

ETHNOMODELLING AS THE MATHEMATIZATION OF CULTURAL PRACTICES

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Ethnomodelling is the process of elaboration of problems and questions that grow of the practical contexts that form an image or sense of an idealized version of the *mathema*. The focus of this perspective constitutes a critical analysis of the generation and production of knowledge (creativity) in order to critically discuss the social mechanisms of institutionalization of knowledge (academics) and its diffusion through generations (education).

By analyzing reality as a whole, this holistic context allows those engaged in the modelling process to study systems of reality in which there is an equal effort to create an understanding of all aspects and components of the system under study as well as the interrelationships among them.

These systems have revealed sophisticated mathematical ideas and practices that often include geometric principles in craft work, architecture, and the traditional practices encountered in activities and artifacts found in local and vernacular contexts, which are related to numeric relations found in measuring, classification, calculation, measuring, games, divination, navigation, astronomy, modelling, and a wide variety of other mathematical procedures and cultural artifacts.

Many Western mathematical activities are regarded as modeling by this definition and due to its cultural roots in non-Western society it can be defined as ethnomodeling of the mathematical practices found in non-Western settings. A characteristic of these new problems is that they cannot be solved using syllogistic that is a classical Aristotelian logic, but need multivalued logic, often called *fuzzy logic*, which is the logic that underlies inexact or approximate reasoning. In this direction, multivalued logic can be used in order to formalize human-like processes that are culturally bound.

This context allows the development of a definition of ethnomodelling as the translation of local mathematical ideas, procedures, and practices in which the prefix *ethno* is related to the specific mathematical knowledge possessed by the members of distinct cultural groups. Thus, ethnomodelling adds cultural perspectives to the modelling process. In this regard, it is necessary to start with the social context, reality, and interests of the students and not by enforcing a set of external values and decontextualized curricular activities without meaning for them.

Reference

Rosa, M. & Orey, D. C. (2013). Ethnomodeling as a research theoretical framework on ethnomathematics and mathematical modeling. *Journal of Urban Mathematics Education*, 6(2), 62-80.