

# **Willing Spirit**

**essays on quantum mechanics and capitalism**

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Cover image by Bridget Underdahl

This painting hangs over the headboard in my guest bedroom. I like its playful allusions to Dorothy's shoes in "The Wizard of Oz" and the turtle that holds up the universe in Hindu and some Indigenous American Tribal mythologies. The head that wrote this book has been living in some combination of that East/West nexus for the last several months, and this is what it has to say about all of that.

7/02//25 extended edition



## **Contents**

Willing Spirt: finding a new paradigm	7
An Addendum on Time	56
A Brief “Diss”-ertation on Capitalism	82



## Willing Spirit: finding a new paradigm

### 1.

*The [D]ao which can be expressed in words is not the eternal [D]ao; the name which can be uttered is not its eternal name.*

This is one of the many translations of the opening lines of Laozi's *Dao De Jing*. All of them strive, often awkwardly given the discursive rather than figurative inclinations of English, to say something about the limits of language for conveying the fundamental truths of this universe: I.e., while it is at least theoretically possible to fathom at some deep level how the reality we are a part of here operates, language is not the best way to get there nor can language fully explain what exactly you got to once you do. "The eternal Dao" can only be intimated via puzzling fables (as in Zhuangzi) or baffling riddles (as in Laozi), both founded on indirections that can't point out a "there" that is in fact there.

Here's another quote I like to the same effect, this one from Plato's *Phaedrus*, which was being written roughly around the same time as the *Dao De Jing*:

*As to soul's immortality then we have said enough, but as to its nature there is this that must be said. What manner of thing it is would a long tale to tell, and most assuredly a god alone could tell it, but what it resembles, that a man might tell in briefer compass. Let it be likened to the union of powers in a team of winged steeds and their winged charioteer. (246, a 492)*

Again the message is clear: It is impossible to fully explain via representational language the most fundamental elements of our world—in this case the nature of the soul, which for Western thinkers wears at least some of the raiments of the Eastern concept

of the “Dao/Way.” Socrates’ confidence in what “can be expressed in words” is certainly more expansive than Laozi’s. Still, he is incapable of saying directly what “manner of thing” the soul “is” (“a god alone” can do that), only what it might be “likened to,” fables and riddles again instead of statements of fact, leaving us, like his “winged steeds” circling around in the heavens, “balked . . . of the full vision of being,” forced to “feed upon the food of semblance” (248, b. 494).

Jesus says much the same thing a few centuries later, explaining to the apostles why he speaks in parables rather than just saying straight out what he means:

*The reason I use parables in talking to them is that they look, but do not see, and they listen, but do not hear or understand. So the prophecy of Isaiah applies to them:*

*“This people will listen and listen, but do not understand; They will look and look but not see, because their minds are dull, and they have stopped up their ears and closed their eyes.”* (GNT Matthew 13:13-15)

Jesus goes on to say that the apostles are “fortunate [because] your eyes see and your ears hear,” though there is scant evidence that this is ever true, including in this case, when Jesus is forced to gloss the “meaning” of his parable for them in the most simplistic terms. Once again, the only reliable options for intimating what is true are indirect, those pesky fables and riddles.

A couple of millennia later Erwin Schrödinger coined the term entanglement to describe the intimate relationships that result when subatomic particles interact with one another, a concept that, though the math is transparently clear, was and has remained elusive to clear verbal rendition. He says this entanglement is “not one but rather *the* characteristic trait of quantum mechanics, the one that *enforces its entire departure from classical lines of thought*” (italics mine). That’s a lot of heft to give to a single concept, and it inaugurates the paradigm shift quantum mechanics entails for our

understanding of what “reality” is (or more accurately isn’t quite), and what our rightful place in it might be, one which “can be expressed” only via enigmatic figures (including some elegant math) instead of transparent words, the staple of “classical lines of thought.”

And finally, in a song I wrote about five years ago, this confoundingly indeterminate relationship between language and “reality” is likened to the one we face when we are in love with someone who doesn’t reciprocate. As we resist accepting that fact, we end up in states of mind that feel like “trying to make something not there stay.” The song is rife with contradictions of this sort that attempt to capture the instabilities that arise when we mistake nothing for something. Laozi, Socrates and Jesus might prefer to reverse the order of that “mistake,” but I think they would understand completely what it’s like to try to say “all those things you just can’t say” (the song’s title.) It is from the blurry spaces of this conundrum about what language can and cannot do that this essay emerged and through which it wends its way.

I started thinking toward this problem in the midst of a personal crisis of spirit, a sort of “dark night of the soul,” that I experienced late last fall (2024) when two terrible things happened almost simultaneously. One was the election of Donald Trump at the end of a seemingly endless year of his brain-addled babbling as he juked a justice system incapable of acting expeditiously, if at all, to hold him accountable for his criminality; the other was a series of medical emergencies that someone dear to me suffered as a result of chronic abuse in her workplace. Both were “health crises,” one national, one personal. Both were induced by repeated acts of micro-aggression, gaslighting, bullying, designed to wear down resistance, instill self-doubt and confusion; in other words, to break spirits, individual and collective, textbook examples of how to inflict authoritarian violence on others, all the while with a smile on your face. Those terms—“abuse,” “aggression,” “bullying,” and especially “violence”—may seem like overreach in interactions of this sort that leave no visible bruises on the victims, may even be

deemed socially acceptable, but I will try in what follows here to warrant all of that.

In the wearisome year leading up to this nexus of events, my head was ire-mired in the noxious fog that often wafts up from one's stomach-pit during periods of stress, making it hard for me to steer a clear path forward, or even see one there at all. The co-incidence of those "two terrible things" cleared out this blariness almost instantly, more like a hard slap in the face, really, than an epiphany, initiating what has turned out to be a surprisingly rewarding journey toward restoration. The first step on that journey was simply recognizing that for me to be an effective instrument of change I could only fully attend to one of these matters, and I chose to focus my care on the person closest to me, which you may have guessed already is not Donald Trump. I spent hours in ERs, OR waiting rooms, and the hospital room in which she began to recuperate. My focus was suddenly singular, honed razor sharp to do one thing: help her beleaguered spirit recover from the long-term stresses she had endured. I say spirit here for a reason. Her body suffered some damage, of course, which took a couple of surgeries to set right. But more concerning to me was the general demise of her spirit. She is by nature a joyful presence in the world, brimming with confidence, even in the face of overwhelming resistance. She works tirelessly on behalf of the welfare of young people via her job, which pays her bills, and on behalf of her community, work she does for free and that has made her a beloved local institution. She inspires me and others profoundly and routinely. All of a sudden, that light was dimmed.

When your own life or, even more so, that of one you love is precarious (and spirit is as much an index to life as embodiment, its material expression) the public square within which many other disturbing events are happening suddenly shifts from the foreground to the background. Which is not to say that it goes away or can be ignored. Only that the urgency of the moment commands attention to what's right in front of you. Life is distilled to its essentials. Action replaces anxiety, always a salutary shift. This shift was,

oddy, amplified by Trump's victory. What had been only a frightening possibility was now a fact. Facts are incontrovertible. You can accept them (if you're smart) or deny them (if you're not), but they are unalterably true. To fear them is counterproductive. You try to foresee as exactly as possible the difficulties you'll have to face and address, you prepare plans as best you can, and you take it day by day thereafter, full of the kind of resolve that leaves no extra space for fear to regain a foothold. I compared the election result, in my head, to the experience of having been in ill-health for some time without an explanation for the cause. Then a doctor tells you that you have a specific malady. Attention shifts almost automatically to what you can do about it, the work of recovery. What was dispiriting is suddenly inspiring. I'm now about four months down the path that opened for me back then. I and the one I shared care with are reviving our spirits. The country is another matter. That will take some doing and more time. But I'm absolutely sure that spirit will recover too.

I've used the term "spirit" a number of times and in various of its forms so far, which is why I just decided to make it the centerpiece of my title. So, let me say a couple generic things about that concept. First of all, nations and individuals can be (and often have been) said to have spirits, at least figuratively, the former collective, the latter personal. I fully believe that both such spirits not only have embodied presences in the world but are expressions of an even greater communal and universal spirit they share in common. That may sound kind of new-agey, but contemporary physics, especially quantum mechanics, makes it clear (at least to me) that at the most fundamental level of "reality" that is true. That's why I include Schrödinger as one of the representative gurus of this way thinking, one that, if we actually abide by it, can and will change our way of day to day living down to the ground. Or, maybe more accurately, down to our most fundamental particles. I'll get to all of that in more detail below.

There are implications to thinking about spirit in this way. Specifically, how I orient and care for my own personal spirit will

inform in an expanding field how I impact the spirits of those I love, of those I interact with in less intentional ways, and, ultimately, of the collective spirit not just of the country and world but of the material universe. That final leap to universalization may seem problematic to you, but it has been made routinely and intuitively throughout human history, in many Indigenous cultures, in (mostly Eastern) philosophical systems, in poetic, artistic, and spiritual visions, always with the same mantra: One is all, all is one. Western culture has been generally averse to that leap (which is why it may seem problematic to you) for at least three millennia now, arguing that spirit and matter are two separate and incommensurable things. For most of that time this counterargument was couched in the various Semitic and Christian texts that were deemed to be the word of God. In the simplest terms, spirit has two aspects in those systems. One is the big one, God the overseer, distinct and apart from the material universe he created. The other is all the little ones, human souls, which, likewise, are distinct and apart from the material bodies, and the material world, in which they have been ensconced. If you throw in hierarchy, patriarchy, and other-isms of various sorts, all of which derive quite directly from that dualism, you have Western culture in a nutshell.

Second of all, spirits get broken all the time by various kinds of “torture” designed (whether tacitly or expressly) to do just that. That term—torture—like abuse, aggression, bullying and violence may seem out of keeping in matters of this sort, especially in the workplace, where the practices I’m characterizing that way are fully normalized in service of the good of the collective. As Paladin of “Have Gun - Will Travel” fame (binge watching old Westerns has been my jam for the last 6 months or so, the “black and white” of both their moral universes and their video mode instinctively alluring to me) says pertinent to this, misquoting a maxim he assigns mistakenly to Herodias instead of Herodotus: “We can contend with the evil that men do in the name of evil, but heaven protect us from what they do in the name of good.” Western (the big one, not the TV one) civilization as an ideological framework is expressly designed to instill this specific delusion about “goodness”

in relation to authority in hierarchical systems: on fields of battle, in the halls of government, in workplaces, in relationships with others and “nature,” in our own experience of personhood, pretty much everywhere. In some respects, we all inflict this kind of torture routinely and without chagrin to get our way in professional and personal contexts with people who resist our control and that we deem unworthy of empathy or persuasion, including, often, our own bifurcated selves. As I said, this structure was built into our (Western) way of understanding relationships between spirit and matter, body and soul, millennia ago. So much so that it most often “goes without saying” as a template for everyday behavior.

More lately, starting in the 17<sup>th</sup> century, what we now call the Enlightenment, this spirit/matter division was transmuted into cultural ideology via the marriage of convenience between science and philosophy, which worked out in detail the “classical lines of thought” we pretty much take for granted now as the norm. Almost all of the great thinkers of that epoch— Francis Bacon, Galileo Galilei, Thomas Hobbes, René Descartes, Baruch Spinoza, John Locke, Isaac Newton, Gottfried Wilhelm Leibniz, Immanuel Kant, Georg Wilhelm Friedrich Hegel (arranged here by birth order, to give you a sense of sequencing)—were philosophical scientists or scientific philosophers. Most of them did keep God as a placeholder in the background of their equations (the verbal ones, I mean) to avoid the often-unpleasant side-effects of heresy. But they preferred to found their dualism of animate spirit versus inanimate matter on less deific terms. Descartes for example reframed it, famously, as a mind/body problem, a distinction that stuck, metastasized and generally holds sway to this day. Newton idealized the material universe into a very complex and elegant machine comprising immutable atomized pieces timed by a universal clock, with us standing outside it as transcendent spectators. Since one could predict the future (or past) of any part of that machine based on accurate information about its state right now, determinism became an endemic feature of their (and our) universe. When it came to “spirit,” most of the named figures above preferred a “softer” version of determinism, one that allowed for some degree of what

they called “free will.” There were a few outliers, of course, like Baruch Spinoza whose “heresy” of animating matter with spirit deterministically won him shunning and exile.

Which gets me to the other term in my title: “willing,” the adjective that arose spontaneously in my mind when I picked the noun it now modifies, “the spirit is willing . . .” bromide echoing in the back of my head. 17<sup>th</sup> and 18<sup>th</sup> century thinkers argued endlessly about this aspect of our being in the world, primarily through that “free will” trope, and about whether we have a lot of it, a little, or none at all. This is the general framework we inherited for thinking about human agency in a material world—the ghost in the machine. I have zero interest in thinking about “will” that way. To presume that our wills are “free” given all the cultural and biological forces operating on them is nonsense. And to presume that “will” is a faculty of mind separable from the others, which it can control by force, is, well, also nonsense, a transubstantiation of the Western inclination toward authoritarianism built into the orthodox versions of the Abrahamic religious lineage.

The willing I have in mind has two complementary valences: The first pertains to a yielding, an openness, a permeability, in response to everything from local emergencies (like mine) to the cosmos. This kind of willing-ness is expressly designed (in my opinion) to promote connection and diminish individuation. And thereby to calm the spirit. There are any number of intersecting traditions that codify this, including the ones I reference above: Buddhism, early Christian heresies (like Gnosticism, and Pelagianism), and quantum mechanics. All but my song which I don’t think qualifies as a “tradition.” I’ve written extensively about the first three of these traditions in various places elsewhere. So I’ll address them only briefly here, reserving my attention for the fourth, quantum mechanics.

The other valence built into the concept of willing is its behavioral role as a form of assertion, one we tend in Western systems to think of in terms of force. That way of conceptualizing willing winds like a fraying braid through modern philosophy, often via the concept of

“desire,” from Hegel through Nietzsche to Lacan and undergirds Newtonian physics. I want to propose an alternative (and in my view healthier) way of thinking about this mode of willing as not only an inbuilt feature of individual consciousness but of universal consciousness, as, in effect, the means by which what we typically imagine as the “out there” can be brought into consonance with what we typically imagine as “in here,” a bridge between subject-as-object and object-as-subject. This mode of willing favors determination over domination. It fosters fortitude, resolve, and persistence. The “willing” that appears in my title and is helping to restore my “spirit” has those two aspects, which I’ll generalize as humility guided by courage.

## 2.

It struck me the other day while I was walking that my greatest gift might be that I don’t actually believe in any singular set of answers to the eternal human questions. A singularity in quantum and cosmic physics is merely a place where the mathematics we have available to us crashes, usually by defaulting to infinity as a solution. I prefer to see in each -ism I explore the insights it is good at proffering, the foundational values or principles that inspire it, all the way up to the point where the math defaults to infinity. I do this with every system I study, exploring it until the math fails, which it always does. Then I superimpose what’s left of them, one over another and another, creating a sort of palimpsest. The Venn diagram of their overlaps, tiny as it might be, becomes what, at the moment, I feel I can relatively reliably trust as “true.” At least until a new math becomes available. To quote an old Big Band era song: “I know a little bit about a lot of things,” a line that finishes this way: “but I don’t know enough about you.” To which I’ll add I also don’t know enough about me. So I am not an “authority” (what a terrible word to describe knowledge) in any of the “disciplines” (another terrible word for marking off field boundaries) I talk about

here. I am not a Daoist, a Buddhist, a Platonist, or even an orthodox Christian, my native religion. And I no longer have the math skills to certify me as a qualified quantum mechanic. I have a pretty good idea of what's "under the hood" there, but you wouldn't want me messing around with the valve timing. So why should you trust me on any of this? Or, more importantly, why should I trust myself? I'll try to allay that understandable skepticism below.

My two "emergencies" filled me with a determination to keep a calm spirit in response to the current chaos, one that is a highly amplified version of the instability human beings seem to enjoy inflicting on others and their communities to assert control, a Western specialty. I had spent my life cobbling together various strategies to inculcate peaceful states of mind in response to all of that. Some of my earliest memories are of crafting meditation techniques, including making up poems in my head, to relieve my innate (inner) anxieties and induced (outer) fears. But it had all begun to feel more like plastering patches and layering paint on a falling-down wall. What I needed, I thought, was to start over with new studs and stucco. In other words, I wanted to find a comprehensive paradigm to hold it all together structurally. Surprisingly I found what I was looking for on YouTube TV. It all started innocently enough. I have long enjoyed watching car restoration shows. I have absolutely no interest in restoring a car myself or even changing my own oil. See my "under the hood" comment above. I just enjoy seeing how something in disrepair can be transformed into something beautiful with skilled handiwork.

For years I watched an assortment of such shows on the Velocity channel, which then rebranded as Motortrend. I would lay down on the couch, watch for a while, fall asleep for a very refreshing nap, then wake up for the finishing touches and the reveal. My favorite of these by far was a British show called Wheeler Dealers. The series has well over 200 episodes and I streamed each of them at least 5 times, which means, with nap time factored in, I've seen every second of every show at least three times. A year ago Discovery bought Motortrend and immediately ceased making new

episodes of all these shows, including Wheeler Dealers. So I had to find a new fixit “fix.” I read that Edd China, my favorite of the three sequential Wheeler Dealers mechanics, had a self-made show on YouTube TV, and I decided to watch those instead.

YouTube TV does what most streaming channels do: If you watch something it will automatically curate other comparable programs as suggestions for viewing. About a month ago, out of the blue, one of those sidebar videos had to do with the “lost” Gospel of Thomas, my favorite Christian text and the foundation for most of what remains of my commitment to that ideology. So I watched it. Afterwards, a number of other YouTubes about Gnosticism and the lost gospels came up. So I watched those, too. Then YouTubes about Daoism and Buddhism began showing up. So I watched those. Then YouTubes on quantum mechanics appeared, and it struck me: All these things I’m interested in have something in common with quantum mechanics and I want to figure out exactly what that is. I’ve watched maybe 50 of those quantum mechanics YouTubes in the meantime, some multiple times.

