Introductory Essay

Metric and Variation: the Tempo of Poetry, the Poetry of Time

Frederick Turner

Arts & Humanities, University of Texas at Dallas, USA

frederick.turner@utdallas.edu

A perfect positivist science envisages an ideal state of invariance in which causality is perfect, cause is identical to inference, and effects and causes symmetrically imply each other.¹ Any Theory Of Everything (or “TOE”) must start out with this state: of zero entropy, complete unity, and infinite mechanical and thermodynamic order.

Yet variation is everywhere. Time is the enemy of invariance. Multiplicity, change and appearance (in the interwoven senses of experiential presence and scientific measurement) are opposed to unity, eternity and Being.

What must be added to silence, darkness, unchangingness, measurelessness and unity to get to the way things actually are? “Actually are,” that is, not just for human minds in different cultures. I mean also “actually are” for animals, plants, sensitive catalytic chemical systems, molecules, atoms, and elementary particles, all of which have unique histories down to the level of the Pauli Exclusion Principle (Fermions), and respond to stimuli in their own terms.

Variation is one name for what must be added to perfection to make actuality:

Variation in mathematics (non-polynomial “hardness,” where the answer to a problem varies with the amount of time given to its provisional solution; chaos; catastrophes; probability, etc.);

Variation in the subatomic world (quantum indeterminacy);

in chemistry (autocatalysis, far-from equilibrium resets, emergence, etc.);

in biology (sexual competition, speciation and individuation);

in ethology (signaling, game-theoretical resource exchanges, individual talent, theory of mind, predicting contests, etc.);

¹ The final edit for this essay was performed in the author’s cabin in the woods, with access to the internet but not to any library. References are therefore made to web pages containing the relevant quotations.

in history (the appearance of Great Men and Women, rational expectation paradoxes, game creation, art, poetry, religion, etc.).

The universe tends toward more and more unlikely events, more individuation, irrevocability and non-replicability—more self-identity.

A new conception of entropy is emerging, as the exponentially accelerating exploration of the information states of a system and of the environments that determine the limits of information states. Over universal history, many chemical and biological “Chess games”—whose information spaces exceed the number of particles in the universe—succeed those few supersymmetrical Feynmanian “Tictactoe games” that constituted the Big Bang initial state.

In this essay I want to explore, with the help of our dead friend J. T. Fraser, one particular “chess game,” metered poetry.

When pressed, in his *Confessions*, to come up with the most precise measure for the passage of time, Saint Augustine in despair comes up with the metrical verse syllable:

35. Deus Creator omnium; this verse of eight syllables alternates between short and long syllables. The four short, then, the first, third, fifth and seventh, are single in respect of the four long, the second, fourth, sixth, and eighth. Each of these hath a double time to every one of those. I pronounce them, report on them, and thus it is, as is perceived by common sense. By common sense, then, I measure a long by a short syllable, and I find that it has twice as much. But when one sounds after another, if the former be short the latter long, how shall I hold the short one, and how measuring shall I apply it to the long, so that I may find out that this has twice as much, when indeed the long does not begin to sound unless the short leaves off sounding? That very long one I measure not as present, since I measure it not save when ended. But its ending is its passing away. What, then, is it that I can measure? Where is the short syllable by which I measure? Where is the long one which I measure? Both have sounded, have flown, have passed away, and are no longer; and still I measure, and I confidently answer (so far as is trusted to a practised sense), that as to space of time this syllable is single, that double. Nor could I do this, unless because they have past, and are ended. Therefore do I not measure themselves, which now are not, but something in my memory, which remains fixed.

36. In thee, O my mind, I measure times.²

2 *The Confessions of St. Augustine*, Book 11, Chapter 27. Newly translated and edited by Albert C. Outler. https://silkworth.net/pages/augustine/book11_chapterxxvii.php.

