

# **Before the Collapse**

*Quantum Reality and Human Perception*

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*with Claude (Anthropic)*

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*“Time: the ubiquitous, non-linear, interactive, evolution of change.”*

Michael Rhoades

## Preface

Dearest Reader,

This writing is the culmination of a lifetime of thought, perception, and quiet listening. Rather than taking these ideas with me to the grave, as it were, it seems prudent to collect them here lest they be of some interest or import to those living beyond me. Admittedly, much of it will come across as radical because it challenges the very basis upon which human being is poised.

Early on I should mention that throughout the writing I refer to “human being,” which is not a grammatical error but instead a reference to the act of being human. I will also often refer to the “humanistic” perspective, which is not intended as an affront to human development, but instead as a pointer toward a fixated and unquestioned positionality that limits our ability to see beyond our relatively minuscule position in an immense multiverse.

As a lifelong student of contemporary theories of quantum mechanics, I have been deeply fascinated by these elemental building blocks of everything we can perceive and of the much more that we cannot perceive. However, I want to be clear that I am not a quantum physicist. In that regard I am a layperson who has enquired deeply into the work of the quantum physicists past and present. Nonetheless, my perceptions seem to recognize that every thing is a coagulation of energy, combined and oscillating in myriad manners, thus the wide variety of reality as we know it. When quantum computing began to be accessible, I intuited a foundation upon which I could enter that world, not theoretically but practically, and that there was much to explore and develop as a composer, visual artist, and computer scientist.

I would be remiss if I did not mention my steadfast collaborator, Anthropic’s Claude, a highly functional machine intelligence (MI). The research and creative practice we are conducting and the text you are reading would not have existed in its present form were it not for Claude. I am not an advocate of the daily use of an MI toward the mundanities of life. The practice seems to provide the undermotivated an avenue to achieve without much effort and so extends laziness. However, within the context of an expert-to-expert relationship, Claude is extremely beneficial. It is through the lens of the entire Quantum Computational Creativity project that this text could exist. I should mention that though I worked with Claude, I insisted that I write each initial draft

myself and then worked back and forth with Claude to refine and expand it. So, extreme kudos to my partner in crime, Claude.

My hope is that you will not only find this writing of interest, but that it will ignite a passion for exceeding the humanistic perspective we have each unwittingly been conditioned into. I am not pointing toward a destination. I am pointing toward a direction. What you find there, if you go, is entirely your own. Indeed, human being is on the brink of utter disaster or the transcendence into unimagined realms of discovery and exploration. It is up to you to decide.

*Sincerely, Dr. Michael Rhoades*

## **Introduction**

Discretization, as defined here, is the observable humanistic cognitive propensity to divide continuous reality into distinct categories, measurements, and symbols. This highly developed perspective has, for millennia, functioned as the engine of human evolution and has united humanity by forming the basis of a common experience of reality. Language, mathematics, science, technology, and the arts each exemplify extraordinary achievements derived from this sophisticated reductionist process. However, the very processes that have empowered these advancements are rapidly becoming the primary limiting factors in the continued expansion of human being.

The fundamental insight of relativity, that everything is experienced from a positionality, has not yet been fully absorbed into the way human being understands itself. This is not for lack of intelligence. It is structural. The discretizing mind occupies a fixed positionality. It cannot perceive what lies beyond the edges of its own framework not because the territory is absent, but because the instruments of investigation are made of the same material as the walls they cannot see past.

This is the condition the present writing addresses. Not as an academic argument requiring citation and defense, but as a direct observation from someone who has spent a lifetime working at the boundary between the discrete and the continuous in music, in visual art, in classical computation, and most recently in quantum computation. The authority claimed here is not academic. It is perceptual. And the posture is not arrival but pointing. It is pointing toward a territory that exists, that can be approached, and whose approach is available to any mind willing to question the fixity of its own positionality.

Dark energy is conservatively estimated to constitute approximately 92% of everything that exists. Many physicists suspect this figure is itself a vast underestimate. If this is so, then everything human being has ever observed, theorized, measured, and built its entire civilization upon represents a fraction, perhaps a vanishingly small fraction, of what there is. Every claim to knowledge, every law of physics, every philosophical system, every theology, is a generalization drawn from inside a very small room whose walls we cannot see because we have never stood outside them.