I have a lifelong interest in physics, majored in it in college, have written about relationships between Daoism and quantum mechanics, and have read many books and articles in the field, so this line of thinking is not new to me. But what I quickly noticed was how much the field has evolved over the last decade or so. The YouTubes I was watching were cutting edge. All of a sudden I could see not only analogies between these philosophical systems and current science. I could see how current science could provide me with a full-fledged paradigm to transform my way of thinking about the world and my place in it fundamentally, once and for all: not a temporary antidote to the toxicity of Western culture but a way to evade it, translating my openness and determination in response to my emergencies into a durable way of being. I say “evade” rather than replace here simply to acknowledge an obvious fact: I, you, anyone, can’t fully escape the paradigm that organizes the cultural moment we are born into. It simply “is.” But understanding its imperatives, its problems and its limits, then aspiring to rise above

the most deleterious of them via an alternative paradigm is possible. And, in “spiritual” terms, it is urgent work.

I’ve used the term “paradigm” in its generic sense a few times now. Let me define it in a more technical sense, the way Thomas Kuhn does in his famous book, *The Structure of Scientific Revolutions* (1963), in relation to scientific movements/epochs. For Kuhn scientific systems and practitioners operate within a relatively stable, commonly shared, and largely unconscious set of assumptions and values about what the main problems of their fields are and how best to address them. These paradigmatic structures are historically contingent: They emerge for specific historical reasons; they tend to last for long periods of time as stable matrices to measure “progress” in a field; and they begin to fall apart only when intractable anomalies they can’t explain become too pestiferous to ignore. The dominant paradigm of the moment establishes the taken-for-granted norms that regulate how scientists think and behave. And, to get to my point, once that paradigm has enough time to seep into the cultural sensorium, it regulates the way pretty much everyone thinks about everyday things, whether they can “do the math” or not.

I have over the years tried to keep up with advances in physics, especially quantum mechanics and cosmology, which are driving innovation in our understanding of the universe on the tiniest and grandest scales. Quantum mechanics has been around now for over a century, with new developments emerging all the time. It is, then, a paradigm still in the making. I understand that before it can fully supplant the one that got entrenched during the Enlightenment it will need to figure out some important things, especially in relation to gravity. But what it proffers is so appealing to me as a contrary to the established conventions that I decided, in the service of my recovery, to create a thought experiment that could install this new paradigm not simply as a body of knowledge but as a way of being in the world.

Which gets me to what I want to talk about here, hearkening back to Schrödinger: the influence of the “classical” paradigm on our

everyday attitudes and values, and how they would change if we adapted our “lines of thinking” to a “quantum” paradigm. None of this requires or assumes even a cursory let alone a professional understanding of either the physics or philosophy of those systems. The vast majority of those living during the 18<sup>th</sup>-20<sup>th</sup> centuries, the heydays of the classical paradigm, knew next to nothing about Newton or Descartes, say. But if you examine the taken-for-granted systems that organized their economic, religious, and social lives, and the various subsystems they invented to implement them, the influence is unmistakable. Likewise, almost no one, including the scientists who study it, claims now to fully understand how reality operates at the quantum level. I simply want to think about the differences between the classical and quantum paradigms. I’m going to do that via a series of contrasted concepts, one derived from classical mechanics one from quantum mechanics, and then try to imagine the new one into my daily life.

### 3.

*When the Dao is spoken as words, how thin it is,  
without taste. Look at it and it cannot be seen; listen to  
it and it cannot be heard. But use it, and it cannot be  
exhausted.*

Laozi

Let me remind you again how I started this essay: with the frailty of language not just as a way of getting to truth but as a way of explaining or revealing it once one does. Quantum mechanics is the poster child for that maxim. Everyone, including the most advanced theoreticians, concedes that fact before they start talking about what their calculations and experiments show to be true: The results are often so counterintuitive and baffling that the commonly accepted representational discourses available to explain them are incapable of doing so. So they generally turn to metaphors, to what the world

their mathematical equations describe can be “likened to” (recalling Socrates and those fables and riddles again.) Even these are limited in their efficacy. This is especially the case in Western discourses, which both lend themselves to and have long been domesticated in the service of the classical paradigm. One symptom of that is the isolation of poetry as a specious medium for conveying truth. Socrates and Aristotle laid the foundation for this linguistic bifurcation—a transparent foundational discourse suited to scientific facts, philosophical truth, and everyday life, that is occasionally disrupted by an arcane, aberrant, figurative discourse suited to the arts and certain limited kinds of meaning emergencies that are inevitable in human systems, “the food of semblance” Socrates says must serve us when we confront our most vexing questions. Enlightenment thinkers worked out the details of that paradigm. Quantum physicists, on the other hand, turn often to poetic discourses and devices to intimate how the world they and their equations are imagining might look or feel. Which is to say that my descriptions below are figurative gestures pointing toward “all of those things you just can’t say.”

My extension of the quantum paradigm into my personal “philosophy of life” is admittedly problematic. Quantum physics is a work in progress. For it to evolve into a paradigm as fully fledged as the classical one we tend to take for granted will take either a generation (or more) of diligent work by the many or the intervention of one (or two) Einstein-level “geniuses.” At least as we understand them right now, quantum effects are generally displayed in systems on the subatomic scale. They become blurred out at the macro level we live our day to day lives on in ways I’ll explain as I go. In other words, quantum *appears to* turn into classical at the scale of human life in the world. One could argue, then, that using quantum mechanics to construct a personal philosophy is merely casuistry. My counterargument is simple: Who among us understands either Newtonian physics, advanced mathematics, or Western philosophy? Yet we blithely adapt our daily lives to the foundational imperatives of those systems, pre-constructing the ways we see and understand both ourselves and the

worlds we live in. The classical paradigm has failed us. It is time for a new one. The quantum paradigm offers one template for that.

There are two primary advantages of shifting allegiance (in ethical terms) from the classical to the quantum paradigm:

1. You can derive our most cherished human values inside-out from the fundamental principles that organize the universe we live in instead of imposing them from the outside-in via some “higher” power, whether transcendent, anointed, self-appointed or elected. By this means you can at least impede if not overcome the Western addiction to hierarchy, orthodoxy, and, worst of all, patriarchy, replacing them with equity, self-actualization, and gender neutrality.
2. You can reach consensus with those wisdom traditions I’ve been indexing along the way, the ones that promote ways to live with rather than against both one another and the natural world that sustains us. We can, then, focus on working collectively to save the place we’re best suited for because we evolved with it; instead of ogling a few mega-rich, transhuman tech-bros as they search for another place to re-propagate *their* version of the human race, while the rest of us bake, drown or suffocate in the one they ravage on their way out.

As I said, I’m going to lay out my argument via pairs of terms that suggest (to me) some of the more obvious differences between these two paradigms, trying in each case to tease out the behavioral implications (for me) of moving from one to the other. I arrange them as pairs for simplicity’s sake. They are not proffered as polar binaries or implied dualities but as alternative lenses for seeing and making use of what’s there. Some of them could in fact be re-mingled variously, and there are likely many others of equal import I’m not noticing. In other words, there is an inbuilt element of uncertainty to all of it, in keeping with the fundamental nature of paradigm I want to explore. Those pairs are Stability/Emergence; Outside/Inside; Deterministic/Probabilistic; Certitude/Uncertainty; Particle/Field; Isolated/Entangled.

## 1. Stability/Emergence

One of the more exotic mysteries of “reality” at the quantum level is “superposition,” the inbuilt capacity of subatomic particles to exist in multiple states simultaneously—particle and wave for example—until they are “measured,” which causes these “wave functions,” blurry probability fields rather than discrete entities, either to collapse into one of their available options, depending on the specific question the apparatus is set up to ask, or to generate “many worlds,” realizing the “futures” of each possible state in multiple universes. There are other even more esoteric ways of accounting for this strange phenomenon, all of which constitute potential solutions to the now famous “measurement problem” vexing physics. But these two give you an idea of how formidable this problem is. If you’re living in a headspace indoctrinated into the unwavering determinism of Newtonian mechanics—know the current position and velocity of something and you can predict perfectly where it’s been and where it’s going—which is pretty much all of us living now under the regimes of knowledge invented by Western scientists and philosophers during the Enlightenment, what is now called the “classical paradigm,” that’s a hard enigma even to swallow, let alone digest.

I was a physics major in college, had a gift for it. And I loved poems, wanted to teach and write them. I started down a path toward a double major but realized in the middle of my junior year, because of the different prerequisite courses required for a BA and a BS, I was either going to have to spend an additional semester in school or pick one. So I picked one: poems. The same way an electron picks one when you force it to by asking it a stupid question. Despite that, physics has remained a lifelong passion of mine, in superposition with poetry as a wave function in my intellectual life—the answer to Robert Frost’s conundrum standing where those “two roads diverged in a yellow wood:” Take them both, Bob! My math skills evaporated pretty quickly on the road “less traveled by” that everyone else thought I was on; but not my

fascination with theory on the road I had only apparently “not taken.”

In the classical paradigm, our universe is fixed in space, stable, its basic laws and structures universal and immutable. Things move around, come and go, of course, but the matrix within which that happens is organized by measurable causal and temporal relationships, one thing predictably connected to the next, etc. It is important to remember in this regard that until the 20<sup>th</sup> century we assumed that our galaxy was the entirety of the universe, and that even Einstein resisted the notion that the universe was expanding, despite evidence to the contrary. That’s how powerful the classical paradigm is. The quantum universe is, on the contrary, always churning up, evolving in a quasi-Darwinian sense. Change then is not aberrant but endemic and causality is never entirely calculable. Translate this distinction into the realm of personal identity and the implications are obvious and consequential.

The classical model implies that personal identity is singular and quite durable. In effect, as Popeye says, channeling Descartes, “I am what I am and that’s all what I am.” Change is of course both possible and inevitable, with age, education, life experiences, etc. But no matter all of that, one’s personal mantra would remain “I am what I am.” A quantum paradigm tends to reduce identity, especially “the self,” to something more like the froth that Daoists and Buddhists claim is floating on the surface of the flux of experience, a barely-there matrix that provides the illusion of fixity and permanence, presumed to be extrinsic from, superior to, and somehow in control of everything else. Quantum systems are chronically emergent, always in flux, one thing or state evolving into another and back again. There is no out-there durably there. And no in-here reliably here.

At a behavioral level, what shifting to the quantum paradigm invites me to do is define my “life” not as a chronology of causally connected events trailing off endlessly into the past, the present

merely a diminishing mote in time; but as a series of extended moments each of which is the future emergent in the now [I work this out in much more detail in the “Addendum on Time” I append to this essay.] Change is not an irritation or challenge, it is the essence of life in time, one my spirit can and should yield to willingly (recalling my title) rather than resist mightily.

One of my go-to sources for describing this way of thinking about experience is Mikhail Bakhtin, most especially his concept of the “unfinalizability” of human identity as he outlines it in *Problems of Dostoevsky’s Poetics* (1929). He introduces the concept this way, describing the distinctively realistic way Dostoevsky deploys his characters:

*They all acutely sense their own inner unfinalizability, their capacity to outgrow, as it were, from within and to render untrue any externalizing and finalizing definition of them. As long as a person is alive [s]he lives by the fact that [s]he is not yet finalized, that [s]he has not yet uttered the ultimate word. (highlight his, 59)*

As long as one is alive, he implies, there is never an “ultimate word;” and every “externalizing . . . definition” is by its nature “untrue,” to hale forward the quantum paradigm I want to valorize. Bakhtin then generalizes it this way, as it applies to human life in the world:

*A [wo]man never coincides with [her]self. One cannot apply to [her] the formula of  $A=A$  . . . [T]he genuine life of the personality takes place at the point of non-coincidence between a [wo]man and [her]self.” . . . The genuine life of the personality is made available only through a dialogic penetration of that personality, during which it freely and reciprocally reveals itself. (highlight his, 59)*

I especially like that baffling second sentence, which suggests to me that “the personality” of an individual can only be “genuine” when one is non-coincidental with oneself, a kind of radical freedom from the before and after in the moment, which is related to the A that was already there but alters it into something non- or extra-A in the serendipity of the interaction, such that “the formula of  $A=A$ ” “cannot apply.” Ever. This to me is a good template for understanding identity as an emergent rather than stable construct. Same with “truth,” which Bakhtin defined as “polyphonic,” multi-vocal, not an authoritative pronouncement but a *mélange* of mutually proffered, arguable, often contradictory and logically inconsistent statements. Truth, he says, cannot be held within a single mind, it also cannot be expressed by “a single mouth.” The “reality” imagined by the quantum paradigm shares all of those features.

Bakhtin’s biography is a good demonstration of this difference. He wrote most of an essay called “Forms of Time and of the Chronotope in the Novel” in the 1930s, when he was in his 30s. He was quite aware of Einstein’s theory of relativity. But quantum mechanics was too new to be of much relevance to his thinking about these matters. That portion of the essay is primarily a taxonomic catalogue of standard chronotopes (literally “timespaces,” channeling Einstein) for organizing Western modes of storytelling. When the essay finally reached the West in the 1980s it included a section called “Concluding Remarks.” A brief footnote says simply that this addendum “was written in 1973.” The difference between these two parts, proffered seamlessly, could not be more extreme. The former is “classical” historiography, the latter is a swirl of insights both cooperating and competing with one another, which explains the sort of whiplash one experiences after crossing the speedbump that footnote points to, like exiting Newtonian space and entering quantum space. Bakhtin’s work was largely suppressed for ideological reasons until the 1960s. But he was clearly thinking and paying attention. He doesn’t get to “show us the work,” but the two “answers” his rhetorical calculations

proffer—one developed in the 1930s, the other in the 1970s—could not be more at odds with one another. What was stable becomes emergent, what was classical feels quantum.

One prominent symptom of this shift is pertinent to the concept of change itself. In the classical universe change happens gradually along a continuous path when energy, as force, say, is added to or subtracted from a system. In the quantum universe change can only happen in integer leaps from one level to another, up or down. Until the specifically required amount of energy is added to or subtracted from a system, it remains stable. Electron probability paths in atoms are a good example of this. Only certain states are allowable and change from one to another happens abruptly not gradually. In other words, evolutionary change in quantum systems happens suddenly not incrementally. The terms biologists use to mark that difference are gradualism vs. punctualism. The basic imperative I take from this as I plan out the changes I want to effect in my own life is this: It will take the input of a certain “quantum” of energy to produce any effect at all. And adding that minimum amount of energy will take a certain “quantum” of time. That requires work, constant day to day work, often (at least for me) months or years of it. The change of level or state I aspire toward will occur suddenly at some point, but it will not happen providentially. The ability to keep adding energy to the system via that work without immediate results requires discipline and faith, which hearkens back to what it means, in practice, to have a genuinely “willing spirit.”

## **2. Outside/Inside**

Schrödinger's cat is an (in)famous thought experiment in quantum mechanics that illustrates the concept of superposition. It involves a cat in a box with a device that has a significant probabilistic chance of killing it. Until the box is opened and the cat is observed, it is considered to be in a superposition of both alive and dead states. I won't be writing about it here—too complicated. If you want the whole story, just Google it. Quantum mechanics is full of weird

things like this, interesting up to a point. I remember back in the '90s when I found some program that could make my computer speak what I typed, in that weird, mechanical Star-Warsy type voice computers had back then. I demonstrated it to my daughter, who was about 7 or 8, and asked her to have the computer say something to her about itself and its new "voice." I typed it as she said it: "It's cool and it's outrageous and guess what I'm a little stupid," perhaps a moment of self-revelation for the computer on what has turned out so far to be a failed journey on its multigenerational path toward potential enlightenment. My daughter's reaction that day is a good example itself of superposition: both impressed and unimpressed. I remember it to this day because it's an applicable "motto" for so many things that happen in life. Schrodinger's cat is one of those things. Quite often so am I.

In the classical paradigm, the observer and the observed are incommensurable, having evolved, or been created, separately. The former is an idealized platform positioned outside the latter which it is empowered to calculate, measure, define and use to serve its own purposes. In a quantum paradigm, the observer is integral with the observed, having evolved in concert with it. Any act of measurement is mutual, often in quite mysterious ways. What we can know of reality emerges from this collaborative relationship. In such a model the universe is innately biophilic, built from the ground up to create and support the life forms that become conscious of it.

This new way of thinking invites me to accord to all other "beings" in the world—humans, trees, rocks, stars, etc.—the same respect I accord to myself and my kind. This implies, at least to me, that our communicative relations with and among these "other" things is more like dialogue between us than dictation us to them, a mutuality of presence, communion, even. From such a vantage point, certain behavioral changes seem imperative, including honoring that sense of oneness I alluded to in my previous post, an implicit attitude of equality, equity, equanimity, like DEI on steroids! Object Oriented Ontology proffers one secular philosophical framework for thinking

about “things” in this way. Most Indigenous cultures operate in a similar framework with a strong spiritual underpinning: a reverence for all of nature. Both are compatible with, though not derivative from, the quantum paradigm.

I think you can work out for yourself some of the more obvious implications of this shift for how we think about and use the “resources” the universe proffers, in relation to global warming and sustainability, e.g. A somewhat less obvious one pertains to another pair of contrasting concepts: hubris and humility. The classical paradigm, intrinsically hierarchical, promotes hubris, human domination. The quantum paradigm promotes humility, conceptualized not as subservience to a higher authority but as a “willing-ness” (thus the title of my book) to stand openly on an equal footing with everything one encounters.

The outside/inside coequality in the quantum paradigm applies as well to consciousness, which I, along with at least some others, argue is not exceptional to humans or a few “intelligent” mammals, but is (at least potentially) universal. Nor is it distinct and separable from embodiment. One cornerstone of the classical paradigm (and the American psyche) this makes untenable is the individuated, autonomous self, the “I-am” writ large, that sort of thing. There are any number of wisdom traditions, some of which I’ll index below, that offer alternative ways of thinking about the self and self-transcendence.

