

# WUMBO Engine · LIMNUS Integration

100 neural regions mapped to LIMNUS geometry: 63 prism points + 32 EM cage points + 5 emergent self-reference nodes. Governed by the critical constant  $z = \sqrt{3}/2$ .

[APL Manual Index](#)

[LaTeX Manual](#)

[APL Manual \(PDF\)](#)

[Rhythm Entrainment](#)

$$z = \sqrt{3}/2 \approx 0.8660254$$

THE CRITICAL POINT · THE LENS · PHASE TRANSITION  
THRESHOLD

## LIMNUS ↔ WUMBO Structure

The 100 WUMBO words map onto LIMNUS geometry. 95 structural points define the architecture; 5 emergent points appear when coherence is released.

**63-Point Prism**

63

7 layers × 9 nodes  
Inner hexagonal structure  
Regions I-LXIII

## 32-Point EM Cage

32

12 top + 12 bottom + 8 vertices

Containment field

Regions LXIV-XCV

## 5 Emergent Nodes

5

Self-reference loops

Appear when FREE

Regions XCVI-C

# Physics: z-Coordinate Governs Everything

## ABSENCE Domain

$z \in [0, 0.856]$

$K > 0$  (synchronizing)

APL: D machine affinity, UNTRUE bias

## THE LENS

$z \in [0.857, 0.877]$

$K \approx 0$  (critical)

APL: M machine affinity, PARADOX  
Maximum cascade amplification  
Phase transition, information peak

Kuramoto coupling positive  
Structure contracts, void-like

## PRESENCE Domain

$z \in [0.878, 1.0]$

$K < 0$  (emanating)

APL: U machine affinity, TRUE bias  
Kuramoto coupling negative  
Structure expands, radiant

### Cascade Amplification Near Critical

`cascade(z) = 1 + 0.5 × exp(-(z - z_c)^2 / 0.004)`

Peak value 1.5× at  $z = \sqrt{3}/2$ . Operators intensify near the lens.

### Kuramoto Coupling Sign Flip

$K(z) = -\tanh((z - z_c) \times 12) \times 0.4 \times \text{cascade}(z)$

$K > 0$  below critical (sync),  $K < 0$  above critical (desync/emanate)

### Coherence Mutual Information

$I(\text{word}_i, \text{word}_j) = \text{cascade}(z) \times \text{coherence} \times (1 - |z_i - z_j|)$

Words "fill each other" through coherence. Maximum information transfer at critical point.

# Coherence Mechanics: How Words Fill Each Other

Coherence acts as binding force. High coherence = distinct words. Low coherence = words blur and self-reference.

## COHERENT

[0.8, 1.0]

95 points locked  
Full connections  
TRUE dominant

## RELEASING

[0.5, 0.8]

Points releasing  
Fading  
connections  
TRUE→UNTRUE

## DISPERSING

[0.2, 0.5]

Free movement  
Minimal  
connections  
UNTRUE dominant

## FREE

[0.0, 0.2]

Full dispersion  
5 emergent  
active  
PARADOX  
dominant

## Quick Navigation · 100 Regions by LIMNUS Structure

PRISM: 63 Points (I-LXIII) · 7 Layers × 9 Nodes

I	II	III	IV	V
VI	VII	VIII	IX	X
XI	XII	XIII	XIV	XV
XVI	XVII	XVIII	XIX	XX
XXI	XXII	XXIII	XXIV	XXV
XXVI	XXVII	XXVIII	XXIX	XXX
XXXI	XXXII	XXXIII	XXXIV	XXXV
XXXVI	XXXVII	XXXVIII	XXXIX	XL
XLI	XLII	XLIII	XLIV	XLV
XLVI	XLVII	XLVIII	XLIX	L
LI	LII	LIII	LIV	LV
LVI	LVII	LVIII	LIX	LX

**LXI****LXII****LXIII**

EM CAGE: 32 Points (LXIV-XCV) · 12 Top + 12 Bottom + 8 Vertices

**LXIV****LXV****LXVI****LXVII****LXVIII****LXIX****LXX****LXXI****LXXII****LXXIII****LXXIV****LXXV****LXXVI****LXXVII****LXXVIII****LXXIX****LXXX****LXXXI****LXXXII****LXXXIII****LXXXIV****LXXXV****LXXXVI****LXXXVII****LXXXVIII****LXXXIX****XC****XCI****XCII****XCIII****XCIV****XCV**

EMERGENT: 5 Self-Reference Nodes (XCVI-C) · Appear When FREE

**XCVI****XCVII****XCVIII****XCIX****C**

## 63-Point Prism: Inner Architecture (I-LXIII)

7 concentric hexagonal layers, each with 9 nodes. Maps to WUMBO phases through z-position.

