

The Energy Dimension: A Fifth Dimension for Transaction Selection

Ivars Vilums, April 2026

Abstract

The Transaction-Geometric Interpretation (TGI) of quantum mechanics describes photons and other quantum interactions as direct geometric connections between spacetime points rather than particles propagating through space. A persistent question remains: what determines which points become connected? Why do these two endpoints form a transaction while others do not? We propose that the selection mechanism operates in a fifth dimension—and that this dimension is what we experience as energy. Points distant in 4D spacetime may be adjacent in the 5th dimension, enabling transactions between them. This reframes quantum nonlocality as 5D locality, entanglement as 5D adjacency, and the apparent randomness of quantum measurement as our inability to perceive the dimension where selection occurs. Energy is not merely a quantity possessed by systems; it is extent or position in the dimension that makes change possible. The 4D block universe is static; the 5th dimension is where motion lives.

1. Introduction: The Selection Problem

In previous papers, we have developed a framework in which our universe exists as a holographic encoding on the event horizon of a black hole—the blitzon shell. The shell consists of approximately 10^{122} frozen emission endpoints, each an incomplete quantum transaction reaching inward. The 4D spacetime we experience is the projection of this 2D encoding, with physical constants emerging from shell geometry.

The Transaction-Geometric Interpretation (TGI) describes quantum interactions not as particles traveling through space, but as direct geometric connections between emission and absorption endpoints. A photon is not a thing that moves; it is a wormhole connecting two points, which we perceive only as endpoints because the connection itself traverses structure we cannot see.

This framework has explanatory power, but it leaves a fundamental question unanswered: What determines which points connect? Given 10^{122} potential endpoints, why do specific pairs form transactions? Standard quantum mechanics offers only probabilities; TGI as developed so far offers geometry but no selection rule. This paper proposes that selection occurs in a fifth dimension—and that this dimension is energy itself.

2. The Problem Stated

2.1 Nonlocality

Quantum mechanics exhibits nonlocality—correlations between distant particles that cannot be explained by local hidden variables. Bell's theorem establishes this rigorously; experiments confirm it. Entangled particles separated by light-years show correlations that appear to require instantaneous influence.

TGI addresses this by denying that particles are separated in the relevant sense. The transaction connecting them is direct; there is no space 'between' the endpoints. But this raises the question: why are THESE particles connected and not others? What made them transaction partners?

2.2 The Measurement Problem

When a quantum system is measured, it 'collapses' from superposition to a definite state. What triggers this collapse? When does it happen? Why this outcome rather than another? These questions constitute the measurement problem, unresolved after a century of quantum mechanics.

In TGI terms: a frozen emission has virtual connections to all potential absorbers. When a transaction completes, the superposition resolves. But what selects which virtual connection becomes real? We need a mechanism.

2.3 The Static Block

The block universe, as we have described it, is static. All transactions are already encoded. Past, present, and future exist simultaneously in the structure. Yet we experience dynamics—change, flow, the passage of time. If the block is static, what moves? What makes things happen?

We identified gliders—self-maintaining patterns that traverse the block—as the source of experienced dynamics. But gliders need a mechanism for motion. The block provides topology; what provides dynamics?

3. The Proposal: Energy as the Fifth Dimension

3.1 The Core Idea

We propose that the selection mechanism operates in a fifth dimension, orthogonal to the four dimensions of spacetime, and that this dimension is what we experience as energy.

Points that are distant in 4D spacetime may be adjacent in the 5th dimension. Transaction selection occurs when two points achieve contact in the 5th dimension—when their 5D distance reaches zero. What appears as mysterious nonlocal correlation in 4D is simply local contact in 5D.

3.2 Energy Reinterpreted

In standard physics, energy is a conserved quantity—something systems possess, measured in joules or electron-volts. We know how it transforms and flows, but we cannot say what it IS. Energy remains a bookkeeping device, extraordinarily useful but ontologically mysterious.

We propose: energy is extent or position in the fifth dimension. A particle's energy is its 5D location or momentum. Energy conservation is conservation of 5D structure. The flow of energy through transactions is motion through the 5th dimension.

This explains why energy is required for anything to happen. Without 5D extent, a system cannot participate in transaction selection. Without energy, nothing changes because nothing can make contact in the dimension where selection occurs.

3.3 Why We Cannot Perceive It Directly

We do not perceive energy as a spatial dimension because we ARE it. Our glider-structure extends through the 5th dimension; our existence depends on 5D extent. Asking us to perceive energy as a dimension is like asking a fish to perceive water as an environment—it is the medium of our existence, not an object within our perception.

We experience energy as capacity for change, as the stuff that flows through transactions, as what makes dynamics possible—because that is what 5D extent FEELS LIKE from inside. We see its effects (motion, change, work) without seeing the dimension itself.