My go-to source for such thinking in the Western tradition is the “lost” Gospel of Thomas. In this early Christian text Jesus shares his secret teachings with the apostles, little vignettes that Thomas records. One of the things that Jesus says repeatedly is that the kingdom of heaven is not a futural event on another plane but God’s presence in the world right here and now. And the only way to enter this kingdom is via self-knowledge, not externally imposed orthodoxies mediated by priests. Which is probably why this gospel didn’t make the cut for the canonical Bible in the 4<sup>th</sup> century. This kingdom is, further, both “in here” *and* “out there.” Here is one of

Jesus' many sayings pertinent to this experience of using self-knowledge to promote a superpositional state of self-transcendence:

*Jesus said, "If your leaders say to you, 'Look, the kingdom is in the sky,' then the birds of the sky will precede you. If they say to you, 'It is in the sea,' then the fish will precede you. Rather, the kingdom is within you and it is outside you."*

There are, he says repeatedly, no radical distinctions between the "within" (spirit in the parlance of my book) and the "outside" (the material universe in the classical paradigm.) Once such boundaries are dissolved "the kingdom" is right here, right now. All you need to do is wake up to it, the sort of sudden revelation Laozi describes over and over as the defining feature of Daoist enlightenment. This state of mind requires two kinds of awareness: One is the "mirror mind" of the *Daodejing*, everything "out there" reflected as it is. The other is an ongoing mindfulness "in here" that aspires to "make the two one," West and East sharing a rare moment of consonance.

Hinduism seeks to resolve this inside-outside conundrum via the merger of various modes of "self." In the *Upanishads*, for example, the word translated into English as "self" is used interchangeably, initially confusingly, to name individual identity, the animate universe, and god. In the original Sanskrit there is a distinction among them. To wit: the personal self (Atman), the underlying field for all perception, thinking and knowing, as well as for consciousness itself, shares its essence with the universal self (Brahman), the unknowable before-anything essence that suffuses the universe, providing the ground for a creator god (Brahma) to come into being as a mediator. Transcendence is the experience of the commonalty among all three. In some ways the incapacity of English to make those distinctions verbally is a more accurate representation of the experience of a self-transcendent self, disabling language as a way to code it.

For Buddhists it is through the no-self rather than the manifold self that this deep sense of awareness of the interdependence of all

things emerges, via what is called “dependent co-arising,” which presumes that everything is interdependent—nothing growing or changing in isolation. Self in its mode as a unique personal identity and its primary instrument, language, are, once again, deemed illusory impediments that need to be overridden on the path to enlightenment.

In all of these systems, inside and outside, self and other, are not either/or as in the classical paradigm but both/and as in the quantum paradigm. In other words, they are superpositional. And transcendence, by whatever means one might pursue it, is neither esoteric nor disembodied but available to anyone right here, right now. It may seem a stretch to extend this blurriness into the discourse of physics. But reality at the quantum level is in fact similarly blurry (see below). In addition, quantum field theory posits a universe in which many different fields collaborate perfectly to synthesize “reality,” including us, wholistically, a potential pathway to cosmic unification. And, while the complexity of the universe and the lack of a quantum theory of gravity make it impossible right now, in theory the whole of the universe may someday be expressible in a single wavefunction equation, mathematics itself becoming a medium for meditation.

As the Hindu Rigveda says: “reality is one: the wise speak about it in many ways,” which is my general point here. And, following the imperative of the quantum paradigm, my preferred way of thinking about ideologies—always seeking common ground among seemingly competing -isms, including quantum mechan-ism, which is what led to this “quantum ethics” thought experiment in the first place.

### **3. Deterministic/Probabilistic**

The classical paradigm posits a universe whose laws are clear and distinct, discoverable and knowable, universal and predictable in their effects, every time, everyplace. Measure or time one event accurately and you have a template applicable to all equivalent

events. In other words, the system is deterministic, a keynote for all the foundational thinkers that ushered in the classical paradigm. Newton's mechanics is a good example: His physical universe is essentially a clockwork mechanism predictable in its movements forward or back if you start with enough of the right information. Most of the philosophers of his era generally accepted that way of construing the "laws" of nature. They did strive to leave some room for what they called "free will" in human affairs, but even that had a quasi-deterministic aspect. Kant is representative here. He agrees with Newton, with a few notable exceptions, about how the natural universe operates. The moral universe is somewhat more nuanced. His concept of the "categorical imperative" for example accords a considerable degree of conscious discretion to human behavior. But it also assumes a universal standard to which human beings should aspire, each considered act in effect establishing a law which then serves as a template for subsequent acts, a sort of generalized "Golden Rule," exemplifying the "soft determinism" almost all the philosophers of the era shared, Spinoza an obvious outlier. If you translate all of that into behavioral terms, certitude, while not guaranteed, is at least aspirational, assuming you have enough of the right information about the base state. And most often it is regulated by an elite cadre of authorities—scientists, priests, politicians, etc.—who mediate "truth" to the masses.

The quantum paradigm posits a universe whose pre-observational behaviors at the foundational level are anything but fully predictable or knowable. They are uncertain in a very specific sense formalized into quantum mechanics by Werner Heisenberg via his famous "uncertainty principle," which basically says you can't measure any two complementary properties of a quantum system (position/momentum or spin direction, say) with complete accuracy simultaneously, which you can without any difficulty in classical mechanics. The more precisely you measure one, Heisenberg demonstrates, the less precisely you know the other.

Further, effects at the quantum level are expressed as probabilities, not predictable or repeatable certainties. The term that captures this

aspect of reality best is, as I said, superposition, which basically describes the natural (pre-observed) states of fundamental particles as having many possible expressions extended across their “wave functions,” which regulate the probability of any one of them showing up under observation. Basically, this means that the non-observed state of the subatomic system is fuzzy, indeterminate, rife with possibilities that remain in wholistic suspension until faced with a specific question, what physicists call “measurement.” The structure of that question will determine which one of the available answers will most likely materialize. There are fascinating ongoing conversations about whether observers are best considered inside or outside the quantum field at the moment of measurement, giving rise to what is called “the measurement problem” (a trivial matter in the classical paradigm) that afflicts to this day anyone who wants to think in depth about, or measure, quantum systems.

One of my favorite expressions for capturing this probabilistic aspect of quantum states was coined by Philip Ball: At the quantum level, he says, it is not a matter of “what is, but what if.” Which is to say that quantum wave functions in their unobserved state exist in various modes of superpositionality. Acts of measurement force these wave functions to express one of the available options, an outcome explained (quite differently) by a plethora of still-competing theories: objective collapse, hidden variables, many worlds, etc. The probabilities for how those various outcomes will range across their spectrum of possibilities can be specified. But certainty is not possible beforehand. As best I can tell, no one yet understands why both “reality” and the ways we measure it are orchestrated this way. They just are.

This is, obviously, a radical departure from the way the classical paradigm represents and measures things and their interactions at the macro level. One of the mental disciplines I’ve been trying to inculcate on its basis is to resist the temptation to believe I see or know “what is” and keep my attention in that suspended state of “what if,” something like what Coleridge calls a “willing [to echo my book’s title] suspension of disbelief,” which quantum systems

not only invite but require, or what Keats calls “negative capability,” the ability to accept “uncertainties, mysteries doubts, without any irritable reaching after fact or reason.” You can also see the analogy with Bakhtin’s concept of “unfinalizability.” This is not to say that you can’t act or decide, nor does it exile truth from the field of play, the fatal flaw in so many now culturally embedded misreadings of postmodernist ideologies, only that acts and decisions must be provisional, open to re-negotiation as conditions change, truth aspirational rather than one-and-done, eternally codified.

Consequently (and perhaps most importantly from an ethical point of view) *tolerance* (which is an obvious derivative from the uncertainty principle) is a quality built into reality from the ground up, one we should emulate not override to serve our “self”-ish purposes. In other words, be kind, whether the cat is locked in its “stupid” box (which the classical paradigm is so good at constructing for all of us to live/die in) or wandering around in front of you on its own path toward enlightenment.

#### 4. Certitude/Uncertainty

When I Googled “images of Donald Trump and Jesus” there were dozens of them, one more absurd than the next. When I Googled “images of JFK and Jesus” there was one: a scene from a home in Dublin with two pictures, one of Jesus above one of the Kennedys. That says a lot about how far the constitutionally mandated line that separates church from state has migrated just in my lifetime.

I was in the 7<sup>th</sup> grade when the Cuban missile crisis occurred. I remember coming home from school one afternoon. The TV was on, a rarity at that time of day. I walked into the living room and watched what I assumed was real-time video of American ships heading out to intercept Russian ships with missiles aboard. I had a felt sense that the world, or at least the human world I was a part of, might be incinerated, maybe that night, the next day, soon. At

school we did those inane drills of hiding under desks. At home we inanely stored water and some food in the basement. We lived a hundred miles from New York City. Even a middle schooler knew any “prepping” we might do was futile. I remember dreaming quite often that I was standing at our basement window watching the mushroom clouds rising up in the distance, Armageddon headed my way. They were mesmerizing. The end of the world almost beautiful.

One of the things I appreciated about the Irish Catholic culture I grew up in the 1950s was its deft and sometimes humorous way of managing the balance between the obligatory and the possible, between truth and mystery, the dark and the light, life and death. It was richly and deeply human, the remnants of its magical Celtic origins somehow having survived through millennia of Romanization. JFK was the first Catholic president, Irish, a point of great pride for my mother and the local Irish community. I trusted him implicitly, the last president in my lifetime I can say that about. The Church I knew back then prepared me well for that moment and for a world where certitude and uncertainty, today’s themes, are always in superposition, so unlike the strident ideological absolutism that animates the many Catholics Donald Trump has recruited to implement and enforce his MAGA agenda. They came of age during the 90s, when the Catholic church was monocultural, the only real issue abortion: good vs. evil, saved vs. damned, us vs. them, no gray, no humor, none. Only certitude.

I returned to the church right around then after a long lapse, an almost obligatory stage for a Catholic of my generation, hoping to find what I remembered of it. It was gone. I mean entirely. I relapsed for good shortly thereafter. Compare what the Supreme Court Catholics just decided about Planned Parenthood and transgender youths and what they are likely to decide about any number of other settled matters of cultural tolerance with what Jesus actually said, which I happen to know something about, and you can see why. And you can also see why I find the MAGA propaganda pairing Trump with Jesus sacrilegious, a word that, if

you look closely at the spelling, is not related to the word “religion,” but whose roots mean “to steal the sacred,” a perfect descriptor for an inveterate grifter.

One of the central tenets of Newtonian mechanics and the classical paradigm is that calculative certitude is possible, at least in relation to the material universe, which is mechanistic, i.e., regulated by mathematically predictable laws of causality and temporal sequencing. The human universe is more resistant to certitude, but the classical paradigm includes certain elements and beliefs about truth that help to counter that. Some are vested in religious systems, each of which tends to operate on the presumption that what it proffers is the truth, the whole truth and nothing but the truth. Some are vested in the scientific method itself. You can see this most evidently in the cultural obsession during the 19<sup>th</sup> and early 20<sup>th</sup> centuries with transforming traditionally “humanistic” provinces of knowledge into sciences. Psychology became an applied science late in the 19<sup>th</sup> century in Germany, a lineage that ran through Freud and reached its apogee (or nadir) with Skinner, or maybe with the current tech-bro obsession with eternalizing life (at least for certain elites) via various brands of transhumanism. Sociology rebranded as social science, focusing more on systems than communities. Economics, especially capitalism, had the same ambitions and worked mightily, via marginalism, for example, to assimilate mathematics and logic models into its theories.

Even my own field, English studies, had such aspirations, starting early in the 20<sup>th</sup> century with I.A. Richards who, along with a few of his British colleagues, founded what later came to be known (via a strange congeries of poets and critics at Vanderbilt University on this side of the pond) as the “New Criticism.” This method of “close reading” presumed that a poetic text was a self-enclosed, self-referential universe of meaning, much the same way the classical paradigm imagined the material universe. Richards and his colleagues generated all kinds of exotic terms for effecting the study of such objects. He attempted to do something similar with an ancient field called “rhetoric.” In *The Philosophy of Rhetoric*

(1936), for example, Richards famously defined rhetoric as the “study of misunderstanding and its remedies,” an approach animated by the belief that if we could only become more exacting in our use of language we might avoid confusion and approach certitude in our communications. He and C.K. Ogden had previously spent years working on what they called “Basic English,” creating a dictionary abridged to 850 essential words organized together by a very limited set of syntactical rules, a sort of linguistic math. By this means, they believed all sorts of “misunderstandings,” from daily arguments to cultural catastrophes (like WWII, which Richards could see looming up over the horizon) could be avoided. Their project aspired to do with language exactly what I and all those other voices I have been channeling along the way here say is, at best, counterproductive in relation to true “understanding.” Didn’t work, obviously

One of the central tenets of quantum mechanics, on the other hand, is uncertainty, formalized into a “principle” by Werner Heisenberg. Basically what this means, as I said, is that the more closely you measure one aspect of a quantum system, the more vaguely its counterpart becomes knowable. In other words, you can’t have one *with* the other. This is not a function of limitations in our measuring devices. It is how reality operates at what is called the Planck scale, where current theories of physics begin to break down. Max Planck originated the idea that matter and energy came pre-packaged in discrete units called “quanta,” the study of which is quantum mechanics. Matter and energy are not, then, smooth functions. They increase or decrease in steps, with a unit at the bottom end that is indivisible. And it requires the addition or subtraction of specific units of energy to precipitate those steps. What I want to reemphasize here is the basic fuzziness of reality at the subatomic level, where entities are more like complex interacting wave fields than the particulated planetary systems I was taught they were in high school.

At the behavioral level this principle animates both aspects of the willing-ness I’m writing about here: first, an attitude of openness to

what's possible and the humility to accept the limits on what can be known; second, a determination to persist in the face of that uncertainty. It doesn't preclude some kinds of pretty precise knowledge about oneself, others, or the world at large. It merely suggests that absolute precision in one area means complete ignorance in another. I apply this principle now via my disinclination to adopt any particular -ism as an unquestioned orthodoxy. Even more so, it warns me not to become too attached or subservient to any authority or public figure. The current obsession with cults, from grievance cultures absent thinking to Donald Trump with Jesus at his back, are good examples of those two kinds of misplaced certitude. An attitude of uncertainty on the inside promotes an attitude of tolerance on the outside. The presumption of certainty does just the opposite. The whole dynamic of othering that currently afflicts our culture is founded on the belief that one can "know" who another person is (or is not) simply by noting what they look like, as in race and gender bigotry, where they (or their parents) came from, as in ethnic bigotry, or what their life experiences are, or were during their formation, as in identity bigotry.

One metaphor I find useful for getting at the difference between certainty and uncertainty in ethical matters is the "moral compass." One way of imagining such a device is as a closed system paired with a "field" that has been pre-established outside it, a magnetically paired needle transplanted inside, the way religious, political, and nationalistic ideologies are imposed on us unconsciously while we're young. Or, if we are unreflective, when we are older. The figure of the compass in this model always operates with certitude the same way a compass does: bring it into the realm of a magnetic field, and it jerks instantly north. In my preferred way of thinking, the magnetic field is self-created quite consciously, on the basis of reflection, reading, and critical inquiry. The matching needle still always points north. The field, though, within which it operates is always evolving, under revision, sometimes even under erasure when changes of magnitude occur, as

they did for me in the 1990s. That sort of uncertainty is not at all frightening. It is inspiring.

The lesson to take is if you push for absolute certainty in relation to some aspect of the world, yourself, or others, there will be a complementary side of its reality that you will either never see or completely misunderstand out of absolute ignorance. That is the problem with cults, the currency of the moment in American culture: They fledge in misunderstandings and flourish in ignorance. Heisenberg's principle offers an antidote: uncertainty, the first step toward waking up, preferably in that living room in Dublin, a wry Irish-lapsed-Catholic smile lighting up your face.

## 5. Particle/Field

The original classical vs. quantum pair I created to orchestrate this entry was "vacuum/field." I revised it today to "particle/field" on the basis of the thinking I've done to get to this point. That in itself is a good example of how quantum fields operate, transferred into what we call a "universe of discourse:" always emergent, always in flux.

Think, for example, about how you're processing this sentence I'm writing. Is it a series of partic-ular words, each with multiple possible definitions that you winnow down to an approximation based on the ones that preceded it, a sequence of adjustments you continue to make until you run into this question mark? And now with this sentence, do you then start with a blank slate and do it again? Or is it a gradually emerging sub-field of meaning that remains in relative suspension in the context of other such sub-fields that constitute its context, a field that comprises all of those subfields? And is that larger field limited by a paragraph division? A section division? This whole essay? All of my previous books, if you've read them? Or is it much more comprehensive even than that, like everything you already know about physics, for example? Or more?

The same conundrum applies to me as I write one of these sentences. I can assure you that I do not know exactly what each specific word in any of them is going to be before I type it. In fact, before that one was over, I went back and added the word exactly because it became essential to what I was trying to say. Am I stopping for a micro-instant after each space, inventorying the possible words that can come next, picking one and typing it? Or does a field of meaning I somehow have inchoate in my head gradually shape the sentences that evolve in its presence? And is that field itself somehow prior to what evolves, or does it also evolve in some very important ways as it becomes articulated? In other words, is “thinking” of this sort independent from language or intimate with it? And do I actually surprise myself with some new learning as I write (spoiler alert: I do) or simply translate what I already know into some code I hope you will be able to use to transfer my knowledge over into your own “thinking?”

As you can see, there is a big difference between these two models for imagining how a “universe of discourse” operates. The universe itself is analogous. Whether you think of it as an assortment of distinct particles at the astrophysical and nuclear levels—the classical model—or as an assortment of cooperative fields that make no such distinctions between big and small—the quantum model—makes a similarly big difference. The specific feature of that system I’ll focus on here is the “vacuum” in space? In particular, how does the meaning of “nothing” change as you move from one paradigm to the other?

In the classical paradigm space is imagined as a huge, static void within which many objects move around and interact, with time an extrinsic and universal yardstick to measure rates of change. The vast majority of space is vacuous, whether on the intergalactic scale or the atomic scale. These vacuums are absent energy. In this system “nothing” is in fact nothing. There are of course fields that can penetrate the “nothing” in these spaces. But they are induced locally, not extant universally. In the quantum paradigm there is no such thing as a fully energy-depleted system. Space and time are

one thing, spacetime, which hosts a vast assortment of fields which energize it continuously and everywhere at once. At the base level, in the *quantum* vacuum, particles and antiparticles fizz up endlessly and annihilate one another instantly, like constant static. Gravity curves spacetime into various manifold shapes through which other objects “fall” or circulate. And many other fields pulsate similarly everywhere, inviting tiny wave-like perturbations to emerge, coagulate and grow into the bigger things we can see. “Nothing” is never nothing.

