

**Title:** The Emergence of Structure in Sign Languages – Is There a Relationship between Crowding and Segmentation?

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**Abstract:**

This study delves into the intricate relationship between segmentation and iconicity (form-meaning resemblance) in the evolution of sign languages. Senghas et al. (2004) observed a transition from holistic encoding to more segmented organisation in a young sign language, and emphasised a tendency for linguistic systems to become increasingly segmented over time. Holistic encodings are more strongly iconic, because the manner of encoding more closely reflects the (simultaneous) availability of the information in the world. The emergence of segmentation in language can thus be understood as a process of fading iconicity. Recently, many in the field have recognized that this process is not necessarily the only option: Perniss et al. (2010) emphasise the pervasiveness of iconicity in all languages. Slonimska et al. (2022) show the prevalence of simultaneous information in sign languages, particularly for complex events where multiple things happen at the same time, and present experimental data to argue that successfully encoding simultaneity can be characterized as an emergent property of sign languages.

To better understand the circumstances that drive segmentation vs. simultaneity preferences, we investigate how preferences for segmented vs holistic encoding in emerging linguistic structure are influenced by properties of the meaning space. Following Gasser (2004), we investigate whether increased crowding of the meaning space induces a segmentation preference. Our research employs a series of experiments wherein participants observe object animations and select gestural representations of the animations in a forced choice task. Animations vary in shape and movement direction. In each trial, participants see two gestural descriptions: one holistic (movement and shape are conveyed simultaneously) and one segmented (shape and movement described sequentially). The experiment comprises two conditions: one with many similar meanings (crowding), and one with fewer meanings (baseline). Preliminary results from a trial run with six participants reveal a surprising almost-consistent preference for holistic sign strategies, irrespective of crowding levels. Participants demonstrated a propensity to maintain their initial strategy choices throughout the experiment. Using an updated study design with a larger sample size, we hope to shed light on the intricate interplay between iconicity, segmentation, and cognitive biases. Further exploration of these dynamics is necessary to enhance our understanding of language evolution and the development of linguistic structures.

**References:**

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