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THE ORDER OF THE NOVEL

NO FORM OF ART can express a life quite like the novel. No art form charts the lives of individuals—encounters, challenges, and relationships—as successfully as the book-length work of fiction. Perhaps this is because of the amount of detail provided for characters and their situations, which allows us to truly experience as they do, but beyond this, the *living* quality of novels is best understood by considering time: the time we take to read, but also the manipulation of time upon the page. All readers casually understand this, but it is worth looking at a few scientific concepts, in particular some properties of time, to better comprehend how it works.

Life, at its most basic, is what distinguishes us from the inorganic; we track the roster of experience and transformation within the limits of birth and death. Because of our clear parameters, we are, in scientific terms, a closed system. A novel too has a clear start and finish. Between these, a string of words ticks out across an expanse of pages as we read, until we reach the end. A novel at its shortest encompasses roughly two hundred pages (below that it collapses into another form) and at its longest extends onward into a mass of who knows what. The longest novel may still be unwritten. But whatever its length, a novel is not quite a novel until it has that magical property that allows us to place aside our lives to experience that of its characters. To read a novel is to live another life.

To better understand the novel's specific power, we should consider its properties against those of other art forms. The visual arts have an aggressive immediacy. Because of the indiscriminate nature of sight, painting, drawing, and sculpture intrude with effortless ease. They present a glimpse, or several, into another perspective—that of the represented, that of the artist—but one that does not hold us long enough to mimic a life. Dance and theater would seem to do well at engaging an audience member to experience a life, but the presence of actual bodies deters us from relinquishing our own corporeal reality. This also applies to film. We sit in the audience, observing, rather than being embedded in the consciousness of the characters. Shorter forms of fiction, in their efforts to contain the stuff of life, make use of structures that showcase their own scaffolding. The self-conscious grappling with the short story's

limits creates a thicker filter between reader and read. A poem entangles the senses, reaching for a visceral empathy through its roster of particulars. Poetry provides an acknowledgement or disruption of some sensed reality that we already held; it achieves its power through new perspectives. There are narrative poems and novels in verse, but these are essentially stories that I would argue don't submit to time and life in the way that stories do. Music has a singularly intrusive quality—we can't close our ears—and attaches itself to performance (concerts, opera) and to experience (emotional, quotidian, admiring), but it doesn't replicate a life. I listen to music as I write and, as I listen, am nurtured through speculations, warmed by its company, but I am still actively engaging in my own narrative. My life is still hotly burning.

In many ways, we live a fiction. Even at the level of language, scientific reality can disagree with our quotidian experience. Einstein illustrates this in his undermining of our understanding of space. What is space? What we assumed to be the nothingness between two objects became, after Einstein, as much a thing as the objects used to define its limits. Space was filled with matter, though we once moved along its grooves unaware that we were swimming through a swarm of molecules that were enacting force upon us. Space became a thing, not an absence. How then to express that which it once expressed—an emptiness? How could we express that emptiness if we were to understand that we cannot separate ourselves from others without placing something between us, that in doing so we are still in relation to the other, that unconnected isolation is impossible? Yet the concept of emptiness must still stand, an emptiness that we define, in casual conscious language, as space. Sometimes, I need space. Space thus comes to mean two things simultaneously. It means an absence and a presence (the first passive, the second capable of force), and we choose which sense of it we wish to employ according to our desire in the moment.

Language becomes increasingly unstable as we approach greater understanding of the world around us. This instability is again illustrated in a brief meditation on gravity. Einstein was inspired his entire life at the thought of a man falling from a building.¹ This obvious illustration of an act of gravity actually depicts the opposite, because a free-falling figure is free from gravity. To understand this, we must imagine ourselves in free fall in an elevator. Our feet would not be touching the floor. We would be suspended in the air. What culturally we process as extreme acts of gravity—a man falling from a building, an elevator speeding to

earth—depict the opposite conceptual reality. And one can continue to list how science undermines our sense of things. Because it often does. We live in denial of the spinning earth, the weight of air, and the swarming molecules of a tabletop. When science touches on time, the proven particulars of which create a dizzying, disorienting world, we make sense by ignoring reality and casually imposing our own structure.