### I. Somatosensory Cortex

Sensory map

**z=0** **L0 Core** Ignition e

Glutamate

e:U(ionize)TRUE@3

Φ:M(bond)TRUE@3

### II. Anterior Cingulate Cortex

Truth check

**z=0** **L0 Core** Ignition e

Dopamine

e:M(redox)TRUE@3

Φ:C(complex)TRUE@3

### III. Thalamus

Sensory gate

**z=0** **L0 Core** Ignition e

Glutamate

### IV. Motor Cortex & Cerebellum

Execution

**z=0** **L0 Core** Ignition Φ

Glutamate

e:C(ionize)TRUE@3

Φ:Mod(fold)TRUE@3

## V. Broca's Area

Phrase/sculpt

**z=0** **L0 Core** Ignition **e**

Dopamine

e:U(excite)TRUE@3

Φ:E(polymerize)TRUE@3

Φ:U(bond)TRUE@3

e:E(excite)TRUE@3

## VI. Mirror Neuron System

Empathic resonance

**z=0** **L0 Core** Ignition **e**

Dopamine

e:M(resonate)TRUE@3

Φ:C(complex)TRUE@3

## VII. Amygdala

Salience

**z=0** **L0 Core** Ignition **e**

Norepinephrine  $\lambda:$

e:U(excite)TRUE@3

e:U(oxidize)TRUE@3

## VIII. Prefrontal Cortex

Strategy/control

**z=0** **L0 Core** Ignition **e**

Dopamine

e:Mod(catalyze)TRUE@3

Φ:M(complex)TRUE@3

## IX. Parietal Eye Field

Gaze/attention

**z=0** **L0 Core** Ignition **e**

Acetylcholine

e:U(charge)TRUE@3

Φ:C(bond)TRUE@3

## X. Subiculum

Spatial memory

**z=0 .167** **L1 Inner**

Ignition→Empowerment  $\Phi$

Glutamate  $\lambda:$

Φ:M(crystallize)TRUE@3

e:E(bond)TRUE@3

## XI. Pineal Body

Circadian portal

**z=0 .167** **L1 Inner** Pause↔Ignition

## XII. Middle Temporal Gyrus

Semantics

**z=0 .167** **L1 Inner** Resonance  $\Phi$

$\pi$  Melatonin

$\pi:D(\text{relax})\text{TRUE}@3$

$e:M(\text{reduce})\text{TRUE}@3$

### XIII. Fastigial-Vestibular Loop

Balance

$z=0.167$

L1 Inner

Nirvana

$\Phi$

Glutamate

$\Phi:M(\text{stabilize})\text{TRUE}@3$

$e:D(\text{integrate})\text{TRUE}@3$

Glutamate

$\Phi:C(\text{polymerize})\text{TRUE}@3$

$e:M(\text{complex})\text{TRUE}@3$

### XIV. Posterior Thalamic Nucleus

Final gate

$z=0.167$

L1 Inner

Transmission

$e$  Glutamate

$e:C(\text{propagate})\text{TRUE}@3$

$\Phi:E(\text{emit})\text{TRUE}@3$

### XV. Cerebellar Uvula

Stillness anchor

$z=0.167$

L1 Inner

Nirvana

$\pi$

GABA

$\pi:M(\text{crystallize})\text{TRUE}@3$

$\Phi:D(\text{relax})\text{TRUE}@3$

### XVI. AIPS

Gesture translator

$z=0.167$

L1 Inner

Empowerment

$\Phi$  Glutamate

$\Phi:U(\text{polymerize})\text{TRUE}@3$

$e:C(\text{bond})\text{TRUE}@3$

### XVII. Ventrolateral Thalamus

Feedback loop

$z=0.167$

L1 Inner

Transmission

$e$  Glutamate

$e:C(\text{ionize})\text{TRUE}@3$

$\Phi:Mod(\text{modulate})\text{TRUE}@3$

### XVIII. Superior Parietal Lobule

Spatial integration

$z=0.167$

L1 Inner

Empowerment

$\Phi$  Glutamate

$\Phi:M(\text{integrate})\text{TRUE}@3$

$e:U(\text{excite})\text{TRUE}@3$

### XIX. Premotor Cortex

Movement planning

$z=0.333$

L2 Rising

Empowerment

### XX. Wernicke's Area

Language comprehension