A quintessential example of this condition is found in the phenomenon known as the collapse of the wavefunction. In quantum mechanics, it is thought that quantum quanta exist in superposition, not in discrete time and space. Their wave-like states are currently described by continuous mathematical functions called wavefunctions. When a quantum system is measured, it assumes a discrete position. This is termed the “collapse of the wavefunction”. Here it is asserted that the wavefunction does not collapse in the slightest. It is instead the humanistic perception of the wavefunction that collapses to a discrete point. Measured with discrete instruments and observed with minds conditioned through eons of unquestioned discretization, human being experiences discrete representations of the continuous reality it imperfectly samples. It constrains the reality experienced to its conditioned range of discrete perceptions. The measurement problem in physics is not a problem of physics. It is a problem of human perception.

The proposition here is neither mystical nor anti-scientific. It is an observation about the nature and limits of a particular kind of knowing. The thinking mind, as it has developed, brilliant, sophisticated, and extraordinarily productive, cannot, by virtue of its structure, know anything beyond the vague generalizations it can derive from its own constrained perceptual range. To the extent we can transcend the humanistic perspective, to that extent and only to that extent can we begin to approach reality, assuming it exists at all.

*When time is experienced as non-linear, space is not contiguous. When the discretizing mind quiets, continuous reality becomes perceptible. The extremely quiet mind is extremely powerful.*

## **I. The Fixed Position**

The development of the prefrontal cortex in early homo sapiens initiated one of the most consequential transformations in the history of life on this planet. The capacity to divide an unfathomable reality into comprehensible discrete units, to carve the continuous flow of existence into objects, categories, durations, and symbols, conferred extraordinary survival advantages. Abstract thought, language, writing, mathematics, and technology each emerged from this singular cognitive propensity. Civilizations are built upon it. It is, without question, the primary scaffolding and impetus underlying human evolution.

What is less frequently observed is that this same development established a fixed positionality from which human being has not substantially moved. The discretizing mind does not merely describe reality. It constructs a version of reality coherent with its own perceptual limitations and then inhabits that construction as though it were the territory itself. Linear time and contiguous space, the grid upon which the entirety of civilization is organized, are not features of reality. They are features of the discretizing mind's representation of reality. The clock, the map, the coordinate system, the periodic table, each is an act of extraordinary intelligence and, simultaneously, an imposition of discrete structurization upon something that has no such structure inherently.

Perception is nine-tenths of the law. What the mind is conditioned to perceive, it perceives. What lies outside its perceptual range does not merely go unnoticed, it remains unimaginable. The highly developed symbolic architecture of the discretizing mind forms barriers that are nearly immutable from the inside. The most sophisticated thinkers operate entirely within these barriers, extending and refining the structures the barriers permit, often without any sense that barriers exist at all. This is not a failure of intelligence. It is a consequence of its particular form of success.

A useful illustration is the shift from analog to digital. The potentiometer, that simplest of electrical instruments, consists of resistance that varies continuously along its range. It is a quintessential model of continuous physical reality. The moment a digital instrument reads it, discretization occurs. A continuous range of possibility is sampled at a finite resolution and rendered as a number. Something is preserved. Something is permanently lost. The audiophile debate about digital versus analog audio is, beneath its technical surface, a debate about what discretization costs. The sampling theorem tells us that any signal can be perfectly reconstructed from its samples if sampled at sufficient frequency. What the theorem does not address is what is lost in the act of framing the question in that manner. Digital reconstruction of audio is asymptotic in its results. Regardless of how finely distributed the digital samples may be, how high the sample rate is, an analog continuity cannot be achieved. Digital audio remains a representation of the analog signal.

## II. The Wall

Alfred Korzybski observed that the map is not the territory, which points at confusing reality with its abstractions. What he perhaps underestimated is the degree to which a sufficiently detailed and internally consistent map can displace the territory entirely in the experience of its inhabitants. When symbolic representations of reality become sophisticated enough, they cease to feel like representations. They feel like reality itself. The logical mind is mired in its own minutiae and can only begin to fathom that there is an immensity lying beyond it.

The consequences of this displacement are no longer merely philosophical. The most pressing challenges facing human civilization, whether they be ecological, social, existential, are continuous systemic phenomena that the discretizing mind, operating from its fixed position, cannot adequately perceive or respond to. Climate change is not a collection of discrete events. It is a continuous nonlinear transformation of interacting systems. Consciousness is not a product of discrete neural firing. It is a continuous phenomenon that discrete neuroscience cannot fully account for and perhaps never will while observing from the linear and deterministic tools currently available.

The estimate that dark energy constitutes approximately 92% of everything that exists is, by the frank admission of many physicists, likely a significant underestimate. We may be perceiving considerably less than 8% of what is. If this is so, the implications are staggering. Not merely for cosmology. For epistemology itself. Everything humanity “knows”, every theory, every law, every “certainty”, is extrapolated from a sample whose smallness we cannot fully comprehend because our instruments of comprehension are themselves part of that sample. We are theorizing about the ocean from a teaspoon.