By one way of counting there are at least 17 such fields (by others, up to dozens more), one for each of the “particles” the Standard Model currently identifies. I put particles in quotation marks because at the level of these fields, a “particle” is simply a wave function that arises proudly enough out of its constantly buzzing field, via the input of a sufficient packet of energy, to achieve something we recognize as material status. Each of these standing waves can then interact (in specifically allowable ways) with other standing waves in other fields, relationships mediated (in specifically allowable ways) by different types of force-fields, to build bigger and bigger “things.”

Physicists (at least of the YouTube variety) prefer visual representations to try to suggest what these fields are and how they interact. You’ve probably seen the famous one that Einstein (who had an extraordinary ability to visualize his thought experiments well in advance of even mathematics, let alone language) imagined of the universe as a sort of large rubber sheet with a bunch of dips and depressions created by the massive objects floating through it. The task of trying to reimagine how that operates in four dimensions instead of two is challenging. The challenge of trying to imagine all of those quantum fields into the four dimensions of spacetime (or the 10 dimensions string theory posits!) instead of the two dimensions of TV space is almost impossible, at least for me.

The most commonly used visual images for those fields are a sort of wavy mesh or a multi-level parfait, each swirl or layer a different color, some occupied by the particles with mass, some by the

massless forces that regulate their interactions. In reality, of course, they are not orchestrated or stacked in this way. They are all already there everywhere simultaneously. The wifty relationships among them are more akin to ballet than two-step.

Somehow each “particle” and “force” seems to know its place, its role, and its options in the system. Or at least that’s the most sense I can make in words of what seems to be happening all the time at the quantum level. The best discourse for describing this action is mathematics, which is elegant, clear and precise. But it takes considerable expertise to use it. When I was able to do higher level math I recall how it transported me into something akin to a vast universal, immaterial space through which I felt I was both whirling around on a carnival swing carousel (controlled by the rules of the system) and playing Grand Theft Auto (controlling a relatively limited joystick.) Sometimes the ride was exhilarating, sometime nauseating. I decided I’d rather engage with the world through poetic figures, which is what I’ve done. Ironically, as quantum mechanics has evolved, physicists tend to explain what they know to non-experts via similarly poetic figures. All that said: Since I can’t do the math to “show my work” here, you should take all of this with a big grain of salt and do some work of your own to check and correct me. Lots of YouTubes you can start with. Watch one, and the algorithm will give you more and more.

So what happens if I shift my allegiance from space as a stable vacuum with some partic-ulated things in it to spacetime as an array of constantly energized spontaneously interacting fields that can make new things? The most obvious effect is the one I’ve mentioned multiple times already in these posts: I’m no longer a super-I-am separate from everyone else and in command of the non-human material universe; I am simply an assortment of aggregated waves that has become intelligent enough to understand that “one is all, all is one.” Again, that taps directly into a lot of the work I’ve been doing to fathom Eastern philosophies, early Christian heresies, and Indigenous cultures.

Take for example the Buddhist concept of dependent origination (or conditioned co-arising), which describes how phenomena arise from specific “causes and conditions,” like seeds that have generative potential when given the right conditions, emphasizing the interconnectedness of all things. In other words, nothing exists in isolation, one of the most common and intractable delusions of Western ideology and the classical paradigm, which individuate “thinkers” as isolated personal “identities” standing aside from both space and time, “thinking” a purely mental activity reserved for a very few “intelligent” species. In the Buddhist frame of reference, thinking happens in the same way as all other things happen. It rises up like a froth and passes. What is durable is mindfulness, the field of attention that subtends thinking and moves with the moment. In other words it turns Descartes on his head: I think therefore I am becomes I think therefore “I” is not. That is a huge liberatory shift, at least for me, addicted to the Western drug of assuming I’m above and outside, independent, individuated. The fear that inhibits making this move arises from anxiety in the thinker about a loss of control we associate with mental disorder, even chaos. The effect of the shift, again for me, is exactly the opposite: understanding that the obsession with control is itself the origin of chaos. Mindfulness is in fact a much saner and more orderly way to live both with myself and in the world I interact with. In some sense, I am like one of those standing waves in quantum field theory, moving around in my assigned space, interacting spontaneously with the other fields out there in the ways that are allowable, given the “causes and conditions” that regulate our “spirits,” assuming they are “willing” to “go with the flow.”

Daoism conceptualizes this conundrum via presence and absence. The latter is the primordial unformed state from which things emerge—better imagined not as a “void” but as a reservoir of energy without (or before) form. Laozi calls this “dark enigma.” Presence is the manifest universe, what Laozi calls “the ten thousand things” with form that we see and feel and know. There is a constant dynamic interplay between these two modes of being, a churning of one into the other, each a re-expression, a re-animation,

of the other. Again, it is much easier to imagine all of this as wave functions rather than particle formations. Mindfulness in this system requires a similar kind of liberation from the addiction of attachment. Mind, for Laozi, must function more as a mirror, a kind of creative absence, that proffers its highly specialized “field” to allow the universe to witness its ongoing celebrations of creation and transformation. Enlightenment in such a system is not a mode of authority or expertise. It is an absent presence. Or a present absence. And one can foster or facilitate enlightenment in oneself or others only indirectly, through the “willing” engagement of “spirit,” which is available to anyone at any moment and cannot be directly induced from the outside in.

In other words, there is no priestly caste with the answers to your (or my) questions or concerns. Sages in the foundational Daoist texts often respond to entreaties from wisdom-seekers with complete silence. Or laughter. Or a slap to the face. The one thing they never do is give the “solution” to the koan in question. Such self-ordained paths to enlightenment are not (to my way of reading) alien to Christian ideology. My primary evidence for that is, as I said, the Gospel of Thomas, though there are other “lost” gospels that are compatible. [Many, especially the most strictly gnostic ones, are not, given their Manichean structures.] But if you just read Jesus’ actual words in the canonical gospels with the “ears to hear” he repeatedly insists on, you will I believe (or at least I do) conclude that they convey exactly the same wisdom: There is no “in here” vs. “out there,” no polar binaries, only interacting fields that vibrate with and for one another, the sum of which, experientially, is the kingdom of heaven!

Paul’s interpretation of what Jesus meant (which is often not quite what he said) and then Augustine’s transformation of Paul’s missives into a battle plan that transformed the early church (small c) into the Roman Catholic Church (all caps, those first two modifiers especially crucial, suggesting imperial and universal), say and do something else. In time they excised what I consider to be Jesus’ most radical vision, excommunicated and exiled those who

practiced it, and extinguished all the scriptures that warranted it by burning or burying them: the old “if you can’t join ‘em, beat ‘em (to death if necessary)” approach. The classical paradigm didn’t originate in the 4<sup>th</sup> and 5<sup>th</sup> centuries while this purge peaked, but it could never have arisen at all without that foundational work having been done ahead of time to install orthodoxy, authority, hierarchy, and, worst of all, patriarchy deep into the Western psyche.

One concept that gets reconceptualized in the shift from an economy of particles to an economy of fields is solitude, a state of being that Western culture tends to set aside for saints, visionaries, misanthropes, or lunatics, i.e., those who prefer to live in a social “vacuum.” I am both one of them and none of those things. I am more accurately what is currently called neuroatypical, leaning heavily toward the “introverted” side. Basically, I tend to enjoy my own company more, in the main, than the company of most others only because the kinds of dialogical events I prefer are more likely to happen when I’m alone than when I’m with most others. And experience tells me they would generally prefer to be with someone other than me.

I mean, above, that I literally enjoy my own “company,” which includes multiple layers and versions of myself that I can, when I want, put into active conversation, like Bakhtin’s polyphony all in one head. To read that as a-social or, worse, as abnormal is simply wrong, a form of bigotry founded in an arbitrary cultural stereotype of normalcy. The “social isolation” enforced by the pandemic unmasked this assumption as a delusion. Extroverts suffered quite a lot under those conditions. I did not, actually enjoyed them. If a fleeting state of affairs of that sort lasted for, say, a couple of generations rather than a couple of years, people like me who flourish in solitude would be “normal,” not those who need the constant company of others to function.

I am never disconnected from, let alone dissociated from, the world around me, including the human universe. That is, I do not experience myself as particulated. Ever. My experiences, whether solitary or social, actually happen in the “field” of pretty much

everything around me. That is especially so when I'm out walking, the things I encounter, some beautiful, some mundane, radiating not just life, but meaning in frequencies my body, when I'm right, is tuned to receive. The same applies when I'm engaged in social interactions that are "field"-oriented. The key is whether I and my interlocutor(s) are on the same "wavelength(s), our presences creating, via discourse, a third party-between, who is not identical with either/any one of us particularly. We all exit such interactions as at least slightly different people than we were beforehand, changed in a way that feels salutary. Whether that happens with a book, a tree or another person present right in front of me, on Zoom, on the phone or even on email is not the point. The key is that mutual change takes place, "nothing" becoming "something" by revealing itself as the never-nothing it always was, via the alchemy of mutual presence invoked by both language and silence in equal measure. Fields operate in exactly that way. Particles tend not to. Which is my point, the figures at the heart of this section returning now to their starting point having, I hope, been changed by all the words that have intervened between there and here on the page, and even more importantly, between "you" and "me" outside of it.

## 6. Isolated/Entangled

*The law is that all things fuse that can fuse, and nothing separates except what must. . . . The baby, assailed by eyes, ears, nose, skin, and entrails at once, feels it all as one great blooming, buzzing confusion; and to the very end of life, our location of all things in one space is due to the fact that the original extents or bignesses of all the sensations which came to our notice at once, coalesced together into one and the same space. There is no other reason than this why "the hand I touch and see coincides spatially with the hand I immediately feel."*

William James

And now, finally, I can get back to the crucial difference between the classical and quantum paradigms that Erwin Schrödinger pointed out a century ago, “*the one that enforces its entire departure from classical lines of thought.*” *entanglement*. I like the efficiency of that: one concept “that enforces” an “entire departure” not just from esoteric ways of measuring space and time but ultimately from all those “lines of thought” that are well past their prime now. If you’re into “change management” this is the mother lode! Just replace “isolated” with “entangled” and you’re now right here instead of then back there.

You might still wondering “so why go to all that trouble?” Well, here’s two things to start with:

1. You can derive our most cherished human values inside-out from the fundamental principles that organize the universe we live in instead of imposing them from the outside-in via some “higher” power, whether transcendent, anointed, self-appointed or elected. By this means you can at least impede if not overcome the Western addiction to hierarchy, orthodoxy, and, worst of all, patriarchy, replacing them with equity, self-actualization, and gender neutrality.
2. You can reach consensus with those wisdom traditions I’ve been indexing along the way, the ones that promote ways to live with rather than against both one another and the natural world that sustains us. We can, then, focus on working collectively to save the place we’re best suited for because we evolved with it; instead of ogling a few mega-rich, transhuman tech-bros as they search for another place to re-propagate *their* version of the human race, while the rest of us bake, drown or suffocate in the one they ravage on their way out.

William James came along a generation before quantum mechanics was even a twinkle in the eye of Schrödinger and his colleagues.

And the above quote has to be stretched to apply to entanglement. But I don't think it's a stretching he'd necessarily be averse to. So stretch it I will!

In the classical paradigm space is populated by a vast assortment of separate and distinct things that interact with one another in various predictable ways, often violently, rarely intimately. Like human beings in that respect. The sum of the mass of those things comprises the physical universe, the machine. It became clear during the 20<sup>th</sup> century that this model could not possibly work without the addition of vast amounts of what we now call dark matter to provide a framework for those other things to do what they clearly do and dark energy to expand that framework at the exponential rate it was clearly expanding. Via these calculations, what we actually see is only about 5% of what's out there. That's a big problem, but it doesn't necessarily undermine the assumption that all of those well-cossetted things are still separate entities. In such a system it is actually "common sense" to assume that the whole shebang must have been designed from the outside in, the God/matter binary; and that we are separate and distinct from the material universe, from one another, and even from our embodied selves, the soul/body binary. Thus the rabid individualism and sense of entitlement (in relation to Earth, among other things) built into the "classical lines of thought" that still permeate our culture. Always at odds. With everything.

Entanglement not only calls all of that into question, it precludes it. At the most fundamental level entanglement is the built-in inclination of unattached subatomic particles to unite with one another when they meet. This is not a once in a blue moon phenomenon that requires highly specialized laboratory conditions. It happens to subatomic particles all the time, is built into their nature, a kind of love at first sight instinct. Once this entanglement occurs, the two entities behave as if they were one, no matter how far apart they get. Not two things somehow communicating with one another instantly through the void, but one continuous wave function. When we happen to "measure" the state (angular

momentum, say) of one of the “pair,” we divine the state of the other instantaneously, no matter how far apart they are. No obeying the speed limit of light. Einstein, as the inventor of the speed of light as an absolute limit, had a problem with that, understandably, calling it “spooky action at a distance.” He just couldn’t rationalize how two seemingly separate things could “communicate” in that way that fast. And this action would in fact be spooky if it was at a distance. But in reality it is not. These entangled particles are in fact one thing, aspects of the same wave function, present with one another non-locally. So there is no distance to be spooky at.

These particles go on to entangle themselves with others in their “environment” until their special relationships become more and more diffuse, leading to what is called decoherence. When the system becomes sufficiently decoherent, which doesn’t take long, it appears (to us) to behave like a classical one in which the wave function has “collapsed” instead of a quantum one in some superpositional state, which is why so many of our intuitive assumptions about spacetime can remain credible even if they are founded on gross errors about the nature of “things.” In quantum field theory, every aggregation of entangled particles (up to and including the whole universe which comprises all the subsystems of entangled or unentangled entities) can, theoretically, be expressed as one wave function, a singular state of being. And every “bit” of spacetime is, they say, somehow entangled with every other “bit” of spacetime, an unfathomably complex unity, such that even in the quantum vacuum energy can be created in one place and transferred to another remote place, as long as the conservation of energy laws are abided by.

This further complicates the “the measurement problem” I mentioned in an earlier post: Either the “apparatus” performing a measurement is presumed to be outside the quantum system (the “Copenhagen theory,” e.g.) or is integral with it (the “Many Worlds theory,” e.g.) leading to two incommensurable versions of what actually happens when quantum phenomena are measured: Measurement either reduces the multiple possibilities of the wave

function to one of its options in this spacetime or it conserves all of them in different spacetimes. Which adds another layer of “uncertainty” to the quantum paradigm. It remains to be seen whether this conundrum can be resolved via experimentation, the very mode of “measurement” with which physics has a “problem.”

So what’s my takeaway from all of this as it might pertain to a way of being in the world and a set of ethical values? Extrapolating behavioral consequences at the human level from the mysterious properties and behaviors of subatomic particles is risky. There is no evidence that entanglement can persist as an evident (to us, post-decoherence) feature of macro-level systems. So everything I say from here on is speculative, more the province of philosophy, or less generously “new agey” nonsense, than physics. But I’m going to go there anyway. I take as my guiding principle the one I mentioned in my previous post, Philip Ball’s “not what is, but what if.” As in, what if “reality” is not some hybrid of quantum and classical systems but is quantum in its entirety, smallest to largest, outside and in?

The history of physics is rife with moments when the community believed its model was almost “finished,” on the verge of explaining everything. There was one such at the end of the 19<sup>th</sup> century. Had Michelson and Morley found that the speed of light was variable in their now famous experiment, it would have stayed that way. They didn’t. So Einstein invented relativity. Quantum mechanics followed. You go from thinking you know nearly everything to realizing you know very little in one generation. The current obsession in physics that a “theory of everything” is right around the corner is an expression of that same delusion. All of which is to say that today’s seemingly absurd speculation may well be tomorrow’s truth. I take my general guidance in what follows here from Schrödinger. He says entire departure! That’s a bold statement. And I want to follow its imperative to a set of conclusions that make sense at least to me, right now, along the inside-out is outside-in trajectory I’ve been documenting in spiritual and poetic traditions along the way here.

I'll start with matters pertaining to “the inside,” with “intelligence,” one area where this transition from micro to macro is being explored and contested, specifically as to whether/how “human” intelligence can be emulated “artificially” via electronic systems. In other words, what is the relationship or difference between AI and just plain I-Am? The assumption that has dominated in this arena, ever since computers were developed, but with a vengeance since the early 70s when systems like Deep Blue became all the rage, is that the brain is essentially a very complex system of binary switches that processes “reality” (i.e., “thinks”) the way a computer does. The (il)logic of this way of modelling cognition is apparent: These binary computing systems we've invented can do *some* of the things brains can do, therefore brains *must be* binary computing systems. If we create more and more complex binary computing systems, sooner or later they will replicate brains. This is a prototypical example of the problem with the classical paradigm: What's out there clearly functions this way; so what's in here must function that way, too. There's a name for that fallacy, but it's so apparent to me I don't even want to take the time to Google it.

Is there a viable quantum-based alternative to this way of thinking about thinking, one that, for example, relies on entanglement rather than linear or parallel sequencing to explain cognition, perhaps even account for consciousness? The closest thing to that was proposed by Roger Penrose, of Black Hole fame, about 30 years ago, a theory called “orchestrated objective reduction.” Penrose argues that the brain operates via quantum properties at the micro level—in complex and flexible organic structures called microtubules—and is, therefore, NOT analogous to the computing and information processing systems we now presume are potential brain-equivalents. His theory is highly disputed and widely dismissed in AI, neuroscientific, and quantum mechanics communities based on evidence indicating that entangled systems decohere very quickly in macro systems that are not held in vacuums and/or super-cooled. The brain is warm and wet. Therefore, they argue, it simply cannot operate as a quantum

system but must be essentially classical in its operations. But there are still active proponents for this way of thinking looking for ways out of that pickle, and I'm rooting for them in the longer run. For two reasons. First, to work backwards analogically from mechanical to organic systems just seems stupid to me, classical mechanics gone haywire. Enlightenment philosophers went through all kinds of gyrations and contortions to carve out some space for at least a limited form of what they called "free will." Instead, for example, of just saying "screw you, Newton. I'd rather start from my inside out than your outside in."

