

# The Codex Process: Expansion After Geometry

*Codex Series — Paper 12*

Shaddon Davis

ORCID: <https://orcid.org/0009-0007-4380-2555>

04/14/2026

## Preface

This arc does not propose a rival cosmological model, nor does it claim that the structures examined here arise in temporal sequence. Its order is analytic, not ontogenetic: each paper isolates one mutually dependent aspect of a single cosmological continuity so that its structural role can be made explicit. Existing cosmological models remain valid within their empirical and mathematical domains. The purpose of this arc is different. It asks what deeper continuity conditions must already hold for time, geometry, expansion, collapse, and equilibrium to be coherent at all. Its aim is not to replace cosmology, but to anchor it by identifying the structural constraints that make cosmological description possible in the first place.

Copyright © 2026 Shaddon Davis

This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), with the following additional permission:

Translation Permission: This work may be translated into other languages for non-commercial educational and research purposes. All translations must (1) provide proper attribution to the original author, (2) clearly identify the work as a translation, (3) include a link or citation to the original English version, and (4) maintain the same license terms. Translations do not constitute endorsement by the original author.

To view a copy of the base license: <https://creativecommons.org/licenses/by-nc-nd/4.0/>

# Introduction

Paper 10 established the outward condition of cosmology: continuity enforced across a closed domain with no external frame, no external sink for effects, and no external coordinator of revision. External time was shown to take the form of irreversible ordering under those conditions. Paper 11 then derived space from that same closure. Geometry was not treated as a container, but as the stabilized structure of a persistent relation under enforced continuity. Distance was reframed as coordination cost, and curvature as the imprint of uneven constraint history.

This paper asks what follows when such a geometry does not remain static. If space is relational geometry rather than background substance, then large-scale spatial change cannot be described as things moving through a container. It must instead be understood as a change in the accessibility structure of the geometry itself. Expansion, in this framework, is not motion through space and not the residue of an initial explosion. It is the redistribution of relational accessibility within a closed continuity whose accumulated constraints cannot be discharged externally.

The aim of this paper is narrower than the one that often governs cosmological discussion. It does not attempt to settle ultimate origins, and it does not yet address what happens when redistribution reaches its limit. Those questions belong to later papers. The present task is to show how large-scale separation, redshift, structure formation, and horizons all follow from one mechanism: continuity managing accumulated constraint within relational geometry.

# Why Expansion Cannot Be Motion

The ordinary description of expansion treats galaxies as moving away from one another through space, or treats space itself as stretching like a substance. Both formulations preserve the same assumption: space is a background arena within which displacement occurs. That assumption has already been excluded.

If space is relational geometry, there is no independent container into which anything moves. Motion remains meaningful locally, where one relation changes relative to others within an already established geometry. But global expansion is not a local displacement repeated many times over. It is a change in the relational structure that defines large-scale accessibility itself.

This distinction matters. Motion through a stable background preserves the background's basic accessibility relations. What changes is the position. Expansion, as cosmologically observed, does not behave this way. Large-scale separation is accompanied by increasing coordination burden, signal stretching, and the emergence of observational limits. That is not what one would expect from simple translation through an inert geometry. It is what one would expect if the accessibility structure of the geometry itself were changing.

Expansion must therefore be understood as reconfiguration, not displacement. Nothing needs to travel into emptiness. What changes is how readily relations can still be completed across the cosmological domain.

## Redistribution of Relational Accessibility

Under closed continuity, effects do not leave the system. Traces accumulate. Interaction histories become constraint histories. Geometry, because it is the stabilized structure of relation, cannot remain untouched by this accumulation. It must respond.

That response takes the form of redistribution. Continuity preserves coherence not by allowing accumulated constraint to pile up uniformly everywhere, but by reallocating how relational accessibility is distributed across the geometry. Some pathways become harder to sustain. Others remain comparatively viable. Some regions retain dense participation. Others thin.

This is not an added mechanism. It follows directly from the conditions already established. A closed continuity cannot expel its accumulated effects. A relational geometry cannot remain indifferent to the burden of those effects. Redistribution is therefore the only structurally coherent way large-scale geometry can continue to preserve participation without collapsing into uniform saturation.

