DNA and Dickinson
Exploring the Symbiotic Possibilities of Genetics and Poetry

By Anna Aileen Saum
Haverford College
English Department
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Advisor: Professor Lindsay Reckson
Introduction

Why does poetry matter? To the layman it is a pretentious jumble of words too encrypted with abstractions to have any practical value. To the scholar, a keen awareness and understanding of the abstract can cloud the ability to see a poem’s simple beauty. Yet poetry, as an ancient means of preserving our history, conveying our emotions, and exploring our own minds, transcends all human difference, perpetually binding us together through the process of inheritance. Considered an invaluable unit of preservation, the poem has allowed humanity to encode its deepest questions about the universe by relating words that gain meaning beyond their singular definitions. Yet, modern western society now prioritizes genetics over poetics as the tool of inheritance. We stand rapt at the realization that our cells have been quietly paralleling our poetic encoding and archiving process long before we knew cells even existed.

Poetics and genetics, as I will explore, have elegant similarities, yet the two disciplines have traditionally been kept apart, portrayed as opposites, enemies, or unrelated entities. CP Snow pioneered this distinction between science and literature in his 1959 short book *The Two Cultures and the Scientific Revolution*. He argues that the two cultures, literary and scientific, are populated with men whose minds are attuned specifically and only to their given field, and “between the two [worlds is] a gulf of mutual incomprehension—sometimes (particularly among the young) hostility and dislike, but most of all lack of understanding” (Snow 4). Snow contrasts the two mindsets especially by articulating the misconceptions they have about each other. Scientists, to literary scholars, are “shallowly optimistic, unaware of man’s condition,” while, to scientists, “literary intellectuals are totally lacking foresight, peculiarly unconcerned with their

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1 CP Snow clearly writes exclusively for and about the male academic audience.
brother men” (Snow 6). Snow asserts that the literary mind is at odds with the scientific, and that men who study one, must inherently misunderstand the other. Snow’s account has been a foundational discourse around the relationship between the disciplines, and contributed significantly to the animosity and underestimation between the humanities and sciences. Yet countless critics have come to the defense of the unity felt between the intellectual “worlds,” many of them arguing that in fact the relatability of the disciplines are instrumental to their functioning.² What use is science if it cannot be expressed through language, and how does literature come about if not through the biological functionings of our brains? Yes, the “worlds” are more related than any purist would have us believe, and there is tremendous value in the mind that can intuit and manipulate these connections.

Emily Dickinson’s poetry illustrates that she had such a mind, whose intuition for the links between different creative processes allowed her to transcend her time and education. Despite being born in 1830, over a century before the discovery of the structure of DNA, there are resemblances between the structure of her poetry and the microbiologic processes discovered in the late 20th and 21st centuries. Her poetry is a perfect case study because it is not alone in this similarity, but is rather exemplary of the tendency of the poetic processes to mimic biological processes. Let us not see Dickinson as the exception to, but rather the most stellar example that when we allow scientific language and structure to permeate the way we analyze poetry, we create new, interdisciplinary ways of understanding form and function that can better describe and complicate poetry and poetic processes.

² See, for example, the work of Carlisle; Keller; Kristeva; Middleton; Rogers; Strickland
In order to begin a conversation about poetry and genetics, I will start by describing the development of the field, especially highlighting critics who have paid particular attention to the relationship between the structure of language and the structure of DNA. I will also consider critics who focus their analyses on poetry that takes up scientific topics, though I find this vein of criticism to lack sufficient analytical creativity. To comprehensively illustrate my later argumentative points, I will dwell on the two major parts of genetic study, The Central Dogma/Genetic Determinism and Epigenetics. From these two fields, I will delve into Emily Dickinson’s work, analyzing two of her poems through the genetic language previously defined. Correlating poetic and genetic processes enlivens both disciplines and demonstrates that language from one field can enhance the other by increasing the interpretive possibilities, especially for poetry that works beyond and against the bounds of traditional, linear structure.

Poetics and Genetics

The specific relationship between genetics and literature has become an increasingly popular subject among literary and linguistic theorists. With the discovery of the genetic code in the 20th century came an instinct among scientists to treat the strand of repeating letters as a readable language. What followed was a desire to become fluent in this language such that we could read and manipulate the sequence as easily as we use a word processor.

Evelyn Fox Keller considers this relationship between genetics and language in her article “Language in Action: Genes and the Metaphor of Reading” which begins by focusing specifically on the act of genetic translation and how scientists have considered language throughout their investigation of the genetic domain. She emphasizes the distinctions between
translation between languages and translation in genetics, concluding that the cell contains “a dizzying assembly of readers and writers, each of them constituted of complex associations of DNA, RNA, and proteins” (Keller 87). She views the elements of the genetic process as literary actors participating in a larger cellular discourse around linguistic principles. Lily Kay extends the conversation by analyzing genetics as a language itself and considering the implications of the genome as a ‘Book of Life,’ an issue which Peter Middleton similarly considers. Both Kay and Middleton argue that while the “fertile metaphor of the book may illuminate the idea that DNA can be understood as information, [it] carries with it other inescapable implications, not least the hint of genetic authorship” (Middleton 523). Kay goes beyond warning against overly implicative metaphors to assert that the book metaphor does not work because “DNA is not a language: it lacks phonemic features, punctuation marks, semantics, intersymbol restrictions, and unlike any language, DNA consists only of three-letter words” (Kay 505-506). If DNA cannot, as Kay would have us believe, be considered a language in itself, how are we to consider the growing relationship between the genetic and literary that all three authors discuss?