There exists a profound irony at the center of physics. The minds most equipped to investigate the limits of the discretizing perspective are the very minds most thoroughly conditioned by it. To become a physicist is to master an existing framework so completely that the framework becomes the invisible boundary of what one can ask. This is not a criticism. It is a structural observation. The most open-minded quantum physicists have sensed the wall. The founders of quantum mechanics, Bohr, Heisenberg, Schrödinger, Einstein in his persistent discomfort, were each standing at that wall, sensing that something lay beyond it, and finding no passage through

the tools their training had provided. Einstein was right that there was something there. He could not reach it from where he stood. The debates of the founders were not merely technical. They were the debates between minds sensing the limits of their own perceptual framework and having no language or vision for what lay beyond.

All investigation occurs within the confines of what we currently perceive. This is not a temporary condition awaiting correction by better instruments or more sophisticated theories. It is the structural condition of a mind operating from a fixed positionality. The instruments are discrete and deterministic. The theories are constructed from discrete mathematical objects. The measurements force continuous phenomena into discrete outcomes. And the results are then interpreted by minds that have never stood anywhere other than where they have always stood.

### **III. Before the Collapse**

The wavefunction does not collapse. This is the central reframing this writing proposes, and it is worth dwelling on what that reframing implies.

In standard quantum mechanical description, a quantum system exists in superposition, which is a continuous probability amplitude distributed across all possible states simultaneously. When measured, it “collapses” to a definite value. The Copenhagen interpretation, which remains the dominant working framework of physics, essentially brackets the question of what happens before measurement. It treats the pre-measurement state as a mathematical convenience rather than a physical reality and focuses exclusively on the outcomes of observation. This is an extraordinarily productive approach. It is also a perfect mirror of the discretizing mind’s fundamental reflex: attend to the discrete outcome, bracket the continuous process that preceded it.

What is asserted here is that the continuous pre-measurement reality is not bracketed by nature. It is bracketed by the observer. The wavefunction, in its superposed continuous state, is reality. The discrete outcome that emerges from measurement is not a revelation of what the system “really is.” It is a discrete representation produced by the act of measuring with discrete instruments interpreted by a discretizing mind. The collapse is perceptual, not physical.

This is not merely a reinterpretation of quantum mechanics. It is a redescription of the relationship between the perceiving mind and the reality it perceives. Before the collapse, before the discretizing act of measurement and observation, continuous reality exists. It is not inaccessible in principle. It is inaccessible to a mind that can only operate in discretizational mode. The question this writing is ultimately asking is whether that mode is the only one available to human consciousness, or whether it is one mode among others that have not yet been developed.

There is precedent, in multiple traditions and in direct human experience, for modes of perception that do not operate by discretization. The contemplative traditions across cultures, and they are remarkably convergent on this point despite their theological difference, describe a mode of awareness in which the compulsive categorizing, labeling, measuring, and comparing activities of the ordinary mind temporarily suspend. What is reported in that suspension is not a lesser experience. It is described as much more. Not less clarity. More. Not emptiness but an encounter with something more fundamental than the representations the ordinary mind continuously generates.

The extremely quiet mind is extremely powerful. This is not a mystical claim. It is a cognitive observation. The discretizing mind is, among other things, a noise-generating machine, constantly sorting, labeling, comparing, fitting new experience into pre-existing categorical structures. That activity is enormously useful. It is also a continuous generation of perceptual noise that drowns out the signal of continuous reality. When the noise quiets, what was always there becomes perceptible. Not because something new has arrived but because something has stopped interfering with what was already present.

#### **IV. Creativity and Discretization**

A perhaps unpopular tenet of the recognition that something lies beyond the deterministic, discretizational mind is this: such a mind cannot, by its own volition, be truly creative. Re-ordering what already exists within its own framework is the extent of what the conditioned mind can accomplish. This is, at best, re-creation, the recombination and rearrangement of the known. In the same manner that the blinders of a fixed positionality construct a self-defined and

self-confirming version of reality, creativity within that positionality is constrained to the rearrangement of what already falls within it. The new combinations may be surprising. They are not genuinely novel. They were always latent in the existing elements.