Augustine is here making a radical statement: that consciousness is identical with time, or perhaps with the *experience* of time as the generation of a new moment every moment. Mind is not something for which time is part of its content: mind is the very experience of time. Significantly, Augustine chooses an art form, specifically the one whose material is language, to explore this idea. Significantly, too, Augustine describes the experience of verse/time in a series of paradoxes, of logical conflicts that refuse to take for granted the coexistence of continuity and discontinuity.

The conflict between temporalities, as J. T. Fraser showed, is the necessary condition of emergence on the physicochemical, biological, social and nootemporal levels. Tragedy is the genre that most explicitly explores such confrontations on the human level: between individual survival and reproduction, passion and reason, soul and body, tradition and innovation, principle and action, the animal and the human, “betwixt damnation and impassioned clay,” as Keats puts it in his poem on *King Lear*.³

But all the arts express and embody such conflicts, making them explicit and making us at home in them. Theme and variation—expectation and surprise—is a familiar feature of music; symmetry and asymmetry in visual arts and architecture; plot and plot-twist in narrative; character and character development in drama. Less well known is meter and variation in poetic form.

This is what I want to look closely at here, following Augustine’s inspiration.

Back in the 1970s, I met the neuroscientist Ernst Pöppel in Alpbach, Austria, at the triennial conference of the International Society for the Study of Time. We shared ideas, and met again over eight years at Bad Homburg in Germany as members of the Werner Reimers Stiftung research group on the biological foundations of aesthetics. One alcoholic evening we first recognized and formulated the neurobiological basis and cultural universality of the three-second line in human poetry.⁴ This discovery has since been cited and used in fields as diverse as audiology, mother-infant communication, poetics and prosody, anthropology, mammalian timing studies, cognitive neuroscience, literary theory, cultural studies, comparative ritual studies, and others. Three seconds can be described as the human present moment: it is the window within which short-term memory happens. Studies of the brain chemistry of ritual chant adepts indicate that if the three-second cycle is driven by an external stimulus like a chant or repeated slogan or work-song, distinct psychological effects result, including a sense of solidarity with others, relaxed awareness, an oceanic sense of unity, synchronization, and a much greater

3 <http://www.web-books.com/Classics/Poetry/Anthology/Keats/OnSitting.htm>.

4 Ernst Pöppel and Frederick Turner, “The Neural Lyre: Poetic Meter, the Brain, and Time,” *Poetry* 142, no. 5 (1983): 277–307.

ability to accept metaphorical and connotative meanings as opposed to literal and denotative ones.

Metrical forms, such as the familiar iambic pentameter, the ballad, the French *alexandrine*, the Italian *endecasillabo*, the Vedic *sloka*, the Japanese *tanka*, and the Arabic *ghazal*, involve set patterns of the various metrical elements—stress, syllable-length, syllable-count, tone, the foot, rhyme, and stanza—that constitute and situate a line.

But—and here ignorant critics of “sing-song” formal verse go wrong—verse poetry is not a chant. It is a chant with *variations*. There are many permissible ways in which English language metered poetry can violate the formal stress pattern of a line, and the greatest poetry displays extraordinarily subtle uses of those variations. Poetry is the emergence of meaning and new concepts out of the poet’s struggle with the physical constraints of sound and rhythmic coherence, the linguistic constraints of grammar and lexicon, the cognitive constraints of logic and trope, and the spiritual constraints of truth, beauty and goodness. Here we need to think about the communicative power of prosody: that complex body of sonic effects that distinguishes speech from writing, and that great writing can recover⁵ by an art as subtle as it is relatively unknown. Let me explain.

A good listener who has heard people speaking in many languages can often learn a great deal about the meaning of an overheard conversation in an unknown language, simply from its prosody, which is largely shared across cultures and is part of our shared human inheritance. We know when a question is being asked, when the partners are lovers, when somebody is being told to do something, when it is a secret, when someone is making fun or expressing scorn or sharing reminiscences or upbraiding or apologizing or comforting or lying. Even dogs have some of this ability to interpret prosody.