Expansion is the visible form of that redistribution. It is what large-scale coherence looks like when accessibility must be reallocated across a geometry whose constraints are internally retained.

# Large-Scale Separation Without Displacement

Once distance has been defined as coordination cost rather than primitive separation, large-scale separation takes on a different meaning. Galaxies do not need to recede through a pre-existing arena for the distance to increase between them. Distance increases whenever the coordination burden between relations increases.

This is why expansion can occur without ontological motion through space. The pathways linking distant structures become more indirect, more constrained, or more expensive to maintain. Effective distance grows because the relation becomes harder to complete, not because objects have been launched into emptiness.

Large-scale separation is therefore not a primitive fact requiring a stretched container or a universal fleeing motion. It is the spatial expression of redistributed accessibility within a closed continuity. Measured distance grows because coordinated participation becomes more costly across the evolving relational field.

That is the core shift of this paper. Expansion is not something happening to space from outside. It is the way relational geometry changes when continuity must manage accumulated constraints internally.

## Redshift as Path Stretching

One of the most familiar cosmological indicators of expansion is redshift. Light from distant sources arrives stretched toward longer wavelengths, and this is commonly interpreted as evidence that sources are receding through expanding space. Under the present framework, that interpretation is not required.

Signals propagate through relational geometry. Their transmission, therefore, reflects the accessibility conditions of the paths they traverse. As coordination cost increases along large-scale pathways, those signals do not merely arrive later or weaker. Their propagation is structurally stretched by the changing accessibility of the path itself.

Redshift is the observable form of that stretching. It measures how much the relation between emission and reception has been altered by redistribution during propagation. The greater the accumulated accessibility shift along the path, the greater the observed redshift.

This allows redshift to correlate with distance without requiring velocity as its primary explanation. Distance already measures coordination burden. Redshift measures how that burden changes across traversal. Under this account, redshift is not direct evidence of flight from an origin. It is evidence that relational accessibility has been redistributed between the source and the observer.

# Structure Formation Through Uneven Redistribution

Redistribution does not occur uniformly. Relational geometry is never perfectly featureless once stabilized. Constraint histories differ. Pathways vary in burden. Some regions retain dense participation while others thin more rapidly. The result is a large-scale structure.

Clusters, filaments, and voids do not need to be treated here as evidence of matter arranging itself within a neutral container. They can be understood more directly as the visible record of uneven accessibility redistribution. Where participation remains comparatively sustainable, relational density persists or deepens. Where accessibility thins, effective separation grows, and sparse regions emerge.

Large-scale structure is therefore not separate from expansion. It is one of expansion's outcomes. Redistribution does not merely make everything farther apart. It reorganizes the geometry unevenly, producing differentiated regions of retention and thinning. Filaments and voids are not secondary decorations on an otherwise uniform expansion. They are signatures of how continuity manages accumulated constraint non-uniformly across relational geometry.

This matters because it unifies two phenomena often treated separately: large-scale separation and large-scale structure. Both follow from the same process. Expansion spreads accessibility unevenly, and structures records where that spreading is resisted, redirected, or sustained.

## Horizons as Participation Limits

As redistribution proceeds, some relations become too costly to complete relative to a given observer or region. Signals fail to arrive. Feedback no longer closes. Participation drops out of reach. Horizons emerge.

A horizon is therefore not an edge of space and not a border where existence stops. It is the point at which participation becomes unsustainable within the redistributed accessibility structure. Beyond a horizon, a relation may persist. Structure may still exist. What fails is coordinated access relative to the observing frame.

This interpretation aligns naturally with the rest of the argument. If space is relational geometry, then observational limits must be limits of relation, not physical walls. A horizon is the large-scale case of participation failure under increasing coordination burden. It marks not the end of the universe, but the end of accessible feedback for a given relation network.

This is why observational absence should not be mistaken for ontological absence. Horizons reveal where accessibility has failed, not where reality has terminated.

# Expansive Appearance and Structural Misreading

Once redshift, large-scale separation, and horizons are observed together, it is easy to treat them as direct evidence of motion through an expanding background or flight from an original explosive event. This paper rejects that inference. Such models may remain descriptively useful within their observational frame, but they should not be mistaken for the underlying structural account. If space is relational geometry rather than a container, then large-scale spatial change must be interpreted first as redistribution within that geometry, not as motion through or stretching of an independent substrate.

