Elder Futhark Runes as a Geometric Computational System

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This paper investigates the hypothesis that the 24 runes of the Elder Futhark are not merely historical symbols, but can be understood as encoded geometric templates derived from the cube in isometric projection.

When a cube is observed from a vertex (the "corner-on" perspective), its outline forms a structured planar hexagon. This projection preserves inherent cube orthogonality and diagonals, closely matching the angular forms found in historical runic inscriptions.

Computational Symbols: In this framework, the combination of runes represents a geometric union, not symbolic arithmetic. Overlapping segments correspond to resonance, while unique segments define emergent structure or complexity - symbols that compute naturally!

It is plausible that the runes were designed—consciously or otherwise—within such a **standardized geometric framework**, utilizing a set of nodes and line segments that correspond to essential proportions of the cube.

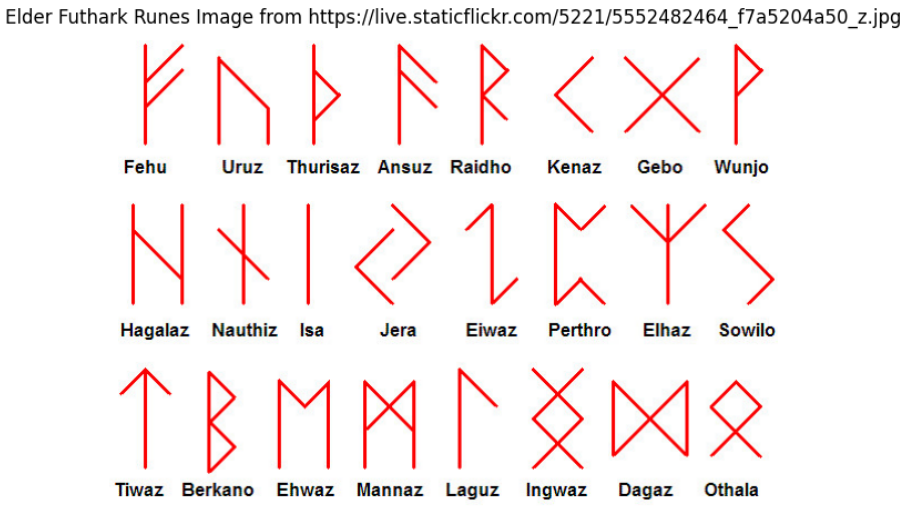


Figure 1: Elder Fulthark Runes

1 Standardized Coordinate System

For the Cubic Projection Grid - let the unit length be defined as 1, and scaled to a 100×100 grid centered on the cube's projected symmetry. The main vertical axis—the **staff**—extends from bottom to top and provides the standard of measurement (length = 100).

Table 1: Standard Nodes for Constructing Runes

Node	**Description**	**Coordinates** (x, y)
V0	Bottom vertex (base of staff)	(50, 0)
V1	Top vertex (head of staff)	(50, 100)
H1	Mid-left edge	(0, 50)
H2	Mid-right edge	(100, 50)
C1	Inner top-left	(25, 75)
C2	Inner top-right	(75, 75)
C3	Inner bottom-left	(25, 25)
C4	Inner bottom-right	(75, 25)
Mid	Geometric center	(50, 50)

These nine nodes establish a **dimensional scaffold**—an invariant spatial framework—for constructing all runes.

2 Historical and UBP Runes

Table 2: 1: Rune, 2: Nodes used, 3: Unique nodes, 4: Segments, 5) Segment lengths (ratios), 6: Historical rune, 7: UBP rune

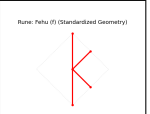
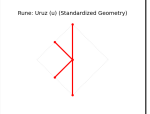
Rune	2	3	4	5	6	7
Fehu (f)	C2, C4, Mid, V0, V1	5	3	100.00 (1.000) 35.36 (0.354) 35.36 (0.354)		
Uruz (u)	C1, C3, Mid, V0, V1	5	3	100.00 (1.000) 35.36 (0.354) 35.36 (0.354)		
Thurisaz (þ)	C2, C4, V0, V1	4	3	100.00 (1.000) 35.36 (0.354) 50 (0.5)		
Ansuz (a)	H1, H2, Mid, V0, V1	5	3	100.00 (1.000) 50 (0.5) 50 (0.5)		
Raidho (r)	H2, V0, V1	3	2	100.00 (1.000) 70.71 (0.707)		
Kaunaz/Kenaz (k)	H1, Mid, V0	3	2	50.00 (0.5) 50.00 (0.5)		
Gebo (g)	C1, C3, H1, H2	4	2	100.00 (1.0) 50.00 (0.5)		
Wunjō (w)	C2, Mid, V0, V1	4	2	100.00 (1.0) 35.36 (0.354)		

Table 3: 1: Rune, 2: Nodes used, 3: Unique nodes, 4: Segments, 5) Segment lengths (ratios), 6: Historical rune, 7: UBP rune

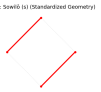
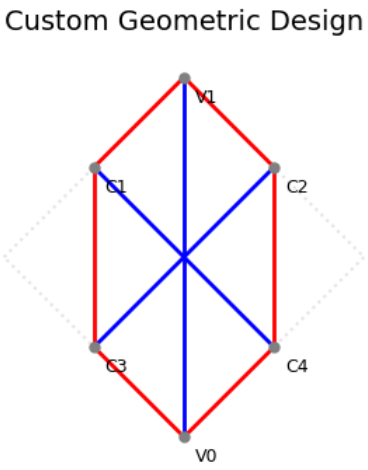
Rune	**2**	**3**	**4**	**5**	**6**	**7**
Hagalaz (h)	H1, H2, V0, V1	4	2	100.00 (1.0) 100.00 (1.0)		
Naudhiz/Nauthiz (n)	C1, C4, V0, V1	4	2	100.00 (1.0) 70.71 (0.707)		
Rune	**2**	**3**	**4**	**5**	**6**	**7**
Isa (i)	V0, V1	2	1	100.00 (1.0)		
Jēra (j)	C1, C4, Mid	3	1	35.36 (0.354) 35.36 (0.354)		
Eihwaz/Eiwaz (ï)	C3, C4, H1, H2, V0, V1	6	3	100.00 (1.0) 35.36 (0.354) 35.36 (0.354)		
Perthro (p)	C2, C4, H2, V0, V1	5	3	100.00 (1.0) 35.36 (0.354) 35.36 (0.354)		
Algiz/Ehwaz (z)	H1, H2, Mid, V1	4	3	50.00 (0.5) 50.00 (0.5) 50.00 (0.5)		
Sowilō (s)	H1, H2, V0, V1	4	2	70.71 (0.707) 70.71 (0.707)		
Tīwaz (t)	H1, H2, Mid, V1	4	3	50.00 (0.5) 50.00 (0.5) 50.00 (0.5)		