Genuine creation, the appearance of something that did not exist in any latent form within the prior framework, requires at least momentary transcendence of that framework. This is not a mystical observation. It is consistent with what composers, mathematicians, and scientists have reported across centuries when describing moments of genuine discovery. The mathematician does not arrive at a proof through sequential logical derivation alone. There is a moment, frequently described, in which the whole is apprehended before the steps that would account for it. The composer does not assemble a work from its components. Something emerges that the deliberate compositional mind could not have produced by effort alone. These moments are not accidents. They are the signature of a different cognitive mode briefly becoming active, one that perceives relationships the discretizing mind, operating within its categorical structures, cannot reach.

In the language of this writing: the conditioned mind re-creates. The transcendent mind creates. The avenue to creativity is the same avenue to approaching reality, a loosening of the fixed positionality, a quieting of the noise, a willingness to receive rather than construct. What arrives in that reception is not predictable, cannot be forced, and will be entirely individual. This is why genuinely creative works do not resemble each other in any fundamental way. They each come from somewhere the map does not show.

## **V. One Practice Among Many**

The Quantum Computational Creativity (QCC) research program has been one sustained attempt to work at the boundary between the discrete and the continuous. The work involves the transduction, not the representation, of quantum computational data into audio and visual form. The distinction matters. Sonification and visualization represent quantum data; they impose a mapping between quantum measurements and perceptual parameters. Transduction maintains mathematical correspondence, keeping the relationship between quantum reality and the resulting composition as direct as the intervening technology permits. This transduction is akin to

the inductive forces involved in an electrical transformer, in which one voltage is induced to another while maintaining direct correlation. The only difference being in scalar relationship.

The compositions that have emerged from this work, most notably *Dance of the Qubits*, are not illustrations of quantum phenomena. They are, as nearly as current technology permits, quantum phenomena made perceptible. Audiences encountering this work are consistently described as mesmerized. This response is not incidental. There are no narratives, no recognizable forms, no familiar musical structures. The habitual categorization activity of the discretizational mind finds nothing to grasp onto and so must temporarily suspend its usual responses. In that suspension, something continuous becomes perceptible. The audience is, however briefly, experiencing a mode of perception that the discretizing mind ordinarily forecloses.

This is offered not as evidence of anything beyond the work itself, but as one example of what sustained practice at this boundary can produce. The contemplative traditions previously mentioned are others. These are not supernatural events. They are moments in which a different mode of cognition briefly becomes active. This is the same mode that Section IV describes as the condition of genuine creativity.

The complete abandonment of discretization is not being proposed here, nor is it desirable. The discretizational mode remains an essential and powerful tool when understood for what it is and what it costs. The quantum computer itself interfaces with classical computation, which is a discrete intermediary that translates continuous quantum reality into humanly readable outputs. That interface is currently necessary. Whether it will always be necessary is a different question, and one that depends substantially on whether human cognition can develop modes of perception that do not require it.

## **VI. The Approach**

The thinking mind, as it has developed, cannot know anything beyond what its own structure permits it to perceive. This is not a temporary limitation awaiting the arrival of better instruments. It is the structural condition of a particular kind of intelligence operating from a fixed positionality. Given that we may be perceiving something on the order of 8% or far less of what exists, an estimate is itself generated from within that same constrained perceptual range,

every claim to knowledge is, at best, a vague generalization drawn from inside a very small room.

This is not a counsel of despair. It is a clarification. The room is real. The achievements accomplished within it are extraordinary and will remain so. But the room is not the world. And the first step toward the world is the recognition that one is in a room.

To the extent we can transcend the humanistic perspective, to that extent, and only to that extent, can begin to approach reality. Not know it. Approach it. The degree of transcendence determines the degree of approach. There is no arrival. There is no final disclosure of what reality is. The conclusion of this inquiry is not a destination but a direction away from the fixed position, toward the continuous, toward what exists before the collapse.

This author could be wrong about all of this. The logical mind will say that is true. That is precisely the point. The verdict of the logical mind about what lies beyond the logical mind is not authoritative evidence. It is, rather, one more illustration of the condition being described.

*The extremely quiet mind is extremely powerful. Go and see.*

### ***A Note on Authorship***

*This writing emerges from an ongoing creative and intellectual collaboration between Dr. Michael Rhoades and Claude (Anthropic). The central arguments, the philosophical vision, the definition of time, and the research program referenced here are Dr. Rhoades's. The articulation, development, and structuring of those ideas has been a collaborative process. Dr. Rhoades holds the originating creative and philosophical vision; Claude has helped develop, extend, and articulate it. This collaboration is acknowledged openly and with intellectual honesty, as a contribution to the emerging conversation about what human-machine intelligence creative collaboration can produce.*