## Structural Synthesis

This paper has shown that expansion follows from the redistribution of relational accessibility within a closed continuity. Once space is derived as geometry stabilized from relation, large-scale spatial change can no longer be understood as motion through a background arena. It must be understood as a reconfiguration of accessibility within the geometry itself.

Large-scale separation is, therefore, not displacement into emptiness. It is increasing coordination costs across redistributed pathways. Redshift is not necessarily evidence of recession velocity; it is the observable stretching of signals traversing altered accessibility conditions. Structure formation does not stand apart from expansion; it records where redistribution proceeds unevenly across the geometry. Horizons are not edges of space, but limits of participation arising where redistributed accessibility can no longer sustain coordinated feedback.

Expansion, redshift, structure, and observational limits are thus not separate cosmological mysteries. They are different appearances of one process: continuity preserving coherence by redistributing accumulated constraints within relational geometry. The remaining question is what happens when redistribution is no longer sufficient to preserve that coherence. That question belongs to the next paper.

# Falsification and Empirical Signatures

The core claims of this paper operate at the level of structural constraint rather than as a local empirical theory. They describe the conditions under which large-scale spatial change remains coherent once space is understood as relational geometry within a closed continuity. As such, they are not empirically falsifiable in the conventional sense of a narrow scientific hypothesis. What is falsifiable are the observable signatures that should follow if those structural claims are correct. The account developed here would be undermined by any of the following.

## **Redshift Fully Independent of Path Accessibility**

If cosmological redshift could be shown to depend solely on recession velocity or source motion, entirely independent of the accessibility conditions of the traversed path, that would count against this account.

## **Large-Scale Separation Without Altered Coordination Burden**

If large-scale separation could increase while relational accessibility, signal stretch, observational reach, and effective coordination cost remained unchanged, that would count against this model.

## **Structure Formation Independent of Uneven Redistribution**

If filaments, voids, and clustering could be shown to bear no relation to differential accessibility redistribution or localized constraint history, that would count against the account presented here.

## **Horizons as Terminations Rather Than Participation Limits**

If observational horizons could be shown to function as literal terminations of structure or continuity, rather than as limits of accessible participation within a larger relational domain, that would count against this model.

Any confirmed result satisfying one or more of these conditions would count against the model developed in this paper.

# References

Davis, Shaddon. The Codex Process: Fundamental Laws of Systemic Reality. (2025), Paper 1  
<https://doi.org/10.5281/zenodo.17563739>

Davis, Shaddon. The Codex Process: Fundamental Laws of Symbolic Reality. (2025), Paper 2  
<https://doi.org/10.5281/zenodo.17563956>

Davis, Shaddon. The Codex Process: Hypocrisy as Dimensional Artifact. (2025), Paper 3  
<https://doi.org/10.5281/zenodo.17626619>

Davis, Shaddon. The Codex Process: Morality as Emergent Equilibrium. (2025), Paper 4  
<https://doi.org/10.5281/zenodo.17685706>

Davis, Shaddon. The Codex Process: Paradox as Dimensional Collapse. (2025), Paper 5  
<https://doi.org/10.5281/zenodo.17766997>

Davis, Shaddon. The Codex Process: The Recursive Self. (2026), Paper 6  
<https://doi.org/10.5281/zenodo.18309880>

Davis, Shaddon. The Codex Process: Time, Memory, & Recursive Continuum. (2026), Paper 7  
<https://doi.org/10.5281/zenodo.18427823>

Davis, Shaddon. The Codex Process: The Threshold of Continuity. (2026), Paper 8  
<https://doi.org/10.5281/zenodo.18515217>

Davis, Shaddon. The Codex Process: The Instability of Nothing. (2026), Paper 9  
<https://doi.org/10.5281/zenodo.18838181>

Davis, Shaddon. The Codex Process: External Time & Closed Continuity. (2026), Paper 10  
<https://doi.org/10.5281/zenodo.19342202>

Davis, Shaddon. The Codex Process: Space After Constraint. (2026), Paper 11  
<https://doi.org/10.5281/zenodo.19448038>

For correspondence: [shaddondavis.codex@gmail.com](mailto:shaddondavis.codex@gmail.com)