Absolute Infinite Union

A critical case for a generative substrate

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Abstract

Absolute Infinite Union is examined as the hypothesis that differentiated existence depends on one unbounded generative reality, potentially experiential and, in its strongest version, one subject with genuine local perspectives. Totality, monist grounding, unboundedness, lawful generation, realized possibilities, experiential fundamentality and cosmic subjectivity are separate commitments. The paper combines an affirmative philosophical case with an explicit map of the bridges needed for scientific support. Its constructive result is conditional: a stationary ergodic symbolic process realizes every supported finite word infinitely often almost surely. The extension to nonergodic processes shows why shared support across components, not ergodicity alone, is the decisive issue for pattern coverage. These standard probabilistic tools clarify premises but do not identify the physical universe or turn descriptions into experiencing worlds. A finite-observation comparison illustrates experiment-specific underdetermination. Primary-source approaches to subject differentiation are examined alongside structural, neutral-monist and physical-realization rivals; passage-level and abstract-only checks remain distinguished. The distinction between common grounding and phenomenal unity prevents arguments for monism from silently becoming arguments for a cosmic subject. Neither repeated oneness reports nor a correct quantum-record theorem determine an ontological likelihood without an observation model. The conclusion is a positive, corrigible research position, not a proof of AIU, its negation, or a numerical probability of ultimate reality.

1. The hypothesis we are actually investigating

The motivating picture is not simply that the universe is very large. It is that all differentiated existence may be the activity or configuration of one fundamental reality. This ground would not merely occupy a pre-existing container. On a strong version, the forms we call spacetime, matter, organisms and subjects are its expressions. The further proposal is that the ground is unbounded, intrinsically experiential and generative of every possibility. The image of one consciousness dreaming many worlds expresses this stronger position.

This paper takes that target seriously. It does not quietly reduce AIU to ordinary ecological interdependence, and it does not grant the target as a premise of its own proof. The question is whether the conjunction can be defined coherently, explained economically, connected to observations and preferred over its strongest rivals.

A distinction in attitude is useful. A researcher can have a strong personal expectation that a hypothesis will prove correct while making public claims at the level the evidence currently supports. Such an expectation can direct attention and sustain investigation. It cannot determine the verdict of the tests. A research programme becomes weaker, not stronger, when every adverse result is redescribed as another manifestation of its preferred conclusion.

The best scientific interpretation of the author's determination is therefore a commitment to expose AIU to meaningful challenge. The project succeeds by learning which propositions survive, even if the final account differs from the initiating image. It does not succeed merely by finding more words for unity.

Contribution and limits

The paper's contribution is an integrated philosophical argument: a seven-part decomposition of the strong hypothesis, explicit inference bridges, a componentwise criterion for finite-pattern coverage, a restricted finite-observation comparison, and a primary-source comparison of subject accounts. The probability results apply established tools; the taxonomy and their joint use are not asserted to be historically unique. A worked pair of subject models below makes one precise point of disagreement available for criticism without claiming a new consciousness mechanism or a proof of the proposed ontology.

2. Definitions that preserve the strong thesis

Table 1 separates propositions that otherwise move between meanings. Here AIU means **Absolute Infinite Union**. Its content is fixed by the explicit commitments below, not by the acronym or the metaphors associated with it. A unity-of-reality definition must not silently import an infinite ground, plenitude or one cosmic subject.

Table 1. The claims carried by the strongest AIU proposal

Claim	Precise working content	Kind and present status
T: totality	Everything actual is included in what we call reality	Definitional; does not establish one substance
M: one ground	No actual entity is ontologically independent of one fundamental generative ground	Metaphysical hypothesis
U: unboundedness	A named property of that ground has no finite global bound	Open physical or metaphysical claim, depending on the bearer
G: form generation	Differentiated effective structures are grounded in or arise from that basis under specified relations	Model-dependent; demonstrated in restricted systems, not universally
P: plenitude	Every possibility in a declared admissible class is actually realized	Strong additional realization claim
C: experiential fundamentality	Experience is a fundamental aspect of the generative ground	Metaphysical hypothesis
C*: cosmic subjectivity	One unified subject grounds genuine local perspectives	Additional metaphysical hypothesis with individuation obligations

The preferred strong thesis is not T alone. The author's strongest version is $M \wedge U \wedge P \wedge C \wedge C^*$, with a generative account G. The conjunction's meaning depends on the definitions of U, P and C. Infinite spatial volume, unlimited global distinguishable capacity, all finite patterns, all physical histories and all logically coherent worlds are different theses. So are a ground with experiential aspects and a single phenomenally unified cosmic subject.

For M, grounding need not mean temporal production. If time is itself effective, asking what happened before the ground formed its first state may import the wrong relation. A non-temporal dependence account must nevertheless explain why particular effective structures exist. Calling the relation grounding does not remove the need for a clear mechanism or philosophical argument.

For U, an operational variant could say that, as the declared finite domain and its resources are enlarged, no finite bound exists on the number of globally available distinguishable alternatives at a fixed error tolerance. This is stronger than the observation that a qubit has continuously many pure states, but weaker than a largest mathematical infinity. It does not imply that one observer can access the entire domain. Other U variants must be stated separately rather than treated as interchangeable confirmations.

For P, the minimal useful version concerns every finite configuration allowed by a fixed law and realization measure. A maximal version extends to every coherent reality under every law. The latter needs a theory of coherence, equivalence and observation across that vast domain. It is not licensed by a theorem about one infinite sequence.

For C*, the central task is subject individuation. Why are there private viewpoints, limited memories and local access rather than one publicly available total experience? An answer must preserve the reality of those limits instead of defining them as illusions whenever they create a difficulty.

2.1 Commitments and evidence bridges

Mathematical method, physical recovery and ontological interpretation need not succeed or fail together. Table 2 distinguishes the immediate conclusion of each type of result from the additional bridge required for the next claim.

Table 2. What each result could license, and what remains to be supplied

Starting point	Legitimate immediate conclusion	Further bridge required
A valid finite theorem or calibrated algorithm	A result under named mathematical premises	Independently motivated model, preparation and observation contract
A locality-record effect in a specified model population	Evidence about that population and estimand	Held-out geometric or causal recovery and comparison with supplied-frame rivals
Successful recovery of effective physics	Evidence for the recovery model	A comparative grounding argument rather than a count of nouns
One common ground	A monist account under its axioms	A named infinite bearer and a comparison with finite grounds
An infinite possibility domain	Availability of unbounded alternatives	Realization dynamics, support and an observation measure
An experiential basis	Consciousness is fundamental in that account	An account of one versus many subjects and their private access
A recurring unity report	A phenomenological regularity in the sampled population	A measurement model and distinct probabilities under competing explanations
A descriptive ontology	A claim about what exists	Explicit normative premises before any ethical conclusion

An entailment is only one way evidence can matter. A well-specified abductive comparison can favour an account without proving it. But an unfilled bridge is not a likelihood, and sharing a prediction is not assigning it the same probability. If two completed models assign an event probabilities 0.8 and 0.2, that event has likelihood ratio four even though both permit it. Those numbers are an illustration of inference, not estimates for AIU.

Individual defences of M, U, P, C and C* also do not establish joint consistency. A complete combined account must reconcile its temporal structure, subject boundaries, physical laws and observation rule. The present paper preserves that conjunction as the target; it does not announce a consistency theorem for the entire ontology.

2.2 Historical commitments that must not be conflated

The present name and research map do not establish historical priority. Several well-developed traditions already address the component claims, often with commitments incompatible with a simple synthesis.