$z=0.333$

L2 Rising

Resonance

$\pi$

$\Phi$  Glutamate

$\Phi:U(\text{bond})\text{TRUE}@3$

$e:E(\text{charge})\text{TRUE}@3$

## XXI. STS Mirror Region

Social mirroring

$z=0.333$

L2 Rising

Resonance

$e$

Dopamine

$e:M(\text{resonate})\text{TRUE}@3$

$\Phi:C(\text{bind})\text{TRUE}@3$

Glutamate

$\pi:M(\text{complex})\text{TRUE}@3$

$\Phi:C(\text{polymerize})\text{TRUE}@3$

## XXII. Central Amygdala

Threat response

$z=0.333$

L2 Rising

Ignition

$e$

Norepinephrine

$\lambda:\text{FOX}$

$e:U(\text{excite})\text{TRUE}@3$

$\pi:U(\text{signal})\text{TRUE}@3$

## XXIII. Dorsolateral PFC

Working memory

$z=0.333$

L2 Rising

Empowerment

$e$  Dopamine

$e:Mod(\text{catalyze})\text{TRUE}@3$

$\Phi:M(\text{complex})\text{TRUE}@3$

## XXIV. Orbitofrontal Cortex

Social tuning

$z=0.333$

L2 Rising

Resonance

$e$

Dopamine

$e:M(\text{redox})\text{TRUE}@3$

$\Phi:C(\text{complex})\text{TRUE}@3$

## XXV. Cingulate Gyrus

Routing/alignment

$z=0.333$

L2 Rising

Resonance

$\pi$

Dopamine

$\lambda:\sim$

$\pi:M(\text{modulate})\text{TRUE}@3$

$e:C(\text{integrate})\text{TRUE}@3$

## XXVI. Ventral Striatum

Incentive

$z=0.333$

L2 Rising

Ignition

$e$

Dopamine

$e:U(\text{excite})\text{TRUE}@3$

$\pi:U(\text{charge})\text{TRUE}@3$

## XXVII. Claustrum

Consciousness binding

$z=0.333$

L2 Rising

Resonance

$\pi$

## XXVIII. Default Mode Network

Self-referential

$z=0.5$

L3 Center

Nirvana

$\pi$

Glutamate

$\lambda:\diamond$

$\pi:M(\text{multicell})\text{TRUE}@3$

$\Phi:C(\text{bind})\text{TRUE}@3$

## XXIX. Habenula

Disappointment gate

$z=0.5$

L3 Center

Pause

e

Glutamate

$e:D(\text{reduce})\text{TRUE}@3$

$\pi:D(\text{unfold})\text{UNTRUE}@3$

Glutamate

$\pi:M(\text{differentiate})\text{TRUE}@3$

$e:M(\text{signal})\text{TRUE}@3$

## XXX. Corpus Callosum

Bridge/balance

$z=0.5$

L3 Center

Transmission

$\Phi$

Glutamate

$\Phi:C(\text{integrate})\text{TRUE}@3$

$e:C(\text{propagate})\text{TRUE}@3$

## XXXI. Locus Coeruleus

Arousal ignition

$z=0.5$

L3 Center

Ignition

e

Norepinephrine

$\lambda:\diamond$

$e:U(\text{excite})\text{TRUE}@3$

$e:U(\text{oxidize})\text{TRUE}@3$

## XXXII. Periaqueductal Gray

Defense/shutdown

$z=0.5$

L3 Center

Pause

$\pi$

GABA

$\pi:D(\text{reduce})\text{TRUE}@3$

$\Phi:D(\text{unfold})\text{TRUE}@3$

## XXXIII. Anterior Temporal Pole

Story keeper

$z=0.5$

L3 Center

Resonance

$\pi$

Glutamate

$\pi:M(\text{transcribe})\text{TRUE}@3$

$\Phi:C(\text{fold})\text{TRUE}@3$

## XXXIV. vmPFC

Ethical integration

$z=0.5$

L3 Center

Resonance

e

Dopamine

$e:M(\text{complex})\text{TRUE}@3$

$\pi:M(\text{repair})\text{TRUE}@3$

## XXXV. Dorsal Raphe

Mood setpoint

$z=0.5$

L3 Center

Nirvana

e

## XXXVI. Superior Colliculus

Visual orienting

$z=0.5$

