

# Sequential Constraint-Elimination in Fragmentary Inscription Analysis

## A Test Case from the Athenian Agora

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## Constrain First. Rank Second.

### THE PROBLEM

Fragmentary inscriptions are often ranked by similarity before incompatible readings are eliminated.

Under fragmentary conditions, similarity-first ranking can elevate statistically proximate but structurally invalid interpretations.

This study tests a reversed sequence.

### APPLICATION SNAPSHOT

- OCR tested and excluded (non-convergent)
- No anchor adjacency  $\leq 30$  characters (Attic civic sample  $n=1,213$ )
- $\Delta\Omega$  + nominative pairing rare (~5%) but attested
- No structural contradictions detected

### METHOD

#### 1. Stone Constraint

Material viability  
(glyph stability, margins, segmentation, termination)



#### 2. Distribution Constraint

Corpus survival  
(adjacency testing, co-occurrence, absence patterns)



#### 3. Behavioral Constraint

Positional stability  
(token mapping, name-chain context, temporal distribution)



Similarity introduced only after constraint filtering.

### EXTERNAL VALIDATION

Probability-first stress test (Ithaca):

- $\Delta\Omega$  preserved as standalone
- $\text{IAT}\Sigma$  preserved as terminal
- No compound collapse
- No forced continuation

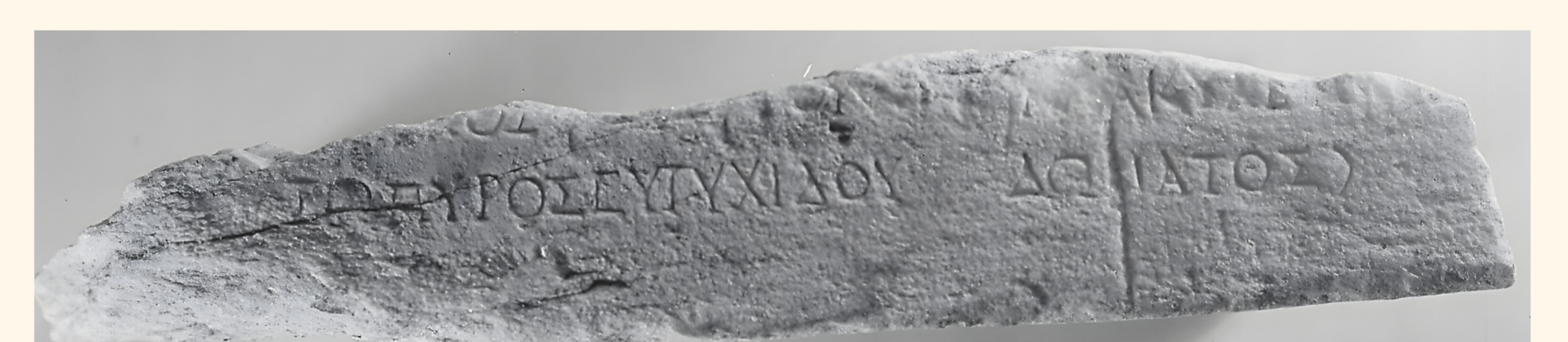
No contradiction between constraint-first elimination and probability-first modeling.

### BOUNDED OUTCOME

$\text{Ρ}\Sigma\text{ΕΥΤΥΧΙΔΟΥ } \Delta\Omega \text{ ΙΑΤ}\Sigma$

Genitive  $\rightarrow \Delta\Omega \rightarrow$  Nominative

Structurally coherent. Statistically rare.  
This study does not propose a formal reclassification.



Agora XV 354 (detail). Preserved lower line and right margin.