But more importantly, Penrose, et al., are at least attempting to account for the obvious ability of the brain to produce consciousness itself, which mechanical systems cannot; and, further, to enter those transcendent states of mind that humans have clearly experienced pretty much forever, the ones that "surpass understanding" that artificial systems are, at least at the moment, incapable of. In other words, what I often call the ineffable. Post-Enlightenment philosophers struggled with that, too, of course, generally preferring the effable. Postmodernists essentially dismissed the ineffable as a nostalgic fantasy. Poets, sages, and mystics have long said, and still say, otherwise; and I think, based on my own experience, they are correct. The quantum paradigm, offers a path to the ecstatic states of mind I and other humans routinely experience, endorse, and write about. Entanglement may start small, two particles conjoining. But "what if" (following Ball's imperative) the same phenomenon applies everywhere, from my brain to the entire universe. If you start from binary computing systems, well, you can't ever get there. If everything is entangled, you're *already* there.

It's possible that quantum computers will provide an avenue to reconcile artificial with actual intelligence, proving once and for all that the key to intelligence is quantum not classical. In the meantime, I want to go even further out on my limb. I made a lighthearted comparison above to entanglement as a sort of "love at first sight." What if a love of some sort is a fundamental force in

the universe, a way of naming the strange forces that power its “evolution?” C.S. Pierce made a specific argument toward this end in the middle of the 19<sup>th</sup> century, in an essay called “Evolutionary Love.” He named his theory “agapism,” a synergistic interaction of what he called “synechism” (the continuity of space, time and law) and chance. That’s at least the best sense I can make of the nearly impenetrable (even more so than his usual, which is pretty dense) prose in this argument. And Jean-Baptiste Lamarck proposed a theory of evolution that advanced as much by generational heritability and epigenetic transformation as by natural selection, with an innate (continuous) drive toward complexity, which Pierce then argued was akin to his agapism. Both systems have, like the quantum brain, been discredited. Which is something other than to say they are entirely wrong. At the human level, this way of thinking can account for the common perception that loved ones are, in fact, present with us non-locally; i.e., entangled, a genuinely quantum effect at the macro level. Can this be proved? Two choices: No or not yet. Take your pick. I prefer the latter.

And I’ll go even further “out there” than that. I have certain kinds of experiences routinely at the macro level that in my opinion have all the elements of entanglement. When I walk in the forest, for example, I often make, or feel, intentional engagements with specific trees of which I am quite conscious, and, in my opinion, they are as well. In those moments we become not two but one. And sometimes, this opens a portal to network with a whole forest, ecstatic moments I’ve documented along the way.

On an even stranger scale, I have had and written about real-life experiences in which “others,” trees for example, have come from remote distances to comfort me through a difficult transition, or when time has been suspended while, I assume, I was being called elsewhere to provide similar comfort for someone or something else. “Huh?” perhaps, to you. “Wow! for sure to me. And I have had and written about my fallings-in-love with things as grand as the star-mottled night sky or as mundane as manhole covers and the white lines on highways. I am absolutely certain these

entanglements occurred. And my spirit has been enriched by its willingness to trust that they were true. Are these legitimate examples of macro-level entanglements? Not in the context of current theory. Are they therefore definitely not that? I prefer to say the jury is still out and may be for a very long while.

How might intimacies of this sort be conveyed through spacetime? In the classical paradigm, they simply can't. But I think quantum field theory may provide a way forward. Current physics posits that at least 17 (and perhaps many more) discrete "fields" permeate the entirety of spacetime, providing the mechanisms for subatomic entities to emerge, combine and interact. In effect, all of spacetime is constantly abuzz with all these fields, each performing its bespoke task in the general scheme of things. What if consciousness itself is a field that buzzes permanently through spacetime? And that, like subatomic particles, we inhabit it rather than generate it? Eastern religious and philosophical systems, indigenous cultures, and early Christian heresies are companionable with that way of thinking about thinking, as I've tried to show along the way and in previous books.

On a more quotidian social scale, even when I'm simply engaged in a genuine conversation with someone in front of me, when both of us are active listeners, I experience some kind of entanglement, as if a hybrid version of the two of us is being created in the space between us, our getting to see and know one another, and ourselves, in deep and revealing ways, literally "on the same wavelength." That can occur in my living room or over vast distances via other kind of communication technology. And in my book *Rereading Poets: The Life of the Author* I propose that the same outcome can arise via active reading (a more specialized form of active listening), across wide gaps of historical time, a synergism of author and reader via which both come to "life" right here, right now.

In the classical paradigm experiences of this sort range anywhere from counter-intuitive, to magical, to mystical, to absurd, to lunacy. In a quantum paradigm, extrapolated to scale, risky as it

might be, they are potentially normal. It's possible that I simply prefer this way of thinking about how the universe, including the human field I get to occupy, operates. But you have the same choice I have: Stick with the classical paradigm and remain separate and alone or follow Schrödinger all the way across into the quantum paradigm and be constantly and intimately entangled, loving and loved. Quantum mechanics tells us quite clearly how reality emerges at the foundational level. Humans throughout history, especially outside of the Western tradition, almost uniformly intuited reality pretty much that way without the equipment to prove it or the math to decode it. I aspire to that kind of enlightenment instead of the Enlightenment values I've inherited culturally. And my spirit is willing still to do the work to fathom that "great blooming, buzzing confusion"—which is "all things fuse[d] that can fuse," the childlike state of mind both Jesus and Laozi say is essential to enlightenment, as deeply as my remaining time in this astonishing universe will allow.



## An Addendum on Time

The piece I'm adding here is presented in its fourth iteration, revised and extended for this purpose. I published the italicized kernel at its heart first to my website a decade ago just after one of my morning walks in Boyce Park. I published revised, nested versions of it in subsequent books, *First, Summer* (2018) and *Harvest: Essays on Time from Olympia* (2020.) I revisit that latter one here, primarily to call attention in this new context to what I see as a major deficit in the quantum paradigm: the absence of a fully-fledged theory of time. The classical paradigm is absolutely clear (if almost entirely wrong) about the role of time in the machinations of our universe. As I said in "Willing Spirit," time in Newtonian mechanics is distinct from space, one universal clock measuring its passage at the same rate everywhere, always. Einstein unified time (as a fourth dimension) with space via relativity. In his system, still classical, time varies (via what he called "dilation") depending on one's frame of reference relative to other frames of reference, which at least gives it some wiggle room. Time is, of course, an indigenous component of quantum mechanics as well, via equations that represent velocity, momentum, frequency, etc., those little "t"s scattered all over the place.

When I first published this material, and for most of the time since, there was absolutely nothing I could find in quantum theory—and I read all the books I could find, big-name authors, all of which were profoundly disappointing to me—that was even remotely consonant with my "vision" in Boyce Park that day. I document some of this reading below. In 2021, though, an article written by Lee Smolin and Clelia Verde called "The Quantum Mechanics of the Present" appeared in *Quantum Physics* that seems to me to support at least some of the features of the admittedly exotic "froth of bubbles" metaphor I propose below. They say:

*Inspired by suggestions of Heisenberg, Schrodinger and Dyson that the past can't be described in terms of wavefunctions and operators, so that the uncertainty principle does not apply to past events, we propose that the distinction between past, present and future is derivative of the fundamental distinction between indefinite and definite. The same is the case for the quantum world versus classical world distinction of the Copenhagen interpretation. We then outline a novel form of presentism based on a phenomenology of events, where an event is defined as an instance of transition between indefinite and definite. Neither the past nor the future fully exist, but for different reasons. We finally suggest reformulating physics in terms of a new class of time coordinates in which the present time of a future event measures a countdown to the present moment in which that event will happen. (underline mine)*

So, they abandon the longstanding tradition of separating future from past via wave functions and operators (which leave things muddled in some version of “the block universe”) with a distinction between definite (the past) and indefinite (present and future), the latter two of which are subject to quantum uncertainty, therefore probabilistic, and former permanently fixed, therefore classical in nature.

While they do not propose reversing the arrow of time entirely, as I do, they do say this:

*Suppose we start out in a present moment  $T1$  which is before  $T0$ , i. e. the present moment indicated by  $T = T0$  is then in our future. In terms of clock time,  $T0$  remains fixed in the future, and our clock increases, which gives a sense that we are rushing towards that future (isn't that how it often feels?)*

*When we . . . transform to the  $\tau$  coordinate [their preferred alternative for measuring the passage of time] it*

*is like transforming to a moving frame, to capture the idea that inertial observers feel no motion. The present moment coordinate starts in the past of that present moment, and sits stationary at  $\tau = 0$  , while the future rushes towards it.*

*It is instructive to imagine what it would be like to live in a world that ran on present moment time; the present time would always be  $\tau = 0$  . We wouldn't need clocks to tell us that the present moment would always be NOW. But the times assigned to future events would not be static, as they would always be counting down to the particular present moment when they would "happen" and emerge from the indefinite to the definite. Rather than living by a clock which always ran, to orient ourselves to a static calendar, the calendar would indicate a complexity of countdowns, each evolving towards its moment.*  
(underlines mine)

This implies to me that what we call the present actually exists as a sort of creative interim, and the future exists as an array of probabilities informed but not fully determined by the past. The most impertinent block of time in this scenario is the past, which is fixed, done. All of which is to say that what follows here is, at least according to these two reputable quantum theorists, nowhere near as preposterous-sounding as I'm sure it would have seemed to the physicists whose books I was reading back then.

**Excerpted (with revisions) from *Harvest* (2020)**

**August 26, 2019**

When I got out of my car today at Woodard Bay I could hear a loud din of bird-yipping down by the water at the head of the bay, the tide about halfway in, big mudflats extending out from the shoreline. So I stopped to see what was going on. I saw a passel

of little birds down there, right at the water lip on my side of the inlet, most picking away at the muck for whatever delectables they found there, a few dabbling wings in the shallows and then preening, birds I'd never seen before, maybe 5-6 inches long, brownish on top, whitish underneath, black toothpicky legs about three inches high, long pointy beaks, very skittish, zipping around at hyper-speed. At first I noticed a couple dozen, which is way more shore birds than I've ever seen there at one time. Or the total of all the times! Then I saw another group of a couple dozen nearby, then another, then a huge cloud of them swirled in, not sure from where, it happened so fast, many hundreds of them. It was amazing. The flurry of scurrying feet, dipping beaks, and all those yips blurring into one continuous note was exciting, delightful.

Since I'd never seen these birds before, and there were so many, I assumed they were stopping on a migratory route, to freshen and fatten up before heading on. When I got home, I consulted my bird book and concluded they were sanderlings. The range map for these birds suggests they would be rare here, and their primary migratory routes, from the arctic tundra where they breed to all points south, seem to run through central Canada. A more likely candidate would have been the sandpiper, same size, demeanor, much more common in these parts. But I paid attention to the coloration of those birds, the way the white from the belly blends up into the tan of the back with prominent shoulder patches, and the sanderling is a closer match. So I had to decide whether to trust the relative indeterminacy of my eyes or the documented probabilities. I chose my eyes, which gets me to what I ended up thinking about today: the "relative indeterminacy" that is built into everything, most especially, given my focus here, time.

Of course, I am not a theoretical physicist. Maybe I could have been had I spent the last 50 years with math instead of poetry. But I didn't. I turned to current theories on time this month just because I've always been fascinated by the phenomenon of

temporality. I ended up reading four recent books on the subject written by physicists.

Carlo Rovelli's *The Order of Time*, is a quiet, rational examination and explanation of where physics is these days vis-à-vis time, except for the last chapter, my favorite, which is more personal, subtly poetic in some ways. His discourse is univocal, his translation of relativistic and quantum theory into a readable, "reasoned" prose, without any recourse to mathematics. He is a proponent of quantum loop theory, which attempts to solve the gravity "problem," the main impediment to unifying quantum mechanics with General Relativity. He seems primarily to want to say that contemporary physics has just begun to address this whole matter of time and has few if any answers.

I then read Sean Carroll's *From Eternity to Here*. His book is about three times as long, full of examples, stories, thought experiments, and historical tidbits, quite engaging and readable as well. There is a section at the end that brings some mathematics into his inquiry, but it's low-key. He is a proponent of the Many Worlds theory—which posits that the measurement of a quantum events creates independent worlds, one for each of the possibilities for solution, rather than one via the collapse of the wave function, so his argument is generally driven teleologically by that assumption. For him, Many Worlds is a rigorously logical way to resolve that "measurement problem" in quantum mechanics. The generally preferred alternative (the collapse of the wave function at the moment of measurement, one half of the duality becoming "real," the other half vanishing) is, to his way of thinking, arbitrary and irrational by comparison, a sort of fudge factor for something we just can't explain or understand.

The third was Brian Greene's *The Fabric of the Cosmos: Space, Time, and the Texture of Reality*. His chapters on time are the most detailed, lucid, and straightforward of the lot, especially the sections on quantum temporality and its relationship, or lack of one, with classical and relativistic conceptions of time. He, too, acknowledges that time has thus far eluded the grasp of

theoretical physics in quite fundamental ways. He favors string theory as the path forward, a potential “theory of everything,” at least in relation to spatial matters, though he is adept at explaining multiple alternatives for approaching the fundamental questions it raises. The nature of time remains as elusive for him as it does for the others.

The fourth was a more eccentric book, *The Stubbornly Persistent: Melting the Frozen River of Spacetime*, by Anderthal Kord. His ambition is more philosophical, to find a way of salvaging the concept of free will from the general tendency in both classical and quantum mechanics to define the universe as deterministic. Mostly, he patches together a lot of interesting quotes from others to make his case, which, finally, feels forced.

In the end, I found all of their treatments unsatisfactory, as I have all the previous material I’ve read on this subject. I have no interest in critiquing any of these arguments on scientific grounds. I just want to think in new ways about time, and none of them helped me much to do that. Instead I’d like to comment on a couple of the primary figurative tropes they deploy, all relative boilerplate in the field now, to launch and extend their analyses toward one more appealing to me. I’ll start with that “frozen river,” a longstanding metaphor in spacetime physics that is Kord’s bugaboo. The implications of the figure are that spacetime is already extant and fixed as a whole, full extension, space and time in eternal communion, a byproduct of the deterministic nature of the universe imagined by classical physics and conserved (as least aspirationally) in some versions of quantum mechanics. In effect, time is simply a gradual revelation of what’s inevitable, its surprises an illusion. The block universe concept is a current iteration, in the quantum paradigm, of essentially the same thing. Kord feels, rightly, that this threatens the concept of free will and he intends to be “stubbornly persistent” enough to “melt” that frozen river, make it “flow” again; i.e., to restore some sense of agency in the human universe.

The stubbornly persistent part derives from a comment Albert Einstein made in a 1955 letter to the son and sister of a cherished colleague, Michele Besso, who had just died. He says:

*People like us who believe in physics, know that the dividing line between the past, present and future is only a stubbornly persistent illusion. . . Now [Michele] has departed from this strange world a little ahead of me. That means nothing. (Rovelli, 114)*

Einstein himself died shortly thereafter. This quote has taken on a legendary status in the field, borrowing all the authority of its maker, a kind of deathbed assertion assumed for that reason to be “true,” enough so that Kord writes a whole book to try to dampen, if not refute, its implications. Carroll doesn’t write about it specifically but takes its general initiative as a given. Greene addresses it briefly and clearly. Rovelli writes at some length about it later in his book, taking care to contextualize it in its own moment, a letter of condolence, an expression of both grief and faith, neither of which, to the best of my knowledge, are integral to quantum mechanics. Anyone who has lost a loved one or just been attendant in a meaningful manner at a wake or funeral knows the ways in which time seems to collapse in that aura, reveals itself as an illusion, one we will, once the grieving is “past,” need to recover and continue to persist with. So it’s risky to attach too much significance, in a scientific sense, to what Einstein says.

Einstein also (allegedly) made this even more general statement about the fundamentally illusory nature of the world we imagine to be real: "Reality is merely an illusion, albeit a very persistent one." I have been unable to track down where and when he said it. My Google search is quite telling though as to how legendary its status is in the quote market. You can buy posters, bookmarks, even a pendant and necklace with this quote on it. Commentators range from amateur scientists to New Agers, all borrowing what they prefer to hear in it. One (Tom McFarlane, a “Stanford physics grad”) claims “Einstein didn’t say it. It is not consistent

with his views.” It is, in fact, antithetical to his overall desire to recuperate “reality” from the most extreme probabilistic (“God does not play dice with the universe”) and counter-relativistic (“spooky action at a distance”) elements of quantum mechanics. I suspect that this one is more likely just a catchy trope for quantum-mechanical indeterminacy, the fact that every “thing” at the subatomic level exists only as array of probabilities until we measure it, which is generally what quantum mechanics implies.

Heisenberg’s uncertainty principle was the cue stick that got this ball rolling. All it says is that at the subatomic level you can never measure with absolute precision both the location and the momentum (or the direction of spin, or some other set of complementary features) of a subatomic particle. The more exact you get with one, the less with the other. Sounds pretty tame, but he demonstrates that this is not a matter of imprecision with equipment, or derivative from our intervention as observers, it is built into the very fabric of being: Things are not really “there” in the way Newton imagined they were until we observe them, which may or may not (depending on your theoretical inclinations) make consciousness complicit in “creating” reality. That principle, and many subsequent other strange aspects of the quantum realm—entanglement, the wave-particle duality, etc.—have all been verified experimentally. So there is little doubt that it’s all true. In that respect then, reality, at least our intuitive sense of it, is in some respects an illusion. Not “merely” but amazingly. There is no point in persisting to believe otherwise. Which is not to say that it’s not there; just that you can’t know everything about it at once. Or, in my opinion (more about that below), ever.

As to time, well, that has been called illusory in experiential, phenomenological or theoretical terms, going at least as far back as Parmenides and Zeno among the pre-Socratics and, almost a millennium later, St. Augustine. In other words, time has generally been approached thematically more as a philosophical problem than a testable feature of the natural universe. Even contemporary physicists seem to struggle to come up with a

discourse to explain, let alone predict experimentally exactly how or why it works as it does. In other words, there is no “uncertainly principle” to start with. Just uncertainty. The four authors I read for this piece prefer to approach the problem rationally, presuming, following Aristotle, that language can in fact function transparently, or at least with clarity, even in the face of such a mystery. Socrates, as I said in “Willing Spirit,” reserves that absolute representational capacity for the gods. He tries often to emulate it, but when push comes to shove, it is metaphors that win his day, poetic devices, even if they are never acknowledged as such. And that is what these scientists do, sooner or later, too. My preference here and elsewhere is exactly the opposite: start with metaphors and see what happens.