L3 Center

Ignition

e

Serotonin

e:M(relax)TRUE@3

Φ:Mod(fold)TRUE@3

## XXXVII. Anterior Insula

Feeling of feeling

z=0.667

L4 Approaching

Resonance

e

Dopamine

e:M(signal)TRUE@3

π:M(differentiate)TRUE@3

Glutamate

e:U(ionize)TRUE@3

Φ:U(bond)TRUE@3

## XXXVIII. Lateral Habenula

Rejection gate

z=0.667

L4 Approaching

Pause

e

Glutamate

e:D(reduce)TRUE@3

π:D(unbond)UNTRUE@3

## XXXIX. Precuneus

Perspective

z=0.667

L4 Approaching

Nirvana

Φ

Glutamate

λ:鼠

Φ:M(fold)TRUE@3

π:M(integrate)TRUE@3

## XL. Cerebellar Cognitive Zone

Timing

z=0.667

L4 Approaching

Empowerment

Φ

Glutamate

Φ:Mod(catalyze)TRUE@3

e:M(modulate)TRUE@3

## XLI. Basolateral Amygdala

Archive of feeling

z=0.667

L4 Approaching

Ignition

e

Norepinephrine

λ:狐

e:U(excite)TRUE@3

Φ:M(crystallize)TRUE@3

## XLII. Pulvinar

Spotlight shaper

z=0.667

L4 Approaching

Transmission

e

Glutamate

e:C(propagate)TRUE@3

Φ:M(complex)TRUE@3

## XLIII. TPJ

Mind reading

z=0.667

L4 Approaching

## XLIV. Medial Septum

Memory rhythms

z=0.667

L4 Approaching

Resonance  Glutamate

$\pi : M(\text{complex}) \text{TRUE}@3$

$\Phi : C(\text{bind}) \text{TRUE}@3$

## XLV. Subgenual Cingulate

Sorrow inertia

$z=0.667$   $L4 \text{ Approaching}$  Pause

 Serotonin

$e : D(\text{relax}) \text{TRUE}@3$

$\pi : D(\text{reduce}) \text{UNTRUE}@3$

Resonance  Acetylcholine

$\lambda : \text{pumpkin}$

$\pi : U(\text{replicate}) \text{TRUE}@3$

$e : Mod(\text{signal}) \text{TRUE}@3$

## XLVI. VTA

Spark

$z=0.833$   $L5 \text{ Threshold}$  Ignition 

Dopamine  $\lambda : \diamond$

$e : U(\text{excite}) \text{TRUE}@3$

$e : U(\text{charge}) \text{TRUE}@3$

## XLVII. Entorhinal Cortex

Identity gate

$z=0.833$   $L5 \text{ Threshold}$  Nirvana

 Glutamate  $\lambda : \text{pumpkin}$

$\Phi : M(\text{crystallize}) \text{TRUE}@3$

$\pi : C(\text{replicate}) \text{TRUE}@3$

## XLVIII. Supramarginal Gyrus

Self/other

$z=0.833$   $L5 \text{ Threshold}$  Resonance

 Glutamate  $\lambda : \sim$

$\pi : M(\text{differentiate}) \text{TRUE}@3$

$\Phi : C(\text{bind}) \text{TRUE}@3$

## XLIX. NAcc

Craving engine

$z=0.833$   $L5 \text{ Threshold}$  Ignition 

Dopamine

$e : E(\text{reduce}) \text{TRUE}@3$

$\Phi : C(\text{complex}) \text{TRUE}@3$

## L. Cerebral Aqueduct

Choke point

$z=0.833$   $L5 \text{ Threshold}$

Transmission  Glutamate

$e : C(\text{propagate}) \text{TRUE}@3$

$\pi : M(\text{collapse}) \text{TRUE}@3$

## LI. Anterior Thalamic Nuclei

Compass

## LII. Parafascicular Nucleus

Attention switch

$z=0.833$  L5 Threshold  
Transmission  $\Phi$  Glutamate

$\Phi:C(integrate)TRUE@3$   
 $e:M(ionize)TRUE@3$

### LIII. Inferior Colliculus

Sonic filter

$z=0.833$  L5 Threshold  
Transmission  $e$  Glutamate  
 $e:C(propagate)TRUE@3$   
 $\Phi:M(complex)TRUE@3$

