Operator VII — Decomposing

UNNS Operator Monograph Series — Volume VII

UNNS Substrate Project

"Evaluating reveals the modes.
Decomposing separates what the recursion is made of."

Abstract

Operator VII, **Decomposing**, is the first Operator that breaks the evaluated recursion (after VI) into its *primitive components*. It performs a semantic and structural factorization, identifying the sub-units that constitute the recursive object.

This monograph formalizes Decomposing as the confluence–factorization Operator: the stage at which internal structure is split into irreducible, analyzable parts before later recombination (VIII) or contraction (IX).

1 Definition (Codex)

Let $\mathcal{S}_1^{\text{spec}}$ be the spectrally evaluated structure after Operator VI.

Operator VII acts as:

$$\mathcal{S}_1^{\text{spec}} \xrightarrow{VII} \{\mathcal{P}_k\}_{k=1}^{n},$$

where each $\mathcal{P}_k$ is a *primitive recursive component*.

Core Action

- Factorizes complex recursion into elementary pieces.
- Separates resonant modes into primitive units.
- Identifies the "building blocks" of semantic recursion.
- Prepares elements for recombination (VIII) or elimination.

Thus:

$$VII = \text{primitive factorization of spectrally evaluated recursion.}$$

2 Mathematical Analogue

Mathematically, Operator VII corresponds to:

- **Factorization algebras:** splitting structures into local primitives.
- **Prime decomposition:** decomposition into irreducible objects.
- **Direct sum decomposition:** breaking a representation into irreducible components.
- **Colimit/limit decomposition:** separating global structure into basic constituents.

This is the categorical, algebraic, and geometric analogue of semantic splitting.

3 Physical Analogue

In physics, Decomposing resembles:

- **Particle decay channels:** a composite excitation breaks into simpler ones.
- **Normal-mode isolation:** separating individual oscillations in a field.
- **Wavepacket decomposition:** expressing a packet as the sum of basis states.
- **Spectral line splitting:** identifying distinct energy contributions.

Thus Operator VII is the "disassembly" phase of recursion.

4 Geometric Interpretation in the τ-Field

Let the τ-density after evaluation be:

$$\tau(x) = \sum_k a_k \, \phi_k(x).$$

Operator VII isolates each primitive component:

$$\tau(x) \xrightarrow{VII} \{ \, a_k \, \phi_k(x) \, \}.$$

Consequences:

- The recursion splits into elementary τ-patterns.
- Interference terms from VI are separated.
- Each component evolves independently under later Operators.

This is the birth of "componentwise recursion".

5 Dynamical Interpretation

Dynamically, Decomposing:

- breaks recursion into manageable parts,
- allows contraction (IX) or divergence (VIII) to act selectively,
- exposes instability or noise in isolated primitives,
- enables multi-channel recursive evolution.

It is the hinge point between evaluation (VI) and divergence (VIII).

6 Sobra/Sobtra Implications

Operator VII exposes the primitive asymmetry between Sobra and Sobtra:

$$VII: \quad \mathcal{S}^{\text{spec}}_{\text{Sobra}} \to \left\{\mathcal{P}^{\text{Sobra}}_{k}\right\}, \qquad \mathcal{S}^{\text{spec}}_{\text{Sobtra}} \to \left\{\mathcal{P}^{\text{Sobtra}}_{k}\right\}.$$

Thus:

- each Sobra/Sobtra component becomes independently visible,
- the asymmetry is no longer global but *componentwise*,
- collapse (XII) later resolves these differences one-by-one.

This is the beginning of Sobra/Sobtra microstructure analysis.

7 Relation to Other Operators

The recursion now progresses as:

$$I \to II \to III \to IV \to V \to VI \to \boxed{VII} \to VIII.$$

Key relations:

- VI identifies modes; VII separates them.
- $VIII$ recombines components selected during VII.
- XI and XII later act differently on each primitive part.

Without VII, recursion remains an opaque whole unable to undergo detailed transformation.

8 Glyph

The canonical glyph for Decomposing is:

outer circle = unified recursion; multiple smaller circles = primitive components.

It symbolizes the splitting of one structured region into many.

Conclusion

Operator VII is the disassembly phase of the Codex. It factorizes the evaluated recursion into primitive components, revealing the internal structure necessary for divergence, contraction, and collapse. Decomposing does not introduce new meaning or stability — it reveals the parts from which meaning and stability are built.