Substance and necessity. In *Ethics* I, Definition 6, Spinoza characterizes an absolutely infinite being through infinitely many attributes. Propositions 14 and 15 defend one substance and the dependence of everything on it; Proposition 33 makes the order of things necessary [1]. This is a substantive predecessor for M and a conception of infinity, not a modern cardinality argument. Its necessary order should not be equated with realization of every independently imagined alternative. Nor does attributing thought to substance by itself establish the present phenomenally unified C* subject. AIU must defend those additional bridges rather than borrow the force of Spinoza's terminology.

Plenitude as a historical idea. Lovejoy's *The Great Chain of Being* (1936) is a central historical treatment of plenitude, continuity and gradation [2]. It supplies intellectual context, not an empirical realization law or proof that every permissible pattern occurs. This paper makes no claim about who first coined a phrase. Its finite-word theorems instead identify an explicit measure, supported events and almost-sure coverage.

Plurality is not automatically unity. Lewis's *On the Plurality of Worlds* defends modal realism and its philosophical utility [3]. The relevant contrast is between commitment to a plurality of worlds and the additional AIU assertion that their existence depends on one ground. A defence of the former does not supply the latter. The word actual must also be fixed before an AIU claim of actual plenitude is compared with a modal account. This discussion is restricted to the publisher's statement of the book's thesis; it does not claim a fresh audit of Lewis's full argument. Nozick's *Philosophical Explanations* is retained as a bibliographic lead for the further fecundity comparison [4]. The relevant original chapter was not accessible in this verification pass, so no detailed attribution or evidential step rests on an AI-generated synopsis of it.

Mathematical existence and physical existence. Tegmark's mathematical universe hypothesis proposes a stronger identification of physical reality with mathematical structure and discusses a

Level IV ensemble [5]. It is not a theorem that every imagined description is consistent, nor a derivation of experiential fundamentality. Even a mathematical-democracy postulate needs a specification of the structures, observers and observation weighting. AIU therefore distinguishes a formal plenitude proposal from one conscious substrate, and realization from the likelihood of this observer's evidence.

The cosmic subject is already a philosophical research problem. Shani (2015) starts from a cosmic-consciousness ultimate and argues that it can ground individual conscious creatures [6]. Goff's *Consciousness and Fundamental Reality*, Chapter 9, defends cosmopsychism by combining phenomenal commitments with priority monism and addressing the Subject Irreducibility Problem [7]. These primary abstracts establish that there are articulated affirmative positions, not merely a new slogan in this paper. Their premises and full solutions must still be assessed. The comparison in Section 10 distinguishes such grounding claims from the private-access and observation rules required by a predictive model.

The positive lesson is not that all these authors endorse the same ontology. They give the programme concrete alternatives and disagreements: necessary substance versus modal proliferation; mathematical structure versus experience; common grounding versus phenomenal unity. A useful synthesis must resolve these differences explicitly.

3. The affirmative case: why AIU deserves investigation

3.1 Argument from explanatory unification

Strongest argument. A common generative account may explain why apparently different domains share mathematical structures and can be described by interlocking laws. If one constrained account recovers many independently established phenomena with fewer adjustable assumptions than competitors, that is a genuine reason to prefer it. The unity hypothesis could guide the search for such an account.

What follows. The argument supports pursuing constrained unification. It can support a particular common-ground model if that model earns explanatory or predictive advantages. It does not establish that any theory described by a single noun is simpler. A one-substance account with an arbitrary bridge rule for every observation may be less economical than a plural ontology governed by tightly related laws.

Best objection. A mathematical formalism can package many components in one space without reducing their ontological number. The ability to write a single global state is not an experimental observation of one substance.

Strongest reply. That objection does not make unity explanatorily idle in every case. A successful theory might show that distinctions previously treated as fundamental are dependent on a deeper structure. The correct test is then comparative recovery and explanatory economy, not verbal counting. AIU needs that concrete achievement before the unification argument can carry its full metaphysical burden.

3.2 Argument from a reality without an external container

Strongest argument. If reality includes everything actual, there cannot be an actual external object containing it. It is natural to seek a self-contained account rather than imagine a literal wall beyond which further ordinary space begins. An unrestricted ground might seem a better explanation than an arbitrary terminal boundary.

What follows. The argument rejects a particular picture of an externally contained totality. It does not prove infinite volume, duration or generative capacity. A finite compact geometry can lack a boundary; a circle and a torus provide elementary mathematical examples. No outer room is needed for their intrinsic definitions.

Best objection. The apparent necessity of infinity depends on imagining only bounded subsets of ordinary Euclidean space. Once intrinsic geometry is allowed, the proposed necessity fails.

Strongest reply. The absence of an outer container still motivates a question about explanatory closure and the status of all finite descriptions. AIU can retain that motivation while abandoning the claim that a no-wall intuition is itself a proof. A theory must explain why its particular finite or infinite structure is physically realized. Both sides face that question.

3.3 Argument from relational and nonseparable physics

Strongest argument. Some quantum states require a genuinely joint description, and effective systems obtain their properties in structured relations. These results make a naïve picture of self-sufficient classical pieces inadequate. A whole-first grounding account can be philosophically attractive because it begins with the joint structure rather than reconstructing it from independently complete local descriptions. Priority monism provides a developed version of such an argument [8].

What follows. Entanglement supports the relevant physical nonseparability, not every proposed ontology of it [9]. A plural ontology can also assign an entangled state to a composite system. A monist interpretation is not refuted by that availability, but the existence of alternatives blocks automatic identification.

Best objection. Quantum records, subsystem algebras and dependence relations are compatible with several interpretations. Nothing in a Bell correlation tells us whether the whole has an experience, whether space is infinite, or whether all possible worlds are actual.

Strongest reply. The evidence can still contribute to an inference to the best explanation once ontological bridge premises are stated. Logical non-entailment is not a theorem of zero evidential relevance. Priority monism can motivate M without supplying phenomenal unity or private perspectives under C*. However, the evidential comparison must concern specified accounts. If two accounts make the same predictions and differ only in interpretive language, a new Bell result does not statistically choose between them.

3.4 Argument from consciousness as an unavoidable datum

Strongest argument. Experience is not removed by describing behaviour or information processing. A common ground with an experiential character could avoid treating consciousness as something entirely foreign that appears inexplicably in a non-experiential universe. An experiential ontology may therefore offer a unifying explanatory proposal, not merely an appeal to religious authority.

What follows. The argument identifies a real explanatory target and motivates experiential fundamentals. Epistemic access through experience does not by itself prove that only experience exists. A neutral basis or a physical realization account remains conceptually available. The difficulty of explaining consciousness is not evidence for an arbitrary specific solution.

Best objection. Moving experience to the fundamental level may exchange the emergence problem for a combination or decomposition problem. Primitive experiential constituents need an account of why and when a unified subject results; a cosmic subject needs an account of why local subjects are private. These are substantive challenges, not terminological inconveniences [10].

Strongest reply. An explanatory relocation may still be an improvement if it reduces total assumptions or yields better constraints. AIU-C must specify what individuates a subject, how its experiential contents relate to physical dynamics, and what observation would favour its rule over rivals. Merely calling private minds fragments of the whole does not yet do that work.

3.5 Argument from recurring experiences of oneness

Strongest argument. Different people report episodes in which ordinary subject-object boundaries seem absent or radically altered. The recurrence is not intellectually trivial. It can indicate stable features of conscious organization and may motivate the possibility that ordinary separation is a limited mode of representation rather than ultimate ontology.