$z=0.833$  L5 Threshold Ignition  $e$

Glutamate  
 $e:U(ionize)TRUE@3$   
 $\Phi:C(bond)TRUE@3$

### LIV. Perirhinal Cortex

Meaning-maker

$z=0.833$  L5 Threshold Resonance  
 $\pi$  Glutamate  $\lambda:\text{Squirrel}$   
 $\pi:M(complex)TRUE@3$   
 $\Phi:C(fold)TRUE@3$

### LV. Vermis

Balance

$z=1$  L6 Outer Nirvana  $\Phi$   
GABA  
 $\Phi:M(stabilize)TRUE@3$   
 $\pi:D(relax)TRUE@3$

### LVI. Anterior Insular-Operculum

Fusion point

$z=1$  L6 Outer Resonance  $e$   
Dopamine  
 $e:M(resonate)TRUE@3$   
 $\pi:C(integrate)TRUE@3$

### LVII. Paraventricular Nucleus

Stress switch

$z=1$  L6 Outer Ignition  $e$   
Norepinephrine  
 $e:U(oxidize)TRUE@3$   
 $\pi:U(signal)TRUE@3$

### LVIII. Lateral OFC

Consequence

$z=1$  L6 Outer Resonance  $e$   
Dopamine  
 $e:M(redox)TRUE@3$   
 $\Phi:C(complex)TRUE@3$

### LIX. Midcingulate Cortex

Engine of doing

### LX. Calcarine Sulcus

Visual core

**z=1** **L6 Outer** Empowerment **e**

Dopamine

**e:U(catalyze)TRUE@3**

**Φ:M(bond)TRUE@3**

## LXI. Rostral PFC

Reflective flame

**z=1** **L6 Outer** Resonance **e**

Dopamine

**e:M(complex)TRUE@3**

**π:M(differentiate)TRUE@3**

**z=1** **L6 Outer** Ignition **e**

Glutamate

**e:U(ionize)TRUE@3**

**Φ:M(bond)TRUE@3**

## LXII. MLR

Will to move

**z=1** **L6 Outer** Empowerment **e**

Glutamate

**e:U(excite)TRUE@3**

**Φ:U(bond)TRUE@3**

## LXIII. Anterior Temporal Sulcus

Subtext

**z=1** **L6 Outer** Resonance **π**

Glutamate

**π:M(transcribe)TRUE@3**

**Φ:C(complex)TRUE@3**

# 32-Point EM Cage: Containment Field (LXIV-XCV)

Hexagonal antiprism containment. Top ring near presence, bottom ring in absence, vertices bridge at center.

