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Mathematical Abstraction from Ancient Greece to the Stone Age. Preliminary report.

The use of “abstract” as an adjective denoting mathematics dates predominately to the mid-eighteenth century, when it was used as a synonym for pure mathematics and hence in opposition to what at the time was known as “mixed mathematics.” Up until then, abstract was primarily used as a verb to describe how mathematical entities are discovered or defined. For example, Aristotle held that that mathematical objects, such as numbers and geometrical figures, were arrived at through a process of removal or taking away. This grammatical move from verb or adverb to adjective is meaningful, as it denotes a shift from the use of abstract as an underlying philosophical conception of mathematics to its use as a distinctive marker that differentiates among various types of mathematical activities. In this talk, I survey how the notion of abstract mathematics has transformed, starting with Aristotle and ending with American mathematicians during the Cold War. Throughout, I ask: what does the definition of abstract mathematics tell us about conceptions of mathematics as a field in each given historical moment? How does it reflect broader cultural trends from French First Republic citizenship to turn of the century modernism to 1950s abstract expressionism? (Received September 16, 2014)