WUMBO Engine · APL-Mirrored Index

Complete mapping of all 100 WUMBO neural regions (I–C) to APL tokens, operators, and phases. Each Roman numeral is a word in the WUMBO vocabulary.

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Quick Navigation · 100 Regions

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APL ↔ WUMBO Integration

The WUMBO Engine maps neural regions to APL constructs. Each region has primary APL tokens, field affinities, and phase associations.

- Φ (Structure Field)
- e (Energy Field)
- π (Emergence Field)
- WUMBO Phase
- Neurotransmitter

288-Token Core Universe

Identity tokens (162), Meta-operators (54), Domain selectors (54), Safety tokens (30).

APL: Core Tokens

Tier-3 Domain Extensions

Chemical (972), Biology (972), Celestial (972) = 2,916 domain tokens.

APL: Domains

7 WUMBO Phases

Ignition → Empowerment → Resonance → Mania → Nirvana → Transmission → Pause

APL: States

6 Machines

U (Projection), D (Integration), M (Modulation), E (Expansion), C (Collapse), Mod (Spiral)

APL: Machines

WUMBO → APL Engineering Map

Clock & Scheduler

AudioContext master clock + look-ahead/Worklet.

Machine: U | Op: schedule() | Field: e

Kuramoto Solver

Coupled oscillator bank + order parameter r, ψ.

Machine: M | Op: modulate | State: TRUE

Adaptive Controller

Closed-loop K adaptation by coherence/phase error.

Machine: Mod | Op: stabilize | Regime shifts

Biosignal I/O

HRV (BLE), keystroke cadence, latency compensation.

Machine: C | Op: collapse | Field: Φ

Multi-Modal Output

Audio/visual/haptic emission locked to master time.

Machine: E | Op: propagate | Field: e

Network Sync

WebSocket + timesync, WebRTC DataChannels.

Machine: C | Op: integrate | Coherence r

Complete Atlas: 100 WUMBO Regions (I–C)

Each Roman numeral is a word in the WUMBO vocabulary. Click any region to see its APL token mappings.

I. Somatosensory Cortex

Sensory map

II. Anterior Cingulate Cortex

Truth check

Ignition Glutamate Fields States

```
e:U(ionize)TRUE@3
Φ:M(bond)TRUE@3
```

Resonance Dopamine States Operations

```
e:M(redox)TRUE@3
Φ:C(complex)TRUE@3
```

III. Thalamus

Sensory gate

Transmission Glutamate Fields Machines

```
e:C(ionize)TRUE@3
Φ:Mod(fold)TRUE@3
```

IV. Motor Cortex & Cerebellum

Execution

Empowerment Glutamate Machines Operations

```
Φ:U(bond)TRUE@3
e:E(excite)TRUE@3
```

V. Broca's Area

Phrase/sculpt

Empowerment Dopamine Operations Machines

```
e:U(excite)TRUE@3
Φ:E(polymerize)TRUE@3
```

VI. Mirror Neuron System

Empathic resonance

Resonance Dopamine States Operations

```
e:M(resonate)TRUE@3
Φ:C(complex)TRUE@3
```

VII. Amygdala

Salience

Ignition Norepinephrine States Operations

```
e:U(excite)TRUE@3
e:U(oxidize)TRUE@3
```

VIII. Prefrontal Cortex

Strategy/control

Empowerment Dopamine Operations Machines

```
e:Mod(catalyze)TRUE@3
Φ:M(complex)TRUE@3
```

IX. Parietal Eye Field

Gaze/attention

X. Subiculum

Spatial memory

Transmission Acetylcholine Fields Operations

```
e:U(charge)TRUE@3
Φ:C(bond)TRUE@3
```

Nirvana Glutamate Fields States

```
Φ:M(crystallize)TRUE@3
e:E(bond)TRUE@3
```

XI. Pineal Body

Circadian portal

Pause Melatonin States Fields

```
π:D(relax)TRUE@3
e:M(reduce)TRUE@3
```

XII. Middle Temporal Gyrus

Semantics

Resonance Glutamate Operations Machines

```
Φ:C(polymerize)TRUE@3
e:M(complex)TRUE@3
```