Fred Carlisle attempts to answer this question through his characterization of the genetic-literary relationship in his article “Metaphor Reference in Science and Literature: The Examples of Watson and Crick and Roethke.” Carlisle summarizes Keller and Kay’s arguments, explaining how genetics, from the very discovery of DNA, has used language as a model, but he extends Keller’s affinity for metaphor by detailing the ways that geneticists have used metaphor as a mask in which to cloak science for ease of access. He analyzes the results of genetic metaphor, settling on two possible outcomes which he calls ‘denotation’ and ‘exemplification.’ ‘Denotation’ permits the speaker to name a thing while still speaking about the thing itself, while
‘exemplification’ replaces the thing with its name, a process which Carlisle likens to the field of genetics’ use of metaphor. ‘Exemplification’ exists when “things or situations come to possess a property, quality, feeling or state which the symbol (model or metaphor) represents” (Carlisle 300). When geneticists use metaphor as ‘exemplification’ to replace the scientific processes with those more tangible for their audiences, they imbue those processes with the attributes of the metaphoric language they use to the point that the original characteristics of the symbolized are lost amid the connotations of the symbolizer. ‘Exemplification’ produces exactly the dangerous result that Kay and Middleton describe, as the layperson can easily be lead to false conclusions through the usage of all-encompassing metaphors. Yet Carlisle notes that metaphor is critical to the description of microscopic molecules, for even “helix’ [is], in the context of chemistry, a metaphor” (Carlisle 293). We are unable to physically encounter a DNA molecule, requiring geneticists to use macroscopic equivalent structures to approximate the indescribable.

Despite the massive scholarship describing the ways that genetics has benefitted from a consideration of the linguistic and poetic, few scholars invert the correlation and consider the ways that genetics can expand poetic exploration. Those that do typically choose to analyze poems which intentionally engage with genetic and scientific themes. Janine Rogers’s chapter on “Elizabeth Bishop’s ‘Sestina’ and DNA Structure” begins to consider the ways that genetic structure can be used to interrogate poetic process. However, she acknowledges from the very beginning of her argument that “Bishop used the sestina form itself to explore the powerful feelings that we have around the issue of heredity, especially regarding inherited diseases like mental illness” (Rogers 66). While Rogers’s analysis of the poem does divulge fascinating and useful correlations surrounding genetic patterns and poetic scansion, I find her analysis stunted...
by the selection of a poem that was designed to be read through the lens of the genetic. By selecting a poem that was intended to be considered within a scientific framework, Rogers loses the ability to turn the argument outwards and speak to the larger relationship between genetics and poetry that does not explicitly address scientific content.

One scholar who incorporates genetic vocabulary into literary analysis without relying on genetic themes is Julia Kristeva. Though her chapter on “Genotext and Phenotext” does not attempt to analyze any literature, her arguments about the relationship between genetic language and literary process begin to interrogate the relationship that I want to unfold. Despite no direct mention of the biological in her chapter, her terms “genotext” “phenotext” derive from the genetic terms “genotype” and “phenotype.” Kristeva assumes her readers’ understanding of the biological undertones in her appropriation, such that when she uses the terms to describe elements of the symbolized and the symbolizer, the reader can envision their relationship to gene expression without further explanation. Kristeva’s naturalization of genetic language into the realm of the literary begins a process that I want to extend. While she uses biologically derived terms to discuss the idea of symbolism, she does not attempt to implement her theories through close reading. I want to move away from her tradition by not only suggesting theories for literary analysis, but applying them too. Also unlike Kristeva, I will not assume that my readers have an intimate understanding of genetic vocabulary and functionality.

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3 The “genotype” describes the specific version of a gene that an organism has. The “phenotype” describes a genetic observable attribute. While the genotype and phenotype often overlap (ex. someone with the gene for blue eyes, had blue eyes), they can differ (ex. Someone with genes that would make them tall are not actually tall). Their relationship is not 1:1, as many genotypes often must be present in unison to create a singular phenotype.
The Central Dogma and Genetic Determinism

In order to understand how poetry and genetics intersect, one must understand the way that genetic structures function. The primary purpose of DNA is as a code which provides instructions for the assembly and implementation of proteins. First coined by Francis Crick in 1958, The Central Dogma encapsulates the fundamental transition from DNA to RNA to protein. To understand The Central Dogma, we must begin in the cell, where all genetic processes occur. By “cell” I mean the cluster of organelles encased by a membrane which compose the bodies of living organisms.\(^4\)

Within the cell exists a plethora of organelles—smaller cell-like bundles of molecules that function as specialized parts of a larger whole. These organelles run the cell, primarily concerning themselves with protein production, usage, and destruction. A “protein” here means a string of amino acids, folded into a particular pattern, that when placed in its appropriate location can exact change on surrounding collections of atoms (including but not limited to, other proteins, organelles, other cells, viruses, and bacteria).

The creation of protein, and the first step in The Central Dogma,\(^5\) begins in the nucleus, a membrane-bound sac in the center of a cell. The nucleus contains the body’s genetic code. Every cell in a body contains the same code\(^6\). Yet cells may, and must, serve a diverse range of purposes. This diversification is partially accomplished by selective transcription of the DNA.

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\(^4\) For the sake of this argument, I will be focusing on animal and bacteria cells, and will be ignoring sex-determined traits, since these vary in mechanism and type from organism to organism. Plant cells, similarly, must be excluded. While their genomes in many ways resemble our own, their cells possess different structures which shift the mechanisms which control genetic manipulation.

\(^5\) See Figure 1

\(^6\) Some cells, like red blood cells, do not contain DNA at all, since their primary function is to transport as much oxygen as possible. Not having a nucleus provides more room for ‘cargo.’

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DNA has a double-helix structure, that when untwisted resembles a ladder. Each rung is one of four ‘bases’ which make up the genetic code. In order to produce protein, DNA is unzipped in small segments and read by DNA Polymerase, which assembles a strand of RNA (a single stranded relative of DNA). RNA is shorter and less stable than DNA, and is used as a means to transmit snippets of the full genetic code to other parts of the cell. The piece of RNA then leaves the nucleus and heads to the ribosome, an organelle that reads the piece of RNA and constructs a protein from the code.

Figure 1

This image displays The Central Dogma, the process of transcription in which the DNA being transcribed into RNA and then translated into Protein (here labelled “polypeptide”)

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7 While bases contain their own molecular structure, for the sake of this argument, we will consider them only in the simplest sense. The four possible bases are adenine, guanine, cytosine, and thymine, commonly abbreviated as A, G, C, and T. These bases form basepairs which create the ‘rungs’ of the ladder. A’s match with T’s and G’s match with C’s, meanings that if the ladder is split up the middle and read from either side, one can predict what the other side will look like.