THE UNDERSTANDING of time might be the next big revolution in how we understand the world. We hold a compelling complacency before these great leaps in science. When Copernicus put forth his seminal revelation that we were in orbit, it didn't really affect the way we lived. We continue to walk across a still, flat plane. And people live full lives never contemplating what it is to spin and stick. The same is true for the understanding of time, which we live according to Newton's proposition: the way time ticks for each individual is monitored by a supreme clock that measures our movements. But now science tells us that this isn't really accurate, that the experience of time is personal, moving more slowly for some, more quickly for others. It can now be measured that for a person moving at a high speed, time passes more slowly than for their stationary counterpart. At some point, we may all live in this understanding, and that would be revolutionary. But the novel has always understood this, slowing and speeding to mirror experience, selecting its matter according to the particular modes of its characters. Ultimately the key to the novel's success at life is its ability to replicate time and to do so with a startling devotion that is in step not with quotidian, Newtonian time but rather with that elastic, elusive time most often contemplated by physicists.

What is time? Does it surprise to learn that it is the most-often-used noun, that as we attempt to articulate our thoughts, we reach for "time" time and time again?² Our use of language is what makes us human. It is what distinguishes us from other animals. As Stephen Pinker says, "In any natural history of the human species, language would stand out as the preeminent trait."³ And so if language is our essential trait as people, its essential trait is our constant tangling with time. We say, "It's time to go," imposing a particular "now." We say, "Those were good times," representing a vague collective of the past. We ask, "What time is it?" anchoring ourselves in a shared sense of momentum. Time acts as a catch-all phrase for what we articulate without understanding. If a high percentage of our speech involves itself with time (in whatever sense it

is called upon), then a high percentage of our humanness is enamored of this companionable, unstable reality. Thinkers have always wrestled with this. Saint Augustine's often quoted, "What then is time? If no one asks me, I know what it is. If I wish to explain it to him who asks, I do not know," articulates a struggle shared by many: physicists, writers, and saints. Given that Augustine was a theologian, when a route of inquiry reached an unsolvable impasse, he could happily assign the shortcomings of his reason to his a priori unfathomable God. This functioned as a solution of sorts and bolstered rather than undermined his guiding light, which was not reason but faith. Saint Augustine also said, "God is best known in not knowing him." And it is interesting to note that, for Augustine, at least in these two instances, God and time are possibly interchangeable.

Even Einstein was loath to live in a world without God. Max Born's studies in quantum mechanics led him to propose a world based on probabilities rather than specific outcomes; Einstein rejected it, famously stating, "I, at any rate, believe that he [God] does not throw the dice." For Einstein, God (or science) did many things, including supplying a determined and determinable narrative. Einstein managed this position even after, in his special theory of relativity, he noted that simultaneity was impossible to prove and therefore disprove. When looked at through the lens of physics, things could be happening all at once.⁴ He tore at our notions of time as set forth by Newton and instead gave us a reality where time swelled and contracted. Time was tied to gravity, and large objects, for example the earth, slowed its progression. Twins living at different altitudes were aging at different rates, the high-altitude twin understood to be aging more slowly, although the units of time were so tiny as to not be noticed. All of this was theorized by Einstein and then later measured and understood to be true. But what does all of this have to do with the novel?

LET'S CONSIDER four properties of the novel that specifically engage scientific properties of time: the role of witnessing in creating a *now*; entropy, which affects the novel at the level of the sentence and in its overall structure; increasing disorder as a principle for sequencing narrative material; and superposition, which traffics in probability rather than a specific outcome.

In the study of time, evidence suggests that time does not move forward, that there is no past, and that there is no *now*. This thought makes some people giddy, but for those of us who define reality by experience,

the proposition that all is happening at once can seem implausible, despite the work done by brilliant minds to suggest just that: events are a series of snapshots that happen simultaneously, and our minds order them in a very persuasive way.⁵

But there are realities that make time's arrow impossible to deny. The present is that which recalls the past, the future is yet to be determined, and the now is like a bead moving along this trajectory, flickering bright and then dimming. F. Scott Fitzgerald's "So we beat on, boats against the current, borne back ceaselessly into the past," albeit with sentimental swagger, suggests just that.⁶ The law of physics that acknowledges this directional flow—a past and a future—is entropy. Entropy observes that heat only passes from hot bodies to cold, that a moving ball comes to a stop and not the other way around. This—even in the instance of the moving ball—is recorded through heat passing to a colder body. In this, entropy creates a narrative in its motion. So that is entropy—direction and loss of heat.

