

Problem solving in mathematics education and the curious case of International Mathematics Olympiad of 1967

Snezana Lawrence (Middlesex University, London), Helena Durnová (Masaryk University, Brno),
Danny J. Beckers (Vrije Universiteit Amsterdam)

This talk will broadly trace the history of the International Mathematics Olympiads within the even more broad history of the relationship of problem solving as a tradition and one of the aims of mathematics education, and set this in the narrative of the competitive spirit of the IMO. The talk will concentrate on one event, the IMO at which Eastern and Western Bloc countries took participation together for the first time during the Cold War, and which was held in Yugoslavia in 1967.

A person of interest in this talk will primarily be a Yugoslavian mathematician Judita Cofman (1936-2001) who worked at the University of Frankfurt am Main during 1964-65, Imperial College London 1965-1970, and University of Perugia, Italy in 1970. In 1971 she gained a position at the University of Tübingen in Germany, then moved to the University of Mainz in 1976. But in 1978 Cofman moved back to London and gained employment as a teacher at a Putney High School, a private school for girls.

Judita was invited to this prestigious private school by a British mathematician Margaret Hyman, neé Crann (1923-1994), who was at the time the Head of Mathematics at the school. Margaret was a well-known mathematics educator, and was a President of the Mathematical Association in 1974-75. With her husband Walter Hyman (1926-2020), a professor of mathematics from Imperial College (where Judita worked a decade earlier) Margaret was the founder of the British Olympiad as part of the IMO. A co-founder with them was their friend and a teacher at Eton College, Norman Routledge (1928-2013). Judita published, while in England, text books dedicated to the problem solving and based on the work she did with talented young mathematicians in mathematics summer camps. She helped organise and run these camps whilst teaching in England, and the nature of these problem-based books will be briefly discussed.

The presentation will further attempt to establish the networks of friendship and the narratives and motivations of the team just described. It will look at the history of the founding of the UK representation at the IMO, as well as Yugoslavian (and post-Yugoslavian) involvement with the IMO. One of the most important research questions we will explore will be related to the influence IMO had on national mathematics education systems which we will, in this talk, examine on examples of UK and Yugoslavia. Finally we will pose some questions on the vision of mathematics education as promoted by the IMO globally, in particular in projecting the measurable problem-solving capabilities of students in international league tables.

Bibliography

1. J Cofman, Mathematics and the Christmas Tree (A Classroom Experience), *Mathematics in School* 9 (4) (1980), 22-23.
2. J Cofman, Play with tangram - The activities of a Maths Club, *Bull. Inst. of Maths and Appl.* 16 (2-3) (1980), 52-53.
3. J Cofman, Tangram and Pangram (Experience of a Maths Club), *Mathematics in School* 9 (5) (1980), 25-27.
4. J Cofman, Thoughts around an international camp for young mathematicians, *The Mathematical Intelligencer* 8 (1) (1986), 57-58.
5. A M Nikolic, Mathematician Judita Cofman, *Teaching Mathematics and Computer Science* 10 (1) (2-12), 91-115.
6. W Hayman, My background and early life, *Computational Methods and Function Theory* 8 (2008), xi-xliii.
7. T Körner, Interview with Tim Gowers (Cambridge) : Fields Medalist 1998, *Newsletter of the European Mathematical Society* 33 (1999), 8-9.
8. P Liljedahl, *Problem Solving in Mathematics Education* (2016).
9. A M Nikolic, The work of Judita Cofman on Didactics of Mathematics, *Teaching Innovations* 27 (3) (2014), 105-113.
10. D Quadling, Margaret Hayman, *The Mathematical Gazette* 79 (484) (1995), 127.