PERCEPTIONS OF ORDER:
THE CASE OF DYNAMIC BEHAVIOR IN DGE

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The sequential organization of actions necessary to produce a figure in any Dynamic Geometry Environment (DGE) introduces an explicit order of construction. In a complex figure this sequential organization produces what is, in effect, a hierarchy of dependencies as each part of the construction depends on something created earlier. (Jones, 2000) This hierarchy of dependencies is one of the main factors that determine DB within DGE (Jackiw & Finzer, 1993; Laborde, 1993).

The longer DGEs are in use and under study the more we learn about their contribution to the learning of geometry but also about the obstacles they are liable to pose to such learning. (Chazan & Yerushalmy, 1998; Healy & Hoyles, 2001)

As a part of a larger study on the complexities involved in understanding DB, Junior high students and graduate students in math education were asked to predict the DB of points that were part of a geometric construction they had executed using a DGE according to a given procedure, and to explain their predictions.

This presentation focuses on user's perceptions of dragging, and their accordance to the order of construction and hierarchy of dependencies, which derive from this order.

The study reveals that while hierarchy in geometric constructions in a DGE is mirrored by the DB, user actions often indicate a **reverse–order** perceptions, specifically, that the DB of certain elements from among a set of those constructed by the (n) initial steps is affected by the elements constructed by step (n+1).

The presentation concludes with a brief discussion of some implications for learning activities and software design.

References:

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