



Topic 1 – The mathematical work and Mathematical Working Spaces

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The purpose of Topic 1 is, on one hand, to delve deeper into the theoretical and methodological model defined by Mathematical Working Spaces, and on the other hand to show how it can be put to use through possible specific usages and case studies.

The previous symposia have highlighted the diversity of the mathematical subjects addressed, leaning on the MWS model: probability, synthetic and analytic (coordinate) geometries, functions, algorithmic, numbers... This diversity confirmed the necessity of having to consider mathematical working spaces specific to delineated mathematical fields, and raise the issue of their definition and their articulation. So, how to better depict the dynamic aspects and nature of mathematical work with the help of the model, for instance by making its use easier in describing the tasks and the mathematical situations that give rise to a change of fields.

It will also be about exploring how the MWS model, conceived as a space of circulations between the poles in the epistemological and cognitive planes, may contribute to enable the implementation and the fine tuning of already constructed tasks, but also the elaboration and 'calibration' of new teaching situations, or of situations still to be experimented.

Moreover, the importance allotted in the model to the interdependence of the three geneses – semiotic, instrumental and discursive – calls for descriptions and characterizations of each, but also for accounts of their interweaving.

The contributions to the topic may lean on case studies taken from teaching experiments in specific fields (geometry, calculus or analysis, probability, etc.), or also on modelling activities resorting to the interaction between real world situations and mathematical models.

See also synthesis of Theme 1 in the Proceedings of ETM 4 symposium, <http://www.mat.ucm.es/imi/ETM4/ETM4libro-final.pdf>, pages 27-32.