The progressive development of early embodied algebraic thinking.

Summary: In this article I present some results from a 5-year longitudinal investigation with young students about the genesis of embodied, non-symbolic algebraic thinking and its progressive transition to culturally evolved forms of symbolic thinking. The investigation draws on a cultural-historical theory of teaching and learning – the theory of objectification. Within this theory, thinking is conceived of as a form of reflection and action that is simultaneously material and ideal: It includes inner and outer speech, sensuous forms of imagination and visualisation, gestures, rhythm, and their intertwinement with material culture (symbols, artifacts, etc.). The theory articulates a cultural view of development as an unfolding dialectic process between culturally and historically constituted forms of mathematical knowing and semiotically mediated classroom activity. Looking at the experimental data through these theoretical lenses reveals a developmental path where embodied forms of thinking are sublated or subsumed into more sophisticated ones through the mediation of properly designed classroom activity.

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