Have you ever wondered why language is the way it is? This research project seeks to answer that question by exploring how language is shaped by the environment in which it is used. Based on the Linguistic Niche Hypothesis (LNH), the project assumes that language as well as forms of communication that preceded language, in particular, pantomime, adapt to the environmental and social niches in which they are learned and used, much like organisms adapt to ecological niches. The main objective of the project is to investigate three sources of environmental impact: physical actions and postures involved in communication act, physical environment, and makeup of social groups that communicate within themselves. To explore these, we will conduct three large-scale experimental studies based on the paradigms of experimental semiotics. Participants will engage in referential games using pantomime to communicate meanings without using speech. The experiments will manipulate different aspects of the environment, such as body posture, the physical surroundings, and the composition of the groups. The effectiveness of pantomimic communication, its conventionalisation, and the strategies used by participants will be analysed based on various data sources, including manual video annotation, motion capture, and eye tracking. This project will significantly contribute to our understanding of language. It will explore the relationship between language structure and environmental factors and will provide insights into language evolution by investigating how environmental phenomena impact the development of communication. The results of this project will contribute to the understanding of the Linguistic Niche Hypothesis and the theories of language evolution. By studying the impact of different environmental factors on pantomime communication, the project aims to deepen our understanding of why language is the way it is and how it has evolved to be this way.