgments of current events according to personal ideology … Modern science is still regarded as a problem-solving activity and a set of technical marvels, the importance of which is to be valuated in an ethos extraneous to science” (2002: 203). What I would like to argue tangentially is that the ‘humanistic’ sciences can only gain by interacting with the natural sciences to find an accord by which a broader and deeper (call it an evolving diachronic/synchronic synthesis) picture of ‘the human’ may be said to be found.

 As this paper would like to continue in the line of thought that tries to interpret literary works with (but not in strict accordance to) natural science, a working methodology will be necessary. If behaviors seen in literary works (or the writing of the book itself) can be said to mirror to a certain degree the evolved tendencies of our species, then there are obviously several main problems and tenets to be addressed:

1. Literature is a falsified medium, and hunting for clues in it in order to reveal universal human traits will necessarily be problematic.
2. Literature is a mimetic repository of real human action and imagination. It can be analyzed by the natural and humanistic sciences.
3. The methodologies of the natural sciences have been developed in accord with those sciences, not literary studies. This must be resolved.
4. A new synthetic model is necessary for the natural and humanistic sciences to communicate with one another, without necessarily assigning either a superior explanatory role. They both explain, but cannot yet explain anything to one another.

A literary theory that seeks to incorporate the natural sciences should have a defined set of questions and answers that it thus seeks to elaborate. Boyd says that “any full biological explanation of a behavior needs to answer four questions: *why?* (fitness: what is its ultimate function?); *how?* (mechanism: how does it operate, what stimuli cause it to occur?); *whence?* (phylogeny: what are its evolutionary predecessors, what did it evolve from?); and *when?* (ontogeny: when does the adaptation develop and change in the individual?)” (2009: 40-41). Can any literary theory answer these questions, or how would it even begin? What, according to the ‘why’ question, is the ultimate function of literature? Unfortunately, that question is slightly outside of this particular essay, requiring much more length to clarify, though the other three questions will be addressed subsequently. Thereafter, I will turn the focus toward Crane and Dickinson and their use of rhythm with these questions in mind. As with any interdisciplinary study, this will require some time in establishing the connection between subjects and therefore will focus its attention there.

*“How?* (mechanism: how does it operate, what stimuli cause it to occur?)”

 If we begin to see literature not only as a repository for the ‘human spirit’ but rather as a ledger in which long tracts of human history and thought have been stored, codified, hyperbolized and -too very often- lost to the ages, we may be able to establish an imperfect but functioning ‘fossil history’ in order to trace back commonalities and differences in works of literature and track their evolution. This can be done by orienting our understanding of literature (or art in general) as a type of ‘Darwinian Machine’. Plotkin (1993) discusses the notion of First, Second and Third Level Darwinian Machines and how these operations might be used to identify the origin of knowledge as something biological rather than requiring only an epistemic or philosophical question and answer. A few quotes from Boyd at length here will clarify the notion of a Darwinian Machine. He says, “The *first-order* Darwinian system is the evolution of life itself. Life, like other Darwinian systems, generates new genetic combinations, tests them in the environment, and allows those that do not fail the test (by dying before reproducing) to *regenerate* (2009: 351-352). This is the first level of the outline. Boyd continues, “*Second-order* Darwinian machines are systems within living organisms that themselves or deploy the same generate-test-regenerate principle. One essential second-order Darwin machine is the human immune system … Among *third-order* Darwin machines are our ideas and their concrete manifestations” (2009: 351-352). This is of course suggesting only that these processes are very similar in their function, and not somehow merely mechanistic entities that tick away toward some absolutely knowable consequence in deterministic fashion. Nor is it somehow suggesting that a Third Level Darwinian Machine is ‘alive’ in the same way that a biological organism is alive. They are similar in the modes of development and their particular ‘evolution’. “[These Darwinian Machines] cannot find the right answer beforehand: there is no single right form of life, no single right antibody, so single right synaptic link, so single right move. But they can generate possibilities that the environment tests” (Boyd, 2009: 120). By reexamining literature as this kind of third level Darwinian machine, we can at least set out from a slightly more naturalistic point without fear of affirming the very consequent being sought[[3]](#endnote-3). If the product of a Darwinian machine has as its goal that which is unknowable until put in an environment (say, a literary text in a society capable or unwilling to accept its merits), then this redefinition stays that particular criticism. It also removes any accusations of determinism, as the teleological function is unknown until it has an environment in which to operate, much like any living organism.[[4]](#endnote-4)

Using Boyd’s definition of literature as a Third Level Darwin Machine (hereafter TLDM, as needed) allows a particular side-step past what might be called the ‘metaphor problem’ addressed in much post-modern/post-structural theory. Namely, that language is never quite as accurate as we think and the formation of various discourses cannot thus make a claim to be superior to one another owing to their foundation in language. Any resulting hierarchy of accuracy in language would then be deemed a politicized account, as in, who is allowed to state that this or that term is more ‘accurate’, thus according to Theory this would be something to eschew.[[5]](#endnote-5) Essentially, this is a politicized update –albeit an interesting one- of the Liar’s Paradox which is at least as old as Eubulides, ca. 400 BCE. The metaphor problem is, as I see it, simply a kind of shell game[[6]](#endnote-6): We substitute one shell/term/metaphoric overlay for another and continue to obscure the prize in a kind of linguistic legerdemain. Yet, some of this is unfortunately necessary. We speak with words. The same with writing. Explanations as such will never be ‘out of language’ in that sense, and for some, this is a core problem.[[7]](#endnote-7) The natural sciences and literature necessarily have some overlap in terminology (though obviously employed in different ways). Some of these terms are slippery and hard to define. No matter. Each gets their work done and they can be brought into accord.