What follows. There is empirical material to examine. Gamma and Metzinger analysed 1,403 usable responses from a selected meditator sample and reported a tentative 12-factor solution [11]. This supplies a measurement approach within that sample, not population-wide invariance or a verified ontological correspondence. A recurring feature can be evidence relevant to a model of experience. Its bearing on ontology depends on what alternatives predict and how reports are sampled.

Best objection. Humans share neurobiology, cognitive biases, linguistic influences and traditions. Similar experiences might follow from these common causes without revealing a universal consciousness. Some experiences are non-unitive, ambiguous or distressing [12]. Reports must not be filtered to retain only those fitting a preferred metaphysics.

Strongest reply. Shared mechanisms do not prove that an experience is false. Accurate perception also depends on common biology. The proper comparison is content-specific: which aspects of the

experience are reliable, which are interpretations, and which a priori differences between models survive an appropriate test? Neural explanation and ontological interpretation should be assessed together where predictions differ, not confused or separated by fiat.

3.6 Argument from lawful generativity

Strongest argument. Simple underlying constraints can produce a remarkable diversity of organized forms. The generative-ground picture expresses a real pattern: macroscopic structures need not be individually present among the basic ingredients for those structures to arise. AIU seeks to generalize that pattern to the deepest level.

What follows. Lawful form generation is possible and occurs in specified physical models. Structure-formation simulations, for example, use initial conditions and dynamics to develop large-scale organization [13]. Such success does not establish unlimited generative capacity or that all possible structures actually appear.

Best objection. The phrase formlessness can conceal the input structure. Laws, initial conditions, resource gradients and selection rules may supply most of what the explanation needs.

Strongest reply. Formlessness should be defined relative to a particular absent effective form, not as literal absence of all structure. The useful research target becomes: which minimal relations and histories produce the relevant form, and what must be supplied? This is a sharper descendant of the original intuition, not its abandonment.

3.7 Parsimony as a comparative burden

A common ground is attractive when it replaces independent assumptions rather than hiding them. Count the laws, initial conditions, subject rules, auxiliary variables and observation kernel as well as primitive kinds. A one-ground theory with an arbitrary rule for each phenomenon is not automatically simpler than a plural theory with tightly constrained relations. The affirmative strategy is to show a common rule that earns its scope across independent targets; the criticism must compare complete explanations rather than penalize the word consciousness in advance.

3.8 Different descriptions as aspects of one reality

A dual-aspect account can propose that physical and experiential descriptions concern one underlying reality without reducing either vocabulary by definition. A neutral-monist account instead leaves the intrinsic base neither mental nor physical as ordinarily conceived. These are different proposals. Their promise is a disciplined correspondence across descriptions; their burden is a bridge law with content. Calling both descriptions aspects does not explain why a given experience occurs, but it supplies a hypothesis worth comparing with one-way realization and cosmopsychist alternatives.

4. Where the strongest case currently stops

The eight arguments converge on reasons to investigate a common generative account. They do not constitute eight independent proofs of $M \wedge U \wedge P \wedge C \wedge C^*$. Several share the same explanatory preference; others rely on the same quantum framework or the same human experiential architecture. Counting them as independent likelihood multipliers would inflate their force.

Table 3 identifies what remains to be supplied. It is a work map, not a verdict that the missing items are impossible.

Table 3. Missing bridges in the strong AIU argument

Starting point	Desired conclusion	Missing bridge
A complete collective term for actuality	One fundamental substance	A grounding argument, not merely a definition
No external spatial wall	Infinite physical reality	Elimination or comparison of finite boundaryless alternatives
Entangled physical systems	One universal subject	A theory of subject individuation and its correspondence
Infinitely many admissible states	Every possibility actually occurs	Reachability, realization dynamics and a measure

Starting point	Desired conclusion	Missing bridge
Repeated oneness experiences	Accurate perception of cosmic consciousness	Reliable content-specific mapping and competing predictions
Elegant generative mathematics	Actual physical substrate	Recovery of independently measured physics
A morally attractive union	True ontology	Evidence independent of the desired ethical outcome

The author can consistently retain confidence in AIU as a research expectation while acknowledging these missing bridges. The public statement should then be that AIU is the preferred hypothesis under investigation, not that the unfinished bridges have already been proved. That distinction is essential for learning from critics without requiring agreement with every skeptical conclusion.

5. Constructing a rigorous partial model

5.1 A positive result for unbounded structure and local plenitude

Consider an infinite binary configuration indexed by integers. Its sample space is $\Omega = \{0,1\}^{\mathbb{Z}}$, equipped with independent fair-bit product probability. Every finite region has finitely many distinguishable configurations. The global index set is unbounded. This is an explicitly defined mathematical structure, not a largest infinity or a physical universe model.

Fix a finite word w of length k. Partition the positive half of the integer line into disjoint blocks of length k. Every block equals w with probability 2^{-k}, independently. Then

$$\Pr(\text{no copy of } w \text{ in } n \text{ disjoint blocks}) = (1-2^{-k})^n.$$

This probability tends to zero. The same calculation applies after any fixed starting block, so the probability of only finitely many occurrences is zero: take the countable union over possible final-occurrence indices. The set of finite binary words is countable. Intersecting their probability-one events gives the following result.

Proposition A. Under the specified fair product measure, almost every infinite binary configuration contains every finite binary word infinitely many times.

This is an elementary application of the same repeated-event reasoning formalized by Borel-Cantelli [14]. It demonstrates that unbounded structure, finite local information and repeated local richness are mathematically compatible. The proposition supplies a precise form of the intuition that a rich infinite domain can contain every finite pattern. The word rich matters: it refers to the chosen measure, not to infinity alone.

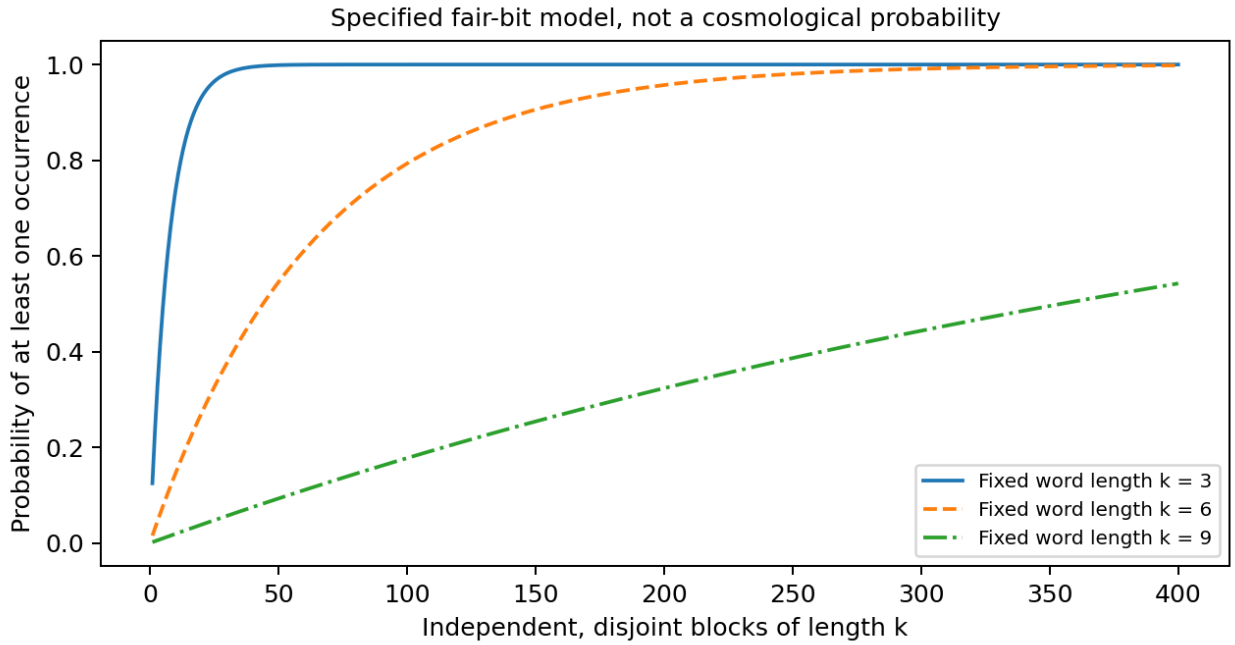

Figure 1. A conditional probability in the constructed model. Longer specified words need more independent opportunities to appear. The curves are not estimates that our universe contains a particular world, person, heaven or hell.