8 I use metaphor here similarly to Francis Crick, because it is incredibly difficult to explain the microscopic without macroscopic language. However, I am conscious of the implications that using ‘ladder’ to describe DNA can create, and trust my readers to see beyond the properties of the ladder to the general structure I am trying to illustrate.

The Central Dogma encapsulates the fundamental process of the cell into one fluid movement from genetic code to functional protein. While The Central Dogma is often discussed as simply a means to create protein, it is a constant process whose parts function seamlessly in perpetual creatio. Simplifying it into a product eliminates the nuances of each step in the process.

This process emphasizes the importance of the linear genetic code. Genetic Determinism takes that emphasis to an extreme by asserting that all aspects of an organism can be attributed to a place on the genetic code. But, just as the sum power of a poem is not encapsulated in the words on the page, the genetic code is only one aspect of inheritance, which relies upon complex chemical structural shifts in the chromosome to transfer information about which genes should be expressed and when.

**Epigenetics**

Forms of biological inheritance that do not rely upon alterations to the genetic code fall under the umbrella term “Epigenetics.” Epigenetics can incorporate experiences like smoking, obesity, abuse, assault, and malnutrition into the genome. Even though these experiences may not change a person’s DNA sequence, the effects can still be inherited by their offspring. These alternative, often undetectable, forms of inheritance mimic common poetic techniques and can especially illuminate the choices Dickinson makes in her usage of medium and punctuation.

Though there are many ways that Epigenetics can manifest, the most common mechanisms are DNA methylation and histone/chromatin modification. DNA Methylation “is the addition or removal of a methyl group (CH3), predominantly where cytosine bases occur consecutively.”

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suppression of the DNA sequence to which it is added, meaning that that portion of DNA would not be turned into protein. This alteration functions similarly to DNA sequence mutations which can cause DNA to be transcribed improperly, resulting in a useless protein, or no protein at all.

Histone/chromatin modification, on the other hand, is a structural change in the way that DNA is bundled. When DNA is being stored within the nucleus in a closed chromosomal structure (the X-shape that we have come to associate with genes) it is wound tightly around histones, which then coil repeatedly to create the chromosomal shape (see Figure 2). Similar to poetry, if the structure is altered the meaning and function are also changed, and sometimes rendered incomprehensible.

Epigenetics has entirely altered the way that scientists consider inheritance. With the knowledge that environmental factors can be inherited, the way that we consider risk factors for

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disease and genetic-based behaviors has shifted to incorporate the possibility of previous
generations’ experiences trickling down through the genome, even if it’s invisible in the actual
DNA sequence.

In his essay “Epigenetics and Poetry,” Peter Middleton introduces the relationship
between poetics and epigenetics. He tracks the etymology of the term “epigenetic” ultimately
deciding that he will consider it a multi-faceted descriptor of the combination of DNA and the
environment. When he transitions to discuss the primary texts, he leaves behind the rhetoric of
genetic determinism and inheritance in favor of content-based correlations between specific
poems and larger scientific questions. Rather than considering the ways that epigenetics and
poetics can work together, he considers how poetry thematizes genetic disorders. By analyzing a
poem only for its thematic, rather than structural, connections to genetics, Middleton’s article
does little more than point out basic connections between poems about science and the science
behind them. Rather than continuing in Middleton’s tradition, I want to turn away from the
notion that genetics and epigenetics are only useful as topics, and consider more closely how the
model of epigenetics in relation to traditional genetics can illuminate the way we read poetry.

In many ways, epigenetics demonstrates in a chemical fashion the mechanisms of
metaphor, irony, tone, inference, medium, and structure. While poetic lines may be scanned for
rhyme, feet, meter, and sentence structure, the process of analyzing for deeper meaning and
implications must consider what lies beyond and intertwined within the words themselves. If we
take the “words themselves” to be like the genetic code—linear, with an ostensibly ‘correct’

12 I do not mean to say that a poem has one reading or one meaning, but rather that each word has a limited number
of meanings and there is a correct way to understand each word in isolation. Speakers of any given language have an
agreed upon number of meanings for each word, and while poets can and often do bend these rules, there are
incorrect definitions for words.
way of being read—epigenetics permit the multiplicity, interpretation, and ambiguity that poetry depends upon. While we have words to describe literary techniques for creating these phenomenon, the language lacks a broader distinction between the words and the extra-textual, such as tone, intonation, font, medium, irony, metaphor, and so many more aspects of poetry that are often stripped away in highly edited texts.

This sterilizing editing process is extremely common among Emily Dickinson editors, especially when Dickinson is placed within a canon or text book. *Norton’s Anthology of Poetry, Shorter 5th Edition* exemplifies this practice. While the editors include extensive footnotes detailing where readers can find alternate versions of the poem, the text provided is in a standard font, with prescribed line breaks and punctuation that normalizes its form. While considering one of Dickinson’s poems in this way may permit a reader to see its letters and its content, the lack of many original elements means that readers can miss the poem’s original variance, medium, or relationship to other poems. Dickinson poetry especially relies upon the consideration of extra-textual elements when choosing which version of her poetry to consider for analysis.

**Why I Chose Dickinson**

Emily Dickinson’s relationship to science is typically situated within her education at Mount Holyoke and her passion for gardening. These two veins of exploration, which scholars point at to demonstrate Dickinson’s knowledge of 19th century scientific practices, may illustrate Dickinson as a naturalist, but continue to consider the scientific content, rather than structure, of her poetry. Judith Farr’s book *The Gardens of Emily Dickinson* painstakingly catalogues and analyzes Dickinson’s relationship to flowers and how that relationship influenced her poetry.
Similarly, in his book *Dickinson and the Hill of Science*, Robin Peel explores the scientific information available to Dickinson in her lifetime, and conjectures about how this information seeped into her poetry. Peel and Farr both make the point that Dickinson was familiar with science and scientific vocabulary during a critical time in scientific exploration. She had a deep familiarity with the “natural world,” as both scholars often describe it. This proximity to nature can be argued for scores of poets, especially those whose poems, like Dickinson’s, frequently take up subjects found in the outdoors. Yet I want to shift the focus of this relationship between Dickinson and the scientific away from Dickinson herself. While she may have had a highly modern understanding of inheritance and plant breeding, she cannot have understood the genetic processes I have described above, and yet her poetry resembles them. I cannot account for those resemblances by claiming she had some supernatural intuition about molecular workings, but rather I want to mark her poetry as that which is best read through a vocabulary that had not yet been discovered when she wrote it. This discrepancy between the language written and the language best suited to describe the written work makes Dickinson a prime candidate for investigation through modern genetic language, despite the lack of possibility that she herself could have foreseen the correlation.

