MIMICRY IN LINGUISTIC EVOLUTION

A LOTKA-VOLTERRA MODEL OF THE EVOLUTIONARY DYNAMICS OF COMPOSITIONALITY MARKERS

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Ambiguity is not expected to be selected for in semiotic systems. But why does it sometimes still occur? A story about consonant clusters, morphological complexity, and mimicry.

**Outline of a cooperative two-dimensional Lotka-Volterra system:** Equilibrium densities depend on the evolving parameter \( \lambda \), which changes if cluster-repair processes are at work in lexical items (see consonant-cluster fact box).

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**Linguistic Mimicry**

**[sain-d]**

**Complex.** The cluster [nd] spans a morpheme boundary between the base *sign* and the suffix *-ed*, and consequently functions as a compositionality marker signalling morphological complexity.

**[faind]**

**Simple.** The cluster [nd] occurs within the morphologically simple form *find* and thus does not function as a compositionality marker.

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**Linguistic compositionality markers are involved in dynamics that share features of Batesian and Müllerian Mimicry**

The signalling function of compositionality markers decreases with the amount of simple forms. They become more ambiguous the more often structurally similar forms appear in a simple item.

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**Can formal modelling shed light on how compositionality marker ambiguity evolves?**

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**Biological Mimicry**

**Batesian Mimicry**

1a. The model: The colour pattern of wasps signals that they are venomous.

![Batesian Mimicry](image)

1b. The mimic: Hoverflies, among other species, imitate the colour pattern of wasps in order to appear poisonous as well.

**Müllerian Mimicry**

2. The two types of *Heliconius* butterflies mimic each other to confuse predators.

The subspecies support each other. An equal number of mimics and models is expected to be optimal.

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**Some facts about consonant clusters in English:**

- function as compositionality markers by signalling both word and morpheme boundaries
- abundantly produced by schwa loss in the Middle English period
- typologically rare and phonotactically marked
- dispreferred articulatorily and perceptually
- frequently subject to phonological repair processes such as consonant deletion or schwa epenthesis

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**EMPIRICAL EVIDENCE:** The interaction of supporting and inhibiting effects leads to stable disambiguated as well as ambiguous configurations.