The metaphor problem is very similar if not the same issue as the ‘frame problem’ raised by Plotkin. Plotkin notes (1993: 225-226) that while the first and second level Darwinian machines have bearing on one another, there is a question whether and how much influence these have over the third. It is exactly here where the difficult task lies between tying together heuristics of explanation between the natural sciences and cultural observation of particular instances. He says, “If the perpetuation of genes, the primary heuristic replicators [here to mean first, second and third level Darwinian machines, my note], is what the primary and secondary levels are ultimately about, then many of the consequences of culture seem to run counter to this general goal” (1993: 226). Perhaps here, Plotkin means that culture may, in general, react against the notion of a goal, or telos. We shouldn’t confuse this general goal as something preordained or necessary. Plotkin continues, “I think, though, that this view is wrong, a kind of conceptual illusion based on our present incomplete understanding of culture. Some of the seemingly ‘unnatural’ features of culture, like sanctions against sexual behavior or the establishment of certain kinds of cultural institutions, may be culture-level manifestations or consequences of cultural selection set by the primary and secondary heuristics” (1993: 226). If this is accurate, then there exists no divide between the slow Darwinian model of evolution and the ostensibly Lamarckian rapid proliferation of cultural practices. Here, the metaphor problem of naming and renaming the same functions and practices is resolved as a system of interrelated behaviors each framed by the other, instead of hair-splitting definitions of theories more allied with the ‘linguistic turn’. It is a chain versus a rupture.[[8]](#endnote-8)

The linguistic turn problem is addressed by Boyd (2009) in relation to narrative and its communicative abilities in human expression and culture. He says, “[Narrative] does not depend on language. It can be expressed through mime, dance, wordless picture books, or movies. And although such narratives are often predicated on or elaborated through language they need not be” (2009: 130-131). Here is perhaps the strength of seeing literature as a third level Darwinian machine, since it abrogates the need to couch the debate purely in language itself (which avoids the self-recursive paradox of Theory in general) and allows for other forms of communication and information participate as interpretive functions. If something as basic to literature as narrative does not specifically require a ‘languaged’ medium, then I believe we may safely proceed.[[9]](#endnote-9)

 An interesting corollary between Theory and evolution can be found in the debate over String Theory in modern physics. Cultural theory as a whole does not make quantitative predictions, opting rather for qualitative descriptions. This is not a negative critique. It is similar to Super String theory and its inability (as of yet!) to provide testable, experimental models for support of its wonderful and weird notions. Yet, as Feynman says, “String theorists don’t make predictions, they make excuses” (qtd. in Woit, 2006: 175). While I do not wish to raise charges against Theory,[[10]](#endnote-10) its very hostility to science as having something ‘real’ to say about the physical world –and thereby about the human species- would seem to place it into a similar camp as that of String Theory: it is tantalizing and engaging, but cannot offer testable proof of its hypotheses. Some might say that this is no fault, and others would say that is exactly the point of Theory’s endeavor. It is this that Theory, and especially the literary studies, can gain from incorporating natural science into its mien. Yet, as I would like to bring the natural sciences and the humanities into concert, an ethos with which current Theory is simply incompatible. This hostility and incompatibility is not new. Ashcroft, et al., outline Lyotard’s famous critique of science saying, “Science as [Lyotard] argues, classifies the narrative dominated oral world as belonging to a different mentality, ‘savage, primitive, undeveloped’. From this view develops ‘the entire history of cultural imperialism from the dawn of Western civilisation [sic]” (2002: 164). This attack is representative, though it seems misguided.

To say that science somehow (anthropomorphically) demeans oral societies as ‘less than human’ is a strange straw hominid. Does Science (anthropomorphically) believe that it has something true to say about the world, the universe, human beings? Yes. Does Science believe that its view of the Big Bang is the correct account of the creation of the universe versus, say, the Christian[[11]](#endnote-11) account? Yes. Does Science say that someone does not have a right to believe in the Christian account. No.[[12]](#endnote-12) If evolution is true, then it has an influence on human action and thereby literary and artistic works. Smolin says, “Either time is real, or it is not. If time is not real, then laws are timeless … So, time being real means laws don’t last forever. They must evolve” (2013: 121). The same holds for evolution by natural selection. The only law by which natural selection operates is one of constant variation, mutation, adaptation. Smolin here is echoing Peirce who said, “To suppose universal laws of nature capable of being apprehended by the mind and yet having no reason for their special forms, but standing inexplicable and irrational, is hardly a justifiable position. Uniformities are precisely the sort of facts that need to be accounted for … Law is par excellence the thing that wants a reason. Now the only possible way of accounting for the laws of nature and uniformity in general is to suppose them results of evolution” (1992: 2:288).[[13]](#endnote-13) Evolution may come under attack by religious cohorts, but it remains the most tested and corroborated theory that we have in the sciences.