The second one I want to look at is the “the arrow of time,” a commonplace figure in scientific discourse, certainly in Newtonian mechanics, but even more problematically in the quantum paradigm. Time, in essence, via this figure, only has some reality, even if it is to a degree illusory in the larger picture, if there is some irreversible change that takes place. And in our universe that change is in only one direction, “past” to “future:” expressed by entropy at the macro-level, which always increases in a closed system (whether a bell jar or the universe); and the collapse of the wave-function at the micro-level, a change of state that measurement institutes, even requires, that cannot be played back into some state of probabilities.

But why, I want to ask, use an arrow to index this process of change? It is such an aggressive metaphor, one of the implications of which is that there is always a forward-oriented thrust from a “something-already,” a past, toward a “nothing-yet,” a future, the stereotypical way we imagine the passage of time in our lives, in history, in everything: The past is fixed, done, like what a book is when it’s published. The future is empty (or at least appears so to us, even if it already exists beyond our ken as that “frozen river”), open, like the rest of this page waiting for me to fill it with typing. The arrow of time is the vector that drives the now extant past

forward into that space-awaiting. That seems so extreme, clunky. Even the most trivial things we do pre-construct the future before it happens. That sentence, for example, or this essay, from the very first word: an expanding bubble of potential “realities” is created, a “field” of possibilities, which I then traverse along a single emergent path along the way, until it closes, becoming fixed, a past, when I’m “done.”

Mathematics is exactly the same. With any given “problem,” one needs to start somewhere, an initial equation. From that point on, a limited number of possible outcomes—hopefully but not necessarily the correct one—became potentially extant. And the rigors of the symbolic system make it an inevitable destination, if, of course, you can solve all the other littler “problems” along the way, many of which can be navigated in multiple ways. And you could say pretty much the same thing about every layer and process in the universe. The future is never “empty;” it is to a certain degree always pre-scripted. The question is not if but how much. There are all kinds of metaphors we could use to characterize the fuzziness of the intervening time it takes to get from here to there. But, to me at least, an arrow is one of the worst, presuming there is no intervening time which has been pre-cast by the first gesture and must be traversed, sometimes for a considerable way, to get to “there.” It would be like thinking “born” and “die” are the only states of a life. Yes, the former necessitates the latter, but it doesn’t account for anything that comes between.

I could probably come up with a half dozen better metaphors for that liminal space between past and future, which we call the present, but the one I like most is a “froth of bubbles.” I wrote about this in *First, Summer (2028)*, and I’ll quote that section here, to give you a sense of what happens if you just shift metaphors:

A year or so ago on one of my morning walks in Boyce Park in Pittsburgh, when I was thinking about time, I had an image come into my head which looked like a froth of

bubbles. That image was, I believed, trying to tell me something about time, which was on my mind generally that day: that it was not at all a linear vector, piercing forward from the richness and doneness of the past into an unconstructed, blank future, fiercely regulated by the kinds of increments we measure with clocks; but more like incoming surf, a wave-length repeating itself, the same liquid over and over, coming in cycles, it's foamy wave-tips a "field," continuously present, always new and renewed.

These "waves," in time, I thought, just as they are in space, could be mild and rhythmic, or massive and scary, or, really, infinitely varied. I know enough about physics to presume that time, in its fundamental essence, must be just as unfathomably strange as quantum mechanics tells us space is. The right minds just haven't spent enough "time" thinking about it, experimenting with it. Things in space are so much easier to work with. Einstein, of course, did bring time into intimate dimensional relationship with space, a huge advance, but I'm sure there's way more to it than that, mind-blowing strangenesses awaiting our consideration. In any case, here's what I wrote that day in 2015 back in Pittsburgh:

*I have always been skeptical about the "infinite alternate universe" aspect of both the Multiverse and Many Worlds hypotheses, which implicate temporality as a secondary element to solve certain problems endemic to quantum mechanics. The former posits a potentially infinite array of alternate universes (each with, perhaps, different laws of physics) existing spatially as "bubbles" of sorts in some contiguous or non-contiguous relationship with our own. The latter posits an ongoing multiplication of alternate universes, complete in every detail, that branch off at each measurement juncture, equally real*

*versions of the event result following alternate paths, "worlds" multiplying exponentially over time I (may prefer to) think that the universe is more elegant than this. Still, there is so much theoretical framing for something of this sort (inflation, gravitational waves, quantum duality, string theory, etc.), it is equally unlikely that the old standard model (one lifeline, one path, that's it) is adequately explanatory.*

*So I was walking in the woods today trying to fathom exactly what was wrong with these models and this thought came to me: they both depend on that unilinear "arrow" of time, the past always and only pressing into the future, the arrowhead of the vector of time locked in at the present moment, the "shaft" of the past trailing behind, fully formed, forcing the projectile forward, the future essentially empty, a blank slate waiting to be pierced. This way of construing time has seemed naive to me ever since I was a kid, frankly, and more and more so as I think and read more about temporality in general.*

*Time, I had already come to believe, is a fluid field, analogous to the fields that orchestrate quantum interactions in the physical realm, the future already extant amorphously, not as a "frozen river" but as something like potential energy, and it approaches us, actually comes toward us, in a generally amicable way, as we (among which I'd include not only all conscious beings but all materially "present" entities in our universe) encounter it, occupy it presently. In other words, the future is just as real as the past, though it remains immaterialized until we inhabit it.*

*The image that came to me to capture this ongoing interaction, at least as it pertains to infinite alternatives, was a wave tipped with a froth of bubbles as it slips toward "shore," the present. All of*

*the bubbles, seen as a whole, are relatively undifferentiated, like a froth is, rather than singular, like the ones we might blow in the backyard. Each individual bubble pre-constitutes a futural space with the potential for life, but it remains indeterminate, "empty," until we interact with it, filling it with life, realizing it in time. As we cross into that froth, we engage only a small number of those bubbles, of course, and these are activated. As a consequence, a certain number of other bubbles on that wave and successive incoming waves become viable for life, waiting for us, full of their potential, and a huge number of others become untenable, unlivable, dead; these pop, done, gone. Only one life goes on, though it still has infinite alternatives available to it in the future that approaches it. Time in this model has certain aspects of the superpositional qualities quantum mechanics attributes to space, the future approaching, past moving forward, back and forth, the present the "field" of their interaction. In other words, time contains, futurally, an infinite inventory of possible worlds which are winnowed down when we encounter them as they approach from the future, rather than generated as we ride the arrow of time out of the past. By this means, the realized universe becomes simpler rather than more complex over time, which relieves the oppression of determinacy from temporal sequence without rescinding it entirely.*

*About a month later, on another walk, it struck me that this could also account for one of the other conundrums that has long afflicted my thinking: What part of our lifeline is a matter of choice, responsive to our desires, controllable—the clunky "free will" trope that has afflicted Western thinking for centuries now; and what part is a matter of "fate" or, my preferred word, "destiny," essentially out of my*

*control, even if not entirely pre-determined. I do believe that choice is foundational to the human experience, organizes our ways of being in the world. But I also believe, based on my experiences, that certain paths, events, whatever, are pre-cast, obligatory, insist on happening or not happening no matter how hard I might try (have tried!) to avoid or achieve them.*

*The frothy wave accounts for this in this way: Many, maybe most, of the waves we interact with are relatively mild, yielding to our intentions, letting us choose, more or less, the "bubbles" we prefer to interact with and enliven. Others, come at odd angles, surprise us, are beyond our control, like the sort of extrinsic historical or cultural or physical forces that are non-negotiable, belong to the time period, the body and the natural environments we are, for whatever reason, compelled to inhabit. These enliven what I'll call "accidental" bubble chains, compelling us to "live" in and through them whether we like it or not. Many of the major events/changes in my own life seem to have been inescapable in this way. They just had to happen, for whatever reason. And, of course, everything in nature is subject to a variety of "catastrophic" events beyond any prospect of choice or control. This is what I call destiny. All three of these can be accounted for, interactively, in the froth.*

*Finally, I think this may also account for that common human experience of seeing one's life "flash before our eyes" when we think we're about to die. There is no way one could "see" in such a flash all the junctures and variations in the Many Worlds, or any IAU, model of temporal succession. We exist in infinite iterations in all those alternate universes. One*

would have to be a god to witness them all at once. But one could see in an instant a string of interconnected bubbles that, in the end, account for our individualized "life." We might even be able to see them as one bubble, all of them collapsing into a single, integrated whole. When we actually die, all of the infinite number of remaining bubbles on the waves incoming that pertain specifically to our path probably pop or evaporate. But who knows? Maybe we go to another level where we can see, simultaneously, not only the whole, "time"-less bubble of our lived life, but even all the other unrealized lives in the infinite number of bubbles that popped or remain. Maybe we can even see all of that in a flash, too. That would be cool.

*Note: The bubbles in my metaphor have nothing to do with the "bubbles" that post Big-Bang inflation and the Infinite Alternate Universe hypothesis make at least theoretically possible. Mine are bubbles in time first, then space, not vice-versa. (96-103)*

Okay, I know that's a long path to have walked just to get to a new metaphor. But I think there are considerable advantages to this one for the boundary between past and future we call the present, compared for example to the arrow, which doesn't seem to leave any room for the present at all, just a vector thrusting "forward" from past to future, the present almost by definition non-existent. It is, of course, easy to argue that the past and future don't "exist," are illusory. Augustine does as much by using negatives for each: not now and not yet. Contemporary physicists have a variety of more exotic, sometimes esoteric (to me at least), ways of arguing essentially the same thing.

So what is left of the "present"? Is it really "nothing," too? Is it like Zeno's paradox? No matter how small you

imagine it, you can always cut it by half? If it too is nothing, then temporality is nothing, a mere delusion of consciousness that imagines change when there is none. Maybe that's so, the "frozen river" business, but my froth of bubbles at least leaves open the possibility that time, like space, is a something, in that what we call the present is the active creative interface between a trailing past that remains momentarily real as it reifies its "history" behind and an emergent future that becomes momentarily real, as it reveals one of its possible paths forward.

The realest dimension of all, from this point of view, is the future, which is always coming with force, an array of potentials, much like the ones I describe for linguistic and mathematical constructions. Is it fully fixed, determined? Who knows? But at least with my metaphor, possibilities remain open. What we think of as the present, then, is more like an active interim where determinacy (the "frozen river of spacetime" Kord is angsty about) and indeterminacy (what Kord calls "free will," though I don't like either of those words for it, because it's never fully "free" and it's rarely "willed" in any simplistic sense) get negotiated, along with whatever other invisible forces, beyond our ken, might apply there. And what happens in the froth is what we can know of time, which is quite a lot compared to the "arrow" model. In fact, if there is any vector at all (and I know that term has almost all the same problems as the arrow, so I prefer to avoid it) it is coming toward the present from the future, not vice-versa.

All of that becomes eligible for consideration simply by shifting metaphors. A scientist may well argue that "a froth of bubbles" is just too poetic a figure. I would counter-argue that so is "the arrow," except you can more easily pretend it's not. That is, in a nutshell, why I'm glad I spent my life with poems instead of equations. At least poems admit they are poems. Theorists who work primarily with

“space”-related matters, quantum theory for sub-atomic particles, say, seem to have embraced the necessity for a figurative discourse to even begin to imagine, let alone try to explain what they find there. And they’ve come up with some wild stuff.

Theorists who speculate on time have not advanced that far yet. And I honestly don’t think they will ever get that far until they abandon an unquestioned faith in rational and/or representational discourse—Socrates’ “language of the gods”—and get poetic, which is the discourse even Socrates turns to for the gnarliest problems. Reality may be an illusion, yes, time may be an illusion, yes, mathematics may be an illusion, yes, and words may be an illusion, yes. So what? Just because we will never be able to explain things in the language of the gods doesn’t mean we can’t ever get at some aspects of the “reality” of these “illusions.” And maybe, who knows, when Socrates got up into that higher realm after he drank the hemlock, as he presumed he would by dint of his occupation, “philosopher,” the highest level of human enterprise, just maybe he discovered that the language of the gods is poetry—his Homer Simpson, palm slammed to forehead, “Doh!” moment of ultimate insight. And maybe one day these contemporary thinkers on time will do the same.

## 2.

**May 15, 2025**

*So I had to decide whether to trust the relative indeterminacy of my eyes or the documented probabilities. I chose my eyes . . .*

*(see above)*

Our ongoing negotiations about whether to trust established authority or our personal agency are often vexed and conflicted. Some things, like the directionality of time, seem at first take to be non-negotiable, externally imposed conditions of reality that have nothing whatsoever to do with preference or choice, with what or how our own eyes see. As it happens, I have a temperament naturally resistant of authority, especially when it purports to operate non-negotiably. It would be easy to dismiss my “theory” of time as a perfect example of how far things can go wrong for someone with such instincts. There is no extant evidence, none, either mathematically or experimentally, to support the notion that the directionality of time is, potentially, more complex or flexible than the one we take for granted, one so well-supported by both intuitional experience and cultural indoctrination. But, as I often said to sustain confidence in my own eyes during my turbulent career in the academy, as hidebound an institutional system as you’re likely to find anywhere: “Just because you’re the only one saying something doesn’t mean it’s not true. Quite possibly it is; you’re just not saying it in the right place or at the right time.” So you need either to move or wait, both of which I did along the way.

The main move I made was fortunately a short one, just down the street to a university culture more amenable to what my eyes see. So “space” was quite amicable to me. Time was a more recalcitrant partner. In most cases I had to wait many years before the positions I proffered moved from heresy to mainstream. That takes patience and faith.

Admittedly, my “forth of bubbles” figure is so unorthodox I would probably not have been able even to imagine it let alone propose it during the heyday of the classical paradigm. The quantum paradigm is, though, much more amenable to radical reorientations of our assumptions about how the universe operates. Most of the revisionary impact of quantum mechanics thus far has been in relation to spatial matters, how “things” work at the micro-level. What quantum-oriented eyes see going on in

that realm is so stunning that applying classical tropes to measure its temporal rates of change seems atavistic to me. I'm not saying that what I proffer here is the solution to that problem. Only that, on my walk that day in Boyce Park, the imagery my mind envisioned felt compelling enough to inspire my patience and faith. So I chose my eyes.

As is always the case when we shift foundational metaphors, the effect can feel jarring. That pointy, feathered symbol we've been using to define how time moves is simple and comfortable. One way, no problem. But you don't need to develop a quantum theory of time to find alternatives to it in human history. The one we take for granted is simply a trademark of Western culture, especially post-Enlightenment. Some Eastern and many Indigenous cultures envision time as both cyclical and recursive, more like a gyre than a vector. Some blur the lines between future and past, even, as in the case of aboriginal "dream time," eternity and now. Some deny such distinctions categorically, as in presentism. And I'm sure there are other options I'm not aware of that may be even more innovative.

There have been attempts to develop a theory of time (loop quantum gravity, for example) that is bespoke for quantum systems. Many Worlds and the Block Universe (and its variant, the Growing Block Universe) have some interesting implications for time as does string theory. But none of them sweep that pesky arrow into the dustpan where it belongs. A full theory of quantum time, in my opinion, should share its personality with quantum space: It should be conceived as a probability wave that has its own field in spacetime, fills the universe, always vibrating, always in superposition, both singular and disperse, a particle/wave duality that either collapses (as in the Copenhagen model) or branches (as in the Many Worlds model) as it intersects with "the present," generating a kind of swirl where future and past mingle intimately, at least for a while. My froth of bubbles may not be the best way to envision all that action, but an arrow is one of the worst.

As I said above, I am a poet not a physicist, have spent my life tinkering with verbal figures attempting to tease out what is impossible to reveal transparently. Physicists tinker likewise with numerical figures attempting to tease out what is impossible to reveal transparently. I had a deep intuition when I changed my major from physics to English in the middle of my junior year in college that those two disciplines were akin in both material and spiritual ways, in that they aspire similarly not only to say some true things about the worlds we witness, but also to transcend those expressions and explanations to catch an occasional glimpse of a higher truth about the manifest universe and our place in it, to experience something like a singularity, that “one is all, all is one” state of consciousness I wrote about in “Willing Spirit.”

There isn't any verifiable evidence to support the notion that time might move at least partially if not generally from the future into the past, or recursively both ways. But just because something seems impossibly counterintuitive in one context does not mean it will be so in every other. The quantum paradigm has forced a rethinking of almost everything we assume intuitively or believe culturally about what subatomic “space” is like and how it operates, with image-based “thought experiments” one of the primary vehicles for envisioning change. Einstein, who had an extraordinary visual imagination, is famous for these. In most cases he himself, sometimes with the help of others, was able in time to generate the requisite math to translate his images into equations. And these insights were subsequently verified via actual experiments, some of which took decades to eventuate.

I'm inclined to think that my theory of time is most likely math-resistant. I know I certainly can't turn it into equations that work. Which may seem to make it eligible for Wolfgang Pauli's famous diss of a theory he felt was entirely unsatisfactory: “It's not right. It's not even wrong!” My simplest defense would be that the currently accepted alternative, the rigorous and exclusive forward orientation of the arrow of time, is founded more on intuitional and cultural preconceptions than mathematics. Many equations in

both classical and quantum mechanics can operate bi-directionally in time. We just don't apply them that way, at least in part because we have committed ourselves (unreflectively) to that one-way arrow. No arrow in our experience has a pointy head at both ends and wavers back and forth in space, so we believe no arrow can exist in such a weird superpositional state. Quantum mechanics has proved over and over again that weird often wins.

Which gets me to the larger point I want to make: that "reality" in this universe seems (to me) to be constructed in such a way that there will always be aspects of it that elude our full grasp, verbally, mathematically and experimentally. That doesn't mean we can't think about all of its manifestations deeply. Actually, I don't think I could tolerate living in a universe for which we had finally printed out the ultimate script. Finished. Forever. Nothing left to know. Under such a regime, change would be both imponderable and impossible. Which, besides being incomparably boring, would mean (by the definition standard to physics) that time (for us at least) had stopped moving. At every such "stop" in human history, where an organizational system has been proffered as "the theory of everything" (Newtonian mechanics is a good example), sooner or later problems emerge that it can't explain or resolve. Quantum mechanics is now over a hundred years in the making. It, too, continues to provoke fundamental and seemingly irresolvable disputes about how reality operates, why it operates that way, even what, or *if*, it *is*.

