Debates on axiom systems for school geometry during the 1960s: A comparative study of the proposals by Artin, Choquet, Dieudonné and Papy

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During the first half of the 1960s, vivid debates on which axiom system is the most suited for teaching geometry in upper grades (15–18-year-olds) took place on a series of international meetings initiated by The International Commission on Mathematical Instruction (ICMI), the Organization for European Economic Cooperation (OEEC; in 1961 joined by nations outside Europe to form the Organization for Economic Cooperation and Development, OECD), and UNESCO. Jean Dieudonné sparked up these debates with his slogan "Euclid must go!" at the 1959 Royaumont Seminar. In the following years, Dieudonné positioned himself at an extreme position in the discussion about the "best" axiom system for teaching geometry, as did Gustave Choquet, but the latter at a different, conflicting, side of the spectrum. Apart from several other mathematicians, Emil Artin mingled in the discussion with his contribution on three extreme points of view on teaching geometry (Artin, 1963). The controversy between Choquet and Dieudonné peaked in 1964 when they each published a book propagating their respective viewpoints (Choquet, 1964; Dieudonné, 1964). In Goemans and De Bock (to appear), we analyzed the key differences and similarities between these two books. Only in 1965, Choquet and Dieudonné were reconciled through the efforts of André Revuz (1965), whose proposition for teaching geometry was based on George Papy's two-stage approach (Papy, 1965a).

In this contribution, we examine Artin's (1957) influence on Choquet (1964) and Dieudonné (1964). It is the only shared reference both protagonists took up in their own work, and from a comparison of the content and structure of the three books, it is interesting to see on which parts there is an overlap. We note that Choquet's (1964) axiomatic system and Dieudonné's (1964) approach based on linear algebra are similar to, respectively, the first and second stage in Artin (1957). Also, we analyze how Papy (1965b) was influenced by Artin (1957). Finally, we discuss how Revuz (1965) reached the settlement through Papy's (1965a) position. By comparing the content of relevant sources, we shed light on the debate on axiom systems for school geometry during the first half of the 1960s.

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