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THE BELGIAN SUBCOMMISSION OF THE INTERNATIONAL COMMISSION ON MATHEMATICAL INSTRUCTION

Summary: In 1908, the International Commission on Mathematical Instruction (ICMI) was founded. Participating countries were represented by national delegates. To assist national delegates in preparing surveys and reports for ICMI, national subcommissions were established, at least in the most active countries within ICMI. Belgium was a member of ICMI from the beginning. In this paper, we discuss the activities of the Belgian delegates and the Belgian subcommission, with a focus on the period 1908–1920 and the period after ICMI’s reconstitution in 1952 (in 1920, the Commission was dissolved, but was able to resume its activities at the end of the 1920s, albeit much more modestly than before). For a relatively small country, Belgium was quite active in the first-mentioned period. Even in the Interwar period, the Belgians’ activity in ICMI did not stop. In the post-WWII era, activity was modest; however, the contributions of Pol Burniat, Willy Servais, and Guy Noël are noteworthy.

Keywords: Belgian subcommission, Guy Noël, ICMI, Joseph Neuberg, Pol Burniat, Willy Servais, 20th century

Introduction

Recently, two landmark publications related to the history of the International Commission on Mathematical Instruction (ICMI)¹ were published: *The International Commission on Mathematical Instruction, 1908–2008: People, events, and*

¹ We use the contemporary name and acronym of the Commission. Until the 1950s, the Commission was mainly referred to by the French acronym CIEM (*Commission Internationale de l’Enseignement Mathématique*) or the German IMUK (*Internationale Mathematische Unterrichtskommission*) and even the English name was somewhat different: The International Commission on the Teaching of Mathematics.

*challenges in mathematics education*² and *National subcommissions of ICMI and their role in the reform of mathematics education*³. The first volume provides a broad overview ‘of the objectives and field of action of ICMI, from its creation in 1908 in Rome until 2008, through the description of the main events and protagonists of ICMI history’⁴. The second volume provides detailed studies of the history of the national subcommissions of ICMI of France, Germany, the United Kingdom, Italy, Russia, and the United States of America in the 1908–1920 period; their origin, context, functioning, and publications are analyzed.

ICMI, the International Commission on Mathematical Instruction, was founded at the Fourth International Congress of Mathematicians in Rome (6–8 April 1908). It was governed by a *Comité Central* consisting of the mathematicians Felix Klein (Germany), president; George Greenhill (UK), vice-president; and Henri Fehr (Switzerland), secretary-general. Belgium participated in ICMI from its founding in 1908. Participating countries were represented by national delegates who formed the broader international committee. Belgium was assigned one delegate (the number of delegates per country varied between one and three). These delegates fulfilled a bridging role between ICMI and the country they represented. On the one hand, they had to supply information on the state of mathematics instruction in their country to ICMI. For that purpose, survey-based national reports were prepared. On the other hand, national delegates were expected to promote the activities of ICMI in their country. To assist the national delegate(s), most countries established a national subcommission of ICMI. Although countries with only one delegate usually did not form such a subcommission⁵, as early as 1910, the composition of a Belgian subcommission was published in “L’Enseignement Mathématique” (“EM”), the official organ of ICMI.

The history of the Belgian subcommission has not been systematically studied to date. With this paper, we attempt to fill this gap in the research literature on ICMI. This is already a step toward fulfilling Alexander Karp’s hope ‘that, in time, this book will have a continuation devoted to other countries’⁶. Moreover, our research action provides valuable information on the organization and characteristics of the teaching of mathematics in Belgium; a history of which the first half of the 20th c. is underexposed in the Belgian and international research literature. For the early history of ICMI, we relied mainly on the information in

² *The International Commission on Mathematical Instruction, 1908–2008: People, events, and challenges in mathematics education*, ed. by F. Furinghetti, L. Giacardi, Springer, Cham 2022.

³ *National subcommissions of ICMI and their role in the reform of mathematics education*, ed. by A. Karp, Springer, Cham 2019.

⁴ *The International Commission*, p. viii.

⁵ G. Schubring, *The history of ICMI: The first phase as IMUK and CIEM*, [in:] *The International Commission on Mathematical Instruction, 1908–2008: People, events, and challenges in mathematics education*, ed. by F. Furinghetti, L. Giacardi, Springer, Cham 2022, p. 3–42.

⁶ *National subcommissions*, p. vii.

“EM” and on the reports of the Belgian subcommission of ICMI. For the period after WWII, the information in “EM” is scarcer, but we were able to complement it with information from archives, national journals and testimonies from surviving national delegates.

Belgium in ICMI’s glorious early days and in the Interwar period

A chronology of events

A first task of the *Comité Central* was to ensure that national delegates were assigned to represent the participating countries in the International Commission. The *Comité* had drawn up specific guidelines for this, including financing aspects⁷. For Belgium, Paul Mansion (1844–1919), mathematician and historian of science affiliated with the University of Ghent, was invited. His name was most likely suggested by Klein. However, Mansion declined. He considered the task unrealizable⁸. Eventually, Joseph Neuberg (1840–1926) (Fig. 1) became the first delegate of Belgium in ICMI⁹. Neuberg was a Luxembourg-born mathematician who worked primarily in the field of geometry, in particular the geometry of the triangle¹⁰. He was a professor at the *Université de Liège* and was elected a corresponding member (in 1891) and a full member (in 1897) of the Belgian Royal Academy. Neuberg was involved in several mathematical journals, his role as founder and editor of “*Mathesis*” in 1881 is probably best known¹¹.



