

Enactivistic and Metaphoric Approaches to Problem Solving

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Abstract: We are interested in exploring the role of enactive metaphorising in mathematical thinking, particularly in the cognitive processes arising in, or triggered by, problem posing and solving. We mean here “enactive” in the sense of Bruner to begin with, but also in the far more radical sense of Varela (and Proulx, Maheux, Brown, Reid, Hutto, Myin,...). Our main hypothesis is that the way a (problematic) mathematical situation is metaphorised and enacted by the learners strongly determines the ideas and insights that may emerge in them and that this may help to bridge the gap between the so called “mathematically gifted” and those apparently not so gifted or mathematically inclined. A big challenge is then trying to figure out under which conditions enaction and metaphorising, more precisely enactive metaphorising, impact on mathematical thinking processes as hypothesised above.

After recalling the highlights of our theoretical framework, we present and discuss some illustrative examples of enacting and metaphorising in problem solving, drawn from our didactical experimenting with a broad spectrum of learners, that includes humanities-inclined students as well as prospective and in service maths teachers.