Selecting a model poet to consider in relationship to the genetic, in this case, resembles the process by which scientists choose the model organism upon which they will conduct their experiments. So too, I want to choose carefully the poet who best exemplifies the applicability of genetic language. A model organism (or poet) should either be a good approximation of an inaccessible organism (like using mice instead of humans), or a stand in for living organisms in
general to set a standard. In Dickinson’s case, the second criteria applies, as her work is emblematic of raw poetic process and innovative structure, while still relying on traditional rhyming and iambic meter.

Emily Dickinson exemplifies the innate connection between the process of biological creation and poetic creation. While she lived a century before the boom of molecular biology and the discovery of DNA, her poetry still resembles cellular processes. Her manipulation of the creative process is encapsulated in her poetry, which highlights the power of poetry to embrace multiplicity, changeability, and constant process. Just like the Central Dogma, poetry is a perpetual interactive process valuable in itself, not just for the product it creates. Dickinson’s poetry in particular demonstrates this fundamental aspect of poetry: that it continues. Despite its typically two dimensional shape (a standard that Dickinson’s poetry challenges) poetry emanates off the page, through interpretation, setting off thoughts and ideas that expand as deeply into the poem itself as they do into the reader.

I am not alone in thinking that Dickinson is the optimal choice for exploring the relationship between poetics and genetics. In her article “The Genomic Tropes of Dickinson’s ‘The Veins of Other Flower,’” CR Resetarits suggests that “the science-centric could learn a thing or two about the use of metaphor for explaining science from a writer like Dickinson...for the skeptical, questioning, rigorous art she offers up as arbiter” (Resetarits 80). She continues Middleton and Carlisle’s insistence that metaphor is the pivotal point upon which to rest the linkage between genetics and literature. While Resetarits begins drawing the scientific conversation towards Dickinson, it is Stephanie Strickland who more clearly emphasizes

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13 Reed et al. (2017)
Dickinson’s structure, rather than content, as a link to the scientific. Strickland writes primarily about the idea of a hypertext wherein elements of a text or piece of work can be infinitely and continuously connected to other elements from the same or other texts. This relational quality of hypertexts allows for richer consideration of passages by linking them to other texts which expand or contextualize the idea outside of the original text. Her argument largely considers modern technology and the increased usage of hyperlinks, but Strickland is careful to repeatedly clarify that hypertext does not require computers to exist, but can be seen in literary works stretching back centuries. For example, she describes Dickinson’s “radical innovation…[of] plac[ing] a superscript cross … to indicate words, or places where she wished the reader to consider a range of choices.” She clarifies that these “are not signs of preliminary indecision,” but rather “endorsements of multiple meaning” (Strickland [11], 108). 

By analyzing these choices, we can begin to unfold the relationship between Dickinson’s structural multiplicity and the web of connections in genetic processes. In fact, the language of genetics will prove more accurate and compelling than traditional literary language in explaining the power of Dickinson’s multiplicity. While science may be consistently informed by the use of metaphor, as many critics have emphasized, poetic analysis can benefit from embracing genetics as a new language with which to address poetry, especially poetry which defies the bounds of traditional verse.

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14 Strickland’s “Seven League Boots: Poetry, Science, and Hypertext” is a transcription of a talk that has been reproduced as both a web-based hypertext (http://altx.com/ebr/ebr7/7strick/) and as an article in The Measured Word: of Poetry and Science. The website presents the short piece in individual, non-linear paragraphs that allow the reader to navigate through the piece by selecting keywords from one paragraph to move to another. For this reason, I could not in good conscience only prescribe page numbers to these quotes, therefore my citation utilizes Strickland’s own bracketed numbering system for her sections in addition to the printed page number.

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Analysis of “The Ditch is dear to the Drunken Man”

Emily Dickinson’s “The Ditch is dear to the Drunken Man” typifies her use of non-linearity and ambiguity in her poetry, making it a prime candidate for genetic parallels, particularly with the language of mutation. Written on the inside of an unfolded envelope, the poem mostly takes up the front face of the envelope, while three smaller lines are scribbled on the flaps. Dickinson presents the reader with three possible versions, or mutations, of the poem’s ending, each of which illustrates a different outcome for the subject. Considering these endings as possible mutations will allow us to incorporate all three into the poem, without requiring readers to preference one or try to suspend all of them in existence at once.

In addition to including multiple endings, Dickinson obscures the intended order of lines as well as the beginnings and endings of sentences through her use of the envelope medium.

\[\text{Image: The Emily Dickinson Archive http://www.edickinson.org/editions/2/image_sets/79132}\]
Though Dickinson rewrote many of these unclear poems later in her life,\textsuperscript{16} clarifying the order and word choice, this particular poem was left alone. Starting with Thomas H. Johnson’s \textit{The Complete Poems of Emily Dickinson}, the flap containing the line “And Honor leagues away” was added to conclude the poem, while the other flap is omitted entirely. Editorial debate over the “correct” way to end this poem has plagued it since its publication, but every assertion of the proper ending fails to consider the possibility not only that there may be no “correct ending,” but that all three endings can co-exist. Dickinson’s “The Ditch is dear to the Drunken Man” confesses a fascination with mutation and possibility within the linear framework paralleled only by geneticist’s fascination with the multiplicity of the genetic code. By drawing a standard literary analysis into the vocabulary of the genetics, specifically the language of mutation, I will demonstrate the power of allowing scientific principles to permeate the consideration of poetic interpretation.

When attempting to conduct a standard scansion analysis of this poem, the difficulty lies in Dickinson’s ambiguous line breaks. Due to her writing on a small piece of paper, one can take her dashes to be line breaks, or one can trust the breaks she inserts for herself at the edges of the envelope. These alternatives, though identical in content, differ in emphasis.