As Peirce makes clear, and with Smolin channeling his ethos, the laws of nature that we observe such as General Relativity or evolution by natural selection will fail in a logical relation between our ability to explain them and the very fact of their observable and predictable existence. This kind of vicious circle is tautological, but the category of the ‘tautology’ is a linguistic, human construct. This is not to suggest that natural scientific laws are ‘constructed’ in any vulgar way. It is simply that the human vocabulary of intermediating terms (i.e. language, math, logical notation) is a social function in search of things to classify and that certain items in reality precede our ability to give them names, being the very causes of the human ability to rationalize and communicate them at all. This is neither a fault with reality per se, nor is it some failing in the language.[[14]](#endnote-14) This is the same function that Boyd identifies in relation to narrative when he says, “We are not *taught* narrative. Rather, narrative reflects our mode of understanding events, which appears largely –but with crucial exception- to be a generally mammalian mode of understanding” (2009: 131). This wiggle room in the linguistic venture of explanatory capacity allows for broad types of Theory, or constructivism, or arguments like Fodor’s (2011)[[15]](#endnote-15) against Darwin’s theory of natural selection to enter the debate to muddy the explanatory models for the diversity of life on the planet. To abuse Nature for not following human linguistic dictates is no more absurd than the slaves of Xerxes being sent down to the Hellespont to whip the water with chains because the river did not follow the God-King’s will[[16]](#endnote-16). Science gives us facts. Theory wants to see what is done with these facts in social and historical settings. That is important, and very necessary, but is a limited portrayal of the human character and is, in its present form, largely incompatible with the natural sciences. They must be brought together.

*“Whence?* (phylogeny: what are its evolutionary predecessors, what did it evolve from?)”

 Perhaps the most tantalizing set of evidence about human interaction comes from the recent study of mirror neurons and other findings in the field of neuroscience. As a caveat to this information, even those researchers most involved in these studies[[17]](#endnote-17) show the necessary caution in their findings’ application to broader conclusions about homo sapiens and human nature, especially when those findings speak of a neurologically linked ability to read intention in others simply by their gestures. Yet, these findings are suggestive at least that there is a clearly defined human nature which has its roots in the neurological functions of the evolved brain, and not only in a constructivist view of the self as created by language. The basic nature of human mirror neurons (Keysers 2012:13-28) is that these neurons fire when action is perceived. If someone raises their hand, the mirror neurons associated with the motor neuron which control that particular action fire in accord, even though the observer is not performing that action. Churchland (2011: 146-147) says that a direct correlation in human mirror neuron systems is fuzzy due to ethical restrictions of human research (viz. we can’t cut into their brains). Satel (2013: 38) is also critical of findings regarding mirror neurons, but only mentions them specifically once in her book. The criticism Churchland raises is that fMRI data gathered by researchers can only show regions of the brain (in humans) which are activated by certain actions or thoughts, and these data are therefore at least partially subjective in their conclusions. Studies by Aziz-Zadeh, et al. (2006) have shown that humans’ mirror neurons (or rather, those regions where they are expected to be located) react to reading; studies by Patel, et al. (2009), show the ability for nonhuman animals to react and synchronize to music (this kind of ‘appreciation’ had been supposed before but not tested); Fadiga, et al. (2009), have shown some relation between mirror neuron centers (again, where they are expected to be located) and language centers in human subjects; Nakahara, et al. (2013), have attempted to explore intention in action and the relation to mirror neurons; Gazzola, et al. (2005), have shown the relation of auditory and mirror neuron systems. The list goes on.

 I would like to suggest along with Robert Frost that “the ear is the best reader.” What I would like to suggest is that the mirror neuron system provides a naturalized basis to explain some of the incantatory power of poetry, and it works both by direct imitation and unconscious mimicry, part of our cultural sensitivity and our evolved neurological sociality. As Mlodinov says, “In other words, the work done by the unconscious is a critical part of our evolutionary survival mechanism. For over a century now, research and clinical psychologists have been cognizant of the fact that we all possess a rich and active unconscious life that plays out in parallel to our conscious thoughts and feelings and has a powerful effect on them” (2012: 5). Pattern and rhythm in poetry relate both to a conscious choice on the part of the author to manipulate the reader’s conscious and unconscious response to beat and syncopation, and this response is a result of both cultural aspects as well as evolved tendencies in the species. As we have defined literature as a TLDM, we no longer need to rest the issue of interpretation only in the words and their valence meanings. We may delve a little deeper, and a bit further back, into the brain and its development, thus tracing forward the roots of rhythm. Later in the paper, I will also turn to findings from musicology and neuroscience to further bolster this connection.

 Boyd (2009: 92-93) likens human art (especially in their mimetic tendencies) as a kind of evolved play, similar to and not apart from types of play seen in other mammal species. He says, “The more often and the more exuberantly animals play, the more they hone skills, widen repertoires, and sharpen sensitivities. Play therefore has evolved to be highly self-rewarding” (2009: 92). The relation between mirror neural activity, mimetic play and variation in that play should be evident. Thus, art and poetry for Boyd is at least partially a physical activity, as well as linguistic activity. Not to mention the actual neural activity that takes place when writing or reading. Play here for Boyd is more or less and evolved tendency toward techne, a craft that must be honed. It also suggests an answer to that age old question: Is a poet made or born. The answer here would be: Both. Poetry in this light can be looked at as a type of TLDM which values pattern, rhythm and variation to create structures which the neural functions respond to within cultural contexts like language and form. There needn’t be an artificial divide. Boyd further adds to this in his emphasis on pattern, rhythm and variation as seen through the notion of attention. He says:

Poets control our attention by making us focus on particular groups of words in one mental moment: as Cleanth Brooks and Robert Penn Warren note, the line is a ‘unit of attention’ … Poets of course have not known that they were constructing lines to fit the human auditory present, or the capacity of working memory; but that’s what they have discovered, by trial and error, because that length holds human attention better, more concentratedly, than longer or bitsier units … Unlike other species, we value joint attention … Sharing attention reaches an unprecedented level in humans even before we acquire language. (2012: 16-17)

What is clear in Boyd’s formulation (cf. Turner, 1999) is that the poet is working both consciously and unconsciously in creating structures that a reader will be attentive to.