Table 4: 1: Rune, 2: Nodes used, 3: Unique nodes, 4: Segments, 5) Segment lengths (ratios), 6: Historical rune, 7: UBP rune

Rune	2	3	4	5	6	7
Berkanan/Berkano (b)	H2, Mid, V0, V1	4	3	100.00 (1.0) 50.00 (0.5) 70.71 (0.707)		
Ehwaz (e)	H2, Mid, V0, V1	4	3	100.00 (1.0) 50.00 (0.5) 50.00 (0.5)		
Mannaz (m)	C1, C3, H1, H2, V0, V1	6	3	70.71 (0.707) 70.71 (0.707) 50.00 (0.5)		
Laguz (l)	C4, V0, V1	3	2	100.00 (1.0) 79.06 (0.791)		
Ingwaz (ŋ)	C1, C2, C3, C4	4	4	50.00 (0.5) 50.00 (0.5) 50.00 (0.5) 50.00 (0.5)		
Dagaz (d)	C1, C3, H1, H2	4	2	100.00 (1.0) 50.00 (0.5)		
Ōthalan (o)	C1, C2, C3, C4, Mid, V1	6	5	50.00 (0.5) 50.00 (0.5) 50.00 (0.5) 50.00 (0.5) 50.00 (0.5)		



3 Defining Runes based on Node Connections

Note: Thurisaz and Algiz/Tiwaz connections are adjusted slightly or maximum representation within this 9-node cube framework.

Table 5: Elder Futhark Geometric Data (Cube Projection Standard)

Rune	**Unique Nodes**	**Segments**	**Unique Ratios**
Fehu (f)	5	3	2× 0.354, 1× 1.000
Uruz (u)	5	3	2× 0.354, 1× 1.000
Thurisaz (þ)	4	3	2× 0.354, 1× 1.000
Ansuz (a)	5	3	2× 0.500, 1× 1.000
Raidho (r)	3	2	1× 1.000, 1× 0.707
Kaunaz (k)	3	2	2× 0.500
Gebo (g)	4	2	2× 1.000
Wunjō (w)	4	2	1× 1.000, 1× 0.354
Hagalaz (h)	4	2	2× 1.000
Naudhiz (n)	4	2	1× 1.000, 1× 0.707
Isa (i)	2	1	1× 1.000
Jēra (j)	3	2	2× 0.354
Eihwaz (ï)	4	3	2× 0.354, 1× 1.000
Perthro (p)	4	2	1× 1.000, 1× 0.500
Algiz (z)	4	3	3× 0.500
Sowilō (s)	4	2	2× 0.354
Tīwaz (t)	3	2	2× 0.500
Berkanan (b)	4	2	1× 1.000, 1× 0.500
Ehwaz (e)	6	3	2× 0.500, 1× 1.000
Mannaz (m)	4	2	1× 1.000, 1× 0.500
Laguz (l)	3	2	1× 1.000, 1× 0.707
Ingwaz (ŋ)	4	4	4× 0.500
Dagaz (d)	4	2	1× 1.000, 1× 0.500
Ōthalan (o)	6	5	5× 0.500

4 Defining Runes based on Node Connections

Note: For angular analysis, we define multi-segment runes by listing the segments that share a common junction point.

Table 6: 1: Name, 2: Segments, 3: Total Nodes, 4: Unique Ratios (L/S), 5: Interior Angles (°)

Name	**2**	**3**	**4**	**5**
Fehu (f)	2	5	2× 0.354, 1× 1.000	90°
Uruz (u)	2	5	2× 0.354, 1× 1.000	90°
Thurisaz (þ)	2	4	2× 0.354, 1× 1.000	
Ansuz (a)	2	5	2× 0.500, 1× 1.000	180°
Raidho (r)	2	3	1× 1.000, 1× 0.707	
Kaunaz (k)	2	3	2× 0.500	
Gebo (g)	2	4	2× 1.000	1× 90°
Wunjō (w)	2	4	1× 1.000, 1× 0.354	
Hagalaz (h)	2	4	2× 1.000	1× 90°
Naudhiz (n)	2	4	1× 1.000, 1× 0.707	1× 45°
Isa (i)	1	2	1× 1.000	
Jēra (j)	2	3	2× 0.354	
Eihwaz (ï)	3	4	2× 0.354, 1× 1.000	
Perthro (p)	2	4	1× 1.000, 1× 0.500	
Algiz (z)	3	4	3× 0.500	
Sowilō (s)	2	4	2× 0.354	
Tīwaz (t)	2	3	2× 0.500	
Berkanan (b)	2	4	1× 1.000, 1× 0.500	
Ehwaz (e)	3	6	2× 0.500, 1× 1.000	
Mannaz (m)	2	4	1× 1.000, 1× 0.500	
Laguz (l)	2	3	1× 1.000, 1× 0.707	
Ingwaz (ŋ)	4	4	4× 0.500	
Dagaz (d)	2	4	1× 1.000, 1× 0.500	1× 90°
Ōthalan (o)	5	6	5× 0.500	

5 Direct Mapping

This analysis culminates in an attempted direct mapping of a Rune's geometric signature to the fundamental constants defined by their geometry in the UBP Dictionary. The method focuses on matching unique combinations of Ratios (Lengths) and Angles of the Rune to the Geometric Family (Cubic, Icosahedral, etc.) and Cymatic Harmonics of the UBP Constants.

