Complex Networks Analysis in Mexican Nationalist Music

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This study aims to develop a new perspective for analyzing Mexican Nationalist Music using an interdisciplinary approach. The study also provides a new methodological framework based on complexity science to analyze the structural topology of Mexican Nationalist Music. In this study, musical scores are interpreted as complex networks, where nodes represent pitch heights (musical notes) and weighted edges represent the order of the notes that describe a given pitch. This formalism is applied to a corpus of orchestral works belonging to the Mexican musical nationalism movement of the last decade of the 19th century and the first half of the 20th century. To analyze the structural characteristics of the works, centrality metrics such as degree distribution, betweenness, eigenvector, and modularity centrality are calculated.

The data show that the works analyzed incorporate non-trivial network topologies and small-world and modular structures. Silence (as a node) emerges as a gravitational axis for the cohesion of sound communities, a finding that not only provides a definition of silence as a physical entity and attributes quantification to silence, but also offers a new methodological tool. These structural properties offer an opportunity for a quantitative description of the works examined, resulting in a "structural fingerprint" that can be considered in an exploratory sense and used as a hypothesis in the study of style in larger corpora. This approach offers many new opportunities for computational musicology and stylistic analysis. Furthermore, it provides an opportunity to study the cognitive correlates of musical structure.