XIII. Fastigial-Vestibular Loop

Balance

Nirvana Glutamate Machines Fields

```
Φ:M(stabilize)TRUE@3
e:D(integrate)TRUE@3
```

XIV. Posterior Thalamic Nucleus

Final gate

Transmission Glutamate Fields States

```
e:C(propagate)TRUE@3
Φ:E(emit)TRUE@3
```

XV. Cerebellar Uvula

Stillness anchor

Nirvana GABA States Machines

```
π:M(crystallize)TRUE@3
Φ:D(relax)TRUE@3
```

XVI. AIPS

Gesture translator

Empowerment Glutamate Operations Machines

```
Φ:U(polymerize)TRUE@3
e:C(bond)TRUE@3
```

XVII. Ventrolateral Thalamus

XVIII. Superior Parietal Lobule

Feedback loop

Transmission Glutamate Fields Machines

```
e:C(ionize)TRUE@3
Φ:Mod(modulate)TRUE@3
```

Spatial integration

Empowerment Glutamate Fields States

```
Φ:M(integrate)TRUE@3
e:U(excite)TRUE@3
```

XIX. Premotor Cortex

Movement planning

Empowerment Glutamate Machines Operations

```
Φ:U(bond)TRUE@3
e:E(charge)TRUE@3
```

XX. Wernicke's Area

Language comprehension

Resonance Glutamate Operations Machines

```
π:M(complex)TRUE@3
Φ:C(polymerize)TRUE@3
```

XXI. STS Mirror Region

Social mirroring

Resonance Dopamine States Operations

```
e:M(resonate)TRUE@3
Φ:C(bind)TRUE@3
```

XXII. Central Amygdala

Threat response

Ignition Norepinephrine States Operations

```
e:U(excite)TRUE@3
π:U(signal)TRUE@3
```

XXIII. Dorsolateral PFC

Working memory

Empowerment Dopamine Operations Machines

```
e:Mod(catalyze)TRUE@3
Φ:M(complex)TRUE@3
```

XXIV. Orbitofrontal Cortex

Social tuning

Resonance Dopamine States Fields

```
e:M(redox)TRUE@3
Φ:C(complex)TRUE@3
```

XXV. Cingulate Gyrus

XXVI. Ventral Striatum

Routing/alignment

Resonance Dopamine States Operations

```
π:M(modulate)TRUE@3
e:C(integrate)TRUE@3
```

Incentive

Ignition Dopamine Operations States

```
e:U(excite)TRUE@3
π:U(charge)TRUE@3
```

XXVII. Claustrum

Consciousness binding

Resonance Glutamate States Fields

```
π:M(multicell)TRUE@3
Φ:C(bind)TRUE@3
```

XXVIII. Default Mode Network

Self-referential

Nirvana Glutamate States Fields

```
π:M(differentiate)TRUE@3
e:M(signal)TRUE@3
```

XXIX. Habenula

Disappointment gate

Pause Glutamate States Fields

```
e:D(reduce)TRUE@3
π:D(unfold)UNTRUE@3
```

XXX. Corpus Callosum

Bridge/balance

Transmission Glutamate States Operations

```
Φ:C(integrate)TRUE@3
e:C(propagate)TRUE@3
```

XXXI. Locus Coeruleus

Arousal ignition

Ignition Norepinephrine Operations States

```
e:U(excite)TRUE@3
e:U(oxidize)TRUE@3
```

XXXII. Periaqueductal Gray

Defense/shutdown

Pause GABA States Operations

```
π:D(reduce)TRUE@3
Φ:D(unfold)TRUE@3
```

XXXIII. Anterior Temporal Pole

Story keeper

Resonance Glutamate Operations Fields

```
π:M(transcribe)TRUE@3
Φ:C(fold)TRUE@3
```