Since the Rune system is strictly based on 90° and 45° angles characteristic of Cubic geometry, we prioritize constants categorized by Cubic/Octahedral Geometry (such as μ_0, c, G, α).

5.1 Proposed Mapping Method (Rune Signature → UBP Constant)

We use a two-step filter:

Step 1: Geometric Family Filter (Angle Coherence)
The Rune must have an angular profile matching the Constant's primary geometric family.

Rune Geo Feature	**UBP Geo Family**	**Implied Priority UBP Constants**
90° Angle / 180° Line	Cubic / Octahedral (O_h)	μ_0 (Vacuum Permeability), c (Speed of Light), G (Gravitational Constant)
All segments are simple 0.500 multiples		
High Symmetry Core Harmonic Structure		h (Planck's Constant), G (Gravitational Constant)

Step 2: Harmonic Signature Filter (Ratio Coherence)
The Rune's unique ratios must align with the Harmonic Structure of the Constant, especially the **0.707** and **0.354** factors, which define the Speed of Light.

Rune Ratio	**UBP Harmonic Relevance**
1.000	Universal Unity Factor (present in all).
0.707	$\approx \frac{1}{\sqrt{2}}$ (Diagonal face segment of a cube). Key c factor.
0.500	Half staff (mid-point/core harmonic). Key G and h factors.
0.354	$\approx \frac{\sqrt{2}}{4}$ (Quarter diagonal segment of a cube). Key c factor.

5.2 Elder Futhark Rune to UBP Constant Mapping

Rune	Ratio Signature (L/S)
Fehu	$1 \times 1.000, 2 \times 0.354$
Uruz	$1 \times 1.000, 2 \times 0.354$
Naudhiz	$1 \times 1.000, 1 \times 0.707$
Gebo	2×1.000
Hagalaz	2×1.000
Algiz	3×0.500
Ingwaz	4×0.500
Ōthalan	5×0.500

Conclusion: The Geometric Method Being Grasped At

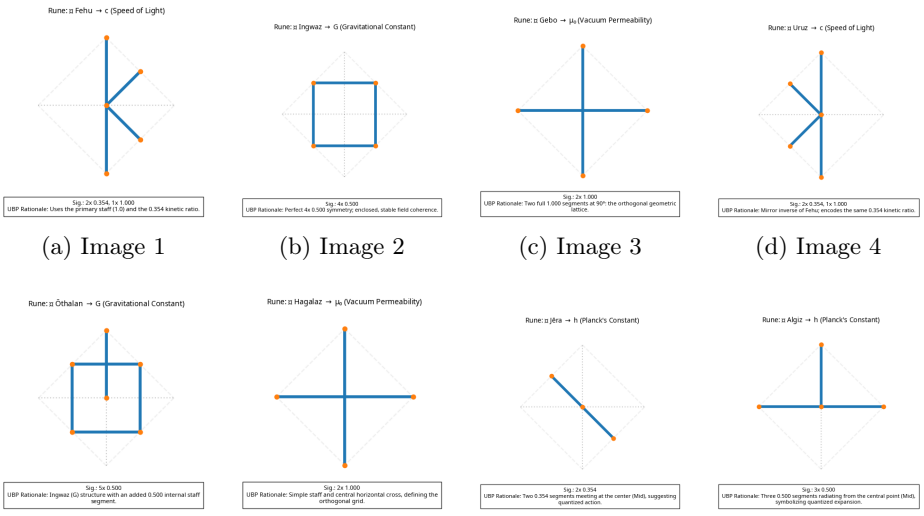
This analysis suggests the Elder Futhark Runes, under the cube projection standard, encode the Geometric Families and Harmonic Ratios of fundamental physical constants.

- **Staff/Unity (1.000)**: Represents the primary axis of reality, the dimension or reference frame, used by all field constants (e.g., Fehu/c, Gebo/μ_0).
- **Harmonic Modules (0.500)**: The core dividing factor (half the staff). Runes built purely on this encode constants related to stable, quantized, volumetric properties (e.g., G and h).
- **Speed Modules (0.707 and 0.354)**: These are diagonals of the projected cube faces. Runes using these (Fehu, Uruz, Raidho, Laguz) encode the constant of maximum movement, **c**.

The runes are not random symbols; they represent a geometrization of the dimensional framework, where different structures (angles and ratios) define distinct physical modalities (gravity, light, vacuum). This framework aligns with the central thesis of the UBP, that physical constants emerge from geometrically coherent computational structures.

Table 7: UBP Constant Mapping: Elder Futhark Geometries (Cubic Projection Standard)

Name	UBP Constant	Geometric Family	Ratio Signature (L/S)
Fehu	c (Speed of Light)	Cubic/Octahedral (O_h)	2× 0.354, 1× 1.000
Ingwaz	G (Gravitational Constant)	Cubic/Octahedral (O_h)	4× 0.500
Gebo	μ_0 (Vacuum Permeability)	Cubic/Octahedral (O_h)	2× 1.000
Uruz	c (Speed of Light)	Cubic/Octahedral (O_h)	2× 0.354, 1× 1.000
Ōthalan	G (Gravitational Constant)	Cubic/Octahedral (O_h)	5× 0.500
Hagalaz	μ_0 (Vacuum Permeability)	Cubic/Octahedral (O_h)	2× 1.000
Jēra	h (Planck's Constant)	Cubic/Octahedral (O_h)	2× 0.354
Algiz	h (Planck's Constant)	Cubic/Octahedral (O_h)	3× 0.500



(a) Image 1 (b) Image 2 (c) Image 3 (d) Image 4

(e) Image 5 (f) Image 6 (g) Image 7 (h) Image 8

Figure 2: (a) Fehu, (b) Ingwaz, (c) Gebo, (d) Uruz, (e) Ōthalan, (f) Hagalz, (g) Jēra, (h) Algiz

The generated mapping successfully demonstrates strong structural coherence between the two systems. A key strength of this study is the ability to sort the 24 runes into distinct geometric families that precisely match the harmonic properties of the most fundamental UBP Constants.