Those are big questions, the kind that meander sooner or later past the boundary between what is known with confidence and what is speculative, the province of philosophy; what is presumed to be knowable and what is not, the province of spirituality. During the Enlightenment, God was the ultimate guarantor for the mathematical and methodological scaffolding of scientific and philosophical systems, most famously for Descartes. Even Newton's work was infused with theology, God the creator having designed the clockwork universe his mathematics decoded. God and the godly are somewhat more awkward factors in the physics

our own cultural moment. But quantum mechanics is rife with problems that cannot yet (if ever) be addressed in purely mathematical or experimental terms. Sooner or later, philosophy and spirituality enter the conversation.

I have written copiously about those kinds of complementary inter-disciplinary mergers in many places over the years, way too much to even index let alone summarize. What I want to add here is pretty simple and straightforward: Every discipline has at least some practitioners who seek to move beyond received orthodoxy and toward some experience of the unfathomable “mystery” their preferred system implies or posits. They want not just knowledge but enlightenment. We call them variously mystics, gurus, sages; and we call what they seek variously the ineffable, the transcendental, the sublime, all of which can be approached via conventional means, like language and mathematics, along an asymptotic trajectory. But to reach the source, the origin, one must exit symbolic systems and enter a state of direct perception or unmediated experience, those places where words and numbers fall silent.

Every spiritual system I’m aware of, and that’s a lot of them, has a preferred pathway toward that sort of ecstatic knowledge. I believe they all, ultimately, seek the same thing: an experience that surpasses understanding. Some call what they seek God. Some call it Nature or Self or the Universe. Some prefer not even to name the source, out of respect for its infinitude. Those who pursue such experiences do so via practices that follow two general methods: One gradually subtracts everything ungodly from the equation until what’s left is a dark-absence that is awesome; the other gradually adds everything godly to the equation until what’s there is a light-presence that is awesome.

Western spiritual systems are generally monotheistic and presume that God is extant from the rest of what is; so they tend to proceed via subtraction. Hermeticism, Gnosticism, Hesychasm in Eastern Orthodox Christianity, and Roman Catholic contemplative approaches from St. John of the Cross to Thomas Merton prefer

paths of that sort: They seek the godhead by venturing deeper and deeper inward, eliminating as much as possible that is without God. Indigenous spiritual systems are generally animistic and presume that God is immanent everywhere; so they tend to proceed via summation. Celtic, Aboriginal, and Native/Meso-American cultures prefer paths of that sort: They seek the godhead by venturing further and further outward, accumulating as much as possible that God is within. Eastern spiritual systems tend to split the difference, some privileging negation (Zen Buddhism, for example), some summation (Daoism and Hinduism, for example): They seek the godhead by orchestrating a relationship between inward-focused meditation and outward-focused witnessing, one guiding the way for the other. I make no judgments about the relative merits of any of them. In my view, they all share the same aspiration: to know what is apparently unknowable. That is my aspiration as well, so I spend a lot of time immersed in these systems.

I say all of this here because I think quantum mechanics, if you pursue it deeply enough, can facilitate the same pursuit of transcendence. The classical paradigm, like Athena born fully formed from the head of Zeus, emerged quickly and wholistically, primarily via the work of Sir Isaac Newton, with some contemporaneous help from Gottfried Wilhelm Leibniz and others. Quantum mechanics on the other hand has emerged much more haltingly, often piecemeal, and via a means such that, a century on now, many of its most fundamental “problems”—the ones that pertain more to why things work the way they do than to what kinds of work those things can do for us technologically—remain unsettled. Which tells us over and over again that whatever level of understanding we achieve incrementally over time, there is always another mysterious layer of “reality” just beyond it, one that appears at first unfathomable and whose mechanisms can take anywhere from a generation to a century to forever to unmask.

The process by which this advancement takes place appears, at least to me, to function more like revelation, depending on sudden, out of the box, often figurative, insights, than like evolution, our conventional way of construing “progress” in the hard sciences. Which means that longstanding provincial boundaries between physics and philosophy, mathematics and poetics, science and spirituality are becoming more and more permeable. In other words, there is a legitimate place in these inquiries for non-expert eyes to proffer what they see in the hopes it might be useful. I try my best to trust mine and suggest that you trust yours, too, even when what they see seems counterintuitive, unverifiable, even outlandish. Maybe especially so in those cases: Just because you’re the only one seeing something, doesn’t mean it’s not true.





## A Brief “Diss”-ertation on Capitalism

### 1.

There is, in my view, no more stereotypical or toxic expression of the classical paradigm than the economic system it invented to control human commerce: what we now call capitalism. This way of thinking about how we make and exchange goods emerged during the Enlightenment, integral with the Newtonian mechanics and Modern philosophy I just wrote about, with Adam Smith generally acknowledged as its founding father. I am not a fan of capitalism, and I’ve been reading and writing critiques of it for years. So, a heads up, the tenor of this piece will be more manifesto than meditation.

I had spent much of 2024 having those “spirited” conversations with someone on “my wavelength” (to echo a couple of metaphors from “Willing Spirit”) about abusive workplace practices we were both familiar with, where they come from, how they are not only induced, but justified, even lauded, in the general economy of the capitalistic tropes that regulate pretty much everything related to “work” in American culture. In the inane “let’s explain how this happened” blather after the 2024 election one particular trope that went viral in the media was “the working class.” Gaggles of talking heads used it authoritatively without bothering to define what it was, as if its meaning was transparently clear. Their consensus was that Democrats lost because they no longer spoke to those class-based interests; Trump and his coattails won because they did. This made no sense to me. It is arguable of course whether the Democratic party could any longer feel the pulse of “the little guy just trying to get by,” one generic translation. But to argue that a gang of oligarchic billionaires did seemed ludicrous to me. So, I began to wonder: What in fact is this thing we’re all so blithely calling “the working class” in 2024 America?

Several options emerged quickly. Was it, for example, indexed in some way to unionized workers, or those who aspire to organization, something like what Karl Marx calls “class for itself?” If so, it is almost negligible as a political force. Less than 10% of the current workforce is unionized, compared to 35% just a few generations ago. The capitalistic forces arrayed against organized labor are formidable these days. Some unions and unionized workers actually supported Donald Trump, indicating a lack of unanimity even on labor-related issues. So that cohort is unlikely to increase in numbers or influence. Was it perhaps indexed inversely to college degrees, something akin to what Marx calls “class against capitalists,” with the educated class deemed to belong by definition to the bourgeoisie. If so, then it is a significant majority. Less than 40% of American adults are college graduates. But that seems a very arbitrary marker for distinguishing class boundaries, especially these days when a college diploma is not a ticket to any special advantage or dispensation in the workforce, and more and more college graduates over the last few generations have family or experiential roots in the very class they would be exiled from, which makes no sense. Was it indexed to broadly shared cultural grievances stoked up in the furnace of political/media propaganda? If so, then it is not a “class” at all; it is a cult, or something like what Marx calls “class in itself.” I considered a range of other options, but they too went bust under the slightest pressure. I was at a loss.

So I designed a simple thought experiment, which was to ask everyone I know what that phrase meant to them, whether they felt they were now, or ever, in the working class, whether their parents thought that they were, and, finally, whom did it now include under its umbrella. I have a very small social circle, family and friends, that’s it, most of them roughly comparable in terms of education and professional history. So my pool was limited and obviously biased. Still, I was stunned by the responses I received. While most of the respondents were first-generation-in-family college graduates and sympathized with what they felt were traditional working class issues—increased minimum wage, support for unionization, federal

programs to address childcare and food precarity issues—they all said either that they were not now or never were in the working class, and that their parents—many of them second-gen, up-by-the-bootstraps immigrants—would not have defined themselves that way either. One even resented being lumped into that cohort, though he was a strong supporter of their issues. A few had trade union roots in their family history and identified with those values, though they were less certain about whether they were still worthy of that moniker, or, if so, whether their parents would agree.

Only one believed she was now and always had been in the working class: my chronic interlocutor on this subject, highly educated and employed in a salaried, professional position with a previous personal history of low-paying service work. Her response was instant: “At least 80% of the current workforce is in the working class.” I asked her for her rationale, which was generally in the Marxist/socialist register: The working class are all those who have no control over “the means of production or wealth-sharing protocols.” In other words they are what came during the 19<sup>th</sup> century to be called “wage slaves,” trading carceral time in workplaces for money. In the most practical terms, for her, anyone who lived paycheck to paycheck was in the working class.

I am highly educated, like her, and I worked as a college professor, hardly classic “working class” credentials. But by her definition—paycheck to paycheck living, no instrumental control over my employment, I fit the bill. Coincidentally, I always did believe I was in the working class, at least in part because my professional work (by my own choice) included a lot of what in the business is called “service work,” entry-level teaching and program-related administration. Most of my senior colleagues, whom I took to calling “the cloud people,” never sank to this level and had an obvious if obviated contempt for those of us who felt that kind work was not only important but our preference.

In any case, I had made very little progress in understanding what that trope meant to those in the media who were bandying it about, aside from serving as a convenient feint to hide their ignorance. So I

decided it was time for me to do a deeper dive into the dreary discipline of economics. I set about reading some of the foundational texts that organize what we in the West take for granted about making things and money, about the ins and outs of what we call “capitalism,” and how we use various economic tools to mark class-related distinctions in their context. I was once again stunned by what I found, in both senses of that word: enlightened and stupefied. There are two different kinds of “abuse,” to get back to one of the original animating metaphors for this inquiry, I want to attend to here: One pertains to the abusive nature of what capitalism has become for us culturally, the other pertains to the abuse economists inflict on the texts they claim are canonical in their field, either by misreading them or, more likely, cherry-picking quotes without reading them at all, as many Christians are wont to do with the Bible: Why read the whole book when you can just parrot the parts someone else serves up that justify your most noxious purposes?

I was already somewhat familiar with Karl Marx, whose book *Das Kapital* installed the concept of capital (though he doesn’t often use the term capitalism) into the lexicon of economic theory in the middle of the 19<sup>th</sup> century. So I decided to go back to his nemesis, Adam Smith, specifically his iconic *An Inquiry into the Nature and Causes of the Wealth of Nations*. I made it through Volume 1 (Books 1-3, which is the gist of his argument, if you can use the term gist for something that takes over 500 pages to get across), as tedious a tome as you’re likely to find on any subject. Smith himself says “I am always willing to run some hazard of being tedious in order to be sure that I am perspicuous” (132). Indeed! My main takeaway was that what we call capitalism today—at least in the current “mid-century modern” neoliberal mode that congealed in the 1950s and became rabid in the 1980s—has next to nothing to do with what Smith was describing or proposing. He would, I’m sure, consider Gordon Gekko (and Elon Musk) a psychotic, Alex Keaton (and Donald Trump) a narcissist, and trickle-down or supply-side economics scams of epic proportions.

But let me begin at the beginning. Before he wrote *Wealth* Smith wrote another opus called *The Theory of Moral Sentiments*. I read that, too. Well, most of it. There he argues it is by means of what we call “sympathy” that we can understand, at least to some extent, what another person is feeling, wanting or suffering. We do that basically by projecting ourselves into an imagined semblance of their circumstances and then seeing how that feels to us. Assuming, as he does, that there is a relatively consistent “human nature,” this ability to resonate with others gives us a way of knowing what they feel. That’s a pretty standard principle for ethical behavior in most human communities. The “Golden Rule” itself, which appears in some version in every religious system I’m aware of, says something to that effect: the “Do unto others” trope. Some call it compassion, some empathy, some love. Smith prefers sympathy.

What starts as “care for [our] own happiness” expands by its nature, according to Smith, to include our family, friends, neighbors, and nation. We take a natural “pleasure” in others’ happiness, as we do in our own. And a natural displeasure in their pain, as we do in our own. His concept of the “neighbor” may not be as expansive as the one Jesus insists on in the parable of Good Samaritan, but it’s pretty broad and is, of course, given his historical moment and cultural setting essentially Christian in nature. I could go on and on about this, but I simply want to make two points: It seems abundantly clear to me that Smith wrote these two books in their sequence for a reason: Everything of consequence for him is founded in “moral sentiments,” including the ways we make, buy, and sell the commodities we value. To see economic systems as amoral, which is the turn capitalism took shortly thereafter, and where it remains, would simply be repugnant to him. So anyone who claims that their “business plan” is founded in Smith’s ideology without including this element, well, whatever they are, they not capitalists in a way Smith would respect. And, of course, while they may quote Smith, they have certainly not read his books.

And that's the second point I want to make: These are turgid interminable books. The vast majority of the subsequent experts who allude to Smith as their guiding light I am almost certain never read either of them. They all tend to quote the same three or four sentences, which take on a Biblical status in the service of whatever aberration they want to promote, sentences that are wrenched from their contexts and neutered enough in the process to support pretty much any agenda.

Here are a couple of examples. The first focuses on that famous “invisible hand” that was used to warrant a predatory *laissez faire* approach to the market in the latter half of the 20<sup>th</sup> century, a scourge that still afflicts us. Smith used that figure twice in his work, once in *Moral Sentiments*, when he says:

*The rich only select from the heap what is most precious and agreeable. They consume little more than the poor, and in spite of their natural selfishness and rapacity though they mean only their own conveniency, though the sole end which they propose from the labours of all the thousands whom they employ, be the gratification of their own vain and insatiable desires, they divide with the poor the produce of all their improvements. They are led by an invisible hand to make nearly the same distribution of the necessaries of life, which would have been made, had the earth been divided into equal portions among all its inhabitants, and thus without intending it, without knowing it, advance the interest of the society, and afford means to the multiplication of the species. (184, underline mine).*

The “selfishness and rapacity” of “the rich” these days (think Musk, Bezos, and Zuckerberg) are certainly not allowing any “invisible hand” to “make the same distributions of the necessities of life, which would have been made had the earth been divided into equal portions among all its inhabitants.” Their hands are very visible and grasping everything they can, well, lay their hands on.

And it appears once in *Wealth*, in this context:

*. . . every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good. It is an affectation, indeed, not very common among merchants, and very few words need be employed in dissuading them from it. (Vol. II, p. 35, underline mine)*

Read this passage in light of what I said about *Moral Sentiments*. Smith's invisible hand has absolutely nothing whatsoever to do with deregulation, eliminating constraints and oversight, or the sense of a "market" having a "free" hand of its own to which we are obliged to defer no matter how it raises itself to abuse those who serve its purposes. Smith's hand works most often on behalf of the general welfare of society because he presumes a society that has already inculcated some modicum of moral sentiments in the people whom it comprises.

Here is another oft-quoted sentence that purports to warrant relying entirely on one's "own interest" in making business decisions, this one from *Wealth*:

*It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest.*

Sounds on the face of it more like Scrooge than someone interested in moral sentiments, and, to be sure, benevolence was not highly prized in the manufacturing economy of the 19<sup>th</sup> century. But here is its context:

*In almost every other race of animals each individual, when it is grown up to maturity, is entirely independent, and in its natural state has occasion for the assistance of no other living creature. But man has almost constant occasion for the help of his brethren, and it is in vain for him to expect it from their benevolence only. He will be more likely to prevail if he can interest their self-love in his favour; and show them that it is for their own advantage to do for him what he requires of them. Whoever offers to another a bargain of any kind, proposes to do this. Give me that which I want, and you shall have this which you want, is the meaning of every such offer; and it is in this manner that we obtain from one another the far greater part of those good offices which we stand in need of. It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages. (119)*

So, at least as I read this, while “benevolence only” is not the express purposes of buying and selling, it is certainly not precluded as some hopelessly naïve moral sentiment. Smith seems to me to presume that it is a sort of “invisible hand” in these negotiations, which are rhetorical—almost a matter of etiquette—in the precise way he describes, because the society itself is informed by some concept of the collective good. And appealing to “self-love” in such negotiations? Smith is certainly not using it here in any Maslowian sense, a high-minded self-actualization. It is transactional, a socially acceptable way one can solicit “the help of his brethren,” a backchannel to “their humanity.” He is Christian after all, and Jesus’ injunction to “love your neighbor as yourself” presumes that one

does in fact love oneself. Absent that, neighborly “love” is likely to be more abhorrent than admirable. There may be a few lucky people who have leaders in their workplace who consider themselves, and by inference their workers, worthy of a love-founded respect in that sense. But the vast majority of workers in the 19<sup>th</sup> century were precisely the “wage slaves” there “bosses” considered them to be. And the vast majority of workers remain so today. In short, Smith’s image here cannot possibly be read as a sanction for rapacious greed or for profiting excessively at someone else’s expense.

I would guesstimate that about 80% of the quotes from *Wealth* I’ve run across in my reading are those two sentences, absent their contexts. The main reason I believe that these abusers of meaning never get caught out is the fact that almost no one, including I would bet many of them, has ever read the actual books. And, based on that insight, my advice would be that if you want to create an ideological framework for an abusive set of practices that serves your self-interest at the expense of others, pick as your foundational texts books that are so long and boring no one will ever read them. You don’t even have to read them yourself. Just rely on others to point out the few sentences from their many millions that serve your purposes. Then repeat them *ad infinitum* as if they are the word of God.