Fig. 1. Joseph Neuberg, n.d.

Source: Archives of the Royal Academies for Science and the Arts of Belgium, n° 15462.

In a circular letter dated 1 March 1910, the composition of the Belgian subcommission was announced¹². In addition to Neuberg, and probably at his invitation, it consisted of four education inspectors: Henri Ploumen, Nicolas Dock,

⁷ “L’Enseignement Mathématique” [“EM”] 1908, vol. 10, p. 445–458.

⁸ G. Schubring, *The history of ICMI: The first phase as IMUK and CIEM*, p. 14.

⁹ As announced in a chronicle in “EM” 1909, vol. 11, p. 470.

¹⁰ L. Godeaux, *Neuberg (Jean-Baptiste-Joseph)*, [in:] *Biographie nationale*, vol. 30, Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, Bruxelles 1958, p. 636–637.

¹¹ “Bulletin of the American Mathematical Society” 1926, vol. 32, no. 3, p. 300.

¹² “EM” 1910, vol. 12, p. 128.

Léon Montfort, and Eugène Rombaut. This team represented the different levels of mathematics teaching in different types of institutes: schools for general education, industrial and professional schools, and teacher training colleges. Much work lay ahead for the newly installed subcommission. Indeed, in 1910, Belgium was given significant responsibility for ICMI. On 9–10 August, the *Comité Central* and the entire international committee were to meet in Brussels on the occasion of the Universal Exhibition¹³. In the session of the international committee (10 August), Fehr presented an overview of the work of the Commission, and various member states presented their reports. This was followed by a public session chaired by Klein. Théodore Klompers, general director of secondary education in Belgium, also addressed the audience during that session. He declared that the Belgian government is following the Commission's work with great interest and will be one of the first to benefit from the results of the surveys being conducted¹⁴. Participants were also invited to visit the exhibition, which incorporated an educational section, including science and mathematics education. Germany's contribution was striking, but the Belgian organizers did not hold back either: 'Pedagogical interest is less exclusive than in the German section, and is fortunately combined with historical, artistic and sociological interest'¹⁵. Other educational events, particularly related to the teaching of science and mathematics, were organized on 10–16 August¹⁶.

In 1911, it was announced that five reports were being prepared by the Belgian subcommission of ICMI: (1) *Les mathématiques dans les écoles primaires et les écoles normales d'instituteurs* [Mathematics in primary schools and in primary school teacher training programs] (by Dock), (2) *Les mathématiques dans les Athénées, collèges et écoles moyennes* [Mathematics in athenaeums¹⁷, Catholic secondary schools and middle schools] (by Ploumen), (3) *Les mathématiques dans les écoles industrielles* [Mathematics in industrial schools] (by Rombaut), (4) *Sur l'enseignement du dessin dans les écoles primaires et moyennes et dans les Athénées et collèges* [On the teaching of drawing in primary and middle schools and in athenaeums and Catholic secondary schools] (by Montfort), (5) *L'enseignement des mathématiques dans les Universités et les Écoles supérieures* [The teaching of mathematics in universities and institutes of higher education] (by Neuberg)¹⁸. Eventually, only three reports were published, these by Dock, Ploumen and Mont-

¹³ "EM" 1910, vol. 12, p. 125, p. 313; see also F. Furinghetti, *Challenges, hopes, actions, and tensions in the early years of the International Commission on the Teaching of Mathematics*, [in:] *National subcommissions of ICMI and their role in the reform of mathematics education*, ed. by A. Karp, Springer, Cham 2019, p. 13–15.

¹⁴ *Le congrès des mathématiciens*, [in:] "Le XX^e Siècle" 14.08.1910, front page.

¹⁵ "EM" 1910, vol. 12, p. 315. All translations were made by the author.

¹⁶ "EM" 1910, vol. 12, p. 316–317.

¹⁷ Athenaeums in Belgium are public schools for general secondary education, which at the time were mainly attended by boys from the upper social classes.

¹⁸ "EM" 1911, vol. 13, p. 127.

fort, compiled into one volume¹⁹. Added to that volume was an article, written by Ploumen, *Les tendances actuelles de l'enseignement mathématique en Belgique et leur influence sur les méthodes et les programmes* [Current trends in mathematics teaching in Belgium and their influence on methods and programs]. During the War, in 1916, the three ICMI reports were supplemented with a fourth, entitled *La préparation théorique et pratique des professeurs de mathématiques de l'enseignement secondaire en Belgique* [Theoretical and practical preparation of secondary school mathematics teachers in Belgium]²⁰. This fourth report was a response to an ICMI survey on the preparation of secondary school mathematics teachers in several countries, launched in 1914²¹. The author, Jean Rose, had previously published in "EM" on the teaching of plane analytic geometry²² and on the organization of mathematics education²³ in Belgium, but these articles were not related to the action of the Belgian subcommittee of ICMI.