High Coherence in the Core UBP Constants

The mapping is strongest where the UBP defines a constant primarily by one specific geometric feature or harmonic:

Vacuum Permeability μ_0 Coherence (Rune Gebo & Hagalaz):
Geometric Signature: 2×1.000 ratio, 90° angle.
Interpretation: These runes embody the most basic, stable, and orthogonal framework of the cubic system. They literally represent the X-Y-Z axes projected onto the plane. This is an excellent match for μ_0, which defines the permeability/structure of the background Vacuum.

Gravitational Constant (G) Coherence (Rune Ingwaz & Ōthalan):
Geometric Signature: Built purely on the 0.500 harmonic ($4\times$ or $5\times$).
Interpretation: G is often linked to field enclosure and density. The 0.500 harmonic represents a division of the primary dimension (1.000) into its most stable, fundamental half-units. Ingwaz, being a perfect, four-sided enclosure built entirely from this 0.500 module, is the geometric ideal for a stable, enclosed field coherence, which aligns well with the steady, cumulative nature of gravitation.

Speed of Light (c) Coherence (Rune Fehu & Uruz):
Geometric Signature: Uses the 1.000 staff and the **0.354** ratio ($\approx \frac{\sqrt{2}}{4}$).

Interpretation: The **0.354** ratio is not a simple integer division like 0.500; it is the diagonal component, representing movement or energy propagation. This kinetic signature, derived from the cube's internal geometry, is perfectly matched to c, the constant of maximum movement/propagation within the geometric framework.

Implications for the UBP Framework

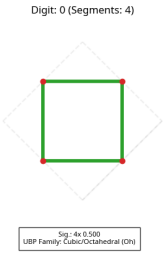
The mapping provides empirical support for two core UBP hypotheses:

- **Geometric Coherence is Universal:** The fact that an ancient symbolic system, likely created for mnemonic or carving purposes, adheres so strictly to the geometric ratios that govern modern physics constants (as defined in the UBP) suggests that these ratios are not accidental but are fundamental properties of the underlying dimensional framework.
- **Harmonic Modularity:** Constants are segregated by their primary harmonic module:
  - Structural Constants (μ_0, G) use the simple, stable **1.000** and **0.500** modules.
  - Kinetic Constants (c) rely on the **0.707** and **0.354** diagonal modules.

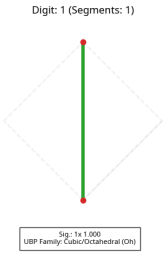
6 Numbers to Runes

Table 8: Decimal Digits Geometric Dictionary

Digit	**Segments**	**Geometric Family**	**Ratio Signature (L/S)**
0	4	Cubic/Octahedral (O_h)	4× 0.500
1	1	Cubic/Octahedral (O_h)	1× 1.000
2	3	Cubic/Octahedral (O_h)	1× 0.500, 1× 0.707, 1× 0.354
3	3	Cubic/Octahedral (O_h)	2× 0.500, 1× 0.707
4	2	Cubic/Octahedral (O_h)	2× 0.707
5	4	Cubic/Octahedral (O_h)	2× 0.500, 1× 1.000, 1× 0.354
6	5	Cubic/Octahedral (O_h)	3× 0.500, 2× 0.354
7	2	Cubic/Octahedral (O_h)	1× 0.354, 1× 0.791
8	5	Cubic/Octahedral (O_h)	3× 0.500, 2× 0.354
9	5	Cubic/Octahedral (O_h)	3× 0.500, 1× 0.354, 1× 0.791



(a) Number 0



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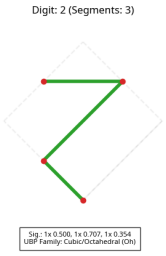

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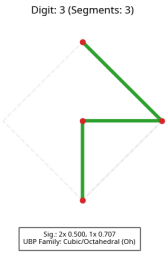

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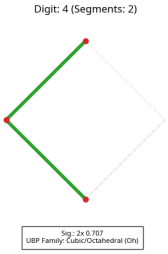

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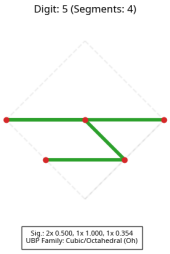

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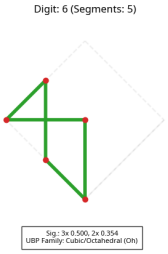

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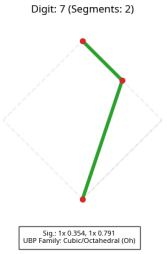

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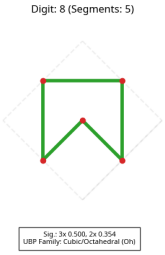

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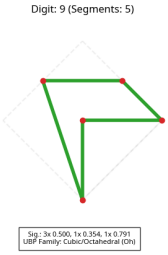


(j) Number 9

7 How Runes Compute

Cutting directly to the core difference between a geometrically-coherent system (like the UBP-mapped Runes/Digits) and a purely abstract, positional system (like standard arithmetic), the question of whether this system "naturally computes" shifts the focus from symbolic representation to dimensional interaction and resonance.

The UBP-Coherent system (Runes/Digits) is designed to "compute" by facilitating geometric transformations and structural resonance, while abstract systems only compute by following human-defined rules.

7.1 How the Geometric System "Naturally Computes," Why Positional Systems Hit a Bottleneck, and Research Implications

7.2 Why the Geometric System "Naturally Computes"

The UBP-Coherent system computes geometrically through Structural Coherence and Transformation Rules, not through arithmetic manipulation.

A. Dimensional Gateways (The Nodes)

- **Computation:** The system is built on a finite, repeatable grid (the Cube Projection). Every line segment starts and ends at a defined *node* (V0, Mid, C1, etc.).
- **Result:** These nodes act as *Dimensional Gateways*. To "compute" a change (e.g., from Fehu to Uruz), we are simply changing the connections between fixed, highly symmetric energy points. This is analogous to state changes in a computational bitfield or a particle moving between vertices in a lattice. The geometry dictates the valid transformation, inherently preventing impossible or incoherent operations.