This process, hearkening back to the findings of neuroscience, has its roots in the brain (and thereby evolution) and it flowers in the myriad poems, poetic traditions and poets who employ it best. Natural preference leads to refinement in social practice. In fact, Turner and Poppel have found an interesting corollary between attention and poetic line. “All over the world human beings compose and recite poetry in poetic meter; all over the world the meter has a line-length of about three seconds, tuned to the three-second acoustic information-processing pulse in the human brain” (Turner, 1999: 122). It seems that the brain, physically, restricts and dictates at least the origins of poetic technique which has subsequently been modified or shattered to evolve into new poetic movements, as a Third Level Darwinian Machine notion would predict. Aberrations from the three-second tendency do not disprove the idea, but rather form around the statistical core of its truth, and these outliers reinforce the idea of mutation/variation upon originary structures. To return the point to mirror neurons, Iacobini notes that in human subjects the brains’ functional ability to perceive utterances and understand and use them are all interrelated. He says, “When the TMS pulses knocked down the subjects’ motor speech areas, their ability to perceive speech sounds was also reduced. The mirroring of other people’s speech is actually necessary for us to perceive it” (2009: 105). Again, it seems quite clear the interrelation between vocalization (and what is poetry except a vocal enterprise based on rhythm and pattern and attention), the written pattern of this vocalization and the brain’s evolved capacity and pleasure in this pattern recognition.

“W*hen?* (ontogeny: when does the adaptation develop and change in the individual?)”

 Influence from one author to another is the basic typological truck of literary meaning. Allusions and borrowings are part of the process, adding meaning or playing ironically against another author’s themes in one’s own work or poem. Yet, what I would like to try to do is identify a few instances in which a particular rhythmic and metaphoric compression pattern from one author can be found in direct influence upon another author as Boyd’s Third Level Darwinian Machine would assume. What this will hope to show is that this process of the Darwinian Machine can be seen in action and is a stronger definition for how literary influence and meaning -as well as naturalistic explanations- can be identified and interrelated in a work of literature without sacrificing range of interpretation on one hand and without needless reduction to an almost spectral ‘forces of evolution’ on the other. It will explore Boyd’s idea of attention, as well as allude to findings in music theory and neurology. Particularly, I will look at a few poems by Emily Dickinson and how certain metric and metaphoric[[18]](#endnote-18) effects from her work show up in Hart Crane’s difficult yet highly rewarding poetry.

 Emily Dickinson should need no introduction, but her orphic offspring Hart Crane might. Put quickly, he is the inheritor of Whitman’s America, the effusiveness and rhetorical broadness of Whitman’s furtive breath, and too, Crane is the inheritor of Dickinson’s incredible rhythmic, metaphoric and linguistic compression. There is no particular way to quantify a kind of TLDM’esque transmission of a poetic trope or idea from one author to the next, especially something as odd as metaphoric and rhythmic compression. However, Dickinson’s influence on Crane is very clear, both in attitude and in practice. As Mariani notes, “Still, if ever a person distrusted ideologies and platforms, that person was Crane. What he did trust was intuition, and Blake’s and Dickinson’s insights now seemed ‘more incontrovertible than ever since Relativity and a host of other ideologies’ had come into being” (1999: 299-300; See also Weber, *The Letters of Hart Crane* , 1965: 323-324).

Also, influence can be seen in his fourteen-line ‘sonnet’, composed of heroic couplets, titled, “To Emily Dickinson”, a poem in response to “[w]hat he’d heard in her poems –as in his own- … something that most people only brushed up against in isolate moments over a lifetime: the sweet silence of Eternity (Mariani, 1999: 255). The ‘Sweet Silence of Eternity’ is more than a little hard to isolate or point to, and would thus be a poor bridge to isolate Crane’s inheritance from Dickinson. Looking at his poem, and how it fuses Dickinson’s influence into his own, and then looking back to similar rhythmic and metaphoric maneuvers in Dickinson will serve much better. The poem reads:

You who desired so much--in vain to ask--
Yet fed you hunger like an endless task,
Dared dignify the labor, bless the quest--
Achieved that stillness ultimately best,

Being, of all, least sought for: Emily, hear!
O sweet, dead Silencer, most suddenly clear
When singing that Eternity possessed
And plundered momently in every breast;

--Truly no flower yet withers in your hand.
The harvest you descried and understand
Needs more than wit to gather, love to bind.
Some reconcilement of remotest mind--

Leaves Ormus rubyless, and Ophir chill.
Else tears heap all within one clay-cold hill. (1961: 128)[[19]](#endnote-19)