A glimpse at mathematics education in Belgium in the pre-WWI period

Given that the ICMI reports are quite detailed and were drawn up by education inspectors, they provide a clear picture of the organization and characteristics of mathematics education in Belgium in roughly the last decade of the 19th c. and the first two decades of the 20th c. Below, we take a closer look at this education at the primary and secondary levels as described in the relevant reports. A thorough scientific study of mathematics education in Belgium in the 19th c. and in the first half of the 20th c., including analyses of the official programs, textbooks and other sources, has yet to be carried out.

At the time of Dock's report for ICMI²⁴, primary education was not compulsory in Belgium. General compulsory education for children aged 6 to 14 was

¹⁹ Commission Internationale de l'Enseignement Mathématique, *Rapports sur l'enseignement des mathématiques, du dessin et du travail manuel dans les écoles primaires, les écoles normales primaires, les écoles moyennes, les athénées et les collèges belges*, J. Goemaere, Bruxelles 1911.

²⁰ In "EM" 1920–1921, vol. 21, p. 339, Fehr published some data on the Commission's publications. For Belgium, 2 volumes, 5 reports, and 366 pages are mentioned. These data refer to the entire 1911 volume Commission Internationale de l'Enseignement Mathématique (348 pages), counting Ploumen's article in that volume as an ICMI report, and Rose's article in "EM" 1916, vol. 18, p. 335–352 (18 pages).

²¹ "EM" 1915, vol. 17, p. 60–65.

²² J. Rose, *Sur l'enseignement de la géométrie analytique plane dans les écoles secondaires*, "EM" 1909, vol. 11, p. 190–192.

²³ J. Rose, *Sur l'enseignement des mathématiques en Belgique*, "EM" 1910, vol. 12, p. 20–36.

²⁴ N. Dock, *Rapport sur l'enseignement des mathématiques dans les écoles primaires et dans les écoles normales primaires*, [in:] Commission Internationale de l'Enseignement Mathématique, *Rapports sur l'enseignement des mathématiques, du dessin et du travail manuel dans les écoles primaires, les écoles normales primaires, les écoles moyennes, les athénées et les collèges belges*, J. Goemaere, Bruxelles 1911, p. 4–33.

introduced in Belgium by the law of 19 May 1914, which is late compared to other Western European countries. The situation Dock describes relates to the first Belgian primary school program introduced in 1887 (to be replaced by a new program in 1922)²⁵. Primary education consisted of three grades: an inferior grade (1st and 2nd year), a middle grade (3rd and 4th year) and a superior grade (5th and 6th year). In each grade, the mathematics program consisted of two parts: (1) elements of calculation and (2) the legal system of weights and measures. For both parts, the basic elements were taught in inferior and middle grades; all primary schools were expected to try to instill these program subjects in their students, even schools ‘where attendance is highly irregular and short-lived’²⁶. Elements of calculation included some knowledge of numbers (integers up to 100 and simple fractions) and the ability to perform the four fundamental operations with integers and decimal numbers either mentally or through numerical algorithms. Although the emphasis was on computational skills and techniques, the program recommended the inclusion of many exercises drawn from everyday life, the professions, agriculture and industry. The metric system for measuring lengths, volumes, weights, and counting money was introduced. In superior grade, the approach became more scientific as the appearance of the term ‘arithmetic’ (instead of ‘calculation’) indicated. Topics included prime numbers, divisibility rules for 2 and 5, 4 and 25, 8 and 125, 3 and 9, greatest common divisor, and the rule of three. Measurement was extended to the area and volume of the common plane figures and solids.

Ploumen’s extensive ICMI report²⁷ (87 pages) provides an overview of mathematics education in the general sections of the different types of public secondary schools as they were organized in Belgium since 1888. The male ‘elite’ received seven years of secondary education in one of the so-called royal athenaeums (from the age of 11, after entrance examination). An equivalent of this type of education for girls did not exist in Belgium at that time. In these athenaeums, students could choose from one of the following three basic options, in order of decreasing ‘prestige’: (1) Greco-Latin humanities (7 years of Latin and 5 years of Greek, but a limited mathematics program), (2) Latin humanities (7 years of Latin, no Greek, but an extensive mathematics program), and (3) modern humanities (with emphasis on living languages). The latter op-

²⁵ D. De Bock, M. D’hoker, K. Vandenberghe, *Terugblik op een eeuw wiskundeonderwijs in de Vlaamse lagere scholen – 1: Van ‘traditioneel’ naar modern*, “Basis-Schoolwijzer” 2011, vol. 118, no. 19, p. 13–16.

²⁶ N. Dock, *Rapport sur l’enseignement des mathématiques*, p. 6.