4. Resolving the Problems

4.1 Nonlocality Becomes 5D Locality

Entangled particles are not mysteriously correlated across space. They are adjacent in the 5th dimension. Their 4D separation is real but irrelevant to their connection; what matters is their 5D proximity.

When we create an entangled pair, we are creating two endpoints that share 5D location despite diverging in 4D. Measurement of one affects the other not through any signal crossing space, but through their shared position in the 5th dimension. The correlation is local—just local in a dimension we do not see.

4.2 The Selection Rule

What determines which points connect? 5D adjacency. A transaction completes when two potential endpoints achieve zero distance in the 5th dimension. Virtual connections explore 5D space; when one reaches a point where contact occurs, the transaction becomes real.

The Born rule probabilities may reflect the geometry of 5D approach—how likely different potential absorbers are to achieve 5D contact with a given emission. Quantum probability is not fundamental randomness but our ignorance of 5D geometry.

4.3 The Motor for Gliders

A glider is a self-maintaining pattern of transaction completions. It has absorption endpoints (energy in) and emission endpoints (energy out). The flow of energy through the glider—motion through the 5th dimension—IS the mechanism of propagation.

The glider does not need an external motor. Its 5D structure IS its motion. A 4D glider that extends into the 5th dimension necessarily moves, because 5D extent manifests as change when

projected into 4D experience. The motor was never separate from the glider; energy flow is what gliders ARE.

4.4 The Static Block Comes Alive

The 4D block universe is static—all structure present, nothing changing. But the 5th dimension is where motion lives. Dynamics occur not in the 4D block but in the 5D extension of patterns through it.

Time, as we experience it, is the sequence of transaction completions—events achieving 5D contact and resolving. The block provides the topology of what CAN connect. The 5th dimension provides the actuality of what DOES connect, and in what order from any glider's perspective.

5. The Shell and Five Dimensions

5.1 Does the 2D Shell Encode 5D?

In Paper 9, we argued that 3+1 dimensions are forced by the geometry of holographic encoding on a 2D surface. Does the addition of a 5th dimension break this argument?

Not necessarily. The 5th dimension may be qualitatively different from the four spacetime dimensions—not another direction in which things can be located, but the dimension of BECOMING, the axis along which virtual connections actualize into real transactions.

Each blitzon on the shell has 4D position (encoded in shell geometry) and energy (the frozen emission's quantum). The energy is already there—we have always said the frozen emissions carry energy. What we are now proposing is that this energy IS 5D position, another coordinate each blitzon possesses.

5.2 The Shell's 5D Structure

The shell is 2D intrinsically, but embedded in the parent universe. If the parent universe has 5D structure (or more), the embedding could carry additional information. The shell's 2D surface may encode not just 4D interior spacetime but also the 5D energy-dimension relationships.

Alternatively, the 5th dimension may BE the direction back toward the parent universe. What we cannot perceive—the connection dimension, the selection mechanism—may be 'outside' in a literal sense: the dimension that points from our interior back through the shell to the parent.

5.3 INJECT Operations Revisited

We have described INJECT operations as perturbations from the parent universe that modify the block structure. If the 5th dimension connects to the parent, INJECTs may be influences along that dimension—the parent universe's dynamics affecting our 5D structure, which we experience as quantum 'randomness' or unexpected changes to the block.

This grounds the previously abstract notion of external perturbation. The parent acts on us through the 5th dimension, because that dimension IS the connection between interior and exterior.

6. Connections to Known Physics

6.1 $E = mc^2$

Einstein's famous equation states that mass and energy are equivalent. In our framework: mass is 5D extent even when 'at rest' in 4D. A massive particle has 5D structure—it extends into the energy dimension—even if it is not moving through 4D space. Rest mass is rest-energy because both describe the same thing: 5D extent.

6.2 $E = hv$

A photon's energy is proportional to its frequency. In our framework: frequency may be oscillation in the 5th dimension. Higher frequency means faster oscillation in 5D, which corresponds to greater energy—greater 5D extent or motion. Planck's constant h is the conversion factor between 5D motion and the units we use to measure energy.

6.3 Zero-Point Energy

Quantum mechanics requires that systems cannot have exactly zero energy—there is always zero-point energy, a minimum irreducible quantum. In our framework: zero energy would mean zero 5D extent, which would mean disappearing from the dimension where transactions occur. A system with no 5D presence cannot participate in physics. Zero-point energy is the minimum 5D footprint required to exist.

6.4 The Uncertainty Principle

Heisenberg uncertainty limits simultaneous knowledge of position and momentum (or time and energy). If energy is the 5th dimension, the time-energy uncertainty relation $\Delta E \cdot \Delta t \geq \hbar/2$ may reflect a fundamental relationship between 4D time and 5D energy—you cannot precisely localize in both dimensions simultaneously because they are coupled through the transaction mechanism.