\textsuperscript{16} This was the primary outcome of her fascicles, which are described in detail in \textit{Dickinson Unbound} by Alexandra Socarides
The Ditch
is dear to the
Drunken man
for is it not
his Bed –
his Advocate –
his Edifice –
How safe his fallen Head
In her disheveled Sanctity –
Above him is the sky –
Oblivion bending over him

The line-breaks forced by the edge of the paper create a choppy reading that prevents the reader from properly situating any rhythm. Perhaps this structural discomfort aims to place the reader in the also uncomfortable location of the ditch, in which the Drunken Man no doubt is comfortable, but would be rather unpleasant for anyone else.

While the alternative structure fails to create the same discomfort, it does emphasize a romanticism and joviality about the Drunken Man in the ditch that best matches how someone reading this poem might place their emphasis. The consonance of the first portion immediately draws the reader into a state of bouncing lyricism. “The Ditch is dear to the Drunken man” Not only does this line display alternating consonance, the almost uninterrupted feminine iambic quatrain enforces a lilt that Dickinson manipulates in the following portion. She draws her reader in, painting a picture of the ruddy-cheeked chanty-singing Drunken Man with the regularity of her verse. She continues with a line of three perfect iambs “for is it not his Bed.” and then shifts quickly to shorter, repeating lines, still maintaining the iambic structure: “his Advocate – his Edifice –” Each line consists of two iambs, ending in a dash, almost begging the reader to fill the

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intentional gap with their own foot-tapping ‘buh-dum’ in place of the now expected third iamb. The regularity by this point has lulled the reader into an almost intoxicated stupor, like the Drunken Man, who is happy to sit in a ditch, in a rut of stale drink and poetic structure. Dickinson concludes her comforting section with an almost biting “How safe his fallen Head.” To the now convinced reader, of course the Drunken Man’s head is safe, down in a ditch, but that seems like an impractical assumption. Things often fall or are thrown into ditches, making the man’s head in fact in immediate peril. Here is where Dickinson begins to jab at the ease with which she has convinced her readers of their complacency.

“In her disheveled Sanctity–” she begins to say, but leaves the thought incomplete as before. Yet this time there is no comfortable rhythm to her omission. Rather, she leaves readers wondering where this floating line connects. Is “her” the fore-mentioned “ditch” or the soon-to-be discussed “sky” above him? The way she situates the line, beginning with a capital letter, between the two possible signified nouns, ensures that there is no correct answer. She presses more firmly on this disorientation as the poem continues.

After completing her final iambic triplet “Above him is the sky–” she capitalizes on the uneasy momentum she has begun to build by beginning another iambic round, which quickly goes awry. “Oblivion” begins shakily in the iambic tradition, but is then followed unexpectedly by a trochee, “bending,” followed by another trochee, “over,” and ends spectacularly on an emphasized “him.” In this single line, Dickinson not only inverts her scansion, but turns a thus far melodic, bawdy nonsense poem into a dark description of a lost soul. While the first portion of the poem seems to reassure readers by insisting that the ditch is “his Advocate” and “his
Edifice,” this more sinister second half begins to question whether that is actually a reassurance, or rather a concerning truth—that the ditch is the only advocate or edifice he has.

On this tipping point, Dickinson abandons the linear structure and presents her readers with multiple possibilities. The two flaps contain a total of three lines, all ending with “y–” perhaps indicating the intent to slant rhyme with “sanctity” or “sky.” From the previous lines, the only safe assumption is that the lines are not all intended to be included. The three options are as follows:

1) And Honor leagues away–
2) enfolding him with tender infamy–
3) Doom a fallacy–

While the line breaks in the poem may be inconsistent and ambiguous, Dickinson does display a fairly strict 4 iamb, 3 iamb repeating pattern, which is of course interrupted by “Oblivion bending.” If she wanted to continue her pattern, options one and three fill the three-iamb requisite, however, the second option continues her sudden digression from the regular course. Each of the three options presents an alternate ending with entirely different implications. Dickinson provides no indication as to a correct choice, so the reader should assume, that there is no correct choice. Rather, this is an opportunity for multiplicity. The poem, as a structure, allows for all three possibilities without demanding a choice, and can simultaneously contain the ramifications of all three.

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17 All previous editors, including R.W. Franklin and Thomas H. Johnson, agree that only one of the lines can be read as the ending at a time. No edition of the poem presents the three possible endings one after another.
If we solidify the first possible ending, which most modern editors do as a result of Thomas H. Johnson’s editorial choice in *The Complete Poems of Emily Dickinson,* the poem concludes with a disparaging tone. As I have noted, the shift in the poem solemnizes the image of the Drunken man from a jovial, bumbling folk figure, to someone overtaken by “oblivion.” This final line seals the notion that “Honor” is “leagues away,” far gone from this pathetic Drunk laying in a ditch. There is nothing respectable or enjoyable about someone who finds himself in this position. Her choice of “leagues” pokes further fun at the sea chanty-esque nature of the poem’s rhythmic beginning. As though set out to sea, the Drunken Man has floated on the ebbing oblivion far from the honorable shore. This one-twist version of the poem, while sobering, is flat, leaving a reader nodding their head in blasé agreement. Of course the Drunken Man is dishonorable and oblivious, we knew that all along, even when we were caught in the snare of the bouncing consonantal melody.