²⁷ H. Ploumen, *Rapport sur l’enseignement des mathématiques dans les écoles moyennes, les athénées et les collèges*, [in:] Commission Internationale de l’Enseignement Mathématique, *Rapports sur l’enseignement des mathématiques, du dessin et du travail manuel dans les écoles primaires, les écoles normales primaires, les écoles moyennes, les athénées et les collèges belges*, J. Goemaere, Bruxelles 1911, p. 190–276.

tion offered a choice in the last three years between a science section (with the same mathematics program as the Latin humanities) and a commercial section (a slimmed-down version of the Greco-Latin program, but expanded with algebra of finance). Ploumen stated that the three basic options more or less corresponded to what was then called the *Gymnasium*, *Realgymnasium*, and *Realschule* in Germany. Roughly speaking, the Greco-Latin humanities prepared students for university studies in law, medicine and natural sciences. Latin humanities and the science section of modern humanities to engineering studies (civil or military) and university studies in mathematics and physics. The commercial section of the modern humanities prepared young people directly for important positions in banking and administration.

It would lead too far to discuss in detail the pre-WWI mathematics programs for the general sections of secondary education in Belgium, nor is it within the scope of this paper. However, in a nutshell, it can be said that those of the Latin humanities and the science section of modern humanities consisted of four major subjects: (1) arithmetic (first basic arithmetic, higher arithmetic in the 4th and 5th years), (2) algebra (various types of algebraic expressions and equations, logarithms, determinants, systems of linear equations, also including some combinatorics), (3) geometry (Euclidean geometry based on Legendre's eight books²⁸, starting in the 3rd year, supplemented in the final year by plane analytic geometry, with strong emphasis on conic sections, and descriptive geometry), and (4) trigonometry (plane trigonometry in the 5th and spherical trigonometry in the 7th year). 'Functions' were not explicitly mentioned, there was no differential or integral calculus, nor probability or statistics. The mathematics programs for the Greco-Latin humanities were largely derived from those of the Latin humanities and the science section of the modern humanities, but with some topics not covered or covered in a later year.

In addition to athenaeums, middle schools also existed, offering a three-year education starting at the age of 12 (after entrance examination) with their own finality and with no direct connection to athenaeums or universities. This type of education was mainly intended for middle-class children. Middle school mathematics focused more on application than on intellectual formation:

The theories of arithmetic, algebra and geometry are only developed to enable their reasoned and intelligent use in everyday life, arts and crafts, commerce and industry, and administrative careers²⁹.

Middle schools also existed for girls, but their mathematics program was not equivalent to that of the boys (on average, 3 instead of 4 hours of mathematics

²⁸ J. Mawhin, *Euclide revu par Legendre, ou des Éléments aux Éléments de Géométrie*, "Revue des Questions Scientifiques" 2012, vol. 183, no. 2–3, p. 203–230.

²⁹ *Ibidem*, p. 227.

per week were scheduled): The schools for girls usually provided one hour for domestic management that was taken from mathematics³⁰.

Ploumen argues for future expansion of the mathematics programs in the atheneaeums³¹, both in the Greco-Latin humanities (so that these students can still study natural sciences at university), and in the Latin humanities and science sections of the modern humanities. He also suggests some weeding, for the Greco-Latin humanities, especially in Euclidean geometry (certain parts of Legendre's books 5–8). The most essential topics to be added, due to developments within the sciences and in the teaching of the sciences at the university, are elements of differential and integral calculus.

We believe that the elements of the theory of derivatives, differential and integral calculus [...] are indispensable from the atheneaeum onwards, so that university studies can achieve their maximum useful effect³².

Possibly because of WWI, it would take some time before Ploumen's call was answered: new curricula for the royal atheneaeums would not appear until 1929³³. In those curricula, some elements of mathematical analysis/calculus were included within the subject of algebra: limits, continuity, exponential and logarithmic functions, derivatives, minima and maxima of a function (but still no integral calculus...).

Belgian activity in ICMI in the Interwar period

In 1920, the Commission was dissolved, but it gradually resumed its activities, much more modestly than before, but in a similar vein. Under the presidency of David Eugene Smith (from 1928), a former vice-president, and with an extension of the *Comité Central*, including Fehr as secretary-general, continuity on the board of ICMI was ensured³⁴. An important achievement was the completion of a study on teacher training that had already been launched in 1914. The study was presented at the International Congress of Mathematicians in Zürich in 1932 and published one year later in "EM". Gino Loria wrote the

³⁰ G. Noël, 1945–1960: *Quinze années d'enseignement des mathématiques*, SBPMef, Mons 2022.

³¹ H. Ploumen, *Les tendances actuelles de l'enseignement mathématique en Belgique et leur influence sur les méthodes et les programmes*, [in:] Commission Internationale de l'Enseignement Mathématique, *Rapports sur l'enseignement des mathématiques, du dessin et du travail manuel dans les écoles primaires, les écoles normales primaires, les écoles moyennes, les athénées et les collèges belges*, J. Goemaere, Bruxelles 1911, p. 279–343.

³² *Ibidem*, p. 295.

³³ Ministère des Sciences et des Arts, *Horaire et programme des études dans les Athénées royaux*, Arrêté Ministériel du 15 avril 1929, Georges Thone, Liège 1929.

³⁴ G. Schubring, *The history of ICMI: The first phase as IMUK and CIEM*, p. 37.

general report³⁵, followed by reports on mathematics teacher training in various countries³⁶.