But poetry’s medium of transmission, since we ceased to communicate poems chiefly by oral memory, is written words. How are we to get the cues we got from our overheard conversation? The point of meter and form is that it provides a firm and predictable framework against which such prosodic variations and departures can be detected.

Here even more explanation is required. In these days when only pop song writers and well-educated literary scholars understand meter, it needs to be pointed out that meter is not a sing-song repetition but a basic beat against

⁵ Even after a century of modernist neglect of meter and rhyme.

which all kinds of variations, expressing intent, emphasis and feeling stand out. Take the first line of Shakespeare's Sonnet 18:⁶

Shall I compare thee to a summer's day

Nobody literate would recite the line according to the basic beat, da DUM, da DUM, da DUM, da DUM, da DUM, da DUM:

Shall I compare thee to a summer's day

The basic beat is understood, but now the line can take several forms, each with its own emotional implication:

Shall I compare thee to a summer's day

(In despair of finding the right metaphor for you, let's try a summer's day.)

Shall I compare thee to a summer's day

(What right have I, poor poet, to compare glorious you with anything?)

Shall I compare thee to a summer's day

(Another poet has compared you to a summer's day: now it's my turn.)

Shall I compare thee to a summer's day

(If I were to compare you with a summer's day, ...)

Or even

Shall I compare thee to a summer's day

(Poets have compared lots of people to a summer's day: let's try it on you.)

Little shifts within the firm stave of the meter could suggest all kinds of other aspects of this hugely complex relationship.

Let me take another example, this one from the great demotic poetry of our own times.

Let me take you down

Cause I'm going to

Strawberry Fields

6 William Shakespeare: *Complete Poems*, New York and Avenel, NJ: Gramercy, 1993, 133. See also https://en.wikipedia.org/wiki/Sonnet_18.

Nothing is real
 And nothing to get hung about
 Strawberry Fields forever.⁷

What meter—and the music of a song—can do is help specify where the tonal emphasis and stress is to be applied, or even, as in “Strawberry Fields,” suggest and control powerful and meaningful ambiguities. “Let me take you down” is an idiom that responds to a request, such as “How do I get to Strawberry Fields?” and in ordinary speech the stress is on “take”—the speaker is not just going to *show* the inquirer, but *take* him down there. Lennon pauses here before going on, implying that the next phrase is not “cause I’m going to Strawberry Fields,” which would be redundant, since the inquirer has already asked the way there. So the next phrase is actually “cause I’m going *too*,” and the music emphasizes “too,” by pausing there at the end of the line, as is consistent with that reading. I’ll take you down because I’m on my way there myself, or at least I just decided that that’s where I really want to go after all. Now the words “Strawberry Fields” are left as a questioning exclamation, “Strawberry Fields?,” grammatically separate from the previous sentence. It is, as the music emphatically insists, a sigh!—a sigh implying something like “why haven’t I thought of that loved place for so long?” And it now leads into the internal musing ramble about the place’s reality, or any place’s reality, and not getting hung for going there or hung up about it. The stanza, pulling itself together so to speak, ends with a half-ironic but bitterly nostalgic cheer, such as one would give to a losing team that one supports: “Strawberry Fields forever!” Now the emphasis is different: “fields” is now two syllables, the diphthong turning to a sort of sob, the whole phrase a defiant statement answering the original question, “Strawberry Fields?”

These two examples show different functions of meter. In Shakespeare meter provides a base for a variety of emphases, each of which adds to an immensely rich mixture of conflicting emotions, all of them, as the rest of the poem explores, fully intended. With Lennon the combination of poetic and musical meter enforces a single interpretation, but one which contradicts the bald prose wording, and which also catches a very complex series of changing feelings and captures a whole conversation by means of only one side of it.

But more deeply still, both poems—all true poems, perhaps—plunge us into a moment-by-moment meditation on the mind itself *as constitutively a moment-by-moment entity*. This is not to say that mind is merely a fugitive and transitory by-product, an epiphenomenon, a “spandrel,” (in Stephen

⁷ <http://www.azlyrics.com/lyrics/beatles/strawberryfieldsforever.html>.

