



FROM NATURAL ACOUSTIC REFLEX TO DISTRIBUTIONAL PROOF: EMPIRICAL FOUNDATIONS OF PHONOSEMANTIC MOTIVATION IN THE ODAM TILI FRAMEWORK

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Abstract:

The Saussurean axiom of the arbitrariness of the linguistic sign has survived for over a century largely due to the absence of scalable methods to test its opposite. This paper presents a unified empirical argument against pure arbitrariness by integrating three independent lines of evidence under the Odam Tili framework developed by Mahmudjon Kuchkarov. First, a controlled behavioral experiment conducted in 2017 at Esta Florida Tennis Academy, USA, with 26 naive volunteers using the S-ilon methodology, which showed systematic above chance mapping between phonetic features and shape, size, and affective meaning. Second, a series of naturalistic field experiments conducted between 2017 and 2019, including acoustic analysis of breaking branches of T and Ch trees with varying diameters, long distance shouting competitions, and heavy versus light load lifting competitions where the H sound emerges as an involuntary physiological reflex. Results of these experiments were presented and published in 2020 at the First International Conference on Linguistics and Foreign Language Teaching at Fergana State University, Uzbekistan. Third, the recent large scale distributional study by Flint and Kislay 2025, titled Quantifying Phonosemantic Iconicity Distributionally in 6 Languages, which analyzed English, Spanish, Hindi, Finnish, Turkish, and Tamil using top 5000 lemmas, GPT-4 based morphological segmentation, PanPhon articulatory vectors, and FastText semantic embeddings with RSA, Mutual



Information, and Canonical Correlation Analysis. Full text available at <https://arxiv.org/abs/2510.14040v1> and summary at <https://chatpaper.com/chatpaper/paper/200550>. We argue that these three strands converge on a single conclusion and provide a SCOPUS level foundation for Odam Tili. This argument is timely for the upcoming Hanyang International Symposium on Phonetics and Cognitive Sciences of Language HISPhonCog 2026, which explicitly calls for new empirical experimental evidence on the cognitive functions of fine phonetic detail <https://linguistlist.org/issues/36/3413/>.

Introduction: For a century, linguistics has treated non arbitrariness as marginal, limited to onomatopoeia and ideophones. Odam Tili theory, developed since the 1990s, proposes the opposite: phonemes carry intrinsic proto semantic content, which we call S-ilon. Openness encodes largeness and visibility, closure encodes smallness and precision, labiality encodes softness and containment, dentality encodes direct contact, and gutturality encodes depth and power. Until recently, this claim lacked quantitative validation at scale.

Methodological History: The first empirical phase was the Esta Florida experiment in 2017. Twenty six participants were presented with nonce syllables systematically varying in labiality, coronality, openness, and manner, and asked to match them to shapes and motions without instruction. Agreement was systematic. The second phase was naturalistic. We recorded the acoustic output of breaking branches of different diameters. Large diameter branches produced low frequency, heavy, dull bursts acoustically close to T, while small diameter branches produced high frequency, sharp, light bursts close to Ch. This demonstrates a direct physical law linking object size and acoustic output. In long distance shouting, open vowels



dominated, showing a natural optimization for sonority. In load lifting, all participants involuntarily produced H under heavy load due to pulmonary compression, while no such reflex appeared under light load. This physiologically grounds the S-ilon value of H as breath, effort, and release. These results were reported at Fergana State University in 2020. The third phase is distributional. Flint and Kislay 2025 tested whether such iconic mappings survive in the lexicon. Using rigorous controls and 1000 permutations, they found significant global iconicity in all six languages, plus novel interpretable alignments such as nasality with reverberation and continuity with fluidity. Classical hypotheses like brightness with frontness and angularity with obstruency were robustly supported.

Discussion and Theoretical Implications: The convergence is not trivial. Human intuition in 2017, physical reflex in 2017 to 2019, and statistical structure in 2025 point in the same direction. Language is not purely arbitrary but retains a motivated substrate that is embodied. Articulatory gestures are motor experiences, and their acoustic consequences are mapped to world experience. This supports the sound symbolism bootstrapping hypothesis for acquisition proposed by Imai and Kita 2014 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4123677/>, where iconic cues help infants break into the lexicon.

Conclusion

Odam Tili has moved from theoretical proposal to empirically grounded framework. It now has behavioral data, naturalistic physiological data with official conference publication, and large scale cross linguistic distributional proof. The next step is to replicate the distributional analysis on Uzbek and other Turkic languages



using S-ilon categories as phonetic predictors and to submit the integrated work to journals such as Journal of Phonetics and Laboratory Phonology.

References:

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