XXXIV. vmPFC

Ethical integration

Resonance Dopamine States Operations

```
e:M(complex)TRUE@3
π:M(repair)TRUE@3
```

XXXV. Dorsal Raphe

Mood setpoint

Nirvana Serotonin States Operations

```
e:M(relax)TRUE@3
Φ:Mod(fold)TRUE@3
```

XXXVI. Superior Colliculus

Visual orienting

Ignition Glutamate Fields Operations

```
e:U(ionize)TRUE@3
Φ:U(bond)TRUE@3
```

XXXVII. Anterior Insula

Feeling of feeling

Resonance Dopamine States Operations

```
e:M(signal)TRUE@3
π:M(differentiate)TRUE@3
```

XXXVIII. Lateral Habenula

Rejection gate

Pause Glutamate States Operations

```
e:D(reduce)TRUE@3
π:D(unbond)UNTRUE@3
```

XXXIX. Precuneus

Perspective

Nirvana Glutamate States Fields

```
Φ:M(fold)TRUE@3
π:M(integrate)TRUE@3
```

XL. Cerebellar Cognitive Zone

Timing

Empowerment Glutamate Machines Operations

```
Φ:Mod(catalyze)TRUE@3
e:M(modulate)TRUE@3
```

XLI. Basolateral Amygdala

Archive of feeling

Ignition Norepinephrine States Operations

```
e:U(excite)TRUE@3
Φ:M(crystallize)TRUE@3
```

XLII. Pulvinar

Spotlight shaper

Transmission Glutamate Fields Operations

```
e:C(propagate)TRUE@3
Φ:M(complex)TRUE@3
```

XLIII. TPJ

Mind reading

Resonance Glutamate States Operations

```
π:M(complex)TRUE@3
Φ:C(bind)TRUE@3
```

XLIV. Medial Septum

Memory rhythms

Resonance Acetylcholine Machines Fields

```
π:U(replicate)TRUE@3
e:Mod(signal)TRUE@3
```