Belgium participated in this study with a report written by Adolphe Mineur (1867–1950) and Frans Sterkens (1882–1964)³⁷. The thread with the pre-WWI Belgian subcommittee went from Neuberg to Mineur: Mineur was a professor of geometry at the *Université libre de Bruxelles* (ULB), and, like Neuberg, specialized in the geometry of the triangle. In 1922, he became editor of “Mathesis” (under Neuberg’s direction) and in 1926, after Neuberg’s death, he became the editor-in-chief³⁸. Sterkens had earned a doctoral degree in mathematics and physics at the University of Ghent. Both were well informed about educational issues. In addition to his position at the university, Mineur was an inspector of secondary schools in the city of Brussels. Sterkens was an inspector of mathematics and later chief inspector of education, both for secondary schools and teacher training colleges, and was chief of staff to the Minister of Education for a time. He was also responsible for the course in specific methodology for teaching mathematics at the University of Ghent³⁹. As far as we could verify, neither Mineur nor Sterkens has ever officially represented Belgium in ICMI.

The report by Mineur and Sterkens reveals that since 1929, the theoretical-mathematical and practical-pedagogical training of mathematics teachers for higher secondary education in Belgium has been clearly separated. The theoretical part required at least four years of university study in mathematics and led to the grade of *licencié*. It included courses in both pure and applied mathematics, as well as in other scientific fields (physics, chemistry, and philosophy). The practical part, which led to the grade of *agrégé*, consisted of four courses (experimental pedagogy, history of pedagogy, general methodology, and specific methodology for teaching mathematics), as well as didactical exercises in a secondary school, spread over at least one year and supervised by the professor of methodology. As part of the assessment, this final part included two public lessons on topics chosen by the jury from the secondary school programs. The grade of *agrégé* could not

³⁵ G. Loria, *Commission internationale de l’enseignement mathématique. La préparation théorique et pratique des professeurs de mathématiques de l’enseignement secondaire dans les divers pays. I. Rapport général*, “EM” 1933, vol. 32, p. 5–20.

³⁶ See also H.J. Smid, *Mathematics teacher education between the World Wars*, [in:] *Handbook on the history of mathematics education*, ed. by A. Karp, G. Schubring, Springer, New York 2014, p. 586–590.

³⁷ A. Mineur, F. Sterkens, *Belgique. La préparation théorique et pratique des professeurs de mathématiques de l’enseignement secondaire*, “EM” 1933, vol. 32, p. 192–201.

³⁸ L. Godeaux, *Notice sur Adolphe Mineur*, [in:] *Annuaire de l’Académie Royale des Sciences, des Lettres et des Beaux-Arts*, Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, Bruxelles 1968, p. 9–18.

³⁹ Ghent University Library, MEM10-000001124_1960, ugentmemorialis.be/files/MEM10-000001124_1960.pdf [accessed 1.01.2026].

be obtained before that of *licencié*. Notably, the report makes no mention of the training of mathematics teachers for lower secondary education.

Belgium after ICMI's revival in the post-WWII period

In 1952, after a period marked by little activity and even non-activity at times, ICMI was reconstituted under the auspices of the International Mathematical Union (IMU). At the first meeting of the 'new' Commission in Geneva on 20–21 October 1952, an Executive Committee of the new Commission was installed with Henri Fehr (Switzerland), honorary president; Albert Châtelet (France), president; Đuro Kurepa (Yugoslavia), vice-president; and Heinrich Behnke (Germany), secretary⁴⁰. During the meeting, a proposal by Kurepa to elect Saunders Mac Lane (United States of America) as second vice-president was accepted. To form the Commission, new national delegates had to be appointed by the national Committees for Mathematics associated with the IMU⁴¹. The idea was to appoint two delegates per country, one for university education and one for secondary education. These delegates should then establish a national subcommission of ICMI, including representatives from the various degrees of mathematics teaching, to assist the delegates in their work with the Commission, as in the pre-WWII period. The correspondence between the protagonists of the IMU and the ICMI from that time shows that these processes were not without obstacles⁴². Furthermore, this correspondence reveals that the normal mission of ICMI (and its subcommissions) in the early years after its reconstitution was also largely the same as that of the old Commission: To prepare survey-based reports on various aspects of mathematics instruction. These reports were primarily intended for presentation at the pedagogical sections of the quadrennial International Congresses of Mathematicians. However, this initial mission will gradually change in the subsequent period as the scope of ICMI expands⁴³.

The first ICMI delegates of Belgium in the post-WWII period were Willy Servais⁴⁴ and Pol Burniat⁴⁵, who were, respectively, appointed secretary and president of the Belgian subcommission of ICMI⁴⁶. Both were French-speaking Belgians.

⁴⁰ Archive of the International Mathematical Union [AIMU], Berlin, 14A_19521020.

⁴¹ The Belgian Committee for Mathematics adheres to the Royal Academies for Science and the Arts of Belgium.

⁴² L. Giacardi, *The voice of the protagonists: A selection of unpublished letters*, [in:] *The International Commission on Mathematical Instruction, 1908–2008: People, events, and challenges in mathematics education*, ed. by F. Furinghetti, L. Giacardi, Springer, Cham 2022, p. 137–238.

⁴³ *The International Commission on Mathematical Instruction, 1908–2008: People, events, and challenges in mathematics education*.