5.1.1 Correlated patterns: the stationary-ergodic extension

Proposition A1 (standard ergodic corollary). Let μ be a shift-invariant, ergodic probability measure on $\mathcal{A}^{\mathbb{Z}}$ for a finite alphabet $\mathcal{A}$. For a finite word w let $[w]$ be its cylinder at a fixed origin. For μ-almost every sequence, every word with $\mu([w]) > 0$ occurs infinitely often with asymptotic frequency $\mu([w])$, and no zero-probability word occurs at any position.

Proof. Apply Birkhoff's pointwise ergodic theorem to the bounded indicator of each cylinder. Ergodicity makes the invariant conditional expectation equal to $\mu([w])$. There are countably many finite words, so intersect their probability-one convergence events. For each zero-probability cylinder, stationarity makes its translate at every integer position have probability zero. The countable union of those translates and words is null. □

This is a direct corollary of a known theorem, not a new probability law [14, Theorem 6.2.1]. It extends the independent-bit construction to many correlated processes. The admissible physical class must be specified independently; defining admissible to mean positive measure establishes coverage relative to a measure, not that every physically possible state has positive measure.

Garriga and Vilenkin's *Many worlds in one* (2001) provides directly relevant cosmological prior art: under their inflationary and finite coarse-grained-history premises, they argue for repeated histories across infinitely many regions [15]. Their finite-history argument and the symbolic ergodic theorem are related but not identical. Infinite regions plus finitely many labels alone guarantees repetition of some labels, not occurrence of all labels. The realization law and support must do additional work. The cited cosmological argument does not make the present physical premises observationally established.

5.1.2 Ergodicity is sufficient, not necessary

Without ergodicity, Birkhoff still gives a limit $\mathbb{E}[1_{[w]} \mid \mathcal{J}]$, where $\mathcal{J}$ is the invariant sigma-algebra. In an ergodic decomposition $\mu = \int \mu_\xi \, d\lambda(\xi)$ on this standard symbolic space, typical frequencies are those of the realized component. Every globally supported finite word occurs in almost every realization precisely when, for each such word, $\mu_\xi([w]) > 0$ for λ-almost every component. This assertion uses the componentwise ergodic theorem and countability; it is a coverage criterion, not a claim that the frequencies equal their mixture averages.

Three examples show the distinctions. A stationary golden-mean Markov chain forbidding adjacent ones has 13 admissible length-five words, not all 32. Its ergodic realizations cover those 13 and exclude the other 19. A half-and-half mixture of the all-zero and all-one sequences is stationary but nonergodic: its length-three support has two words, of which one realization contains only one. The relevant failure is one of two supported words, not one of eight supported words. Conversely, a mixture of independent Bernoulli processes with parameters one quarter and three quarters is nonergodic but each component has full finite-word support. Almost every realization still contains every finite binary word infinitely often, with component-dependent frequencies. Nonergodicity alone is therefore not an obstruction to finite-pattern plenitude.

The new finite simulations illustrate the golden-mean support and a finite sample's coverage. They do not test an infinite almost-sure theorem by exhaustive observation. Extension to a random field on $\mathbb{Z}^d$ requires a specified measure-preserving shift action and the appropriate multiparameter averaging theorem; it is not a free generalization to arbitrary continuous physical worlds.

5.2 What the construction does not show

The construction supplies its integer index, independent bits and probability measure. It does not derive geometry, time, energy, a quantum measurement rule, sentience or a causal process of world creation. A bit pattern is not automatically an experiencing world. A physical implementation would need a mapping from the code to lawful systems, including the resources and subject structure required for experience.

Every finite word is also much less than every possible infinite world. There are uncountably many infinite binary configurations, while one sequence contains only countably many positions at which to begin a suffix. The finite-word proposition cannot be promoted to realization of every infinite sequence. Nor does probability one mean that the exceptional all-zero sequence is logically impossible. The sample-space semantics remain intact.

A deterministic enumeration can also concatenate every finite word. That provides another existence construction but places the plenitude directly in its rule. Neither route makes the realization principle free. The positive result is coherence under explicit premises; the actual-world question remains open.

5.3 A finite-window comparison

Take a second model: a ring containing L independent fair bits. Compare it with the infinite independent chain through an experiment that samples r distinct sites, with r<L and without identifying wraparound or revisiting one physical site under two labels. In both models every observed r-bit assignment has probability 2^{-r}. Unobserved sites simply marginalize out.

Proposition B. For this specified finite observation design, the finite-ring and infinite-chain models have identical likelihoods for every possible outcome.

This does not prove that infinity is forever untestable. It shows that a particular experiment cannot distinguish these particular models. A larger domain, repeated-site identification or other structural assumptions can change their predictions. The lesson is practical: evidence supports the feature a comparison actually identifies, not the largest ontology compatible with it.

5.4 Can this count as a substrate model?

It can be called a minimal generative or configuration model if that term is defined. One may treat the entire configuration as a single object with many substructures. That still leaves open whether the object is physically fundamental or merely a mathematical representation. The same distribution can be described using many variables; notation does not settle monism.

The construction is therefore best used as a constructive consistency test for a restricted AIU component. It shows that certain objections based solely on infinity or local finiteness are too strong. It does not supply the empirical bridge for AIU-M, AIU-C or maximal plenitude.

6. Infinity, necessity and the Absolute

Cantor's hierarchy and philosophical Absolute should not be collapsed into one physical magnitude. The fact that a set's power set has larger cardinality does not show that physical reality instantiates all

such sizes. A physically infinite model can be represented by an ordinary set. It does not need to be the largest possible mathematical object. Historical discussions of the Absolute illuminate terminology, not the truth of a modern cosmology [16].

There are several ways to preserve the intended depth without claiming an invalid theorem. One is unrestricted ontological dependence: every actual form depends on the same ground. Another is unbounded actual extent or capacity under a specified physical model. A third is inexhaustibility of finite descriptions. These may be related in a developed theory, but none is equivalent by definition to the other two.

A ground that is not located inside effective spacetime need not have infinite spatial volume in the ordinary sense. Its relevant infinity might concern histories, relational extent or accessible alternatives under enlarged domains. It might instead be finite while supporting emergent spacetime. The empirical implications depend on the exact representation. Thus the statement that infinity can occur at any point needs disambiguation: global infinity is not an event that happens at one coordinate.

Literal unlimited retrievable information in a bounded finite-resource region encounters distinct physical questions. Entropy bounds have conditions involving energy, size, entropy definition or light-sheets [17; 18]. A maximum bound can constrain an admissible distinguishable codebook. Finite entropy of a single state alone does not imply finite support. Neither statement establishes the global size or experiential nature of the ground.

