1158-94-248 **Andrew G Benedek*** (benedek.andras@btk.mta.hu), Institute of Philosophy, Research Centre for the Humanities, 4. Toth Kalman st., Budapest, 1097, Hungary. *Models and Logics in the Practice of Mathematical Heuristics: Tools for concept development and discovery or just for retroactive reconstruction?*

I survey some models of Building Theories and History Based Logics of concept formation both from the point of view of conceptual and historical reconstructions of heuristics. Discussing Inquisitive Semantics and Interrogative Models of Inquiry in terms of Dynamic Epistemic Logic I raise three questions. 1) Is it necessary that "the owl of Minerva spreads its wings only with the falling of the dusk", i.e., we obtain logic models of reasoning only after the historical event of discovery, or 2) can we also use the Dynamic Epistemic Logical and Game Theoretical tools for concept development in mathematics education and actual scientific research? 3) Could we blend these approaches with the toolbox of Model Theory? My answer to the first question is "No"; "Yes" to the second; and "Should" for the third one. I argue my case w.r.t (1) by pointing out that reconstructions of thoughts overlap with the field of discovery; show (2) by logical formalizations of Polya-type and Lakatosian heuristics; and support (3) by use-cases of Model Theory and Reverse Mathematics. The main point of the talk is that the challenge of describing real-world practice of mathematical heuristics is to combine modeling mathematical structures with the dynamics of epistemic logics of reasoning about them. (Received March 03, 2020)