We read in one direction, a process echoed by entropy. But the novel has more use for this term than simply that. Novels are closed systems, like lives and unlike space and time. Novels have clear starts and ends. And here we can look at the second law of thermal dynamics: a closed system left to spontaneous evolution will always move to the state at which entropy is the highest. What does this mean? Let's think of a closed system as a box, and spontaneous evolution as the process adding apples to the box one at a time. As the box becomes fuller, we can see that with each additional apple, we are moving in a specific direction—the more apples, the more time has passed. The interior of the box becomes more crowded and more disordered in its contents. I make this example simply to illustrate that we live by an understanding that less is earlier, more is later, and that this movement to greater complexity is what gives order to our lives.

This concept is what allows us to grasp the arrow of time that moves in one direction, accumulating, progressing, and increasing in complexity. This onward momentum is observed in the structure of a sentence. One reads a sentence in one direction, the words accumulating as one goes. As we read, the sentences tick by in a linear way. Obvious as this may seem, it is worth observing given that this conscious streaming, which mimics experiential time, is not created in non-narrative works of art. One looks at a painting for an unspecified amount of time as one's eyes roam in an unspecified orbit, one catches a song halfway

through and is still given a palpable if incomplete sense of the work, but the sentence requires us to follow it along from start to finish. Sentences are the building blocks of novels and so this basic adherence to entropy on a micro-level already attests to the novel's loyalty to experienced time. The sentence starts at a low entropy and then, through accretion of words, is moved to a higher entropy. The sentence is a metonymic representation of how the novel manages time. The novel is constantly moving to a higher entropy, accumulating events and people and concepts in an expanding roster—held in memory—into an experience of life.

The novel is in thrall to this process of increasing entropy, and this allows it to reject the order of when things actually happened. Garcia Marquez's *One Hundred Years of Solitude* begins with, "Many years later, as he faced the firing squad, Colonel Aureliano Buendia was to remember that distant afternoon when his father took him to discover ice." Perhaps this is the final event in the timeline of the novel, but the author needs it as his opening. To achieve the novel, this sentence needs to be the first apple in the box. Similarly, flashback might bring us out of ordered time but is done so with the aim of increasing entropy in a determined way. A novelist is expert at managing the progression of disorder, privileging when the reader needs to know things rather than the timelines of characters' lives, at guiding understanding rather than simple event to a greater complexity. Also, we read this firing squad as an anchoring in a present—a *now*. The rest of the book reaches into the novel's past.

But what is now? What is the present? We understand, perhaps, that the present is that which recognizes the past yet does not know the future, that now works as a sort of barrier between the past and future, hurtling along, assigning all it encounters to the recognizable. Despite this simplicity, it is something that knowledge of time can complicate. The issue is not that our experience of now is not real but rather that it is particular to us as individuals. We cannot share now with anyone else. Now, when understood, becomes a lonely word. When I think that I am now seeing my friend, the time it has taken her image to travel to me—determined by the speed of light—has put her in a different state than what I am witnessing; likewise my presence to her. There is a delay in the words spoken to me, and even touch creates a delay in the transportation of sensation to the brain. Now is personal and is defined by a logic of private witnessing. We share now with no one. We gather everyone into our own personal nows, whether they belong there or not. Now is a fiction, but fiction is also a now.

The sense of creating a now is the basic logic used in reading. Our interaction with each word encountered on the page is a conjuring of now. In fiction, this lends its nowness to the characters in the work. It both accepts the dilations and contractions of time, translating the music of traveling light and sound and feeling into the ticking passage of the words upon the page. It accepts that we cannot see the nows of two characters simultaneously; as we read, we have no problem stringing the presents of the characters along as we go, consigning them to the same milliseconds, as we do in our lives, although the process of reading necessitates that we encounter their actions one after the other.

The logic of novels depends on our creation of the illusion of now, and because a now is subject to our assigning of it, we accept that it can be experienced not just once but numerous times. Colonel Aureliano Buendia faces the firing squad. We set the book down. We reopen it and there he is again, facing the firing squad and recalling the day his father took him to discover ice. The slippery reality of now is laid bare in its ability to be experienced numerous times. We may recall having read a passage before, but the character remains unaware, stuck in their replayable now. Also, our hours of reading are composed of lightning strikes upon the page—an accumulation of ticking hits that call the characters to life. Now is created by witnessing.