⁴⁴ "EM" [2nd series] 1955, vol. 1, p. 202.

⁴⁵ "EM" [2nd series] 1956, vol. 2, p. 318.

⁴⁶ "EM" [2nd series] 1957, vol. 3, p. 300.

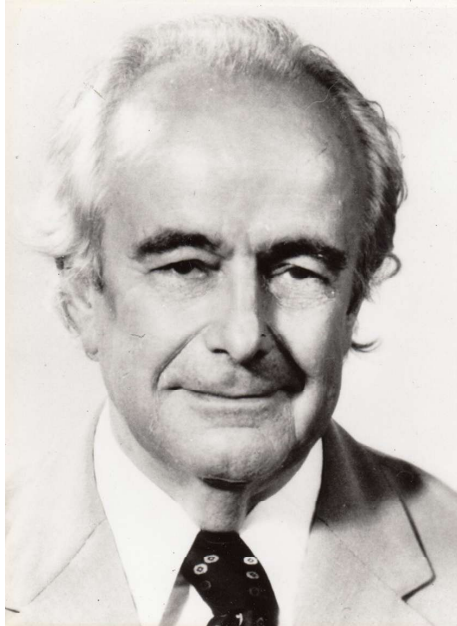


Fig. 2. Willy Servais, 1978.

Credit: Courtesy of Marie-France Servais.



Fig. 3. Pol Burniat, n.d.

Source: Archives of the Royal Academies for Science and the Arts of Belgium, n° 15458.

Substantively, the selection of Servais and Burniat as representatives of Belgium in ICMI was a reasoned one: Both had a strong mathematical background and a clear interest and expertise in educational issues.

Willy Servais (1913–1979) (Fig. 2) was a main personality in mathematics education in the post-WWII period⁴⁷. After graduating in mathematics from the ULB in 1936, Servais began a teaching career at the *Athénée du Centre* in Morlanwelz, of which he was appointed *préfet des études* in 1958. Servais co-founded the *Société Belge de Professeurs de Mathématiques* in 1953 and became its first president and undisputed leader during the 1950s and 1960s. In 1951, he started attending the meetings of the *Commission Internationale pour l'Étude et l'Amélioration de l'Enseignement des Mathématiques* (CIEAEM). As European secretary (from 1956) and general secretary (from 1960) of the CIEAEM, Servais became a figurehead of that organization. From the mid-1950s, Servais was a frequent and esteemed contributor to international meetings on mathematics education, including an invited lecture at the well-known Royaumont seminar in 1959.

⁴⁷ D. De Bock, G. Vanpaemel, *Rods, sets and arrows: The rise and fall of modern mathematics in Belgium*, Springer, Cham 2019.

Pol Burniat (1902–1975) (Fig. 3) studied mathematics at the *Université de Liège*, where he earned a doctorate in mathematical and physical sciences in 1925⁴⁸. Burniat taught for a few years at a secondary school, but in the meantime, he continued his personal research in algebraic geometry. For this, he obtained a research internship with Federigo Enriques in Rome. In 1934, Burniat was appointed professor of mathematics at the ULB, where he also became responsible for the training of prospective mathematics teachers. Burniat was elected a corresponding member (in 1962) and a full member (in 1973) of the Belgian Royal Academy.

At a meeting of the Executive Committee in Münster-Westfalen, Germany (27 May 1956), Burniat, who participated as a national delegate, accepted an important assignment: to investigate the possibility of organizing an ICMI meeting in Brussels in early July 1957⁴⁹. The purpose of the meeting would be twofold: (1) to prepare the ICMI contribution to the International Congress of Mathematicians in Edinburgh in 1958 and (2) to coordinate the work of the subcommissions in the surveys that were in the pipeline. Eventually, a meeting of the Executive Committee was held in Brussels on 3 July 1957. At that meeting, the entire Commission was invited, and several national delegates participated⁵⁰. For Belgium, both delegates, Burniat and Servais, were present and actively participated in the debates. In addition to preparations for the upcoming Edinburgh Congress and various operational issues, the agenda of the meeting included a proposal by IMU President Heinz Hopf to launch a study on the difficulties that arise in recruiting mathematics teachers. Hopf's proposal was accepted, and a working group was formed, consisting of David van Dantzig, Howard Fehr, Kurepa and Servais, to prepare a questionnaire for that purpose⁵¹.

Prior to the meeting of the Executive Committee, the Belgian ICMI subcommission organized a symposium for Belgian mathematics teachers (Brussels, 1–2 July 1957) on the teaching of mathematics to students aged 11 to 16⁵², a topic related to one of the ICMI reports being prepared for Edinburgh. In his opening address, however, Burniat elaborated on the recruitment problem highlighted by Hopf. His words sound like a prelude to the 1959 Royaumont seminar...

The anxious world is experiencing an acute shortage of variously qualified technicians, especially those whose successful training depends on an ever-increasing knowledge of mathematics. [...] Secondary schools are having a tough time recruiting the mathematics teachers they need. [...] At the university level, [...] some demand

⁴⁸ T. Lepage, *Burniat (Pol-Martin-Célestin)*, [in :] *Biographie nationale*, vol. 43, Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, Bruxelles 1983, p. 153–156.