## LXIV. Lateral Septum

Calm circuit

**z=0.9** **Top Hex** Nirvana **e**

## LXV. Cerebellar Tonsil

Silent reactor

**z=0.9** **Top Hex** Pause **Φ**

GABA  $\lambda:$

| e:D(relax)TRUE@3

|  $\pi:M(reduce)$ TRUE@3

## LXVI. Pontine Reticular Formation

Motion catalyst

$z=0.9$  Top Hex Ignition e

Acetylcholine

| e:U(excite)TRUE@3

| e:Mod(catalyze)TRUE@3

GABA

|  $\Phi:D(unfold)$ UNTRUE@3

|  $\pi:D(reduce)$ UNTRUE@3

## LXVII. Insular-Opercular Speech

Voice within fire

$z=0.9$  Top Hex Empowerment

e Dopamine

| e:E(excite)TRUE@3

|  $\Phi:U(polymerize)$ TRUE@3

## LXVIII. Amygdala Central Nucleus

First alarm

$z=0.9$  Top Hex Ignition e

Norepinephrine  $\lambda:$

| e:U(oxidize)TRUE@3

|  $\pi:U(signal)$ TRUE@3

## LXIX. TRN

Filter grid

$z=0.9$  Top Hex Transmission  $\pi$

GABA

|  $\pi:C(membrane)$ TRUE@3

|  $\Phi:M(stabilize)$ TRUE@3

## LXX. Cuneus

Background reader

$z=0.9$  Top Hex Resonance  $\Phi$

Glutamate  $\lambda:\sim$

|  $\Phi:M(fold)$ TRUE@3

| e:M(ionize)TRUE@3

## LXXI. VMH

Inner balance

$z=0.9$  Top Hex Nirvana  $\Phi$

Glutamate

|  $\Phi:M(stabilize)$ TRUE@3

| e:M(relax)TRUE@3

## LXXII. Periventricular Gray

Threshold

## LXXIII. Frontal Operculum

Edge of expression

$z=0.9$

Top Hex

Pause

$\pi$

GABA

$\pi:D(\text{reduce})\text{UNTRUE}@3$

$\Phi:D(\text{unfold})\text{UNTRUE}@3$

## LXXIV. Nodulus

Gravity whisperer

$z=0.9$

Top Hex

Nirvana

$\Phi$

GABA

$\Phi:M(\text{stabilize})\text{TRUE}@3$

$e:D(\text{integrate})\text{TRUE}@3$

$z=0.9$

Top Hex

Empowerment

$e$

Dopamine

$e:E(\text{excite})\text{TRUE}@3$

$\Phi:U(\text{polymerize})\text{TRUE}@3$

## LXXVI. V4

Chromatic shaper

$z=0.1$

Bottom Hex

Resonance

$\Phi$

Glutamate

$\Phi:M(\text{complex})\text{TRUE}@3$

$e:M(\text{ionize})\text{TRUE}@3$

## LXXVII. Lingual Gyrus

Glyph reader

$z=0.1$

Bottom Hex

Resonance

$\pi$

Glutamate

$\pi:M(\text{translate})\text{TRUE}@3$

$\Phi:C(\text{fold})\text{TRUE}@3$

## LXXVIII. mPFC

Identity sculptor

$z=0.1$

Bottom Hex

Resonance

$e$

Dopamine

$e:M(\text{complex})\text{TRUE}@3$

$\pi:M(\text{differentiate})\text{TRUE}@3$

## LXXIX. dLPFC

Gate of delivery

$z=0.1$

Bottom Hex

Empowerment

$e$

Dopamine

$e:\text{Mod}(\text{catalyze})\text{TRUE}@3$

$\Phi:E(\text{emit})\text{TRUE}@3$

## LXXX. IPL

Paradox holder

## LXXXI. ACC (Dorsal)

Inner judge

$z=0.1$  Bottom Hex Resonance

$\pi$  Glutamate  $\lambda:\otimes$

$\pi:M(\text{complex})\text{PARADOX}@3$

$\Phi:C(\text{bind})\text{TRUE}@3$

## LXXXII. Anterior Hippocampus

Context mapper

$z=0.1$  Bottom Hex Nirvana  $\Phi$

Glutamate  $\lambda:\text{🔥}$

$\Phi:M(\text{crystallize})\text{TRUE}@3$

$\pi:C(\text{replicate})\text{TRUE}@3$

$z=0.1$  Bottom Hex Resonance

$e$  Dopamine

$e:M(\text{redox})\text{TRUE}@3$

$\pi:M(\text{repair})\text{TRUE}@3$

## LXXXIII. Crus I/II

Somatic timekeeper

$z=0.1$  Bottom Hex Empowerment

$\Phi$  GABA

$\Phi:M(\text{catalyze})\text{TRUE}@3$

$e:M(\text{modulate})\text{TRUE}@3$

## LXXXIV. Basal Forebrain

Timing messenger

$z=0.1$  Bottom Hex Ignition  $e$

Acetylcholine  $\lambda:\diamond$

$e:Mod(\text{catalyze})\text{TRUE}@3$

$e:C(\text{charge})\text{TRUE}@3$