Crane’s use of the dash, mimicking what is perhaps Dickinson’s most idiosyncratic poetic invention, further demonstrates his ability to pick up on her odd rhythmic interjections, as seen in the punctuation of the first line and rhythm of the final line. To parallel a famous example, one can look at the final stanza of Dickinson’s ‘I felt a Funeral, in my Brain’. The final stanza reads, “And then a Plank in Reason, broke, / And I dropped down, and down -- / And his a World, at every plunge, / And Finished knowing --then --” (1961: 128). What Dickinson forces on the rhythm by punctuation, the halting stops and starts, the estrangement of the speaker from a clear cognitive ability to reckon (the speaker is literally entering the last moments of consciousness/life in the final stanza), is what Crane also does, albeit in longer lines, in the end of his poem to Dickinson. Here, Crane piles up aural meaning in contrast to what the line says, using monosyllables and alliteration to create in the linguistic onsets a difficulty in articulation. It is the abstract pattern of mental attention paid to the metaphysical ‘Death’ held against the human difficulty in vocalization, a grief made manifest in its metric compression and aural jumble. For Dickinson as for Crane, this kind of mental onomatopoeia underscores the contrast between the thinkable and sayable, the knowable and expressible. This kind of inheritance –intellectual and aural- fits Boyd’s Darwin machine well enough.

Indeed, it follows also the general trend of the human brain to focus intently on patterns and pattern recognition, since, what is poetry except a kind of heightened analysis of patterns or deviation from patterns that according to attention, give the reader or writer a very real pleasure, both in prediction and surprise. Dickinson’s own definition of poetry seems to fit this when she said, “If I feel physically as if the top of my head were taken off, I know that is poetry” (*Complete Works*, Letter 342a). Crane, like any good poet, simply followed the pattern set by Dickinson and then altered it in his own way. The pattern-recognition abilities of the human species should not be understated, especially in relation to literature, and poetry most specifically. Nobel laureate Gerald Edelman says, “brains operate prima facie not by logic but by pattern recognition” (2006, 58; qtd. in Boyd, 2013:579). Ignoring logic here is not a claim for an anti-logocentrism. It is a simple case of observation, and one that can be made in part via careful attention to the attention poets pay, for example, to one another’s work.

Also important to note was Crane’s own idiosyncratic music in his poetry, and while musicality is an obviously important part of poetry, as in Dickinson’s work, there are few poetic musics in English language literature more dissonant with their mother tongue and resonant with one another than Crane’s and Dickinson’s. Crane’s is not sing-song verse, but is perhaps the most lyric of the major modernist poets, never hitting the overt musicality of the early Eliot, nor ever really falling consciously flat, placing Crane also in the company of Wallace Stevens’ metric compulsion in that both poets tended to be lyrical and highly metrical at the sake of sense to evoke a compounding of metaphoric compression in the sound units. The avoidance of straightforward meaning to add density amid the sensitivity to pre-conscious reflection on the poem’s strict ‘meaning’ is nothing less here than an increased ability to call to action a language played against its metric meaning, its rhythm and pattern. What Crane sought was a thing he named ‘the logic of metaphor’, or, the “illogical impingements of the connotations of words on the consciousness (and their combinations and interplay in metaphor on this basis” (Mariani, 1999: 191-192). This compression seen in his poetry, the idea itself, owes everything to Dickinson, to his particular attention to her metrics, metaphors and meanings. This is not to suggest that Crane believed poetry needn’t have or require logic, but rather that the logical arrangement of a poem is most intimately linked to its constituents, which is to say, form and content are most baldly wedded in poetry for Crane, and these needn’t obey strict logical expression or require the outside stamp of an intervening ideology about what a poem should do or be.

The obvious contrast to notion of the ‘logic of metaphor’ in Crane’s other major American forebear, Whitman, can be seen in any of Whitman’s poems one chooses to look at. Whitman’s poetry is an open hand, inviting and offering, while Dickinson’s a balled fist, torsional and secretive. Whitman seeks to make the poem make sense of the world in clear and declarative language, a Democracy of breath and of ideas, while Dickinson seeks to do nothing less than map the contours of a personal and universal ontology. Crane’s democratic ontology, however, inherits its primary cues from Dickinson. “Crane’s ‘logic of metaphor’, his associative rhetoric, is not at all Whitmanian … Crane wins autonomy by returning to Emily Dickinson” (Bloom, 2001: xiv). Dickinson’s musicality and intellectual depth was noted not long after her death. Robert Bridges wrote that a reader hunting for philosophy in poetry can readily find it in her verse, though they may then miss “the original fancy which compresses striking images into a few words, or catches a strange melody in most irregular measures” (Cooley: 2008). What Bridges, British poet laureate from 1913-1930, notes in his article of 1890 is nothing less than those very qualities most obvious in Crane’s work too: philosophical depth, metaphoric compression, idiosyncratic music and rhythm. Hearkening back to Smolin and Boyd from sections 1 and 2, the ideas of uniformity (here in art) and attention as a combination of poetic preference and evolved tendency will hopefully allow this connection and uniformity between Dickinson and Crane to fit the outline of a Third Level Darwinian Machine.

