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Symposium: Mathematical Language in Transitions – From Secondary to Tertiary

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Giving the same name to different things: On the challenges and opportunities in the secondary-tertiary transition

Poincaré famously referred to mathematics as the art of giving the same name to different things. His statement captures the celebrated power of mathematics to provide concepts and structures that unify situations that, on the face of it, have little in common. Coming from the commognitive standpoint, these situations pertain to mathematical discourses that revolve around different objects but partially overlap in some linguistic attributes, such as keywords (e.g., terminology) and visual mediators (e.g., symbols).

My talk will focus on students' learning of such linguistically resembling discourses, when many learning instances of this sort take place in the transition from secondary to tertiary mathematics. On the one hand, some attributes of the new discourse are familiar to the learners already, which may invoke a smoother learning experience. On the other hand, as in any discursive transition, some mathematical "truths" and familiar practices need to be left behind as they become invalid in the new discourse. Yet, these properties of linguistically resembling discourses are rarely discussed explicitly, leaving the students to figure out on their own which mathematical properties change and which ones remain intact. I will use specific mathematical examples to illustrate students' experiences in these transitions as well as discuss their potential for instruction and task design.