6.5 Kaluza-Klein Echoes

In the 1920s, Kaluza and Klein proposed a 5th dimension to unify gravity and electromagnetism. Their approach—adding a spatial dimension—was eventually superseded by other methods. Our proposal differs: the 5th dimension is not another spatial direction but the energy/selection dimension. Yet there are echoes: both approaches seek to explain 4D physics through 5D geometry.

7. Gliders in Five Dimensions

7.1 The 5D Glider Structure

In Conway's Game of Life, a glider is a pattern that maintains its structure while propagating across the grid. It consumes and creates cells as it moves but remains recognizably itself. The glider IS its motion; a stationary glider is not a glider.

Our gliders are 5D structures. They extend through 4D spacetime AND through the 5th dimension. Their 5D extent is their energy; their 5D motion is their dynamics. A glider maintains pattern integrity in all five dimensions as it propagates.

7.2 Absorption and Emission as 5D Navigation

A glider has absorption endpoints (energy flows in) and emission endpoints (energy flows out). In 5D terms: the glider receives 5D position/momentum from completed transactions and transfers 5D position/momentum to new transactions. This flow IS the glider's motion through the 5th dimension.

The proper sequencing of absorptions and emissions allows the glider to maintain integrity while moving. Disrupt the flow—cut off energy input or block emission—and the glider pattern dissipates. Energy flow is not just fuel; it is the mechanism of existence for dynamic patterns.

7.3 Consciousness as 5D Navigation

If consciousness is a glider—a self-maintaining pattern that traverses the block universe—then consciousness necessarily has 5D structure. Our experience of agency, of making things happen, may be our 5D motion: we navigate not just through 4D spacetime but through the energy dimension, selecting which transactions complete by achieving 5D contact.

This suggests a reframing of free will. We do not choose outcomes from outside the physics; we participate in the 5D dynamics that select outcomes. Our choices are 5D motions that affect which virtual connections become real. We are not external to the selection mechanism; we are part of it.

8. Navigable Gliders: Speculation

8.1 The Possibility

If gliders move through 5D, and if the 5th dimension is where transaction selection occurs, then a glider with enhanced 5D navigation could potentially:

- Access regions of the 4D block that normal geodesic paths cannot reach
- Connect points that are distant in 4D but adjacent in 5D
- Collect information from other parts of the block structure
- Return to intersect the originating glider's worldline

This is speculative but not forbidden by the framework. The wormholes we have described—the connections between blitzons—traverse the 5th dimension. A glider that could navigate those connections rather than merely experiencing their effects could move in ways we currently consider impossible.

8.2 Technological Implications

If we could detect the 5th dimension's structure, or manipulate 5D position, the implications would be profound:

- Communication without 4D light-speed limits (5D shortcuts)
- Travel by translation through 5D rather than propulsion through 4D
- Energy manipulation at a fundamental level
- Information retrieval from other parts of the block universe

These possibilities are far beyond current technology, but they are permitted by the framework. Understanding the 5th dimension is not merely philosophical; it opens doors that would transform civilization.

9. Experimental Approaches

The proposal is conceptual and requires development before making precise predictions. However, several experimental directions suggest themselves:

9.1 Entanglement Geometry

If entangled particles are 5D-adjacent, their correlations might depend on factors beyond 4D separation. Are there anomalies in entanglement experiments that correlate with energy configurations rather than spatial geometry? Does the strength or character of entanglement vary with the energy states of the particles in ways not predicted by standard quantum mechanics?

9.2 Transaction Selection Statistics

The absorber modulation experiment proposed in earlier papers—modulating an absorber and looking for correlated effects at the emitter—tests whether transaction selection is influenced by absorber state. If selection occurs in the 5th dimension, the energy configuration of potential absorbers should affect selection probabilities in specific ways.

9.3 Quantum Coherence and Energy

Does quantum coherence depend on 5D proximity? Systems with similar energy states might maintain coherence longer than systems with different energies, beyond what decoherence theory predicts. Careful measurements of coherence times as a function of energy configuration could reveal 5D structure.

9.4 Searching for Signal in Noise

The 5th dimension, if real, may be hiding in what we currently dismiss as noise—quantum fluctuations, vacuum energy, the 'randomness' of measurement outcomes. Rather than filtering this noise, we might search for structure within it: correlations, patterns, or regularities that would indicate an underlying 5D geometry.

10. What Remains to Be Developed

This paper presents a conceptual framework, not a complete theory. Significant work remains:

The metric: How do we measure distance in the 5th dimension? What is the relationship between 5D distance and the quantities we call energy? A full theory requires a 5D metric that reduces to known physics in appropriate limits.