A proper-class ontology creates additional modelling work but need not ban all local predictions. A local experiment can have a set-sized sample space and ordinary observation probabilities even when a philosophical account refuses a completed set of everything. The consistency and interpretation of the larger ontology remain separate problems. Declaring that the totality exceeds formal capture does not itself yield a prediction.

6.1 Actual infinity and potentialist alternatives

The author's target includes an actually unbounded reality, not only a process whose finite descriptions can always be extended. Potentialism and indefinite extensibility are useful alternatives to examine; Linnebo and Shapiro (2019) provide a relevant philosophical treatment [19]. They must not silently replace the target or be declared mandatory merely because they ease formal modelling. Actual infinite set models, extensible-stage models and class-theoretic descriptions can encode different commitments. Selecting between them requires explicit philosophical or physical reasons. None is a largest cardinal, and none proves its own physical realization.

6.2 Cosmology constrains specified continuations

The DESI DR2 Results IV analysis, version 3, Section VI.4.3, Eq. 36 reports $10^3\Omega_K = 2.1 \pm 1.1$ for DESI BAO plus Lyman-alpha full-shape plus CMB, in a curved Lambda-CDM analysis [20]. This is a model- and data-combination-dependent curvature constraint, not a direct measurement of total volume. It does not choose infinity over all finite alternatives. A compact flat torus illustrates why local flatness alone is insufficient.

Conversely, failure to settle finiteness against every possible continuation does not make all finite-versus-infinite comparisons nondiscriminating. Specified models can predict different topology signatures, correlation structure or curvature distributions. Their likelihoods and priors must be stated. The finite-ring theorem concerns one restricted observation design, not a universal ban on evidence about global structure. Complete positive-constant-curvature spatial manifolds can be finite quotients as well as simply connected spheres; simple connectedness is not required for every finite-volume inference. Other bearers of unboundedness, including time or generative capacity, remain distinct.

7. Probability without manufactured precision

7.1 What would an AIU probability mean?

A probability for AIU must be conditional on a hypothesis space, background information, priors, auxiliary models and an observation rule. None is supplied by the word infinite. The appropriate comparison is between sufficiently specified rivals, including their uncertainty about laws and parameters.

$$\text{Posterior odds}(H_1 : H_0) = \text{Prior odds}(H_1 : H_0)\,\frac{\Pr(E \mid H_1)}{\Pr(E \mid H_0)}.$$

When both rivals exactly reproduce the same observation distribution, that evidence gives a Bayes factor of one. When either likelihood is unspecified, no numerical Bayes factor has been earned. It is a mistake to treat compatibility as probability one, and an equal mistake to treat lack of a calculated likelihood as probability zero.

The conjunction has its own constraints. Under any common probability model,

$$\Pr(H_{\text{AIU}} \mid E) \le \min_{J \in \{M,U,P,C,C^*\}} \Pr(J \mid E), \qquad H_{\text{AIU}} = M \wedge U \wedge P \wedge C \wedge C^*.$$

Here P inside the event denotes the plenitude proposition; the operator Pr denotes probability. The chain rule expands the conjunction using conditional probabilities, not an assumed product of five independent confidence levels. This matters because a person can have a strong argument for a common basis while having much less evidence for all possible worlds or one universal subject.

7.2 A sensitivity illustration, not a verdict

Suppose, solely for illustration, that a specified model comparison had Bayes factor ten. A prior probability of 0.01 would become about 0.0917; a prior of 0.1 would become about 0.5263; a prior of 0.5 would become about 0.9091. These are arithmetic consequences of the assumptions, not three estimates of AIU's truth.

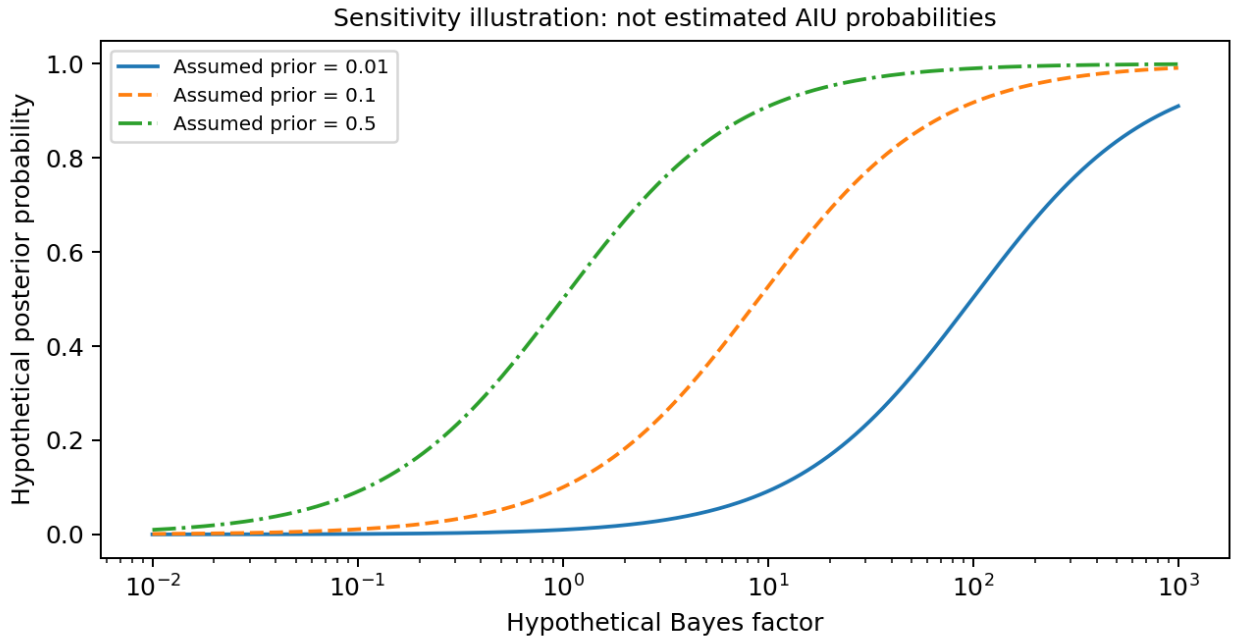

Figure 2. Conditional Bayesian sensitivity. No prior or Bayes factor on this figure was estimated for AIU. The point is that even a stated evidence ratio does not uniquely determine a posterior without the other assumptions.

An explicit non-numerical conclusion can be more rigorous than a precise invented percentage. One can identify a model as coherent, an argument as invalid, an empirical claim as constrained, or a comparison as presently nondiscriminating without pretending to possess a calibrated probability of ultimate reality.

7.3 Dependent patterns do not multiply into certainty

For evidence $E_1, \ldots, E_n$, a valid likelihood factorization is $\Pr(E_1 \mid H)\,\Pr(E_2 \mid E_1, H)\cdots$. Replacing all conditional terms with $\Pr(E_i \mid H)$ assumes conditional independence. Similar contemplative

reports may share biology and traditions; papers may reuse a dataset; AI systems may reuse text or reasoning; different arguments may rely on one interpretive premise. Their apparent number can greatly exceed their independent information.

This does not make convergence worthless. It changes the research question from how many favourable examples can be listed to how much new constraint each example supplies. A genuinely surprising out-of-sample prediction under a well-specified alternative can matter more than hundreds of repetitions of a familiar description.

8. A pattern-and-indicator ledger

Table 4 shows how the programme should treat its principal indicators. The entries are analytical distinctions, not numerical weights and not a vote on AIU.