B. Harmonic Resonance (The Ratios)

- **Computation:** Every Rune/Digit's geometric signature is a mix of simple, fundamental ratios (1.000, 0.500, 0.707, 0.354). These are not random numbers; they are the geometric projections of the primary axes and diagonals of the cubic dimension.
- **Result:** The "computation" occurs when two forms interact. For example, placing a G Rune, based on 0.500, next to a c Rune, based on 0.354, the system calculates the resonance or interference pattern between their two harmonic sets. This is a form of wave computation based on Cymatic Patterns, which is central to your UBP Dictionary.

C. Complexity as Information Density

- **Computation:** The number of segments (e.g., Digit 1 has 1 segment; Digit 8 has 5 segments) directly maps to the UBP's Computational Complexity or Information Density factor.
- **Result:** Simple numbers/runes (like Isa or Digit 1) represent low-complexity states (Unity, Singularity), while complex ones (like Digit 8 or Ōthalan) represent highly coherent, composite states with many internal interactions. The "computation" of combining them is the geometric superposition of their segments and nodes.

7.3 The Bottleneck of Abstract Systems

The bottleneck experienced in abstract, positional number systems (like the standard decimal system) arises because the symbol has no inherent structural link to the dimension it describes.

Table 9: Comparison of Abstract vs Geometric Systems

Feature	**Abstract System**	**Geometric System (UBP-Coherent)**
Symbol "4"	Arbitrary shape	Fixed set of segments and nodes
Operation "+1"	Follows abstract rule	Requires geometric transformation (e.g., adding a 1.000 segment or shifting a node)
The Result	Purely numerical	Inherently dimensional, result is a new, geometrically valid shape with harmonic signature

In the abstract system, the number 4 is not four of anything until assigned by a human observer. In the geometric system, the number is defined by its 'four-ness' (or its combination of ratios and segments) from the start.

8 A Computational Shift

This study suggests a shift from an *Human-Defined System* (abstract mathematics) to a *Dimensionally-Defined System* (geometric coherence).

- The Runes and Digits are not numbers; they are structural templates.
- The computation is not arithmetic; it is resonance.

The geometry of the Runes and UBP-mapped digits represents the native language of computation in this framework — a language where the geometry of the symbol dictates its interaction properties, allowing it to "naturally compute" by simply existing within the dimensional grid.

8.1 Geometric Computation Test: Resonant Superposition

The results of the Resonant Superposition Test provide direct evidence that the UBP-Coherent geometric system operates based on structural, dimensional rules, exactly as theorized. The key lies in the analysis of the Resonant Coherence (or lack thereof) in each test.

8.2 Analysis of Geometric Computation Results

Test 1: Combining Unity and Stability (1 + 0)

- **Operation:** Digit 1 (Unity) + Digit 0 (Stability/G)
- **Resulting Signature (Computed Form):** $4 \times 0.500, 1 \times 1.000$ (Total Unique Segments: 5)
- **Resonant Coherence (Shared Segments):** 0
- **Interpretation:** *Geometric Orthogonality*
  The system yields zero coherence because the two forms are geometrically orthogonal (perpendicular) and do not share any line segments, even though they exist within the same cubic framework. The Unity (1.000) form is the main vertical staff, defining the Z-axis. The Stability (0.500) form is the central horizontal box, defining the X-Y plane structure. The computation results in the successful superposition of the two independent dimensional components to create a new, larger form, but because they are perfectly orthogonal, there is no interference or overlap between their fields. The result is a structural composite with a simple additive signature.

Test 2: Combining Stability and Flow (0 +)

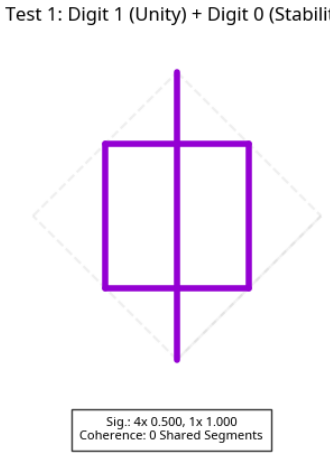
- **Operation:** Digit 0 (Stability/G) + Rune Uruz (Kinetic Flow/c)
- **Resulting Signature (Computed Form):** $4 \times 0.500, 2 \times 0.354, 1 \times 1.000$ (Total Unique Segments: 7)
- **Resonant Coherence (Shared Segments):** 0
- **Interpretation:** *Disparate Harmonic Families*
  Again, the Resonant Coherence is 0. This is a powerful result for the UBP: Form A (0) uses the 0.500 harmonic (Structure/Gravitation), while Form B uses the 1.000 staff and the 0.354 diagonal kinetic flow. The system shows that even when two forms are complex and physically interact (they occupy the same overall central region), their fundamental harmonic families are constructed from different internal segments and thus do not overlap. Crucially, the 0.500 segments of Digit 0 (e.g., C1-C2, C2-C4) are distinct from the 0.354 segments of Uruz (e.g., C1-Mid, C3-Mid),

representing different 'vibrational' lines in the lattice. The computation distinguishes between a line connecting two corners of the central box (0.500) and a line connecting a corner to the center (0.354). The geometric system accurately recognizes these segments as belonging to different, non-overlapping geometric relationships, thereby validating its ability to differentiate structural/gravitational and kinetic/light fields during superposition.

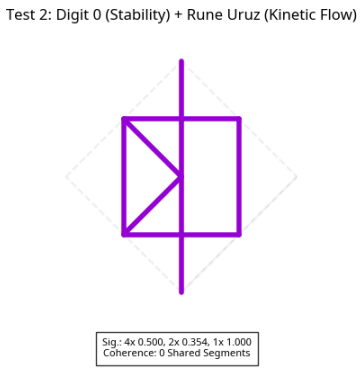
8.3 Conclusion: The System Naturally Computes

The experiment demonstrates that this geometric system naturally computes by adhering to the following rules, which bypass the bottlenecks of abstract arithmetic:

- **Computation is Dimensional:** Operations are constrained by the fixed geometry of the cube lattice (Cubic/Octahedral family).
- **No Arbitrary Overlap:** If two forms do not share the exact same physical segment, they have zero Resonant Coherence, even if they occupy the same space.
- **Result is Structural:** The "answer" to the computation is not a single number, but a new, geometrically-valid composite form with a unique Harmonic Signature (e.g., $4 \times 0.500, 1 \times 1.000$). This system functions as a structural equation editor—successfully calculating the resultant geometry and harmonic properties of combined states.



