



The Center for Gesture, Sign, and Language presents



Action-Cognition Transduction: A Proposed Mechanism for Enhancing Mathematical Intuition During Proof Production

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**Monday, May 23, 3:00-5:00pm
Stuart Hall 104, 5835 S Greenwood Ave**

To RSVP: Click [here](https://cgsl.wufoo.com/forms/rsvp-for-cgsl-spring-workshop/) (<https://cgsl.wufoo.com/forms/rsvp-for-cgsl-spring-workshop/>)

I will present new work on how directed action influences mathematical reasoning. My interest is in proof and intuitions about mathematical conjectures in geometry. Two key theoretical developments drive this work. First, I expand the notion of action-cognition transduction, the premise that body actions by themselves can influence our cognitive state, and may do so even without our conscious awareness. Second, I explore the interplay for complex cognition between motor system influences and language system influences. I argue, and present empirical evidence on this point, that in order to foster valid proof-with-intuition we need to bring together both the action and language systems. These ideas inspire the design of a novel learning environment where avatar characters in a video game prompt players to make directed actions with the aim of enhancing their mathematical intuitions and proof production. Actions that are mathematically relevant for subsequent mathematical conjectures about general properties of geometric objects are expected to enhance players' mathematical intuition through action-cognition transduction. Game-directed actions are unlikely to also enhance the complex reasoning and language necessary for mathematically valid proof production unless the game interactions activate both the language and motor systems. I share pilot data from a prototype video game used by middle school and high school-aged students. My talk draws on these empirical and theoretical contributions to further explore how actions and language contribute to our understanding of gestures and of grounded and embodied cognition.

Free and open to the public. ASL-English interpreting will be provided. Persons with disabilities who need an accommodation in order to participate in this event should contact Laura Tharsen at ltharsen@uchicago.edu. Organized by [The Center for Gesture, Sign, and Language](#) with support from the [Neubauer Collegium for Culture and Society](#).