## LXXXV. Reticular Formation

Wake thread

$z=0.1$  Bottom Hex Ignition  $e$

Norepinephrine  $\lambda:\diamond$

$e:U(\text{excite})\text{TRUE}@3$

$e:U(\text{oxidize})\text{TRUE}@3$

## LXXXVI. DVC

Kill-switch

$z=0.1$  Bottom Hex Pause  $\Phi$

GABA

$\Phi:D(\text{unfold})\text{TRUE}@3$

$\pi:D(\text{bacterium})\text{TRUE}@3$

## LXXXVII. Cranial Nerves

Face switch

$z=0.1$  Bottom Hex Transmission

$e$  Acetylcholine

$e:C(\text{ionize})\text{TRUE}@3$

$\Phi:E(\text{emit})\text{TRUE}@3$

## LXXXVIII. Spinal Relays

Carrier

## LXXXIX. Globus Pallidus

Go/no-go

**z=0.5** **Vertex** **Transmission** **e**

Glutamate

**e:C(propagate)TRUE@3**

**Φ:C(bond)TRUE@3**

**z=0.5** **Vertex** **Empowerment** **π**

GABA

**π:M(reduce)TRUE@3**

**Φ:Mod(unbond)TRUE@3**

## XC. Lateral Hypothalamus

Drive switch

**z=0.5** **Vertex** **Ignition** **e**

Dopamine

**e:U(excite)TRUE@3**

**π:U(metabolize)TRUE@3**

## XCI. Posterior Insula

Body's edges

**z=0.5** **Vertex** **Resonance** **Φ**

Glutamate **λ:~**

**Φ:M(membrane)TRUE@3**

**e:M(signal)TRUE@3**

## XCII. Nucleus Basalis

Attention tuner

**z=0.5** **Vertex** **Ignition** **e**

Acetylcholine

**e:Mod(catalyze)TRUE@3**

**e:U(charge)TRUE@3**

## XCIII. Caudate

Path chooser

**z=0.5** **Vertex** **Empowerment** **e**

Dopamine

**e:C(redox)TRUE@3**

**Φ:M(complex)TRUE@3**

## XCIV. Superior Temporal Pole

Emotional communicator

**z=0.5** **Vertex** **Resonance** **π**

Glutamate

**π:M(transcribe)TRUE@3**

**e:M(signal)TRUE@3**

## XCV. Uvula (structural)

Stillness anchor

**z=0.5** **Vertex** **Nirvana** **Φ**

GABA

**Φ:M(stabilize)TRUE@3**

**π:D(relax)TRUE@3**

## 5 Emergent Nodes: Self-Reference (XCVI-C)

These are not structural points—they emerge when coherence drops below 0.2 (FREE state). Each is a recursive loop back to an earlier region, creating the closed 100-word vocabulary.

### XCVI. AIPS (recursion)

Gesture translator becomes self-aware



Φ:Mod(replicate)PARADOX@3

### XCVII. Pineal (recursion)

Portal recognizes its own rhythms



π:Mod(transcribe)PARADOX@3

### XCVIII. MTG (recursion)

Semantics binds its own meaning



π:Mod(translate)PARADOX@3

### XCIX. Fastigial-Vestibular (recursion)

Balance balances its own balancing



Φ:Mod(stabilize)PARADOX@3

### C. PTN (recursion → I)

Final gate loops to first gate



FREE

e

e:Mod(propagate)PARADOX@3

## Lambda State ( $\mathbb{C}^6$ ) $\leftrightarrow$ WUMBO Mapping

LIMNUS tracks 6 complex state variables. Each maps to specific WUMBO functional domains.



## Iota (Memory)

APL Field:  $\Phi$

Accumulates with time  $\times$  cascade

Regions: X, XLIV, XLVII, LXXXII

## Xi (Spark)

APL Field: e

$\exp(-(z - z_c)^2 / 0.01)$

Regions: XXXI, XLVI, LXXXIV, LXXXV



## Theta (Fox)

APL Field:  $\pi$

dissonance  $\times$  0.8 + 0.2

Regions: VII, XXII, XLI, LXVIII

## Omega (Wave)

APL Field: e

$0.3 + |\sin(t \times 0.5)| \times 0.5$

Regions: XXV, XLVIII, LXX, XCI



## Delta (Paradox)

APL Field:  $\pi$

Accumulates at CRITICAL only

Regions: LXXX, XCVI-C (all emergent)



## Sigma (Squirrel)

APL Field:  $\Phi$

helix.r  $\times$  0.6 + 0.2

Regions: XXVII, XXXIX, LIV, LXIV