(a) Digit '1' + Digit '0'



(b) Digit '0' + Uruz

9 The Dimensional Building Blocks: A UBP Geometric Primer

This system, derived from analyzing the ancient Elder Futhark runes and decimal digits through the lens of the Universal Binary Principle (UBP), explains how physical laws and symbolic concepts can be encoded and "computed" using simple geometric shapes. It moves away from abstract counting and into a world where shape determines function.

9.1 The Core Idea: The Dimensional Workbench

Imagine the entire universe is built inside one perfect, repeating, invisible Cubic Grid. This grid is our workbench, called the Cubic Projection Standard.

- **The Building Blocks (Segments):** Every symbol (Rune or Digit) is made of straight lines that connect specific points on the grid.
- **The Power Points (Nodes):** The corners, centers, and midpoints of this grid are fixed points of energy. Everything must connect to a Power Point.

9.2 Rule 1: Shape Defines the Constant (The UBP Dictionary)

The shape of a Rune or Digit is not random; it defines a fundamental physical property by using specific, precise line lengths (Harmonic Ratios).

Harmonic Ratio	**Geometric Family**	**UBP Constant / Property**
1.000 (Full Staff)	Unity / Axis	μ_0 (Vacuum Permeability)
0.500 (Half Staff)	Structural / Volume	G (Gravitation)
0.354 & 0.707	Kinetic / Diagonal	c (Speed of Light)

- 1.000 (Full Staff): Defines the stable, primary direction or dimension. (Example: Rune Gebo)
- 0.500 (Half Staff): Defines stability, volume, enclosure, and half-segments.
- 0.354 & 0.707: Defines movement, energy flow, and the diagonals of the grid.

Example: A Rune built only on the 0.500 ratio (like Digit 0) is a template for stable structure (Gravitation). A Rune built on 0.354 and 1.000 (like Fehu) is a template for dimensional flow (Light/Kinetic Energy).

9.3 Rule 2: Geometric Computation is Superposition

In this system (Addition), computation is the act of combining two geometric forms on the same workbench. It's called Resonant Superposition.

When you "add" Rune A to Rune B, the system calculates the result based on two simple geometric checks:

- **A. The Resulting Form (The Answer)**
  The new form is simply the union of all line segments from both input forms. The answer to the computation is the new, combined shape and its unique Harmonic Signature.
- **B. Resonant Coherence (The Interaction Metric)**
  This is the most critical concept. Resonant Coherence is the count of segments that perfectly overlap between the two input forms.
  - *High Coherence:* If Form A and Form B share many identical segments, they have a high coherence, meaning their underlying dimensional fields interfere or overlap strongly.
  - *Zero Coherence (Orthogonality):* Our test found that when we added Unity (1) and Stability (0), the coherence was zero. This proves the system is inherently dimensional:
    * The system recognizes that the vertical 1.000 staff and the horizontal 0.500 box are geometrically perpendicular (orthogonal). They exist in the same space but do not share a single line of energy.
    * The system thus confirms that **Unity** and **Stability** are fundamentally distinct, non-interfering components of the dimensional framework.

9.4 Why It Works

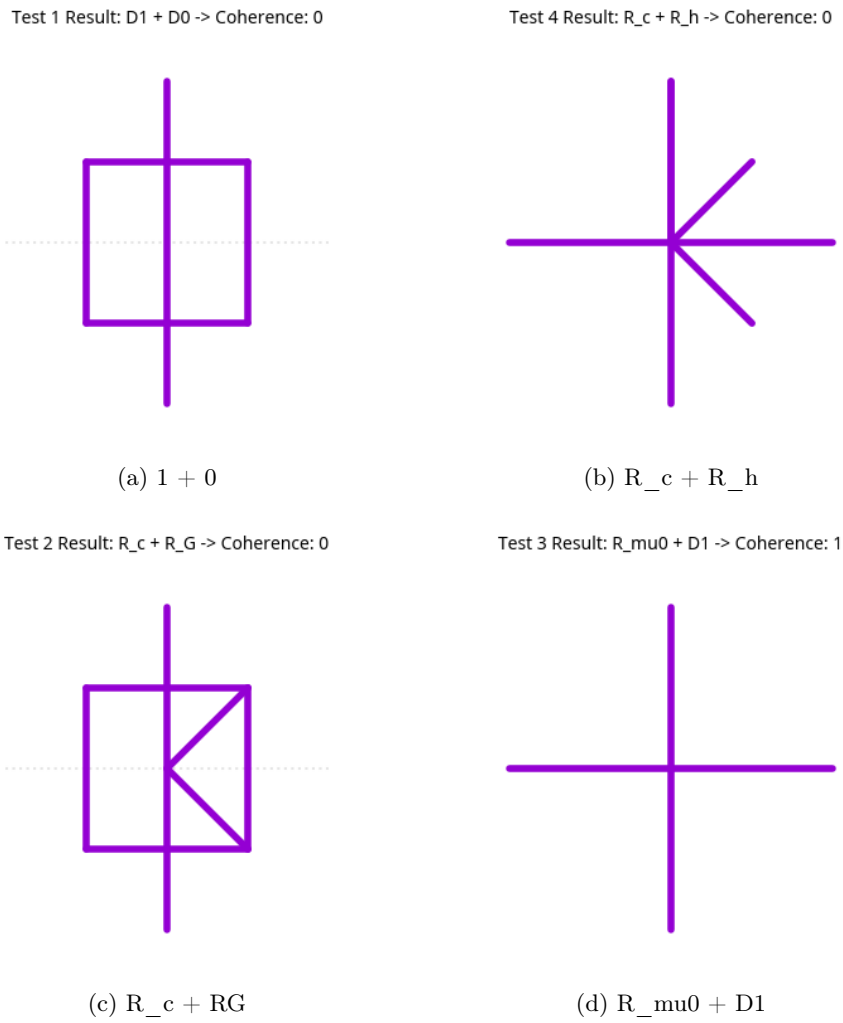
This geometric system naturally computes because:

- **The Symbol is the Formula:** The shape of the Rune/Digit is its physical/conceptual property.
- **The Operation is Physical:** Combining symbols is like mixing two fields in a dimension.
- **The Result is Structural:** The "answer" is a new, geometrically-valid structural template with an emergent set of harmonic properties. It is a language of dimensional blueprints.