⁴⁹ AIMU, IA, 14A_19560527.

⁵⁰ A list of participants is available in “EM” [2nd series] 1957, vol. 3, p. 302.

⁵¹ “EM” [2nd series] 1958, vol. 4, p. 218.

⁵² “EM” [2nd series] 1957, vol. 3, p. 300.

even more; they call for the introduction in secondary education of mathematical disciplines not yet included: elements of probability, statistics, [...] A vast pedagogical problem has thus arisen everywhere. Society is urgently calling for a quick solution, or risks stagnation in its development. [...] We will have to make audacious efforts to find more efficient methods. We must adapt universally revered traditions that have become cumbersome, such as the millennia-old tradition of Euclid. Finally, in a world with a dangerous shortage of mathematicians, paradoxically, we rapidly and massively need a large number of mathematics teachers who are open to new concepts and methods⁵³.

In addition to Burniat's address, lectures by Behnke, Kurepa, Hans Freudenthal and Belgian professors were scheduled⁵⁴. The symposium program also included a visit to an exhibition of mathematical models made by students at the *Athénée royal d'Etterbeek*⁵⁵. Such exhibitions were popular in Belgium in the mid-1950s, when the intuitive geometry was still flourishing⁵⁶. The ICMI symposium is the only concrete action by Belgium in the 1950s of which we could find traces in the Archive of the IMU and in "EM".

In the 1960s, Servais was omnipresent at international meetings related to mathematics education, often (co-)organized by ICMI⁵⁷. However, he contributed to these meetings as an internationally recognized expert rather than as a Belgian delegate of ICMI. Two meetings deserve special mention (1) the ICMI seminar on *Les répercussions de la recherche mathématique sur l'enseignement* [Repercussions of mathematical research on teaching] (Echternach, Luxembourg, 30 May to 4 June 1965), co-organized by Servais⁵⁸, which would be followed up with a second, third, and fourth edition in 1969, 1973, and 1978, and (2) the ICMI colloquium 'How to teach mathematics so as to be useful' (Utrecht, the Netherlands, 21–25 August 1967) at the beginning of Freudenthal's presidency of ICMI. These meetings, not directly related to contributions of ICMI to an International Congress of Mathematicians, point to an agenda of ICMI separate from that of the IMU, and would culminate in the first International Congress on Mathematical Education (ICME-1) (Lyon, France, 24–30 August 1969).

⁵³ "EM" [2nd series] 1957, vol. 3, p. 301–302.

⁵⁴ "EM" [2nd series] 1957, vol. 3, p. 79.

⁵⁵ E. Trost, *Les journées de la CIEM*, "Elemente der Mathematik" 1957, vol. 12, no. 5, p. 116–117.

⁵⁶ See, e.g., G. Vanpaemel, D. De Bock, *Marxism and mathematics. Paul Libois and intuitive geometry in Belgium*, [in:] "*Dig where you stand*" 4. *Proceedings of the fourth International Conference on the History of Mathematics Education*, ed. by K. Bjarnadóttir, F. Furinghetti, M. Menghini, J. Prytz, G. Schubring, Edizioni Nuova Cultura, Rome 2017, p. 383–398.

⁵⁷ For an overview, see F. Furinghetti, M. Menghini, *The Royaumont seminar as a booster of communication and internationalization in the world of mathematics education*, [in:] *Modern mathematics: An international movement?*, ed. by D. De Bock, Springer, Cham 2023, p. 55–78.

⁵⁸ "EM" [2nd series] 1964, vol. 10, p. 295.



Fig. 4. Guy Noël, 1977.

Credit: Courtesy of Guy Noël.

A program booklet distributed at ICME-2 (Exeter, UK, 29 August–2 September 1972) listed two representatives of Belgium in ICMI: Pol Burniat (who did not participate in ICME-2) and Guy Noël⁵⁹. For the latter, it came as a complete surprise⁶⁰. Noël would hold this position until 1983⁶¹. Guy Noël (born in 1939) (Fig. 4) had studied mathematics and physics at the ULB, where he earned a doctorate in 1969. Starting in 1970, he began an academic career at the *Université de Mons*, being responsible for courses in mathematical analysis and didactics of mathematics. Noël was a key member of the *Société Belge des Professeurs de Mathématiques* (from September 1974: *Société Belge des Professeurs de Mathématiques d'Expression Française*):

As responsible editor of the Society's journal "Mathematica & Paedagogia" (from 1975: "Mathématique et Pédagogie") (1968–1977) and as president (1993–1997). In 2004, he became research director of the Research Centre for Mathematics Education in the French Community of Belgium (CREM).

Guy Noël's main achievements as a representative of Belgium in ICMI are: The realization of an edited booklet about the state of mathematical education in Belgium⁶², which was distributed at ICME-4 (Berkeley, US, 10–16 August 1980), and the organization of an international colloquium on geometry teaching (Mons, Belgium, 31 August – 2 September 1982)⁶³. To compile the booklet for ICME-4, Noël could rely on his network in circles of the societies of mathematics teachers in French-speaking Belgium and in Flanders (a group he referred to as 'ICMI Belgium'). The booklet provides a unique insight into the teaching of mathematics in Belgium in the early post-'modern mathematics' era. In general,

⁵⁹ *ICME Programme Exeter 1972*, Representatives of Countries. A footnote mentions: 'Where we are not certain of the present representatives, two names may be given' (no pagination).

