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The effectiveness of geometric diagrams in geometric proofs

Mathematical proofs are often presented with notation designed to express information about concepts the proofs are about. How is such mathematical notation to be understood, philosophically, in relation to the proofs they are used in? In my talk I approach this question by examining the distinctive effectiveness of geometric diagrams in the proofs of elementary geometry. First, I explain how geometric diagrams can be fruitfully understood as a kind of mathematical notation. Second, to show what exactly the effectiveness of geometric diagrams consists in, I contrast the presentations of proofs using a diagrammatic notation with presentations using a purely sentential formalism. Finally, I consider the philosophical implications of the contrast by relating it to some observations on the surveyability of proof from Wittgenstein's *Remarks on the Foundations of Mathematics*.