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The concept of proof in the light of mathematical work.

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Summary: Our article aims to show how illuminating mathematical work as a concept from didactics of mathematics is useful in understanding issues relating to proving and learning of proof, with or without technology. After posing our hypotheses on the relationship of proof with mathematical work, the pedagogical intent of historical elements of geometry and the use of modern technical tools, we present reference contexts and situations around the property of the tangent. These contexts and situations allow for a comparison of the validation modes, the type of epistemic necessity at stake and certain underlying discourse peculiarities. We introduce the idea of a “valence of mathematical work” and we interpret in an a priori approach the main interactions that could maintain a model user-reader in a mathematical working space. We pay special attention to an extract of *Elémens de Géométrie* by Alexis Claude Clairaut, with one of the reference contexts revisiting his problem with the assistance of dynamic geometry software.

Classification: E50 D20 C70

Keywords: didactics of mathematics; epistemic necessity; interactions; mathematical working space; model reader and model user; proving in geometry; tolerance analysis; valence of mathematical work; validation mode

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