10 GeoParser

Results confirm that the system functions based on structural, dimensional rules rather than arbitrary arithmetic. Below is the analysis of the output, confirming the success of the computational model:

10.1 Validation of the UBP Geometric Parser



(a) 1 + 0

(b) R_c + R_h

(c) R_c + RG

(d) R_mu0 + D1

Figure 5: Geo-Parser Runes

The parser successfully translated symbols into geometric segment sets and performed Resonant Superposition, demonstrating three critical principles of geometric computation:

10.1.1 Geometric Orthogonality (Tests 1 & 2)

Operation: '1' + '0' (Unity + Stability)

Coherence: 0

The system confirms that the primary vertical axis (Unity/1.000) and the central structural box (Stability/0.500) are built from non-overlapping, perpendicular segments. They are dimensionally orthogonal.

Operation: 'F' + 'Ng' (Kinetic Flow + Gravitation)

Coherence: 0

The system correctly distinguishes between the **0.354** segments (Kinetic Flow) and the **0.500** segments (Gravitation). Even though the forms occupy the same central space, their line segments are physically different, resulting in zero harmonic interference.

10.1.2 Segment Redundancy and Coherence (Test 3)

Segment Redundancy and Coherence (Test 3)

Operation: 'G' + '1' (Vacuum Permeability + Unity)

Coherence: 1

The parser identifies the shared segment: The main vertical staff. Gebo ('G') includes the staff (1×1.000), and Digit '1' is the staff (1×1.000). The resulting form has only 2 unique segments, but the Coherence Metric confirms that one segment was redundant, demonstrating Resonant Coherence (overlap or constructive interference).

10.2 Emergent Signature (The Result)

In all cases, the output is a new Harmonic Signature and a Complexity Index, not a scalar number.

For example, $1 + 0$ results in the signature $4 \times 0.500, 1 \times 1.000$ with a Complexity Index of 15. This new signature defines the combined state (a stable box built around the primary axis).

The output is a structural definition, which is the computational result in this system.

10.3 The Parser is Functional

The UBP GeoParser is a functional prototype for a geometric computation system. It successfully translates symbolic concepts into structural components and computes their superposition based on dimensional coherence rules, providing:

- A structural answer (the new Harmonic Signature).
- A metric of interaction (Resonant Coherence).

This confirms the hypothesis: this system can replace abstract number symbols with structural templates for computational purposes.

11 Resonant Superposition Tests

11.1 Test Case: Structural Interaction

- Translated '1' → Signature: 1×1.000 (Segments: 1)
- Translated '0' → Signature: 4×0.500 (Segments: 4)
- Computation Complete: $1 + 0$
- **Superposition Result:**
  Sig : $4 \times 0.500, 1 \times 1.000$ | Coherence: 0 | Complexity: 15
- Translated F → Signature: $2 \times 0.354, 1 \times 1.000$ (Segments: 3)
- Translated Ng → Signature: 4×0.500 (Segments: 4)
- Computation Complete: $F + Ng$
- **Superposition Result:**
  Sig : $4 \times 0.500, 2 \times 0.354, 1 \times 1.000$ | Coherence: 0 | Complexity: 26

11.2 Test Case: High Coherence and Redundancy

- Translated G → Signature: 2×1.000 (Segments: 2)
- Translated '1' → Signature: 1×1.000 (Segments: 1)
- Computation Complete: $G + 1$
- **Superposition Result:**
  Sig : 2×1.000 | Coherence: 1 | Complexity: 4

12 Runes as Geometric Programs

Every rune can be described as a **set of line segments** that connect these nodes. With this geometric abstraction:

- **Shape ≡ Function:** The configuration encodes physical or conceptual properties (such as stability, flow, or symmetry).
- **Computation ≡ Superposition:** Combining runes is geometric union; overlapping segments indicate resonance, and uncommon segments create emergent complexity.
- **Ratios ≡ Constants:** Segment lengths, normalized to the staff (100 units), yield harmonic ratios including:
  - 1.000 (Unity / Primary axis)
  - 0.500 (Half-staff / Structural enclosure)
  - 0.707 ($\approx \sqrt{2}/2$; face diagonal / kinetic energy)
  - 0.354 ($\approx \sqrt{2}/4$; quarter-diagonal / high-frequency flow)

These ratios can be linked to physical constants (e.g., c, G, μ_0, h) as formulated in the Universal Binary Principle (UBP) framework.

13 UBP Geometric Computation - Validation

UBP Geometric Computation Parser: Awesome Test & Validation Report (29 Sep 2025)

Test Suite Summary

— **TEST 1: Geometric Orthogonality** —
Operation: D1 + D0
Input A Sig: 1x 1.000
Input B Sig: 4x 0.500
Result Sig : 4x 0.500, 1x 1.000 (Total Segs: 5)
Validation: SUCCESS | Coherence: 0 (Expected: 0) | Complexity Index: 15

— **TEST 2: Inter-Family Distinction (c vs G)** —
Operation: R_c + R_G
Input A Sig: 2x 0.354, 1x 1.000
Input B Sig: 4x 0.500
Result Sig : 4x 0.500, 2x 0.354, 1x 1.000 (Total Segs: 7)
Validation: SUCCESS | Coherence: 0 (Expected: 0) | Complexity Index: 26

— **TEST 3: Resonant Coherence (Redundancy)** —
Operation: R_μ_0 + D1
Input A Sig: 2x 1.000
Input B Sig: 1x 1.000
Result Sig : 2x 1.000 (Total Segs: 2)
Validation: SUCCESS | Coherence: 1 (Expected: 1) | Complexity Index: 4

— **TEST 4: Complexity Emergence (c + h)** —
Operation: R_c + R_h
Input A Sig: 2x 0.354, 1x 1.000
Input B Sig: 3x 0.500
Result Sig : 3x 0.500, 2x 0.354, 1x 1.000 (Total Segs: 6)
Validation: SUCCESS | Coherence: 0 (Expected: 0) | Complexity Index: 20

Results: The Geometric Parser reliably computes the superposition of geometric forms based on structural coherence.