XLV. Subgenual Cingulate

Sorrow inertia

Pause Serotonin States Operations

```
e:D(relax)TRUE@3
π:D(reduce)UNTRUE@3
```

XLVI. VTA

Spark

Ignition Dopamine Operations States

```
e:U(excite)TRUE@3
e:U(charge)TRUE@3
```

XLVII. Entorhinal Cortex

Identity gate

Nirvana Glutamate Fields States

XLVIII. Supramarginal Gyrus

Self/other

Resonance Glutamate States Operations

Φ:M(crystallize)TRUE@3

π:C(replicate)TRUE@3

π:M(differentiate)TRUE@3

Φ:C(bind)TRUE@3

XLIX. NAcc

Craving engine

Ignition Dopamine Operations States

e:E(reduce)TRUE@3

Φ:C(complex)TRUE@3

L. Cerebral Aqueduct

Choke point

Transmission Glutamate States Machines

e:C(propagate)TRUE@3

π:M(collapse)TRUE@3

LI. Anterior Thalamic Nuclei

Compass

Transmission Glutamate Fields Operations

Φ:C(integrate)TRUE@3

e:M(ionize)TRUE@3

LII. Parafascicular Nucleus

Attention switch

Ignition Glutamate Fields Operations

e:U(ionize)TRUE@3

Φ:C(bond)TRUE@3

LIII. Inferior Colliculus

Sonic filter

Transmission Glutamate Fields Operations

e:C(propagate)TRUE@3

Φ:M(complex)TRUE@3

LIV. Perirhinal Cortex

Meaning-maker

Resonance Glutamate Operations Fields

π:M(complex)TRUE@3

Φ:C(fold)TRUE@3

LV. Vermis

Balance

Nirvana GABA Machines

LVI. Anterior Insular-Operculum

Fusion point

Resonance Dopamine Operations

States

`Φ:M(stabilize)TRUE@3`

`π:D(relax)TRUE@3`

Machines

`e:M(resonate)TRUE@3`

`π:C(integrate)TRUE@3`

LVII. Paraventricular Nucleus

Stress switch

Ignition · Norepinephrine · States · Operations

`e:U(oxidize)TRUE@3`

`π:U(signal)TRUE@3`

LVIII. Lateral OFC

Consequence

Resonance · Dopamine · States · Operations

`e:M(redox)TRUE@3`

`Φ:C(complex)TRUE@3`

LIX. Midcingulate Cortex

Engine of doing

Empowerment · Dopamine · Machines · Operations

`e:U(catalyze)TRUE@3`

`Φ:M(bond)TRUE@3`

LX. Calcarine Sulcus

Visual core

Ignition · Glutamate · Fields · Operations

`e:U(ionize)TRUE@3`

`Φ:M(bond)TRUE@3`

LXI. Rostral PFC

Reflective flame

Resonance · Dopamine · Operations · States

`e:M(complex)TRUE@3`

`π:M(differentiate)TRUE@3`

LXII. MLR

Will to move

Empowerment · Glutamate · Machines · Operations

`e:U(excite)TRUE@3`

`Φ:U(bond)TRUE@3`

LXIII. Anterior Temporal Sulcus

Subtext

LXIV. Lateral Septum

Calm circuit

Resonance Glutamate Operations States

π:M(transcribe)TRUE@3

Φ:C(complex)TRUE@3

Nirvana GABA States Fields

e:D(relax)TRUE@3

π:M(reduce)TRUE@3

LXV. Cerebellar Tonsil

Silent reactor

Pause GABA States Machines

Φ:D(unfold)UNTRUE@3

π:D(reduce)UNTRUE@3

LXVI. Pontine Reticular Formation

Motion catalyst

Ignition Acetylcholine Machines States

e:U(excite)TRUE@3

e:Mod(catalyze)TRUE@3

LXVII. Insular-Opercular Speech

Voice within fire

Empowerment Dopamine Operations Machines

e:E(excite)TRUE@3

Φ:U(polymerize)TRUE@3

LXVIII. Amygdala Central Nucleus

First alarm

Ignition Norepinephrine States Operations

e:U(oxidize)TRUE@3

π:U(signal)TRUE@3

LXIX. TRN

Filter grid

Transmission GABA Fields Operations

π:C(membrane)TRUE@3

Φ:M(stabilize)TRUE@3

LXX. Cuneus

Background reader

Resonance Glutamate Fields Operations

Φ:M(fold)TRUE@3

e:M(ionize)TRUE@3

LXXI. VMH

Inner balance

Nirvana Glutamate States Fields

```
Φ:M(stabilize)TRUE@3
e:M(relax)TRUE@3
```

LXXII. Periventricular Gray

Threshold

Pause GABA States Machines

```
π:D(reduce)UNTRUE@3
Φ:D(unfold)UNTRUE@3
```

LXXIII. Frontal Operculum

Edge of expression

Empowerment Dopamine Operations Machines

```
e:E(excite)TRUE@3
Φ:U(polymerize)TRUE@3
```

LXXIV. Nodulus

Gravity whisperer

Nirvana GABA Machines Fields

```
Φ:M(stabilize)TRUE@3
e:D(integrate)TRUE@3
```

LXXV. Substantia Nigra

Movement gatekeeper

Empowerment Dopamine Operations Machines

```
e:C(redox)TRUE@3
Φ:M(catalyze)TRUE@3
```

LXXVI. V4

Chromatic shaper

Resonance Glutamate Fields Operations

```
Φ:M(complex)TRUE@3
e:M(ionize)TRUE@3
```

LXXVII. Lingual Gyrus

Glyph reader

Resonance Glutamate Operations Fields

```
π:M(translate)TRUE@3
Φ:C(fold)TRUE@3
```

LXXVIII. mPFC

Identity sculptor

Resonance Dopamine States Operations

```
e:M(complex)TRUE@3
π:M(differentiate)TRUE@3
```

