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# The Evolutionary Dynamics of the Mixe Language

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Additional information is available at the end of the chapter

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## Abstract

Mexico has been characterized by its great linguistic diversity concentrating 364 native linguistic variants from 11 native linguistic families. Unfortunately, the risk of disappearing of Mexican indigenous languages represents a problem for Mexican culture since they are precisely the medium through which cultural knowledge is transmitted. The risk of disappearing is reflected on a small number of native speakers and their geographical dispersion, the prevalence of adult speakers, and the tendency to abandon transmission strategies to youngest generations. The aim of this chapter is to analyze the impact of idiolect mutations on the evolutionary dynamics of the linguistic group Mixe in Camotlán, San Sebastian, Puxmetacán, Mazatlan, and Coatlán communities. First, we develop a conceptual model of the linguistic group Mixe as complex adaptive system, followed by the implementation of an agent-based simulation model in NetLogo, and finally, we analyze the evolutionary dynamics of the Mixe language, depending on the mutation rate of the idiolects. From the simulation analysis, we observe that when the mutation rate in idiolects is equal to zero, the Mixe language becomes homogenous. On the contrary, when the rate of mutations is equal to 100, a large number of language variants are generated and the risk of disappearing increases for Mixe language.

**Keywords:** Mixe language, modeling and simulation, complex systems, agent-based modeling

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## 1. Introduction

At the global level, languages have been recognized by the UNESCO as instruments for the preservation and development of the tangible and intangible heritage of the world. All efforts focused on promoting the dissemination of native languages have not only emphasized linguistic diversity and multilingual-multicultural education but have also led to greater awareness of linguistic and cultural traditions throughout the world and have inspired solidarity with indigenous people, based on the understanding, tolerance, and dialogue [1].

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