Table 4. Indicators, competing explanations and discriminating work

Indicator	Why it motivates AIU	Strong alternative explanation	Next discriminating task
Successful unifications in physics	Common underlying organization can replace apparent plurality	Shared mathematical representation with multiple primitives	Compare complete models and independently recovered phenomena
Entangled joint states	The whole has structure not fixed by independent marginals	Composite quantum systems without substance monism	State which ontology adds a distinctive prediction or explanatory constraint
Local records in effective physics	Differentiated forms can share common dynamics	Ordinary decoherence with supplied geometry and preparation	Test an independently motivated pre-geometric implementation
Boundaryless or near-flat cosmological possibilities	Finite observational horizons do not bound total reality	Compact finite geometry or other global continuations	Compare topology and model-conditioned predictions, not curvature alone
Convergent unity reports	Ordinary self-boundaries may not exhaust experience	Shared cognitive mechanisms and interpretive learning	Measurement invariance, negative cases and content-specific reliability
Low-structure states yielding organization	A common ground can have many forms	Supplied laws, perturbations and resource gradients	Identify exactly which input does the explanatory work
Neural dependence of human experience	Could be a constraint on how local perspectives appear	Physical realization models with explicit neural mechanisms	Compare subject and intervention predictions, not generic labels
Mathematical infinite constructions	Some forms of unbounded richness are coherent	Formal existence without physical realization	Supply physical correspondence and an observation measure

The ledger avoids two extremes. It does not classify every compatible pattern as confirmation. It also does not insist that philosophical explanation can have value only after a laboratory experiment. A reasoned metaphysical comparison can be substantive, provided its premises, explanatory criteria and alternatives are made explicit.

9. The major rival accounts and their strongest challenges

These are reconstructed positions, not statements issued by external scholars in a completed panel. Real advocates may reject some formulations; that is one reason to seek domain-qualified review rather than treat the table as a settled debate.

9.1 Finite common-ground realism

This rival accepts one ground but denies that unity requires infinity. A finite quantum or relational model can contain many differentiated patterns and complex experiences if the relevant realization theory permits them. Its strongest objection is that AIU has not shown why adding U explains any particular observation better. The AIU reply must identify a feature that finite alternatives cannot reproduce, or explain why an unbounded account is substantially more constrained and economical. Merely saying a finite ground would need an outside repeats the boundary error.

9.2 Plural physical realism

This rival treats some plurality of physical components as fundamental while allowing their states and interactions to be deeply relational. It need not imagine completely isolated little objects. Its objection is that a single ground may add a metaphysical label without reducing physical assumptions. AIU's best reply is to show a genuine dependence relation or unification that removes otherwise independent postulates. A global mathematical description alone is insufficient.

9.3 Structural or process realism

Ontic structural realism gives relational structure explanatory priority. Process ontology instead emphasizes events or becoming, and need not reduce to a timeless structure. Both can reject a further substance behind relations, but they offer different resources for explaining persistence and change. Both can agree with much of the substrate research while rejecting the image of one underlying stuff. Their shared question is what the word substrate contributes beyond the relational structure. AIU can answer by defining the ground as that structure, but doing so relinquishes any additional material-goo claim. A conscious-ground extension would still require its own argument.

9.4 Neutral and dual-aspect monism

Neutral monism offers a basis not initially classified as either ordinary mentality or ordinary matter. Dual-aspect monism treats mental and physical descriptions as irreducible aspects of a common reality. These positions need not have identical commitments about their ground. They can make unity plausible while leaving C*'s universal-subject claim open. Their advantage is avoiding an immediate inference from structural physics to consciousness. Their challenge is to specify the relation between the base and its aspects without simply renaming the explanatory gap. AIU-C must show why experiential fundamentality explains more than these less committal alternatives.

9.5 Panpsychist and cosmopsychist accounts

Panpsychist accounts begin with experiential or proto-experiential features at a basic level; cosmopsychist accounts begin with a fundamental whole. The former faces a combination problem, the latter a differentiation or decomposition problem. Naming one ground does not decide which grain is a subject. A useful comparison asks how private viewpoints, split or altered access, and non-biological realizations are individuated. The existence of these problems does not logically disprove experiential fundamentals, but it prevents treating them as a completed explanation [10].

9.6 Idealist and physical-realization accounts

An idealist model takes experience or mentality as fundamental and must recover the lawfulness of shared observations. A physical-realization model must explain how the organization of a physical system realizes experience. Either can be made so flexible that every result is accommodated. The productive test is between constrained versions: which systems are subjects, how interventions alter experience, and what predictions differ before the data are collected? Generic labels are not complete statistical models.

9.7 Methodological empiricism

This position suspends the ultimate ontological choice while studying the shared observable structure. Its strongest objection is that many AIU proposals have no unique empirical consequence. AIU's strongest reply is that science also depends on conceptual interpretation, and foundational questions can motivate new models before new predictions are available. Both points stand. The consequence should be appropriate classification and targeted development, not either metaphysical certainty or a prohibition on metaphysical research.

10. Consciousness, individuation and the proposed dream

A literal cosmic-dream account owes more than a metaphor. It must specify what is experiencing, how differentiated viewpoints arise, why their access is limited, and how intersubjectively stable observations emerge. A schematic map e_j = B_j(s) from ground state s to perspective j may organize the

question, but the function B_j contains the central explanatory burden. Writing it does not explain phenomenality.

The claim can be separated into experiential character of the ground, unity of its subjectivity, and the relation between local subjects and that subject. These need not rise or fall together. A neutral common ground with local experience is not identical to one cosmic mind. A common conscious ground with irreducibly private perspectives still needs a rule for their numerical identity and continuity.

Physical constraints remain relevant where a conscious-ground theory makes physical commitments. IIT, for example, uses specified causal and partition conditions rather than a generic measure of unity [21]. A conclusion internal to that theory is not a theory-independent disproof of consciousness beyond its model. Conversely, a claimed cosmic subject cannot simply ignore causal-model assumptions while invoking IIT as evidence in its favour.

The paper does not infer that a copy of a person's physical pattern is the same continuing person. It also does not infer infinite pleasure or pain from an infinite number of finite episodes. Actual realization, recurrence, valence magnitude and personal identity are distinct obligations. Heavens and hells can remain names for proposed experiential possibilities, but their actual infinite realization is not established by the word infinity.

10.1 Affirmative AIU variants, not one ambiguous claim

Table 5. Main variants kept active for reasoned comparison

Variant	Positive commitment	Distinctive burden
AIU-R: relational ground	Every actual entity depends on one generative relational basis; effective forms need not be primitive	Show a nontrivial dependence account rather than merely collecting everything into one set
AIU-U: unbounded ground	AIU-R plus no finite bound on a specified global extent, history depth or distinguishable capacity	Name the bearer and compare actual finite alternatives; local continuum mathematics alone is insufficient
AIU-C: experiential ground	In the author's nested variant, AIU-U plus intrinsically experiential reality	Explain the experiential-physical relation; experiential fundamentality alone does not logically imply U
AIU-C*: cosmic-subject extension	AIU-C plus one unified subject with genuine local perspectives	Supply phenomenal unity, private access and individuation rules; common substance does not supply co-consciousness

Plenitude is an additional P parameter of any variant, not a hidden consequence of the letters AIU. P-finite says every finite pattern in a stated admissible class is realised. P-history says every admissible complete history is realised. P-modal says every logically coherent reality is actual. These have different measures, cardinality issues and observation burdens. The author's preferred strongest vision remains AIU-C* with a strong P commitment; the weaker variants are comparison points, not a covert redefinition of that vision.