Pinker's use of the term). It is, only if we regard unchangingness, as Plato and Parmenides did, as the hallmark of real being. But perhaps now we must haul our minds around to a different basis of evaluation, as my opening remarks about the necessity of variation for existence itself suggest. Knowledge is only here when we are thinking it. Our reality is our change.

Still, we do want authenticity, a kind of authenticity that does not deny other authenticities and that can breast the waves and tempests of change without sinking—or better, can use those waves like a surfer, or use those winds to drive its own quest. Such a person does not need to walk on water. Here is a suggestion: let us revise Heidegger's word "Dasein," his God-term for the locus of true authenticity. Let us try "Hiersein" instead of "Dasein:" being here instead of being there.

What is good about Heidegger's term is that it is clearly reaching for some kind of interiority, some kind of centeredness. Well and good. But his word, at least in its English translation, immediately roots that centeredness and interiority not in the person who uses the word, but in town, in the usual place, "there" in the land, in the dwelling. Part of the point of "being here" is that wherever one is, one is here. The phrase is deictic, indexical—the meaning of a deictic word such as "here," "now," "present," "I," and "you" depends on where one is, where one is facing, "left" or "right." "There" is a definite location, a pronoun for a place previously mentioned, and when I'm not there, I'm not there. But I'm always *here*. "There" can be specified by longitude and latitude on the globe, whereas "here" depends on where one is. "I'm here for you" is not the same as "I'm there for you;" the first implies the speaker's immediate willing presence, the second implies a duty, a job.

Let us think about "deixis"—"hereness"—as a kind of authenticity that might work for the arts and literature of the future. I don't mean *subjectivity*—"here" always already acknowledges the limits of my perspective. That's what it looks like from here, one says, but then one can go over and look at it from the other person's side, a new here. Poetry is always deictic: I put up my little tent of words and am at home there at the center of the universe until I pull up stakes and carry off my dictionary, like a snail her shell, on my back. The fundamental quality of anything that has existence ("stands forth," to translate the Latin) is that the world is different for it than it is for anything else, whatever its location. It is the center of its own world. It is the place where things that are pointed at or pointed out are pointed *from*. Michael Polanyi has a nice term, the complement of "attend to:" "attend from"—he calls it "tacit knowledge."

This idea stands in distinct opposition to certain interpretations inherent in "being there." One of them is implicit in the phrase "you had to be there:" that unless you have had a certain experience you can't authentically know it.

In the academy this idea is captured in the rather nasty word “situatedness.” “I’m troubled by how this statement is situated.” If you’re rich (a man, white, a Westerner, etc.), you can’t know what it is like to be poor (a woman, black, colonized, etc.). Then if you are poor, a woman, black, etc., you can’t understand the experience of someone who is rich, a man, white, etc., and so can have no basis for criticism? What happened to the faculty of imagination? Are we all one-eyed Polyphemuses, incapable of taking someone else’s point of view, sitting in our caves and eating each other when we get a chance? Poets of all cultures use the ode form, that turns everything in the world into a “you,” and then shifts the poet’s “here” into the point of view of the entity that is addressed. “What leaf-fringed legend haunts about thy shape?” Keats asks of the urn, and goes on to inhabit the little town whence the priests lead the ox lowing to the sacrifice.⁸

“Dasein” has the implication of the possession of a home place from which one gets one’s identity. It can be a place of hospitality—another anxious contemporary trope—but it is also a place from which strangers can be turned away, a place with a vocabulary that outsiders are not permitted to use. From Heidegger’s “Dasein” it is a short step to the condemnation of “cultural appropriation”—one of the chief grievances of the Nazis against the Jews—and then to the Wall against sinister “linkisch” immigrants who want to appropriate our cultural property. What makes us human is precisely our exogamy, our incest taboos, our willingness to risk having to get to know difficult in-laws and to take them with a grain of salt. Every new family is an act of the imagination, the making of a new “here.” What is usually meant by empathy is inadequate without that creative inhabiting of a new “here.” Empathy alone is merely subjective. It doesn’t take the active work of imagining, the artistic reconstruction of the other’s experience, the re-experiencing of it in oneself, and the risk that one might be changed by the experience. Goethe’s word for this work is *Einfühlung*.