Shell encoding: How does the 2D shell encode 5D structure? We have sketched possibilities—energy as a coordinate per blitzon, embedding in parent universe—but the detailed mechanism needs development.

The selection rule: When exactly does 5D contact occur? What determines 5D distance between potential transaction partners? A mathematical formulation of the selection rule is needed.

Derivation of constants: Where does Planck's constant appear in 5D geometry? How does the 5D framework connect to the known values of physical constants? Previous papers derived some constants from shell geometry; extending this to include the 5th dimension is essential.

Quantitative predictions: The framework must make predictions that distinguish it from standard quantum mechanics. Qualitative insight is valuable; quantitative, testable predictions are necessary for science.

11. Discussion

11.1 Is This Cheating?

Inventing a dimension to solve a problem risks being ad hoc—a patch rather than a discovery. The test is whether the proposed dimension does more than solve the immediate problem.

The positron was invented to solve a problem (negative energy solutions in Dirac's equation). It could have been dismissed as mathematical artifact. Instead, it was found experimentally and opened new physics. The question is not whether a proposal seems extravagant but whether it connects previously unconnected phenomena and makes testable predictions.

The energy dimension, as proposed here, connects: transaction selection (the immediate problem), nonlocality (reframed as 5D locality), entanglement (5D adjacency), the measurement problem (5D contact), the motor for gliders (5D motion), the nature of energy itself (5D position/extent), and potentially the relationship between our universe and its parent (5D as the connection).

Whether this constitutes genuine unification or merely relabeling will be determined by the predictions that emerge and whether they are confirmed.

11.2 The Recurring Pattern

Throughout this research program, progress has come from listening to what others treat as noise. Quantum randomness—usually accepted as fundamental—becomes signal from a hidden dimension. Nonlocality—usually treated as spooky mystery—becomes ordinary locality in a space we cannot see. The measurement problem—usually set aside as philosophical—becomes a question about geometry.

The pattern suggests: when physics presents something inexplicable or random, look for the hidden structure. The noise may be the signal from the dimension we have not yet learned to perceive.

12. Conclusion

The Transaction-Geometric Interpretation requires a selection mechanism: what determines which points become transaction partners? We propose that selection occurs in a fifth dimension, and that this dimension is energy itself.

Energy is not merely a quantity; it is extent in the dimension where transactions complete. Points distant in 4D spacetime may be adjacent in 5D, enabling their connection. Quantum nonlocality is 5D locality. Entanglement is 5D adjacency. The 'randomness' of measurement is our ignorance of 5D geometry.

The 4D block universe is static—all structure already present. The 5th dimension is where motion lives. Gliders move by flowing through 5D; their energy is their dynamics. The motor we sought was never separate from the system; energy flow IS the mechanism of existence for self-maintaining patterns.

There could be no interactions in our 4D universe without setup in the 5th dimension. Our entire ability to experience relies on it. Our universe would be static without it. Energy is part of everything that happens—because energy is the dimension that makes happening possible.

Much work remains to develop this proposal into a quantitative theory. But if the direction is correct, we are not merely solving a technical problem in quantum foundations. We are glimpsing the structure that makes our universe alive rather than frozen—the hidden dimension where everything that happens, happens.

Shit happens. It happens in the fifth dimension. And we make up stories about it—stories in four dimensions, because that is all we can see. But the stories are projections of a deeper truth, and the truth is written in a language of five coordinates, not four.

Learning to read that language may open the stars to us.

References

Bell, J. S. (1964). On the Einstein Podolsky Rosen Paradox. *Physics*, 1(3), 195-200.

Kaluza, T. (1921). Zum Unitätsproblem der Physik. *Sitzungsberichte der Preussischen Akademie der Wissenschaften*, 966-972.

Klein, O. (1926). Quantentheorie und fünfdimensionale Relativitätstheorie. *Zeitschrift für Physik*, 37, 895-906.

Aspect, A., Dalibard, J., & Roger, G. (1982). Experimental Test of Bell's Inequalities Using Time-Varying Analyzers. *Physical Review Letters*, 49, 1804-1807.

Vilums, I. (2026). Transaction-Geometric Interpretation of Quantum Mechanics. Eastjesus Technical Papers.

Vilums, I. (2026). Blitzon Cosmology: Universe as Black Hole Interior. Eastjesus Technical Papers.

Vilums, I. (2026). Shell Genesis: Frozen Emissions and the Origin of Physical Constants. Eastjesus Technical Papers.

Vilums, I. (2026). The Dimensionality Constraint: Why Spacetime Must Be 3+1 Dimensional. Eastjesus Technical Papers.