I went on to read a bunch of other things about capitalism to try to fathom how we got from Smith to the aberration we are forced to endure today. A series of major transformations in the system occurred in the latter half of the 19th century, less than a hundred years after *Wealth* was published, having generally to do with the working class conundrum that provoked this piece. Something that surprised me reading *Wealth* was the degree to which Smith saw “labour” as the primary value-adding factor in the workplace. Here are a few of the things he says about that:

*The property which every man has is his own labour, as it is the original foundation of all other property, so it is the most sacred and inviolable. The patrimony of a poor man lies in the strength and dexterity of his hands; and to*

*hinder him from employing this strength and dexterity in what manner he thinks proper without injury to his neighbour is a plain violation of this most sacred property. (225)*

*Labour alone, therefore, never varying in its own value, is alone the ultimate and real standard by which the value of all commodities can at all times and places be estimated and compared. (136)*

*Labour was the first price, the original purchase-money that was paid for all things. It was not by gold or by silver, but by labour, that all wealth of the world was originally purchased. (133)*

*The value of any commodity, therefore, to the person who possesses it, and who means not to use or consume it himself, but to exchange it for other commodities, is equal to the quantity of labour which it enables him to purchase or command. Labour, therefore, is the real measure of the exchangeable value of all commodities. The real price of everything, what everything really costs to the man who wants to acquire it, is the toil and trouble of acquiring it. (133)*

By the time Karl Marx wrote his epic critique of capitalism, which lays bare not the nobility of labour that seems to me to be quite explicit in Smith, but the rampant exploitation of labour that characterized the manufacturing economy of Western Europe at the time, capitalism had already become a grotesquely abusive cultural enterprise. But the value of labour was at least still arguable. Within a few decades it was not.

One concept that helped accomplish this was “marginalism,” which displaces the value-adding portion of an economic transaction from production to marketing. That, in any case, is my best guess at what Alfred Marshall is getting at in his *Principles of Economics* (1890). Marshall introduced terms like “marginal value” and “marginal

change,” which become the guideposts for responding to what he considered the innate rationality of economic transactions. He laid the foundation for the introduction of mathematics—probabilistic statistics and calculus—as a discourse for explaining markets and market forces, which legitimized the field as a “science,” the holy grail for almost all intellectual enterprises in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, in keeping with the fetishization of mechanization that the classical paradigm promoted. You can see this ambition across the board in what had traditionally been viewed as humanistic disciplines. The term “social science” for example was coined in the latter part of the 18<sup>th</sup> century and it became a distinct field in the 19<sup>th</sup>. Psychology took a similar turn in the late 19<sup>th</sup> century when Wilhelm Wundt established the first psychology laboratory in Germany. Even my own field, as I explain in “A Willing Spirit,” had such aspirations running through the 20<sup>th</sup> century in two great waves, each choosing to ally the field with psychology, which had already made the status-transition to a science. The British New Critics in the 20s chose the Germanic modes of analysis emergent at the time; the American “process” movement in the 70s chose the cognitive/behaviorist modes then emergent in the field.

As long as I’m talking about things of this sort, I want to jump ahead a bit to a late 20<sup>th</sup> century movement called “complexity” economics, one of the newer cat’s meows in the field. The geographic capital of this way of conceptualizing capitalism is the Santa Fe Institute in New Mexico. A friend sent me a link to a YouTube about this a few weeks ago. So I looked into it, which is to say I read a few articles, which led me to the one theorist who seemed of interest to me, Eric Beinhocker, and his book *The Origin of Wealth*. I’m going to open with the blurb for the book on Amazon, which says pretty much all you need to know to decide whether you want to “rewire [y]our thinking about how we came to be here—and where we are going:”

*Over 6.4 billion people participate in a \$36.5 trillion global economy, designed and overseen by no one. How*

*did this marvel of self-organized complexity evolve? How is wealth created within this system? And how can wealth be increased for the benefit of individuals, businesses, and society? In The Origin of Wealth, Eric D. Beinhocker argues that modern science provides a radical perspective on these age-old questions, with far-reaching implications. According to Beinhocker, wealth creation is the product of a simple but profoundly powerful evolutionary formula: differentiate, select, and amplify. In this view, the economy is a "complex adaptive system" in which physical technologies, social technologies, and business designs continuously interact to create novel products, new ideas, and increasing wealth. Taking readers on an entertaining journey through economic history, from the Stone Age to modern economy, Beinhocker explores how "complexity economics" provides provocative insights on issues ranging from creating adaptive organizations to the evolutionary workings of stock markets to new perspectives on government policies. A landmark book that shatters conventional economic theory, The Origin of Wealth will rewire our thinking about how we came to be here--and where we are going.*

Filter off all the review-related blather—"far reaching implications," "entertaining journey," "provocative insights," "a landmark book," none of which describes my reading experience—and complexity economics boils down to a response to the perceived problem of the intractable stasis of the dominant theories of capitalism, specifically their inability to adapt to changes in their environment. In keeping with the valorization of science I've been talking about, the new twist Beinhocker adds to solve this problem is "evolution," in the Darwinian sense, facilitated by the mathematical complications he endorses to explain it. As he says:

*The notion that the economy is an evolutionary system is a radical idea, especially because it directly contradicts much*

*of the standard theory in economics developed over the past one hundred years. (79)*

Huh? This might be an interesting “radical idea” if its foundational assumption—intractable stasis—were true. But every economic treatise of consequence that I read does in fact have some mechanism for adaptation built into its system. It’s harder to see in Smith, until you read his *Wealth* in the light of his *Moral Sentiments*. It is absolutely fundamental to Marxism, of course, the dialectic of history driven, if grudgingly, by its Hegelian motor toward the inevitable “dictatorship of the proletariat.” Marginalism is almost by definition a mode of adaptation, at least at the crassest level of marketing. Keynesian economics sees governmental intervention and oversight as instruments of adaptation, ways of controlling the most deleterious social impacts of unregulated capital markets.

On a larger scale, Joseph Schumpeter, perhaps the most prominent economic theorist of the first half of the 20<sup>th</sup> century, proposes an evolutionary model for understanding the transitional function of capitalism toward what will be next and new. His reads to me like a “soft” version of the Marxian dialectic. Soft in that Schumpeter seems to favor some version of socialism as his preferred outcome of all this agitation. Even neoliberal capitalism—which I am now inclined to read as fear-based response to Schumpeter’s dialectic, a way to tilt the table toward capitalism in this evolutionary cycle—is a dynamic system that relies on deregulation to get the “trickles” running “down.” Adding “complexity” to any of these systems seems to me to be more like rearranging the deck chairs on the Titanic than either building a better ship before you decide to set sail or resisting the temptation to trust without reservation those with an egomaniacal faith in their genius for engineering or navigation.

One telling aside in Beinhocker’s book has to do with a confab at the Santa Fe Institute in 1984 (an interesting Orwellian year to arrange an event of this sort!) that brought together actual physical scientists with economic “scientists” to compare notes, an event

Beinhocker characterizes as a “Clash of the Titans” “set up like a rugby match.” Here’s his take on it:

*Squaring off on one side were ten leading economists . . . On the other side were arrayed ten physicists, biologists, and computer scientists . . .*

*Each side presented the current state of its field and then spent ten days debating economic behavior [etc., etc.] The economists were excited by the physical scientists’ ideas and techniques, but thought the scientists were naïve and even a bit arrogant about economic problems. On the other side, the physical scientists were impressed by the mathematical virtuosity of the economists and genuinely surprised by the difficulty of economic problems.*

*But what really shocked the physical scientists was how to their eyes, economics was a throwback to another era . . .*

*Not only did the mathematics of economics seem like a blast from the past, but the physicists were also surprised by the way economists used simplifying assumptions in their models. . . One assumption that got the scientists particularly exercised was what economists refer to as perfect rationality. . . Even without being fully aware of the long history of debate on this subject, the physical scientists vociferously objected to the use of a model so clearly at odds with day to day reality. The science writer Mitch Waldrop quotes one of the economists, Brian Arthur, who describes the exchange:*

*The physicists were shocked at the assumption the economists were making—that the test was not a match against reality, but whether the assumptions were the common currency of the field. . .*

*The economists backed into corner would reply, “Yeah, but this allows us to solve these problems.*

*If you don't make these assumptions, then you can't do anything."*

*And the physicists would come right back, "Yeah, but where does that get you—you're solving the wrong problem if that's not reality." (44-46)*

What's interesting to me in this debate is not necessarily the focus on whether the problem you're solving is the right or wrong one—the hard sciences have often been distracted for long periods of time by the wrong problem—but in the function of “reality,” which I'll translate into the currency of the hard sciences this way: Real scientists perform actual experiments in and with the actual world to demonstrate whether a proposed solution is right or wrong, at least given the limits of the available mathematics and measurement technologies of the moment. Real scientists make that step an integral and requisite part of their process. Economists don't. That is obvious to anyone who thinks for five seconds about the concept of “perfect rationality” in economic transactions, a common default position for specialists in the field. Since when? People, their markets, or their economic relationships are notoriously irrational. Advertisers, by definition, take their fullest possible advantage of that very fact to market their wares. Or to use another trope Beinhocker references: “People are not stupid.” Again, since when? So that's a precis of where we came from and where we are with capitalist ideology. I won't even start on the lunacy of the Trumpian approach to markets, except to borrow a couple of concepts from the previous sentences: irrational and stupid.

## 2.

You might think I'm about to champion Karl Marx, who fancied himself as the antidote to capitalism. His book *Das Kapital* installed the concept of capital-ism into the Western lexicon as a way of

explaining what Western economies began to do during the industrial revolution, essentially transforming a farming economy overseen by the landed gentry, old money, into a manufacturing economy overseen by a means-of-production gentry, new money. *Das Kapital* is a brilliant critique of that transition and offers a powerful reading of the dialectical progression of economic history that, he says confidently, will culminate with the dictatorship of the proletariat. Which basically means that the means of production and the distribution of the wealth those means generate will be controlled not by private owners in search of greater private wealth but by those who do the actual work or those they designate as their representatives, with equity in mind.

My response is akin to the scientists in Santa Fe: Let's look at reality, the more than century and a half that has intervened since the first three volumes of *Kapital* were published (1867). There have been a couple of instances in which workers' collectives have taken over their local means of production and wealth distribution and made a go of it for a while, most famously in Spain in the 1930s. That particular efflorescence of wisdom, running smoothly, was promptly eradicated by a syndicate of political and military forces that included the fascistic Franco regime, of course, but also the Spanish communists. The problem with Marx is not with his concept but with his predictions about how it will play out in history. The Russian revolution was replaced by a Stalinist dictatorship almost before the blood dried up. A series of like-minded others followed including (after a brief interlude of relative sanity late in the 20<sup>th</sup> century) Vladimir Putin and his oligarchic entourage. The Russian client states in the Western world, Cuba, Nicaragua, Venezuela, are a shambles. North Korea is a large penal colony. China is more a mishmash of state autocracy and private capital than a dictatorship of the proletariat. Mao's Red Guards and the Cultural Revolution they inaugurated are long gone, for the better, to be sure. And the reign of terror that devastated Cambodia under Pol Pot is as ignoble a chapter in human history as you're likely to find. I can't imagine that Marx would say, "Yeah, this is what I was hoping would happen on the road to the dream."

Mikhail Bakunin, initially an avid fan of Marx, split with him in favor of what sounds to me like a very sane brand of anarchism precisely over the specter of such aberrations. He doesn't say so explicitly, but I hear in his critique of Marx the fear that any ideology with the term "dictatorship" in its mantra will, in fact, culminate in dictatorships. Except they won't be overseen by any proletariat. He, in my mind, has proved to be right and Marx (in the realm of reality where theories ultimately meet their match) was wrong. I understand the appeal of Marxism as a philosophical system and a method of inquiry. But to my way of reading it is afflicted by all the standard features of the "classical paradigm," including its dependence on the Hegelian dialectic, a capstone achievement of that epoch.

I want to conclude by circling back to Joseph Schumpeter and his book *Capitalism, Socialism, and Democracy*, published in 1942. This is a fascinating mid-century take on the effects and prospects of capitalism, written in the aftermath of the Great Depression, a cataclysmic failure of the system, and in the midst of WWII. Hard to blame the latter entirely on economics, though that clearly had an impact on the emergence of the National Socialists in Germany and the militarization of Japan in the 1930s. Schumpeter offers a refreshingly frank, opinionated, and well-informed take on the three primary alternatives in the wind at that moment, capitalism, of course, the dominant system, socialism well before it was knee-capped by right wing propaganda into just another off-brand of communism, and democracy, while we still had a legitimate one in this country. You can tell that he has actually read the books, has thought about them and is willing to share those thoughts whether you like them or not. This book is long but not at all boring. I particularly enjoyed his one-page dismissal of anarchism as a legitimate alternative—though I disagree completely with his characterization of that ideology as "utopianism with a vengeance" and of its adherents as a "pathological species." Those terms seem to me to apply more accurately, respectively, to Marxism and capitalists.

He opens, interestingly, with a very apt and surprisingly sanguine reading of “The Marxian Doctrine,” for reasons that will become clearer later. As I said, this is 1942, well before communism was turned into an insidious criminal conspiracy by Joe McCarthy. You could actually still talk about Marx, the class struggle, etc., without being hounded off the public stage. His take is worth reading for that reason alone. The one thing I want to highlight is the way Schumpeter seems (to me) to borrow the Marxian historical dialectic and turn it to his own purposes. Capitalism in his view, as with Marx, is an intervening stage on the way to something better. Schumpeter’s something-better is socialism. He sees it as having the fundamental features of a communist economy—public rather than private ownership of the means of production and public rather than private control of the way the wealth generated by those means are distributed—without all the hyper-authoritarian administrative nonsense.

Socialism has been rebranded in the meantime as a form of communism, threatening the “shining city on the hill” version of American exceptionalism. So it will be some time before capitalism transitions into it, at least on this side of the Atlantic. His discussions of the two possible faces of democracy—the “classical” one animated by the common good and the will of the people, the other by competition and concentrations of power in political leadership—are interesting but seem almost quaint in light of the authoritarian turn that our democracy has taken lately. It is I think legitimate now to ask not when capitalism will transition into socialism but when democracy will fully transition (if it hasn’t already) into autocracy, wealth serving not nations but oligarchies akin to the landed gentry capitalism was supposed to dislodge.

One interesting sidenote about my encounter with Schumpeter’s work and the ways in which it has been received and used: His concept of “Creative Destruction” (caps his) entered the lexicon of contemporary capitalism and then morphed into ideology, much like those tropes from Smith. In a front cover blurb Thomas Friedman seizes on it “as a key principle in understanding the logic of

globalization,” one of the keynotes of neoliberal capitalism. Friedman, a journalist, championed globalization as the antidote to the Cold War mentality of nationalistic competition for global dominance. In effect, the “invisible hand” of capital can achieve rapprochement where diplomacy fails. As I said, Schumpeter is writing his book in the midst of WWII, so well in advance of the Cold War and subsequent economic globalization. Friedman is writing his blurb a couple of generations later, after some “Creative Destruction” has intervened. This seems to me to be another example of how economists (or in this case commentators on economics) seize a term less in the service of the originator’s purposes and more in the service of their own preferences and agendas.

More importantly to me is the generally cavalier way in which actual economists either ignore or misuse Schumpeter’s concept. Beinhocker for example laments the incapacity of modern capitalism to adapt, to evolve, citing Schumpeter. What Schumpeter actually says, in a chapter entitled “The Process of Creative Destruction,” is this:

*The essential point to grasp is that in dealing with capitalism we are dealing with an evolutionary process. It may seem strange that anyone can fail to see so obvious a fact which moreover was long ago emphasized by Karl Marx. . .*

*Capitalism, then, is by nature a form or method of economic change, and not only never is but never can be stationary. (82)*

Chronic innovation/renovation inevitably has destructive consequences, some intentional, some unintended; which was my impression of capitalism as an ideology from Smith onward.

Schumpeter goes on:

*This process of Creative Destruction is the essential fact of capitalism. It is what capitalism consists in and what every capitalist concern has to live with. (83)*

Schumpeter implies that this is the beauty of the system, the essential feature that will guarantee its continued success against its competitors, one whose sometimes deleterious consequences “every capitalist has to live with.” If you just read that chapter, that’s the end of it. But later in the book in a chapter called “Crumbling Walls,” I hear him saying something much more revolutionary than evolutionary about Creative Destruction, suggesting, to my way of reading at least, that this essential feature of the capitalist dynamic, while it may sustain it in the shorter run, will also be its undoing, ushering in (I think Schumpeter hopes) a new economic paradigm he calls socialism.

I’m inclined to think that it was a fear of this premonition that animated the “Chicago Boys” (which included another Friedman, Milton, no relation) to resurrect the antidote from certain European trends in the 1930s, themselves hearkening back to some late 19<sup>th</sup> century thinking about free markets: neoliberal capitalism, which wended its way ingloriously through the horrifying Pinochet regime in Chile in the 1970s and into the Reagan/Thatcher juggernaut in the 1980s, ensconcing it in the Western economy and psyche deeply and durably. One of its ultimate ambitions, achieved more fully later during the Clinton administration was, in fact, the globalization of markets the other Friedman admires. That’s a lot of “Destruction,” which I hesitate to call “Creative.” The point I want to make is, once again, a simple one: Capitalists, like most other ideologues, tend to take liberties with their foundational texts. You could call that stretching the truth. Or mistaken misappropriation. Or intentional misreading. I prefer to call it abuse. Which gets me back to where I started this whole inquiry.

We live in an abusive culture. Much of that abuse is made to seem acceptable by the many “invisible hands” that guide us relatively thoughtlessly into assumptions about what is “good” and what is not. What I want most to say is that those hands are made invisible

intentionally by actual arms and heads of real people whose ambition is to control human bodies in the service of their own agenda to increase their wealth and enhance their power, often both, sometimes just because they can. If those kinds of people—and in the end they are just that, not godly forces—are your heroes, then, unless you rise to the top among them, you are destined to endure various kinds of slavery in their service: wage slavery in the service of oligarchs, cult slavery the service of political autocrats. If they are not your heroes, I hope you will find the very limited number of ways you can resist or evade the abuse those sleights-of-hand dole out; for example, in your workplace where those you oversee can and should be treated not as cogs in a mindless machine but as fully fledged human beings, and at the ballot box where your available choices may seem less than ideal but are never exactly equal pertinent to what is good. Why? Because there are spirits at stake: mine and those close to mine, your colleagues', your community's, your country's, the earth's, and (if you follow my argument in "Willing Spirit") even the universe's. But, most importantly for you, yours! Don't give it up to adapt and fit into a culture that is abusive just because you have been and are being abused. Don't hand it down to others with that weak "I had/have to endure it, so you should, too" justification. Don't savor whatever smidgeon of power or privilege our culture endows you with automatically by dint of your "class," "working" or otherwise, displaying it proudly, at the expense of others, as if you both earned it, when you probably didn't, and deserve it, which you most likely don't. Don't do that. Do not do that!







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