 Crane’s use of couplets in ‘To Emily Dickinson’ is also -and very importantly as a cue- employed in his masterpiece, *The Bridge* when he directly evokes two heroines, Dickinson and the American dancer (and exile, due to her Communist affiliations) Isadora Duncan, in the section, ‘Quaker Hill’. It is the only section of the long poem that relies on rhymed couplets throughout. ‘Quaker Hill’ and the poem dedicated to Dickinson were also composed around the same time in 1927, so that they employ similar modes of structure while calling upon Dickinson is too telling to ignore (Crane, 2001: 237, 242). The only other section in *The Bridge* that repeatedly uses the technique of rhymed couplets is ‘Cape Hatteras’, Crane’s evocation of Whitman, though the couplets therein are not consistent throughout the section. What Crane may be doing structurally in ‘Quaker Hill’ is combining the voices of the two women, as the joined rhymes in ‘To Emily Dickinson’ may also signal the joining of Crane to Dickinson. Here is clear evidence of the symbolic/literary joined to the evolution of poetic voice, handed from Dickinson to Crane, at least in Crane’s use of the form in relation to his forebear and progenitor. Variations like these, following Boyd, are invariably reactions of some effect to an environment, here, a poetic concentration within a new artistic milieu. Yet, is there some analog available that can more convincingly tie the idea of a natural inclination toward poetic rhythm, language and attention to poetry? The answer may lie in a cousin of poetry, music and absolute pitch.

It seems far too easy for some to speak of absolute pitch in those individuals whose genetic and phenotypic constitutions allow them to perfectly identify or recreate the specific musical notes without reference, as in relative pitch, to other reference tones. It is a phenomenon that requires both the genetic and the technic. A child born with the disposition but lacking in formal music training will not exhibit absolute pitch later in life. The “data suggest that it is likely that a combination of environmental and genetic factors promote the genesis of AP [absolute pitch]” (Theusch, 2009). If we are willing to take absolute pitch as true on its face, or to say that evolution by natural selection is a fact, then why is there so much resistance to the notion that certain evolved dispositions could therefore show up in literature, in the tendencies of writers or of characters, or, for the purposes of this paper, in the attention that writers give to (or inherit from) their influences and what would seem to be innate dispositions toward certain poetic effects like rhythm and metaphoric compression as functions of a Third Level Darwinian Machine? It is true that having perfect pitch will not innately make someone a gifted composer, though it most certainly would help. It is also true that having a level of sensitivity –and here to recall Boyd’s idea of attention- to language, a gift or proclivity for it will not make that individual a ‘good’ writer or poet.

Yet, such neurological dispositions cannot help but be part of the aetiological explanation of what makes someone a writer, let alone a good writer. One cannot fake or force the genius of Dickinson’s poems. Neither of Crane’s. They bear a strong resemblance to one another, as one would expect after seeing literature as a Third Level Darwin Machine. While we can point to their oeuvre and certainly say that they are works of genius, it is difficult to point exactly to the ‘genius’ individually. As noted earlier, there seems to be ample evidence that language is a neural function of the evolved brain and therefore, much like the genetic inheritance of absolute pitch, there ought to be at least some neural basis for the tendency toward ‘poetic absolute pitch’. It’s fuzzier, certainly, given that music is far more mathematic than language, as has been known as far back as Pythagoras. There would seem to be enough in the rhythm and the compression of sound and metaphor in Dickinson’s and Crane’s work to identify a kind of inheritance between them, a focused attention that is as unmistakable as it is irreducible. They both certainly labored on their poems, but their particular sensitivities to language also suggest a shared neurological disposition. Crane’s poems are emulative and yet are entirely their own. Humans are incredibly mimetic animals. While this might seem quite obvious, the underlying reasons for the universality of mimesis (conscious and unconscious) is not as obvious. As Boyd says, “In the twentieth century, even before the recent Theory downgraded authors, critical theory had begun to understate the importance of authorial individuality. The New Criticism of the mid-twentieth century stressed authorial *intention* as crucial to interpretation, as indeed it is” (2009: 350). Today, much of the talk of Theory regarding literature sees everything as a text, textual, textualized. The author (somehow) has been written out. Boyd goes on, “But in life we respond to others not only because of their actions and the intentions that we read into them, but also because of them as individuals … [among many things] their vocal tone, timbre, pitch, and volume; their accents and register; their turns of word, phrase and sentence … their intelligence, curiosity, kindness, sense of humor; and much more. (2009: 350) ‘Reading into them’ here is to understand intention, and mimesis would be our reaction. Following Boyd, I would label influence in poetry -here as seen in relation to rhythm between Dickinson and Crane- a type of mimesis with adaptation in accord with a Third Level Darwinian Machine. Crane, much like those possessing absolute pitch, simply had the right ‘ear’, both to hear (and understand) Dickinson’s unusual rhythmic musicality and her metaphoric density, and thus was most distinctly her progeny, based on poetic and neural proclivity.

While I do think that natural science can have something to say about works of art, it shouldn’t try to be a totalizing explanatory force in that exegesis. “Still, direct evidence with reference to the arts is slender. It is possible that new discoveries concerning the brain and evolution will yet change the picture fundamentally. Such is the nature of science” (Wilson, 1998: 238). I like to see this article and similar work in Literary Darwinism as part of a synapse gap with cultural theory on the other side. Such explorations, ideas and hypotheses are simply the exchange chemicals being passed back and forth. This is meant to be suggestive, of course. In American letters there are few poets as lyrically brilliant, metaphorically dense, metrically sensitive and who have a clear and documented relation to one another via one’s influence on the other as Crane and Dickinson. Crane’s diamond-like compression of meaning and sound together bears the stamp of Dickinson’s oceanic influence. It is an intellectual inheritance, poetic and haunting and there.