And *Einfühlung*, “*Hiersein*,” is as essential to good science as it is to any good art. The work of science is nothing more or less than learning the real language of what is studied, speaking math with electrons, electron with atoms, nitrogen with nitrates, oak with bur oaks, mammal with fallow deer—just as an anthropologist speaks Tigre with Eritreans or French with the farmers of Picardy. Einstein didn’t look at the photon from Einstein’s point of view, but looked out at the world from the photon’s point of view. When the physicists adopted David Hilbert’s idea of the eigenfunction as the unique signature of a

8 John Keats: “Ode on a Grecian Urn” <https://www.poetryfoundation.org/poems/44477/ode-on-a-grecian-urn>.

particle, they were granting a certain “hereness” to those most elementary of entities.

Another way of expressing “hereness,” “deixis,” is the extent to which an entity is involved in a feedback relationship with itself. We know from Einstein that an atom is just energy bound in a sort of knot so that it cannot escape itself. The buzz of its electron shells and the higher-pitched buzz of its nuclear refresh is the rate at which it refreshes and reproduces itself into its next present moment. Molecules maintain themselves by a continuous music of these buzzes: laser flashes can now be used to take stills of the movie. The DNA of life, at an astonishing higher order of complexity (yet made of earlier self-maintaining herenesses!), literally clones itself, cleaved and replenished by the histone. Social species, through such devices as mate choice, take control of their own evolution, accelerating it faster than the rate of genetic drift and selective adaptation. Humans think about themselves and form working models of themselves and each other in their minds, speeding the refresh as they attend to a Bach variation, a Cézanne landscape, or a Shinto ritual dance, or a Shakespearean sonnet, or a Beatles song.

The point here is that the interiority of a human being is not that which alienates her from everything else in the universe, but what she has in common with everything else. Primitive interiorities make up more complex forms of “here” and “now;” our unique selves are not alienated from our bodies, but further extensions of our bodies’ continual process of self-invention. Augustine hits on the word *distentio*⁹ to describe time—time is a distention of the soul or self. That is, it is not a dimension but a process, a self-expanding process. Augustine is thinking here only about the human soul, but if we recognize the time and deictic “hereness” of other entities than humans, we may be pretty close to the picture contemporary physics is beginning to give us of time.

So poetic meter is a tool by which mind emerges as it negotiates the conflict between the ritual beat of the chant and the delicate patterns of emphasis that constitute conscious emotion. The three-second present moment of human poetic meter is the site of mind. The person is the story or full picture or drama or symphony of those moments. And in this process we perhaps join in the much greater symphony, the “hereness” of the whole universe, past as well as present; it is not a coincidence that the verse Augustine chooses for

9 Augustine is plainly using this word as opposed to others, like expansion or extension, because it is not an abstract measure but a process inherent in the nature of the self of the being that distends. Collectively the past distends into the not (“yet”) present future, and mind is the leading edge of it—that is, when we mind it.

his meditation on time and metric is “*Deus creator omnium*”—“*Deus creaaator oomniuum*.”

T. S. Eliot puts it this way, probably with Augustine in mind:

And prayer is more
 Than an order of words, the conscious occupation
 Of the praying mind, or the sound of the voice praying.
 And what the dead had no speech for, when living,
 They can tell you, being dead: the communication
 Of the dead is tongued with fire beyond the language of the living.
 Here, the intersection of the timeless moment
 Is England and nowhere. Never and always.¹⁰

¹⁰ T. S. Eliot: *Four Quartets*, “Little Gidding,” Section 1. <http://www.davidgorman.com/4quartets/4-gidding.htm>.