ICMI Column

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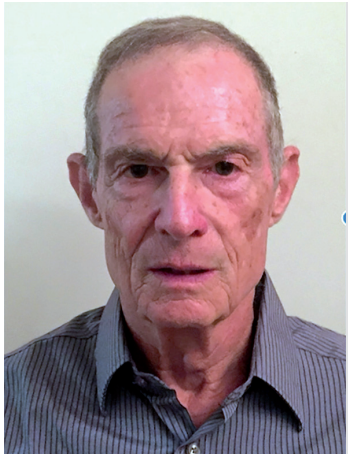
The 2019 Felix Klein, Hans Freudenthal and Emma Castelnuovo ICMI Awards

ICMI is proud to announce the eighth recipients of the Klein and Freudenthal Awards and the second Emma Castelnuovo. We give some key elements below, the three full citations can be found at:
https://www.mathunion.org/icmi/awards/icmi-awards



Tommy Dreyfus, Professor Emeritus at Tel Aviv University, Israel receives the 2019 Felix Klein Award.

The *Felix Klein Award 2019* is awarded to **Professor Tommy Dreyfus** in recognition of his outstanding contributions to research as well as his leading role in shaping and consolidating the research community and in fostering communication between researchers.

For four decades, Tommy Dreyfus's research has been systematically deepening our understanding of mathematics learning. Trained as a mathematical physicist, Tommy has drawn in this work on his deep understanding of mathematics and his first-hand familiarity with ways in which mathematical ideas transpire and evolve. From the late 1970s and for the following two decades, his research focused on students' conceptualisation of mathematical objects such as function, and on the role of intuition, visualisation and aesthetics in mathematical thinking. These efforts resulted in the theory known as AiC – Abstraction in Context, which he developed with Baruch Schwarz and Rina Hershkowitz. Conceived in the late 1990s, the AiC framework has become increasingly influential. Since its inception, it has generated much empirical research all over the world. The theory has also been found to be useful to teachers, whom it provides with tools for monitoring student learning.

Another outstanding part of his work is his ongoing project of shaping and consolidating the international community of research in mathematics education; a goal that he has strived to attain in multiple ways. First and foremost, he has set standards and given directions for research in mathematics education through his extensive editorial work. His association with Educational Studies in Mathematics, which spans three decades including a three-year term as editor-in-chief, has been particularly influential. Professor Dreyfus has also served in, and shaped, numerous professional organisations, with PME (the international group for the Psychology of Mathematics Education) and ERME (the European Society for Research in Mathematics Education) among them. In addition, he has played key roles in numerous professional committees in Israel, Europe and America. His influence on research and on policy directly affecting mathematics teaching can be felt all over the world.

Moreover, Professor Dreyfus has contributed to changing the dominant narratives about theoretical diversity. With his help, the multiplicity of research discourses is now seen to be less a problem to solve than an opportunity to embrace.

To sum up, over the 40 years of his career, Professor Dreyfus has contributed to our collective endeavour of promoting mathematics education in great many ways: as a researcher, as an editor, as an organiser and policy adviser, and as a teacher and mentor. For all this and his many other contributions to our community, Tommy Dreyfus is an eminently worthy candidate for the Felix Klein Award.

Gert Schubring, a long-time member of the Institut für Didaktik der Mathematik at Bielefeld University, Germany, and an extended visiting professor at the Universidade Federal do Rio de Janeiro in Brazil receives the 2019 Hans Freudenthal Award.

The *Hans Freudenthal Award 2019* is awarded to **Professor Gert Schubring**, in recognition of his outstanding contribution to research on the history of mathematics education.

Gert Schubring's research of over four decades has opened new, important avenues of research into the phenomenon of mathematics education. Trained as a mathematician, Gert has been a member of the *Institut für Didaktik der Mathematik* (IDM) since 1973, when this interdisciplinary research institute for mathematics education was founded. In his doctoral dissertation, defended in 1977, Gert Schubring wrote on the genetic principle in approaching historical research in mathematics. Afterwards, he extended his interests, producing wide-ranging writings on the history of mathematics

education within and across countries, and publishing on the history of mathematics.

Another, related but separate, strand of Gert's pioneering work was the study of textbooks, which he began during his investigations on the evolution of mathematics teaching in Latin America. This is yet another area of research that he helped to recognise as worthy of attention. In 2017 he also chaired the International Program Committee for the Second *International Conference on Mathematics Textbook Research and Development* held in Rio de Janeiro, Brazil.

Gert Schubring also laid out the formal structures that helped turn the study of the history of mathematics education into an academic field. He was the founding co-organiser of the *International Conference on the History of Mathematics Education* (ICHME), a forum that has already met six times since 2009.

For decades, Gert Schubring has been actively promoting the study of the history of the field of mathematics education, while simultaneously conducting significant historical studies of his own. No other researcher has had a greater impact on establishing the social history of mathematics education as a dynamic field of scholarly endeavour. His work has not only made us aware of the past of mathematics education; it has provided important insights into mathematics education as it stands today and has set directions for its future. It informs current teaching by showing ways in which historical mathematical texts can inspire pedagogy. It makes us aware of future possibilities and of the fact that they do not have to be merely determined by the past, but can be moulded by new understanding of past practices, values and ways of thinking. All these important contributions make Professor Gert Schubring an eminently deserving recipient of the Hans Freudenthal Medal for 2019.

NCTM | NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

The 2020 Emma Castelnuovo Award for Outstanding Achievements in the Practice of Mathematics Education goes to the National Council of Teachers of Mathematics (NCTM), USA.

The *2020 Emma Castelnuovo Award for Outstanding Achievements in the Practice of Mathematics Education* goes to the **National Council of Teachers of Mathematics (NCTM)**, USA, in recognition of 100 years of development and implementation of exceptionally excellent and influential work in the practice of mathematics education.

Founded in 1920, NCTM is the world's largest mathematics education organisation, with 40,000 members and more than 230 affiliates. In their nomination of NCTM, the chair of the United States National Commission on Mathematics Instruction, John W. Staley, gave four reasons for nominating NCTM:

- NCTM has served the mathematics education community (nationally and internationally) for almost 100 years by providing leadership, publications and resources, professional development and networking opportunities.
- NCTM has served its membership by supporting and growing educators and involving them in many of the organisation's initiatives and projects, and providing various opportunities to develop members' leadership skills.
- NCTM continues to advocate high-quality mathematics teaching and learning for each and every student. This advocacy extends to the work that helps educators who choose to advocate with their elected officials and policymakers.
- NCTM continues to build and value collaborative relationships with educators throughout the world.

The Award Committee found much evidence in support of the reasons mentioned above, and further criteria also had to be met in order to achieve the Emma Castelnuovo Award. In the following, some exemplary activities of NCTM's past 30 years are highlighted. These activities fall in a wide range of domains – in particular, principles and standards as foundations for policy and practice, publications including research journals, professional development, legislative and policy leadership, and international collaboration.