Postscript and Conclusion

Three sets of tracks, barefoot, were left by a group of hominids moving across a bed of cooling lava. The lava cooled and hardened, sealing these footprints into a kind of igneous tablet, the prints themselves like a living cuneiform. The individuals who left them wandered into their unknowable future, our modern human past. 3.7 million years later, these tracks were discovered by Mary Leakey and her team (Christian, 2006: 160). Who knows what this small band of Australopithecus made of it, that apocalyptic volcanic landscape as they moved through it, and who knows whether they had a kind of proto-language to communicate anything more than grunts or assent and fear. We do know that two sets of tracks are close enough together that they could have touched, and that one set of prints is larger than the other. Perhaps a parent held the hand of its offspring, calming and reassuring it, as they moved from one place to next, ever hunting and ever hunted. It is our species’ knack for examination and interpretation that gives this find a special stamp, and I do not think it unfair to attempt to read into the footprints that stamp of pre-human dignity, or at least an early example thereof. It is a moment of tenderness in which we find –and not conclusively, of course- a set of human-like traits which links us invariably and inevitably back to earlier and earlier examples of similarity and continuum between our species and others. If love as we know it, affection as we know it, care and altruism as we know it, have their roots in our shared evolutionary history, the care and attention showed by an elder member of a group for those most vulnerable, even in the possible evidence here of a parent holding the hand of its offspring, then we have nothing less than a chain of antecedent relationships between these traits and behaviors noted in provocative evidence like these rock-ghosts of footprints.

One could well suggest here at the end, for example, another frame or heuristic by which to examine the arts, that literature be seen as something akin to Gould’s notion of *punctuated equilibrium*[[20]](#endnote-20). “Most evolutionary change, we argued, is concentrated in rapid (often geologically instantaneous) events of speciation in small, peripherally isolated populations (the theory of allopatric speciation)” (Gould and Eldridge, 1977: 116-117).[[21]](#endnote-21) That is, that evolution flourishes and stagnates in bursts and fits, and not as some steadily increasing and complexifying linear fashion. Yet, any such descriptive maneuver is erroneous. I say erroneous because culture or art or literature is not alive like an organism, and the modern human definition of ‘culture’ hasn’t been around for the billions of years that life has. Yet, much like the Darwinian Machines, the term has some explanatory and categorizing power. Smolin says, “As Charles Sanders Peirce understood more than a century ago, *laws must evolve to be explained*” (2013:239, Smolin’s emphasis). To parallel this to the study of literature, interpretive heuristics must evolve to have explanatory power. We no longer talk about authors swept up by the Divine, or with the muses whispering coolly in the ear of poet by a window, her fingers stained with ink and pages fluttering on a table. Ditto the Sublime. If we can do away with these kinds of explanations about where literature and the arts come from, then why not take the extra step and look at where they really do come from?

The shift of defining literature as an enterprise divorced from natural science to one in league with it allows both explanatory power of empirical research on one side, with full interpretive range on the other. The two don’t cancel one another out like nodes in intersecting light waves. They build on one another. I would suggest that more be done along these lines -and with the careful caveat threaded between the theories of the natural sciences and cultural theorists- and all these be used as quantifiable and qualifiable evidence drawn from the neurosciences, genetic data and paleontology as well as a more or less close reading literary strategy. Otherwise, we are simply back to the name problem: we’ve stuck a label used as scientific theory onto something which is an effect of evolutionary processes, which cannot be bent backwards *onto* itself in order to give a satisfactory answer *for* itself. Evolution in this sense cannot be ‘explained’ by language. Rather, it is we -the diversity of life and activity on this planet, the sheer range and beauty of it- that are the language in which evolution speaks.