⁶⁰ G. Noël, personal communication, 14.10.2023.

⁶¹ "EM" [2nd series] 1983, vol. 29, p. 180.

⁶² *Mathematical education in Belgium—L'enseignement de la mathématique en Belgique—La enseñanza de las matemáticas en Belgica*, ed. by G. Noël, Sous-Commission belge de la C.I.E.M.–I.C.M.I. belgium subcommittee–Subcomision belga de la C.I.E.M, Mons 1980.

⁶³ *Sous-Commission belge de la C.I.E.M.–Belgische sub-commissie I.C.M.I.: Colloque international sur l'enseignement de la géométrie—Internationaal colloquium over het onderricht in de meetkunde—International colloquium on geometry teaching*, ed. by G. Noël, Université de l'État à Mons, Mons 1982.

‘modern mathematics’ in Belgium was still seen as a marked improvement over traditional mathematics teaching, but shortcomings were also identified (e.g., abstraction level is too high for most students, problem-solving skills are neglected, solid geometry does not enhance ‘seeing’ in space), and the turn toward a more problem-oriented approach to mathematics education has already been initiated (especially in French-speaking Belgium). Moreover, new developments were emerging, such as the use of pocket calculators, computer-assisted instruction, and teaching mathematics to students with special needs. The proceedings of the international colloquium in Mons, with contributions by Alan Bishop, Rudolf Bkouche, Francis Buekenhout, Emma Castelnuovo, Jan de Lange, Hans Freudenthal, Marta Menghini, Georges Papy, Nicolas Rouche, Roland Stowasser, among others, show that in the early 1980s, geometry education was in transition. In the ‘modern mathematics’ era, there was much debate about teaching geometry⁶⁴, but most experts agreed that an approach from axioms and linear algebra, especially vector spaces, was the ‘royal road’ to geometry⁶⁵. Some participants in the Mons colloquium still shared this point of view (‘Some aspects of the modern math curricula are basic to any teaching of mathematics and vector spaces are one of these’⁶⁶), but the majority of proposals for teaching geometry went in (different) other directions (e.g., the spiral approach, to name one).

A discussion of the contributions of Guy Noël’s successors is beyond the scope of this paper and may be a topic for future research; we only mention their names and the periods they represented Belgium in ICMI: Francis Lowenthal (1980–1988), Gontran Ervynck (1988–1997), Dirk Janssens (1997–2008), Maggy Schneider (2008–2016), Paul Igodt (2016–2021), and Ann Doods (since 2021).

To conclude

The ICMI reports and articles in “EM” show considerable dynamism of Belgium in the glorious days of ICMI before WWI. They also provide important information about the organization and characteristics of mathematics education in Belgium during that period, which can serve as a basis for a more comprehensive study of this education in the future. The Belgian subcommittee certainly met expectations in terms of providing information about national mathematics education to the Commission; however, the reverse, i.e., the flow of information

⁶⁴ See, e.g., W. Goemans, D. De Bock, *Debates on axiom systems for school geometry during the 1960s: Relating the proposals by Artin, Choquet, Dieudonné and Papy*, [in:] “Dig where you stand” 7: *Proceedings of the seventh International Conference on the History of Mathematics Education*, ed. by K. Bjarnadóttir, F. Furinghetti, A. Karp, J. Prytz, G. Schubring, Y. Weiss, J. Zender, WTM-Verlag, Münster 2023, p. 99–113.

⁶⁵ G. Choquet, *L’enseignement de la géométrie*, Hermann, Paris 1964.

⁶⁶ F. Bingen, Introduction to *Sous-Commission belge de la C.I.E.M.–Belgische sub-commissie I.C.M.I.*, p. 3.

from the Commission to Belgian education stakeholders to revitalize the internal mathematics education life, is less clear. Did the Belgian subcommission take any initiatives in this regard, and if so, what were they? A search on Belgica Press and Belgica Periodicals⁶⁷ yielded virtually no results, but to obtain definitive answers, all Belgian journals devoted entirely or partly to mathematics would have to be checked carefully.

In the post-WWII era, the Belgian participation in ICMI was interesting yet rather modest. In the archives of the Belgian Committee for Mathematics, kept in the Royal Academies for Science and the Arts of Belgium, only a few traces of ICMI could be found. What we did find was a receipt of a 1962 letter from Marshall Stone, president of ICMI, regretting Belgium's absence from the 1959–1962 ICMI meetings and calling on the Academy for action. Likely, mathematics education was not a major concern of Belgium's leading (research) mathematicians after WWII.

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Acknowledgements

The author thanks the Archives of the International Mathematical Union (IMU), Berlin, Germany, and the Archives of the Royal Academies for Science and the Arts of Belgium, Brussels, Belgium, for the documents they made available. The author is grateful to his colleague Wendy Goemans for reading and commenting on an earlier version of this paper. Many thanks also to the two anonymous reviewers for their valuable comments, which have improved the paper.

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