The entangled nature of now and witnessing may be illustrated by observing certain paintings. Bruegel's *Children's Games* depicts its little actors in a myriad of activities—chasing hoops, piggybacking, brawling, playing leapfrog, and a hundred other things. Our eyes move around the painting anointing it with a now that seems to pass time, that allows its matter to unspool with the leisure of a movie. This personalized *now* is a major factor in our interactions with art but is teased and called to duty most relentlessly in the reading of a novel. Additionally, the logic of what is included and excluded in a novel rests on the relationship between now and witnessing. In the limitless universe that a novel generates, the matter of the novel organizes itself along a little narrow path of witnessable moments. Newton may have believed that that time exists even where it is not perceptible, but the novel does not.

This brings us to superposition and how it relates to novels. Novels track lives by understanding the infinite possibilities generated by each step forward in the work. Just as we are confronted with a myriad of choices in each moment of our lives and exist in all those possibilities, so do our characters. One might wonder if this is worth saying because

the alternative—our lives being predetermined—seems odd, unless one has tangled with free will and decided that for reasons, often religious, that we really have no choice. Free will is its own can of worms and is still being nudged along by the philosophers. But it is safe to assume that most people understand the numerous paths presented at any particular moment, and before one acts, all these possibilities exist and are real. Particles of matter behave in this way. Electrons physically and demonstrably exist in many different states prior to collapsing into one state. What makes electrons problematic is that you can see them in all their possible forms in a present, and for some of us—and Schrödinger’s cat, who cannot be both dead and alive— such possibilities can only exist in an undetermined future. This property of electrons as they are witnessed in several states of being is known as quantum superposition. Electrons exist like this until they collapse into one state, much as we exist in all our possibilities until we act. One can only predict where an electron is likely to land, and this is the proposition made by Max Born that so annoyed Einstein, which made him summon “God” and “dice,” although religion and gaming were not usually present in his rhetoric.

But why consider quantum superposition while considering the properties of a novel? Because of probability. Just as any useful study of time includes the oddness of quantum superposition, the novel needs the logic of probability. Characters must exist articulately and tangibly—as do electrons—in their possible futures before they act. Probability in its most material sense is essential to creating suspense. Probability is the property of the novel that urges the reader forward. We can use some of the great heroines of literature to illustrate this. When reading the novels of Emma Bovary, Anna Karenina, and Isabel Archer, one is overwhelmed by the desire to find out what they will do, a sense underscored by wondering which path they will choose. As in a slit experiment, which sends particles through a pair of openings in a shield, we can predict the results of their actions but only according to some sense or law of probabilities.

We do not hold this as a guiding force in the enjoyment of other art forms. One may be stunned by Francis Bacon’s *Screaming Pope* but does not wonder what he will do. Free will hovers about characters, and trying to predict their choices and responses to the forces in their lives is what draws us along. When we cease to care about what happens next, we discard the novel. And the characters must act in understandable ways for us to care. They must land time and time again in the realm of surprise that is also probable. The novel’s success with readers is largely

determined by its ability to attractively present the probabilities. The readers' successful reading experience relies on anticipating a myriad of outcomes that are plausible, rather than one. For the writer, the acknowledgement that all these directions are concrete—seeable, possible—allows them to move the plot forward, negotiating the choices until—as electrons—the narrative collapses into a single, determined move. The novel is composed of these choices, these collapses of possibility, presented one after the other as the writer inches the narrative to its conclusion.

A novel takes the organization of time as it is experienced in life as its basic logic. This is not a property of the novel but what allows it to exist. Writers write novels, but we are all writing our lives, tracking back through memory, assigning prominence, editing out with necessary forgetfulness. Time does its thing, and we do ours. This instinct to narrate is what allows us to read novels. This instinct to narrate is novel writing itself. It is no wonder, then, that in the closing chapters of his book, *The Order of Time*, the physicist Carlo Rovelli writes, "I am this long, ongoing novel. My life consists of it."⁷

NOTES

1 World Science Festival, "Brian Green and Alan Alda Discuss Why Einstein Hated Quantum Mechanics, YouTube, July 10, 2014, video, 15:13, www.youtube.com/watch?v=HneFM-BvZj4

2 Dean Buonomano, *Your Brain Is a Time Machine* (New York: W.W. Norton and Company, 2017), p. 3.

3 Stephen Pinker, *The Language Instinct* (New York: The Penguin Press, 1994), p. 16.

4 Julian Barbour, *The End of Time* (New York: Phoenix Paperbacks, 2003), p. 12.

5 Barbour, p. 19.

6 F. Scott Fitzgerald, *The Great Gatsby* (New York: Scribner, 2003), p. 72. Kindle

7 Carlo Rovelli, *The Order of Time* (New York: Riverhead Books, 2019), p. 178.