The second possible ending, unlike the first, continues the sporadic scansion, while rejecting the de-romanticizing of the Drunken Man. Here, the oblivion itself “enfold[s] him with tender infamy,” a sympathetic and fairy-tale ending for an inebriate in a ditch. Dickinson carefully introduces a momentary doubt of the man’s “sanctity,” but quickly reverts to exalt the timeless awe which he inspires. However, the use of the word “tender” pokes at the irony Dickinson may be employing. The sappiness of this term betrays the overzealousness with which

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18 In *The Poems of Emily Dickinson Variorum* Edition R.W. Franklin notes that this poem was first published in *Bolts of Melody* (1945) with the ending “Oblivion enfolding him with tender infamy.” Mabel Loomis Todd and Millicent Todd Bingham delete the final line and a half, and instead insert the first alternate ending from the right envelope flap. The next publication of the poem, *The Poems of Emily Dickinson* (1955) edited by Thomas H. Johnson, instead chooses “and Honor leagues away” as the final line. However, Johnson does acknowledge the other two alternate endings, and includes them in a footnote, adding “Oblivion” just as MLT and MTB did. In 1960, THJ edited *The Complete Poems of Emily Dickinson,* wherein he removed the possible endings, solidifying “And Honor leagues away.” as the final line.
she praises this degenerate. Irony chips away at the trust the reader has in the poet’s sincerity and invites an inquisition into the phrase’s true content. By granting her reader the opportunity to question her sincerity, Dickinson herself seems to question whether this noble drunk should actually receive the infamy she has prescribed him. Yet, unlike the first ending, which forced readers to that conclusion, this ending allows readers to slowly consider the point until they realize just how blinded by elegant language they have been. While the ultimate outcome may be comparable, the means by which the reader achieves this conclusion means that their impressions of the poem and its tone are quite different.

The third possible ending creates yet another tone for the conclusion of her poem. Unlike the other two which end in two states of skepticism, the third is profoundly optimistic. “Doom,” she says, is “a fallacy—” She anticipates her reader’s skepticism, and rather than confirming or stoking it, she squelches it entirely. The inevitable misfortune that readers have bestowed upon the Drunken Man is a red herring, an obvious conclusion, that Dickinson cheekily warns her readers is a misguided assumption. If there is no doom, then the reality that has been encroaching on the romantic image she first painted was in vain. The safety first prescribed, then, is the accurate image, romantic and implausible though it may be. Or perhaps this move, too, is a double twist. As the “oblivion” begins to take hold, the fallacy of doom is perhaps the notion of the Drunken Man’s irrational ravings. Rather than asking her readers to think skeptically, as Dickinson did with her second ending, she here invokes their pity. This delusion that she invites them into, this sanctuary from doom, is precisely the world of the Drunken Man, whose only escape is convincing himself that the ditch is his haven.
Dickinson offers mutations of her poem by presenting many possible endings, making genetic mutation the ideal language with which to discuss this alteration of language and addition of multiplicity. Mutation of the genetic sequence can take many forms, including insertions, deletions, and reading frame shifts, however, the most applicable in this case is the “missense” mutation. A missense mutation occurs when a single base is swapped for another base (e.g. Adenine gets swapped for Guanine). There are many possible outcomes when a missense mutation occurs, ranging from no alteration to a completely dysfunctional protein.\(^{19}\)

Dickinson’s poem uses the principle of the missence mutation in the end of “The Ditch is dear to the Drunken Man” to demonstrate the outcomes of substitution. As we have seen, the first and second endings create relatively similar outcomes, while the third strays drastically. However, no matter whether editors select one ending or display or footnote all three, no critic claims that each ending creates a new poem, for a total of three different poems. The ability for mutation to result in the same product is common in genetic transcription, especially in the case of missence mutations.

While some amino acids are encoded by only one 3-base sequence, called a codon, many amino acids can be indicated by a multitude of codons. The ensuing protein can be created from a vast number of different sequences, though each version functions slightly differently (Dix and Thompson). For example, the amino acid Isoleucine can be encoded by three different codons (ATT, ATC, and ATA). The genotype is different, but the phenotype would be considered to be essentially the same. However, geneticists have recently discovered that although all three codons may code for Isoleucine, each of the Isoleucine structures that they create is slightly

\(^{19}\) I recognize that poetry does not operate within the binary of function and dysfunction, as proteins do, so I will only consider, outcomes when the missence mutation still creates a functional protein.
different. When a missense mutation occurs in an Isoleucine codon, such that it switches between two synonymous Isoleucine codons, the resultant protein does not change identities, just as Dickinson’s poem does not lose its identity as a singular poem by having three possible endings. By considering each of the endings of the poems like synonymous codons, rather than just alternate endings, we can see the relationship they have to each other and to the resultant poem. Each ending on its own allows for a slightly different interpretation when it is implemented. However, just like it would be incomplete to say that ATA codes of Isoleucine, without also considering that ATT and ATC code for the same protein, the three endings of Dickinson’s poem create a complete picture of the poem “The Ditch is dear to the Drunken Man,” which can be ‘coded’ in any one of three ways. Only by considering the three endings, not as alternatives to one another, but three elements that contribute to create a multiplicitous whole, can we see the full scope of the poem. Considering missence mutation does not require us to say that all three endings happen at once, but that they are all valid endings to the same story. The reader can never know if the Drunken man is doomed or blessed, but the consideration of all the analytic possibilities in concord permits readers to see all of the potential outcomes played out without requiring a correct or preferred ending.

**Analysis of The Two-Poem Envelope**

Dickinson’s manipulation of linearity and multiplicity expands beyond multiple endings to question the possibilities of alternative mediums for poetry. She again uses an envelope, but in what I am calling the ‘Two-Poem Envelope,’ she writes on both sides, complicating the poem’s readability by physically entangling the verse and obscuring the possibility of a clear start or end.
(See Model 1). The exterior of the Envelope, now unfolded, displays fragments of a larger poem, “Pompless no life can pass away,” which was published originally in Poems (1891), edited by T. W. Higginson and Mabel Loomis Todd. Over the following century, the poem was changed slightly based on a series of word changes that Dickinson indicated on small notes and scraps of paper. For the sake of this essay, however, I will not be considering “Pompless no life can pass away” as a whole piece, but rather the fragments of it that appear on this envelope. I want to move away from the provenance of each of the poems on the envelope and instead consider the envelope itself as a poetic object because the medium of the envelope defines the poem’s structure and linearity and cannot be extracted from the poem’s identity.

In fact, the text which most resembles traditional poetic structure on the envelope, is scribbled on the interior of the envelope, typically referred to as “Excuse Emily and her Atoms.” This poem is referenced in Franklin’s The Poems of Emily Dickinson: Variorum Edition in a footnote to “Pompless no life can pass away” as only “notes for a message to Susan Dickinson in October 1882,” because Dickinson included a slightly modified, transcribed version of the poem in a letter to her sister-in-law. Despite appearing on poetry websites, this text has never been formally published as an individual “poem,” and is excluded from the Variorum, which is considered to be the authority on the complete works of Dickinson.