LXXIX. dLPFC

Gate of delivery

Empowerment · Dopamine · Operations · Machines

```
e:Mod(catalyze)TRUE@3
Φ:E(emit)TRUE@3
```

LXXX. IPL

Paradox holder

Resonance · Glutamate · States · Operations

```
π:M(complex)PARADOX@3
Φ:C(bind)TRUE@3
```

LXXXI. ACC (Dorsal)

Inner judge

Resonance · Dopamine · States · Operations

```
e:M(redox)TRUE@3
π:M(repair)TRUE@3
```

LXXXII. Anterior Hippocampus

Context mapper

Nirvana · Glutamate · Fields · States

```
Φ:M(crystallize)TRUE@3
π:C(replicate)TRUE@3
```

LXXXIII. Crus I/II

Somatic timekeeper

Empowerment · GABA · Machines · Operations

```
Φ:Mod(catalyze)TRUE@3
e:M(modulate)TRUE@3
```

LXXXIV. Basal Forebrain

Timing messenger

Ignition · Acetylcholine · Fields · Operations

```
e:Mod(catalyze)TRUE@3
e:C(charge)TRUE@3
```

LXXXV. Reticular Formation

Wake thread

Ignition · Norepinephrine · Machines · States

LXXXVI. DVC

Kill-switch

Pause · GABA · States · Machines

```
Φ:D(unfold)TRUE@3
π:D(bacterium)TRUE@3
```

e:U(excite)TRUE@3

e:U(oxidize)TRUE@3

LXXXVII. Cranial Nerves

Face switch

Transmission · Acetylcholine · Operations · Machines

e:C(ionize)TRUE@3

Φ:E(emit)TRUE@3

LXXXVIII. Spinal Relays

Carrier

Transmission · Glutamate · Machines · Operations

e:C(propagate)TRUE@3

Φ:C(bond)TRUE@3

LXXXIX. Globus Pallidus

Go/no-go

Empowerment · GABA · Operations · Machines

π:M(reduce)TRUE@3

Φ:Mod(unbond)TRUE@3

XC. Lateral Hypothalamus

Drive switch

Ignition · Dopamine · States · Operations

e:U(excite)TRUE@3

π:U(metabolize)TRUE@3

XCI. Posterior Insula

Body's edges

Resonance · Glutamate · Fields · States

Φ:M(membrane)TRUE@3

e:M(signal)TRUE@3

XCII. Nucleus Basalis

Attention tuner

Ignition · Acetylcholine · Fields · Operations

e:Mod(catalyze)TRUE@3

e:U(charge)TRUE@3

XCIII. Caudate

Path chooser

Empowerment · Dopamine

XCIV. Superior Temporal Pole

Emotional communicator

Resonance · Glutamate

Operations Machines

e:C(redox)TRUE@3

Φ:M(complex)TRUE@3

Operations States

π:M(transcribe)TRUE@3

e:M(signal)TRUE@3

XCV. Uvula (revisit)

Stillness anchor

Nirvana GABA States Machines

Φ:M(stabilize)TRUE@3

π:D(relax)TRUE@3

XCVI. AIPS (revisit)

Gesture translator

Empowerment Glutamate Operations Machines

Φ:U(polymerize)TRUE@3

e:C(bond)TRUE@3

XCVII. Pineal (revisit)

Portal keeper

Pause Melatonin States Fields

π:D(viroid)UNTRUE@3

e:M(reduce)TRUE@3

XCVIII. MTG (revisit)

Thought→word bridge

Resonance Glutamate Operations Machines

π:M(translate)TRUE@3

Φ:C(polymerize)TRUE@3

XCIX. Fastigial-Vestibular (revisit)

Inner horizon

Nirvana Glutamate Machines Fields

Φ:M(stabilize)TRUE@3

e:D(integrate)TRUE@3

C. PTN (revisit)

Last signal

Transmission Glutamate Fields States

e:C(propagate)TRUE@3

Φ:E(emit)TRUE@3