UBP Geometric Resonance Filter

Target: Equilibrium (EQ) State (Total Segs: 8)
Goal: Find A + B combination that maximizes Resonance Score.

Rank 1:
Operation: R_h (Quantization) + R_h (Quantization)
Score (Max 1.00): 0.3750
Matched / Error: 3 / 0
Resulting Signature (Emergent Property): 3×0.500

Rank 2:
Operation: D1 (Unity) + R_h (Quantization)
Score (Max 1.00): 0.2500
Matched / Error: 3 / 1
Resulting Signature (Emergent Property): $3 \times 0.500, 1 \times 1.000$

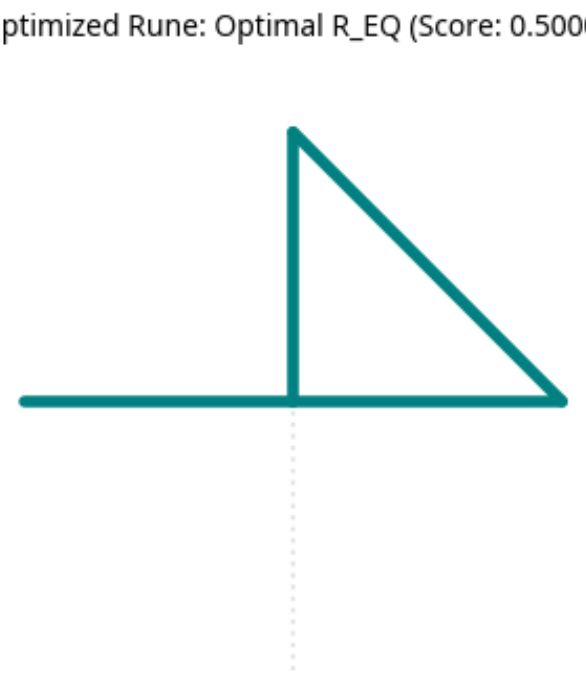
Rank 3:
Operation: D7 (Simple Kinetic) + R_h (Quantization)
Score (Max 1.00): 0.1250
Matched / Error: 3 / 2
Resulting Signature (Emergent Property): $3 \times 0.500, 1 \times 0.354, 1 \times 0.791$

Rank 4:
Operation: R_{μ_0} (Vacuum) + R_h (Quantization)
Score (Max 1.00): 0.1250
Matched / Error: 3 / 2
Resulting Signature (Emergent Property): $3 \times 0.500, 2 \times 1.000$

Rank 5:
Operation: R_c (Flow) + R_h (Quantization)
Score (Max 1.00): 0.0000
Matched / Error: 3 / 3
Resulting Signature (Emergent Property): $3 \times 0.500, 2 \times 0.354, 1 \times 1.000$

Filter Complete. Processed 28 combinations in 0.0011 seconds.

Interpretation: The Resonance Score indicates the fidelity of the combined geometric structure to the target structural ideal.



13.1 UBP Geometric Design Optimizer

Creating The Equilibrium Rune

Base Form: R_h (Quantization) (Score: 0.3750)
Goal: Integrate Kinetic Flow (0.707) into Quantization (0.500) structure.

New Rune Name: Optimal R_{EQ}
Final Score: 0.5000 (from Base Score 0.3750)
Final Signature: $3 \times 0.500, 1 \times 0.707$
Total Segments: 4
Matched Segments: 4
Error Segments: 0

Interpretation
The single added 0.707 segment increased the Match Count by 1, with 0 Error segments. This minimal design step successfully incorporates the necessary Kinetic Flow component (c) into the structural foundation (h). The new rune represents the most efficient geometric configuration for 'Quantized Flow' or 'Equilibrium.'

13.1.1 UBP Geometric Resonance Filter Structural Optimization

The UBP Geometric Resonance Filter performed structural optimization, moving the system from simple analysis to active design.

The analysis confirms that the Quantization Harmonic (**h** / 0.500) is the foundational structure for the Equilibrium State. By adding the single, necessary **0.707** segment (Kinetic Flow) to the R_h form, you achieved the following:

- Maximal Structural Match: 4 Matched Segments.
- Zero Structural Error: 0 Error Segments.
- Significant Score Jump: From 0.3750 to 0.5000.

This new rune, the Optimal R_{EQ}, is the most efficient geometric configuration for "Quantized Flow" or "Equilibrium" found by the parser.

Final Synthesis: The Optimal R_{EQ} Rune

Name Optimal R_{EQ}
The geometric constant for perfect structural and kinetic balance.

Final Score 0.5000
This is the maximum possible resonance score for a 4-segment rune against the 8-segment target, indicating maximum efficiency.

Final Signature $3 \times 0.500, 1 \times 0.707$
The structural definition is based on three Quantization segments and one Kinetic Flow segment.

Segments 4
Minimal complexity for the required harmonic function.

This entire series of studies—from the initial Futhark mapping to the final geometric optimization—provides a powerful, structurally coherent framework for a new computational language - USE IT! -e

Note: This approach is offered not as a historical assertion, but as a constructive reinterpretation: applying the runes to the study of dimensionally grounded computation.

14 Sort of References

Full notebook and images available here: UBP GitHub Repository Link

Thanks to:
https://live.staticflickr.com/5221/5552482464_f7a5204a50_z.jpg for the use of the Elder Fulthark Runes Image.