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20 Model 1 was created from scans of The Gorgeous Nothings. Werner and Bervin carefully placed the text such that it is in precisely the same position as Dickinson’s own handwriting. The envelope itself is extremely faded and difficult to read, so I chose instead to provide this model that allows for readability as well as an appreciation of the poem’s physicality.

21 I have not found any indication as to when this envelope may have been unfolded, so there is no way of knowing its state when Dickinson originally wrote on it or whether she chose to unfold it during or after her writing process. However, as I explore later in the paragraph, we can determine that it was possible that the envelope was folded when Dickinson selected, allowing us to consider both the folded and unfolded shapes.

22 Typically referred to among Dickinson scholars as simply the Variorum

23 This letter is housed at the Houghton Library at Harvard University, and while I was unable to see the letter in person, I was able to find an old scan that shows the page containing the poem. Here is a link to the page containing the image: http://archive.emilydickinson.org/working/hb103.htm

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However, the envelope as a poetic whole, which I will be considering here, was first published in *The Gorgeous Nothings*, compiled and edited by Werner and Bervin, which allows readers access to the previously unpublished material forms of Emily Dickinson’s poetry. While many of Dickinson’s poems were transcribed by herself and others into more traditional, linear forms (like the two poems that appear on the envelope) the pieces displayed in *The Gorgeous Nothings* are inextricably bound to their physical forms in a way that previous editions of Dickinson’s poems have not fully addressed. However, I will argue, through a consideration of protein folding and denaturing, that providing only two-dimensional images of a text that relies so heavily on three-dimensional material does not accurately represent the poem, despite it being more accurate than sterilized text.

As Werner and Bervin present this poem in their book (pictured below), there are two ways in which to consider its shape: folded and unfolded. I also wish to propose a third: folded and open. Werner and Bervin fail to include an image of the original manuscript from the back, with the top flap open, which could reveal how much of the interior text would be exposed by ‘opening the envelope.’ Since the material relationship between the two poems so significantly impacts their interpretations, I believe it is critical to the understanding of this piece to be able to determine if the interior text could have been written while the envelope was still intact. If Dickinson could have written “Excuse Emily and her Atoms” without unfolding the envelope, the interior/exterior relationship between the poems becomes more pronounced. However, if “Excuse Emily and her Atoms” must have been written after the envelope was unfolded (i.e. the text falls underneath the other flaps of the envelope when folded), the relationship between the

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24 Thomas H. Johnson primarily edited Dickinson’s poems into linear, non-multiplicitous, traditional forms
25 The *Variorum* includes alternate word choices and Dickinson’s unique punctuation, but still forces the poems into a font-based text form with no regard to third-dimensionality.
two poems is primarily front/back, with the capability for encapsulation if the flaps are re-folded over “Excuse Emily and her Atoms.”
These manuscript scans and transcriptions are from *The Gorgeous Nothings (2012)* edited by Bervin and Werner.
However, we can recreate this experience by means of Model 1, which shows that all of “presides” and “yet,” as well as the line under “yet,” are visible when one opens the envelope. Though deceptively simple, this distinction allows us to consider the text as interior, as opposed to having been written on the flip-side of an already unfolded envelope. The prospect of one poem existing within the confines of another invites a line of questioning about the relationship between the content of the two poems based on their physical proximity to one another.

In her book *Dickinson Unbound*, Alexandra Socarides explores the materiality of Dickinson’s poetry, with particular attention to how her poems are related through folding. Socarides spends the majority of her book discussing Dickinson’s fascicles, attempting to answer her own critical questions: “What is the relationship of one poem to another poem? What are the different forms of possible relation and how do poems find their ways into these relations? What do these relations make possible and what do they repress?” (Socarides 22). Though Socarides applies these questions to the folding of the fascicles, her inquiries apply directly to my consideration of Dickinson’s envelope poem as well.

The challenge when reading or analyzing a poem such as this is the lack of a beginning. What one reader may take to be the first line, another may take to be the last, thus there is no proper or correct way to begin or end. Even if Dickinson herself read the words here in a specific order, the poem itself is defined not by its beginning and ending, but rather by its folded shape, and the relationships it creates between words. Rather than considering, therefore, a first word or line, we will begin with the outside, allowing us to most robustly account for the envelope’s unique shape.
Covering the outside of the envelope are fragments of Dickinson’s poem “Pompless no life can pass away” (here noted in bold face).

Pompless no life can pass away;
The lowliest career
To the same pageant wends its way
As that exalted here.
How cordial is the mystery!
The hospitable pall
A “this way” beckons spaciously,—
A miracle for all!

Though the outside of the envelope only directly quotes two short snippets of the poem, the link is clear. In addition to these phrases, Dickinson includes “a Fir/mament/for all,” a curious twist on “A Mir/acle/ for all.” Here Dickinson plays with the similarity of the second and third letters of Miracle and Firmament. Though The Gorgeous Nothings does not note it in their transcription of this envelope, there is a faint “P” in the lower left corner below “A Mir/acle /for all” which perhaps indicates the beginning of “Pompless.” When reading with a top-down approach, the folding of the envelope totally inverts one’s perspective, allowing this to be an almost circular poem, which can then, both physically, and linguistically form a case in which the other poem can reside.

When folded, the back of the envelope reads in order “denotes| / Cordial is the/ Miracle| / A Fir/ mament/for all,” yet the unfolded envelope read in the same manner produces “Miracle| / A Fir/ mament/ for all/ A Mir/acle/for all/ denotes| / Cordial is the.” This wrapped text, void of beginning or end, evokes the message of the larger poem, which focuses on the universality of the miraculous.

The outer poem moves inward on the word “denotes,” which the letter to Susan Dickinson (1882) shows was a word variant in “Excuse Emily and Her Atoms.” However, it
appears here on the outside of the envelope, either ending or embedded within the fragments of “Pompless no life can pass away.” As the exterior gestures towards the interior, this link between the poems draws the reader inwards. When the reader follows the ‘denotation’ into the envelope, we discover within these fragments the poet herself, asking to be excused by her reader.