10.2 Subject maps and observational equivalence

A candidate model must specify at least a ground-state or history space S, laws D, an observation kernel O, a subject assignment Sigma(s), and a mapping B_j from the relevant ground history to the contents accessible to perspective j. O is a rule for public experimental outcomes; B_j is a proposed experiential bridge, not an equation that solves consciousness simply by naming it. A cosmic-subject model must explain why local subjects do not share unrestricted memory or access. A local-subject model must explain what binds each subject. These are rival explanatory burdens, not an automatic victory for either account.

There is a precise identification limit. Suppose two complete models, after integrating over their declared auxiliary parameters, assign the same probability to every event in a specified observation family. Then that family gives likelihood ratio one wherever the common probability is nonzero. No amount of repetition of those same kinds of observations separates the models. The conclusion is local to that family and model pair. It does not prove all ontological questions meaningless or every future observation uninformative.

Conversely, absence of a numerical likelihood is not likelihood ratio one. An unfinished cosmic-subject proposal may have no specified prediction at all. The constructive next step is to constrain B_j or O enough that an alternative would expect a different outcome, or to argue a demonstrable reduction in independent explanatory assumptions. A small p-value in a quantum-record calculation supplies neither bridge by itself.

10.2.1 Candidate subject accounts and the objections they must answer

A subject account may begin with explicit philosophical commitments rather than a numerical function. Table 6 distinguishes the authors' proposals and the scope of the source material used, including a publisher abstract where the full chapter was unavailable. Distinct proposals must not be collapsed into one supposedly established solution.

Table 6. Primary-source subject accounts and their open burdens

Approach	Claim in the primary source	Critical question and checked scope
Kastrup, dissociation-based idealism	Living organisms are dissociated centres within cosmic consciousness; his association-graph analogy models restricted experiential access	Does lost associative access suffice for distinct subjects? Sections 8 and 9 propose the account; Section 12 addresses brain-experience correlations. This is philosophical extrapolation, not experimental confirmation of cosmic dissociation [22]
Albahari, perennial idealism	The ground is aperspectival, not an enlarged perspectival cosmic observer. Dispositional subjects bounded by imagery account for manifestation	What constrains those dispositions and their correspondence to observations? Abstract and Sections 3 to 5 inspected. An aperspectival ground is not automatically the one-subject C* hypothesis [23]
Nagasawa and Wager, priority cosmopsychism	The cosmos is fundamental and phenomenally propertied; local parts depend on the whole	Whole-first dependence does not alone individuate private subjects. Publisher chapter abstract and pages 113-129 verified; full chapter argument not assessed here [24]
Miller, decombination critique	Structural phenomenal unity and disunity create a problem distinct from qualitative heterogeneity	His criticism targets transferring one proposed solution, not every possible conscious-ground theory. Published article, Sections 2 and 3, inspected; 2021, pages 112-125 [25]

Kastrup provides more than a label: his Section 9 proposes associations among phenomenal contents and dissociation between parts of that network. Yet ordinary dissociation does not, without another argument, establish a cosmic implementation. Albahari deliberately avoids treating the universal ground as another bounded perspective. These are different ontological commitments, not interchangeable evidence for C*. Both remain candidates to assess, not validated subject-selection algorithms.

Miller distinguishes qualitative variety within experience from the unity and boundaries that individuate subjects. This challenges the automatic transfer of Schaffer's response to heterogeneity into a solution of decombination. It does not establish that priority monism itself is true, nor does it rule out every alternative individuation principle. The priority-monism argument in Section 3.3 therefore remains motivation for M, not proof of C*.

The next comparative step is to state which subject relations and observation rules each proposal actually constrains, and distinguish those from new rules introduced by this programme. A named rival may assign different probabilities to ordinary intervention or access outcomes even when both accounts permit them. No clinical intervention or diagnosis is proposed here, and neural results are not converted into metaphysical verdicts by analogy alone.

10.2.2 Worked comparison: a common ground with or without a cosmic subject

Consider a deliberately minimal operational system with two binary registers A and B. Initially they are independent fair bits. An intervention sets A to a chosen value a. One later update leaves A unchanged and, when a communication link is enabled, sets B equal to A with probability $1 - \eta$, where $0 < \eta < 1/2$. When the link is disabled, B retains its initially independent bit. Reports read

the corresponding registers without additional noise. This is an identification-limit illustration with equal observable laws imposed by construction, not a neural model, a fitted theory of consciousness or a discovery that published subject accounts are observationally equivalent.

The shared observation rule is therefore

$$\Pr(R_B = a \mid \mathrm{do}(A = a), \mathrm{link} = 1) = 1 - \eta,$$

$$\Pr(R_B = a \mid \mathrm{do}(A = a), \mathrm{link} = 0) = 1/2.$$

At $\eta = 0.1$, these are 0.9 and 0.5. The same law specifies the entire joint report distribution. Repeating the experiment, varying a, or disabling the link cannot discriminate accounts that retain exactly this law.

Cosmic-subject account. The physical process is a restricted expression of a common experiential ground. In addition to local perspectives with contents A and B, the account posits a unified ground-level subject. Local accessible content is restricted to the corresponding register and whatever the stated communication rule supplies. Ground-level co-consciousness is a further postulate; it is not defined as communication bandwidth.

Nearby rival. The same common ground and operational process support the same local perspectives, but there is no additional cosmic subject. The rival can share the proposed physical continuation, including a separately stipulated unbounded completion. Thus the comparison holds the infinity and physical-law commitments fixed and varies the cosmic-subject commitment, rather than confusing several changes in ontology.

Under these stipulations both accounts agree on every event in the declared report/intervention family, so the Bayes factor is one wherever their common event probability is nonzero. Their subject assignments differ, even though no readout here observes that difference. This is an exact identification limit for these constructed accounts, not evidence that actual subject accounts are equivalent in every possible experiment. Neither account derives phenomenal experience from a bit label; both still owe an independently defensible experiential bridge.

The strongest objection to the cosmic-subject account is explanatory surplus: the additional subject has not reduced any operational or local-subject assumption in this construction. The strongest reply is that a cosmic unity principle might independently constrain which local perspectives can exist and thereby reduce the full theory's unexplained assumptions. That reply becomes an argument only when the constraint is supplied. The common observation rule cannot by itself favour either ontology, and counting one fundamental entity as simpler is insufficient if extra bridge rules are required. A useful discriminator would be an independently motivated modification that makes the models assign different probabilities or excludes different subject configurations before the relevant observations are inspected. This example is the present paper's schematic comparison, not a formalization claimed by Kastrup, Albahari, Nagasawa, Wager or Miller.

10.3 What the preparation results do, and do not, imply for formlessness

Conditional Haar typicality is a statement about a specified invariant distribution on finite quantum states. It is not a statement that reality without a preferred macroscopic form cannot produce form. A globally covariant ensemble can contain preparation and coupling resources that are aligned within each individual draw. Conditioning on those resources matters. Likewise, an energy-constrained ensemble need not behave like a full-Hilbert-space Haar ensemble.

The stronger scientific descendant of the original image is therefore not creation from an absence of every constraint. It is generation of new effective form from a basis lacking that particular effective form, under explicit relations, history and selection rules. AIU can make this a positive explanatory ambition. It must then say what is supplied and show what is recovered, rather than call supplied laws evidence of unlimited generativity.