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1. I will employ Boyd’s term Theory in this article to denote the range of postmodern, post-structural, post-colonial or post-theory theories out there. A taxonomy of these would require a critical article of its own. [↑](#endnote-ref-1)
2. Diamond (1991) [↑](#endnote-ref-2)
3. Indeed, this kind of contradiction seems to be the very mode and method by which modern literary theory operates, by saying, for example, that the individual does not exist except in language or that the text itself is the only authority while lionizing certain authors and texts above all others, contradicting its own presuppositions. As Boyd notes, “What makes Theory’s frequent denial of the importance of authorial individuality so odd is that we engage so naturally, personally, and pleasurably with particular artistic personalities … With characteristic self-contradiction, Theory also spawned the star system in American academe, bestowing unprecedented adulation on its heroes such as Derrida and Foucault” (2009: 350-351). Boyd is not criticizing these two thinkers as much as the self-styled and willing hypocrisy of the Theory advocates who attack anyone not on their side. [↑](#endnote-ref-3)
4. For further reading in combining evolutionary thinking and literature, see Carroll (2011), Dissanayake (2011), Gottschall (2012/2008) or Dutton (2006), among the many others in this ever-expanding field. Too, I would recommend reading Darwin’s (1872/2006) *The Expression of the Emotions in Man and Animals*. It is very strange to me to hear cultural theorists flatly and wholly deny all parts of a shared human nature. [↑](#endnote-ref-4)
5. Alan Sokal demolishes this line of thinking in his books, *Beyond the Hoax* and *Fashionable Nonsense*. [↑](#endnote-ref-5)
6. For the life of me, I cannot think of an appropriate pun on Three Card Monte to fit an evolutionary subject. [↑](#endnote-ref-6)
7. For example, Rorty has been a strong advocate for the ‘linguistic turn’ and uses it often in his critiques, not just against the natural sciences, but also on the very methods that the sciences employ. He says, “New pragmatists wish that Dewey, Sidney Hook and Ernest Nagel had not insisted on using [the term ‘scientific method’] as a catchphrase, since we are unable to provide anything distinctive for it to denote” (1999:95). He calls into question the issue of denotation, yet the natural sciences have largely had little issue with such matters. The methods themselves are Third Level Darwinian Machines and evolve. To Rorty’s argument that any real method to describe the ‘real world’ must fail because it is inextricably bound in language and thus, like in a paradigm shift, are incommensurable, Searle would reply, “I think nothing interesting follows about external realism [after a Kuhnian paradigm shift]. That is, the fact that scientific efforts to account for the real world are less rational and less cumulative than we had previously supposed –if it is a fact- casts no doubt at all on the presupposition that there is a real world that scientists are making genuine attempts to describe” (1998: 24). [↑](#endnote-ref-7)
8. One might relate it philosophically to Peirce’s notion of evolutionary love or agapism (*Collected Papers*, 1974, vol. VI: 191-215). [↑](#endnote-ref-8)
9. And should someone say that miming, looks or facial gestures are all ‘language’ via the notion of textuality, then so be it, but it’s the wrong conclusion to take from Boyd here. [↑](#endnote-ref-9)
10. And, no, this is not meant as a type of paraleipsis. [↑](#endnote-ref-10)
11. Here, one can insert literally any belief system or mythological system, be it religious, cultural, superstition. [↑](#endnote-ref-11)
12. With full knowledge, I realize that this is a large and old issue, and I do not want to simply malign Theory in a straw hominid fashion. [↑](#endnote-ref-12)
13. Peirce outlines a view of Darwin’s theory in the same essay, ‘The Architecture of Theories’, saying, “Whenever there are large numbers of objects, having a tendency to retain characters unaltered, this tendency, however, not being absolute but giving room for chance variations, then, if the amount of variation is absolutely limited in certain directions by the destruction of everything which reaches those limits, there will be a gradual tendency to change in directions of departure from them. Thus, if a million players sit down to bet at an even game, since one after the other will get ruined, the average wealth of those who remain will perpetually increase. Here is indubitably a genuine formula of possible evolution, whether its operation accounts for much or little in the development of animal and vegetable species” (1992: 2:289). [↑](#endnote-ref-13)
14. Nor should this be seen as deterministic. The bearing of QED on physical states that allowed evolution to take place on Earth and those subsequent bearings on human traits which give rise to behavior in particular physical environments is so vanishingly small that charges of epiphenomenalism should be obviously absurd on their face. I leave it to the physicists to figure out the Unified Field Theory. [↑](#endnote-ref-14)
15. Fodor’s argument, as I see it, is simply a charge of linguistic slipperiness against the idea of evolution by natural selection in that some people will anthropomorphize evolution as an active agent which ‘selects for’ certain traits rather than the random variability of inherited traits being selected for by selection pressures due to environment or sexual selection or group living and competition. Darwin’s notion is simply that evolution is not some active agent preferring the stronger or more fit. Rather, “[F]or Darwin, the traits that contribute to the overall fitness of an organism occur initially by chance, prior to their being ‘required’. They are then selected from the multiplicity of variants and transmitted to offspring” (Plotkin, 1993: 32). If someone mistakes the wording here of ‘selected from’ to involve some supernatural force or imply some vagary in the part of Darwin’s theory, then we are simply playing a linguistic shell game to criticize language and not the theory itself. For a clarification of the theory of natural selection, see Plotkin, 1993: 22-58. Pigliucci (2010) is especially devastating regarding Fodor’s argument. [↑](#endnote-ref-15)
16. The account comes from Herodotus, *The Histories*, 7.35. Of course, it might be entirely fabricated, but it is a wonderful telling nonetheless. [↑](#endnote-ref-16)
17. Iacobini (2009) makes relatively strong claims about the mirror neuronal origin of empathy in humans. My study is sympathetic but fallibilistic in that regard. He says, for example, “[T]he results confirmed my two predictions. Indeed, mirror neuron areas, the insula, and emotional brain areas in the limbic system, particularly the amygdala –a limbic structure highly responsive to faces- were activated while subjects were observing the faces, and activity increased in those subjects who were also imitating what they saw” (118-119). It is not for me to dispute an expert like Iacobini, but merely to self-apply a cautionary air to my own study, especially when trying to pair unlikely disciplines like neuroscience and poetry. Pinker also makes clear that mirror neuron research should be taken with at least a shovel of salt. He says, “The discovery of mirror neurons is important, though not completely unexpected: we could hardly use a verb in both the first person and the third person unless our brains were able to represent an action in the same way regardless of who performs it” (577). I do not want to hype mirror neurons as anything but very fascinating and compelling. For a more complete critique of mirror neurons, see Hickok (2014). [↑](#endnote-ref-17)
18. ‘Metriphoric’ perhaps. [↑](#endnote-ref-18)
19. This poem can also be accessed via the internet through *poemhunter.com*. [↑](#endnote-ref-19)
20. Another possible rubric might be found in Smolin’s book *Time Reborn* where he outlines (2013:124-125) five categories that an explanatory system must have: a space for parameters that vary among a population; a mechanism of production; variation; differences in fitness; and typicality. This might make an interesting rubric in which to attempt to connect the sciences and humanities, but I leave this notion to other future endeavors. [↑](#endnote-ref-20)
21. Another avenue might be to examine literature as an emergent property in accord with the first-second-third level Darwinian machines. [↑](#endnote-ref-21)