“The poet” as a figure rarely enters Emily Dickinson’s poetry. While her poems often come from a first person narrative voice, they rarely explicitly betray the identity of the speaker as Emily herself.27 Inside the envelope, as soon as one opens the flap, the name “Emily” jumps out. “Excuse Emily,” with its double- ‘E’ command, shifts the ambiguous tone of the outside words to a specific action required of the reader. But what are we excusing her from? Before that question can be answered, we must consider what is being excused, for it is not just Emily, but “Emily and her Atoms.” The bits of matter that make up and belong to “Emily” must also be excused. Dickinson digresses from the subject of atoms to discuss the North Star. She uses scale as a means to both diminish and expand the star’s purview. While it “is of small fabric,” it still “implies much” or as Dickinson’s alternate word choice suggests, “presides much.” The physical nearness she uses to parallel her own atoms and the north star implies that the excuse she is making is from the smallness, or perceived smallness, of herself.

Yet Dickinson’s assertion of the smallness of atoms and the North Star plays smartly with the shape of the envelope itself. While this larger poem is hidden within the confines of the fragmented outer one, there is an expanse of interpretive dimension to the interior like the

27 Virginia Jackson devotes “Chapter 5: Dickinson’s Misery” in her book of the same title (2013) in large part to the dissection of Dickinson’s poet persona. While her larger arguments focus on the labelling of Dickinson’s poems as lyrics, her attention in this chapter is on the frequent contradiction and multiplicity found in Dickinson’s poetic voice. She dwells especially on the metaphors and personified poetic elements that Dickinson implemented as a stand-in for the poet, as well as Dickinson’s poetic voice in relationship to the perceived privacy of her unpublished poems.
infinity of possibility and energy within an atom or a star. Like these underappreciated and oversimplified quanta, Dickinson positions herself as something which, at first glance, may be physically small and simple, but within, there is inexplicable power and mystery — ‘miracles’ Dickinson might say. The “miracle for all,” so closely tied to the “firmament for all” presumably contains this infinitesimal North Star which is simultaneously miniscule to the naked eye and unendingly mysterious when unpacked.

This relationship of space, between interior and exterior, folded and unfolded, influences the meaning of the poem and invites the invocation of scientific language which often deals closely with materiality and spatiality. Dickinson herself solidifies this parallel by using “Atoms” and the “North Star” as the best approximations of the containability of infinite mystery that we find within each of us. She conflates poetic structure with malleable materiality to obscure the distinction between the poem and its medium, heightening the relationship between the poem and its scientific parallels. Dickinson creates expansive possibility through the manipulation of ostensibly linear sequences into three-dimensional materials, a process also found in modern microbiology through protein folding.

At the end of the Central Dogma, after the protein has been synthesized into a long strand of linear amino acids, the strand is folded into a three dimensional shape based on the chemical properties of its amino acid sequence. Only through this folding can the protein become functional within the cell, and if it is ever unfolded again, the protein is considered ‘denatured,’ meaning that it has been robbed of the natural structural and chemical features it needs to function.
As I established at the beginning of this section, the Two-Poem Envelope is inextricable from its medium. Even in its prescribed name, I confess the poem’s resistance to titling, as both “Pompless no life can pass away” and “Excuse Emily and her Atoms” invoke different pieces, though with similar text. The Two-Poem Envelope uses its shape to alter and heighten its interpretive possibilities, just as proteins use the process of folding to heighten their function. While poetry does not have an explicit function the way that protein does, every poem still ‘does’ something, which is precisely why we analyze poetry—to discover what it is ‘doing.’ Just like protein, this poem depends on its shape and material to be itself. The poem without the envelope is not the same poem. It is only through the consideration of the movement of the envelope, and the multiple possibilities that it displays that the poem can be analyzed. Through the folding process, both protein and the poem confess themselves as only truly appreciable in three-dimensions. While both can be depicted as a linear sequence of letters, which mostly capture their contents, they do not ‘function’ until they are situated and considered in three dimensions.

By considering The Two-Poem Envelope through the lens of protein folding we can see how integral the form is to the function. Considering The Two-Poem Envelope without its shape would ‘denature’ its poetic potential, ensuring that any analysis lacked a true sense of the poem’s meaning. As the analysis I have just provided shows, the foldability of the text permits numerous interpretations that would be entirely erased by being denatured. The folded functionality of protein can teach literary editors about the dangers of denaturing a poem that relies upon its materiality. Stripping a text of the non-textual elements that contribute critically to its poem-ness inhibit analytical possibilities that may move beyond the text to the medium and physical
formation of the text. Especially in the editing and curation of Dickinson’s work, editors must think beyond the linear to depict Dickinson’s work in its folded forms, such that readers can both see and feel what the poem ‘does’ as a three-dimensional object.

Conclusion

By examining Dickinson’s poetry in this way, readers can begin to connect the biological process within their own bodies to the creative process on the page. Thinking about the processes of genetics and the way that they correlate to the poetic process allows us to consider the relationships between molecular biology and poetics. As Evelyn Fox Keller has theorized, reading literature like cells read DNA allows for a more robust vocabulary for describing non-linear poetry. Furthermore, the conflation of literary and genetic language enlivens both discourses by allowing them to extend beyond their traditional scopes. Dickinson serves as the perfect model organism for these experiments in poetic analysis, because her poetry deviates from the linear norm. However, the rhetoric of genetics can be expanded to discuss other forms of literature, especially poetry, which by its very nature, like DNA, has a baffling and intriguing quality. Considering genetic language as a tool with which to interrogate literary texts, regardless of whether or not they consciously engage with scientific ideas, expands the interpretive possibilities beyond what literary language can describe. While scientists needed literary language to describe the microscopic world they have uncovered in DNA, so too do literary scholars need the language of science to explain the ways that poetry functions beyond the traditional literary vocabulary. Just as Dickinson’s poems mirrored genetic processes that were
not yet known to exist, there may be many more poetic processes that are waiting to be
discovered through a genetic close reading.

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