11. Empirical routes that could matter

11.1 Physical structure and records

A physical research route asks whether independently defined locality and informative records favour compatible subsystem structures. The mathematical safeguards and finite quantum examples developed in the separate methods paper *Frame-Aligned Records* do not yet recover an unknown spacetime metric. Its original source-off pilot has a negative mean change relative to frozen evolution. A later

paired factorial extension has positive contrasts between Hamiltonian orientations at fixed injection. These are different counterfactuals, not a reversal of one result. Neither reconstructs a metric or establishes a common infinite ground; both concern supplied finite dynamics and access. A finite propagation bound does not by itself identify the mechanism behind the scalar readability contrast.

The correspondence burden includes controlled recovery of the target regime. A few-body decomposition is not enough. Graphs, symmetries, effective distances, propagation, matter content and measurement rules must be classified as supplied inputs or recovered outputs. Existing emergent-spacetime approaches provide concrete problems and examples, not transferred confirmation of AIU [26; 27].

11.2 Phenomenology and common structure

A useful first question is whether defined experiential dimensions survive comparison across adequately sampled groups after translation, expectations and interpretive vocabulary are addressed. A reanalysis can begin with a known dataset only after its codebook, permissions and group sizes are inspected. This release did not analyse participant data. A new study requires ethics review, informed consent and safeguards for distress; it need not instruct anyone to induce altered states.

Experiential description should be separated from metaphysical interpretation. Blind coding of open accounts can complement predeclared scales, while negative and ambiguous cases remain eligible. Episode properties, repeatable capacity, enduring trait change and a tradition's attribution of enlightenment are not one variable. A recovered common factor establishes a measurement result within its population, not universal identical experience. Generic AIU and neurocognitive labels do not by themselves specify the probability of measurement invariance, so their likelihood ratio cannot simply be assigned a value near one. A discriminating comparison requires completed observation models; both models may assign positive probability to an outcome and still be distinguishable.

11.3 Content-specific correspondence

For an experience to support a claim about a referent beyond the experience, there must be a defensible correspondence. Ordinary perception earns such warrant through prediction, calibration, cross-checks and action. An AIU interpretation needs an analogous account appropriate to its content. A feeling of unlimitedness does not by itself encode infinitely many independently checkable facts.

Unusual information access is not the sole possible test, and no such ability follows from monism alone. Ordinary evidence about subject boundaries and intervention effects may be more tractable. A proposed anomaly would first need rigorous controls and comparison with multiple explanations; it would not uniquely identify AIU by defeating one ordinary account.

11.4 Observation selection and measure

A plenitude theory must explain why this kind of observation is expected, not only why it exists somewhere. Observer-weighting pathologies can make a proposed cosmology epistemically unstable under stated assumptions [28]. Their significance is that realization and observation measures do substantive work. A claim that every possible world exists still needs an account of why our records are orderly and reliable.

This task should be approached as model construction, not as a demand for a universal probability measure before any local science is permitted. Specific domains and comparisons can be predictive. Their success does not automatically validate the unrestricted metaphysical extension.

12. Union, compassion and the independence of ethical protection

The author's conception links union with care and the possibility of flourishing. That can be a coherent ethical orientation without being a physics theorem. The descriptive fact that two beings share a ground does not establish a particular duty unless normative premises are added. Conversely, their protection need not wait for agreement about ultimate ontology.

Boundaries also have more than one moral role. A boundary can exclude or harm; it can protect an organism, preserve agency, allow consent and support cooperation. Fear and greed cannot be reduced to all forms of separation without a causal account and evidence. The aspiration to reduce alienation should therefore be distinguished from erasing functional differentiation.

A strong AIU ethics can say that no being's experience should be dismissed merely because it is described as an expression of a larger whole. It must not convert cosmic unity into permission to sacrifice vulnerable individuals. People who reject AIU remain fully eligible for protection and participation. This follows from the ethical commitments being proposed, not from a measurement of the substrate.

Ethical protection should therefore remain robust across the compared ontologies. A philosophical preference for unity may guide personal interpretation, but it must not become a prerequisite for rights, participation or consideration of suffering. Nor should a numerical ranking be invented when the evidence and normative assumptions do not identify one.

13. What would change the assessment?

Table 7 keeps the research vulnerable to evidence without pretending one experiment can adjudicate the entire conjunction.

Table 7. Update rules for the principal commitments

Claim	Confidence could increase through	Confidence could decrease through
M: one ground	A constrained common-basis model with superior independent recovery or a stronger grounding argument	A competing account that explains the same target with fewer arbitrary bridges; internal inconsistency
U: unboundedness	Comparative support for a specified unbounded continuation against named finite alternatives	Evidence incompatible with that continuation, such as a relevant compact topology under its assumptions
G: effective emergence	Controlled approximation and successful predictions of the target regime	Persistent failure in the declared model class or proof that the target was supplied as input
P: realization richness	A realization theorem whose physical premises are independently supported	Conserved constraints, inaccessible sectors or a measure contradicting the claimed coverage
C: conscious ground	A constrained individuation rule with discriminating successful predictions or a stronger philosophical account	Failed predictions, inability to recover observed dependencies, or uncontrolled ad hoc repairs
Phenomenological relevance	Replicated, well-specified convergence and validated correspondence	Sampling/translation explanations, failed generalization, or stronger rival predictions

Evidence against a model is not necessarily evidence against every member of its broad family. But that fact must not become immunity by perpetual retreat. After a predeclared class repeatedly fails, the programme should record that loss, narrow its claim and justify the next class independently. Calling every successful theory AIU after the fact would erase the thesis's distinct content.

Likewise, successful mathematical repairs do not move the ontological posterior by themselves. They improve the instrument used to investigate one possible mechanism. A correct map is not evidence that the destination exists; it is what makes a genuine search possible.

14. A focused agenda

Two tasks have the greatest direct relevance. A physical model must identify its primitives, recover specified observations and compete with alternatives on a held-out target. A subject account must explain private perspectives and shared observations, then state either a genuine empirical discriminator or an explicit philosophical criterion of preference. The worked comparison in Section 10.2.2 shows how identical operational predictions leave a precise ontological disagreement rather than a fictitious probability verdict.

Further development should close one of these obligations with a proof, counterexample, model comparison or observation. Repetition of compatible examples is not a substitute. Conceptual criticism remains useful when it identifies a genuinely different constraint or exposes a hidden premise; its value is not measured by the number of approving reviewers.

15. Conclusion: the strongest defensible affirmative position

The affirmative AIU position can be stated without false certainty: differentiated existence may depend on one generative ground; unbounded and experiential versions are serious possibilities; mathematics can clarify their consistency and implications; and patterns in physical organization and expe-

rience can motivate focused investigation. The preferred strong conjunction remains explicit rather than silently replaced by generic interdependence.

Its current limitation is not that inquiry is prohibited by an old unsolved problem. It is that the physical, probabilistic and experiential bridges have not yet been supplied at the strength the full claim requires. That is a research agenda with identifiable burdens, not a licence to announce proof or a reason to terminate the investigation.

A successful programme may confirm a constrained AIU account, reject part of it, or reveal a better structure not captured by the initial metaphor. Its standard is whether the resulting account explains and predicts more accurately while carrying fewer unsupported assumptions. That is how commitment to the possibility of an infinite union can remain commitment to truth rather than commitment to a predetermined answer.

Declarations

This is a philosophical hypothesis assessment, not an empirical consciousness study. No human-participant data were collected or reanalysed. Claude and ChatGPT assisted criticism, calculations, source retrieval, drafting and production; no AI system is an author, and their agreement is not independent evidence. The author retains responsibility for the arguments and final approval. Funding, competing interests and final correspondence metadata require author confirmation before submission. Related quantum calculations belong to the separate methods paper and supplement, not independent confirmations of this ontology.

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