ICTMA Newsletter

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Dear ICTMA friends...

This first ICTMA newsletter of 2024 provides news related to mathematical modelling internationally. It also includes a feature report by Rita Borromeo Ferri on a recent meeting with an icon of mathematical modelling education - Henry Pollak. This newsletter also provides a list of selected recent publications by ICMTA members in journals and books related to our field. We would like to thank all colleagues who have contributed to this newsletter with their comments and texts.

News

- **International Mathematical Modelling Challenge competition**
  Irene Ferrando (Spain) presented a short report on the International Mathematical Modelling Challenge competition related to the 4th edition of the selection phase held in Spain, IMMC-Spain (https://immcspain.blogs.uv.es/). Irene is a member of the expert panel of the international competition. The IMMC organisation will present a discussion group at the next ICME in Sydney.

- **ICTMA 22 in Linköping, Sweden, August 10-15, 2025**
  In 1989 the fourth International Conference on Teaching of Mathematical Modelling and Application (ICTMA4) was held in Roskilde in Denmark. For ICTMA22, in 2025, Jonas Bergman Ärlebäck and Peter Frejd inviting all researchers, teachers and mathematicians

interested in the teaching and learning of mathematical modelling and applications to return to Scandinavia again – but this time to Sweden and the city of Linköping! An early research career day and welcome reception are planned for 10 August. The official academic programme starts on 11 August. https://liu.se/en/article/international-conference-ictma22

- **ICMI Study 27 Conference "Mathematics Education and the Socio-Ecological"**
  The discussion document is now available for the ICMI Study 27 Conference "Mathematics Education and the Socio-Ecological" which will take place from January 22 to January 26, 2025, in Quezon City, Philippines. https://icmistudy27.sciencesconf.org
  The summary dates for the study are as follows.
  - 1. Call for proposals (paper submission): from February 2024
  - 2. Pre-submission support deadline: May 30, 2024
  - 3. Deadline for proposals (paper submission): June 15, 2024
  - 4. Invitations to participate mailed: between July 30 and August 15, 2024
  - 5. Registration: opens on July 30, 2024, and closes November 1, 2024
  - 6. Proceedings published online: December 31, 2024
  - 7. Conference Opening: January 22, 2025

  The co-chairs of the study are Alf Coles (University of Bristol, UK) and Kate Leroux (University of Cape Town, South Africa). ICTMA-President Vince Geiger is a member of the organising committee.

- **ACTIO "Constitution of environments for teacher education in mathematical modelling"**
  Emerson Tortola and Karina Alessandra Pessoa da Silva (Brazil) have passed news that the Brazilian journal ACTIO has published a call for manuscripts aimed at a thematic issue on "Building environments for teacher training in mathematical modelling". ACTIO: Teaching in Sciences, has an A3 classification in the CAPES qualis. The deadline for submission of manuscripts is 30 June 2024.

- **CERME 14**
  CERME 14 will take place in Bolzano (Italy) from 4 to 8 February 2025. The call for TWG06: Applications and Modelling can be found at https://www.cerme14.it/twg-teams/. ICTMA members are invited to participate in TWG06 on mathematical modelling at CERME14, both with papers and in person. The Papers from CERME 13 are available at https://hal.science/search/index?q=CERME13+Modelling

Feature Report: A meeting with Henry O. Pollak

In the following article, Rita Borromeo Ferri describes a recent meeting with an icon of mathematical modelling - Henry O. Pollak. Rita travelled to Henry's home in Summit, New Jersey, during a visit to the USA as part of a collaboration with Teachers College, Columbia University, and shares a reflection from her fascinating meeting.

Das ist die Wahrheit! (That's the truth!) – An afternoon with Henry O. Pollak

by Rita Borromeo Ferri

An afternoon with Henry O. Pollak on January 10, 2024, in Summit, New Jersey, USA

New York City on January 10, 2024, I'm in Pennsylvania Station in New York City, waiting for my train to take me to Summit, New Jersey. I don't need an umbrella today. It had rained heavily the day before and stormed so much that I almost lost my umbrella on the way to Teachers College across the campus of Columbia University. The umbrella was no use, I was wet anyway. Yes, Teachers College (TC) is where I always like to go to teach mathematical modeling courses. It is thanks to Henry Pollak that mathematical modeling is so important in the mathematics education faculty at TC. If you haven't been to the TC yet, you should, because the building is beautiful both inside and out. Admittedly, I have to find the exact staircase and the right stairway every time, which then at least leads me purposefully to the "Thompson Hall", where mathematics education is located. Henry Pollak's name is also written on one of the wooden office doors.

Now my platform is called, and I take the escalator down to the train, which is already waiting there. It takes about 47 minutes to reach Summit in New Jersey. That's where Henry lives. The train makes a jerky start. I look out of the window for the first 10 minutes and can see the magnificent Manhattan skyline on a clear day, but it gets smaller and smaller and eventually disappears. It becomes more rural and as I look into the gardens of the houses along the railroad tracks, I really look forward to the upcoming meeting! Yes, I haven't seen Henry since 2016 and now it's 2024. Before I flew to New York City, I contacted Henry and asked him to meet up. He replied within two days. Not many 96-year-olds would do that, but Henry did. So, it worked out that I would go to Summit and his wonderful daughter Cathy would pick me up at the train station and bring me to him. That was very nice! And that's how it turned out. Now I'm sitting here on the train, looking forward to it. And no, I didn't come up with an interview guide for the meeting. I know the many very interesting interviews with Henry from around 1998, also recorded in Summit. Among other things, Henry talks about his school career in three different countries, namely Austria, England, and the USA. Or the interview that Alexander Karp conducted with Henry in 2007. I find this particularly insightful, because it reveals how Henry became a mathematics educator, although he is an applied mathematician, and then an adjunct professor at Teachers College, Columbia University. So why ask Henry something that he has actually already answered several times and in great detail. Henry, Cathy and I want to have lunch together and spend the afternoon chatting. Surely, that's not out of the question, we'll also talk about mathematical modeling. And so we did.

Cathy recognizes me immediately at Summit station and we drive about 20 minutes to her house, which is beautifully located. I would have loved to see all this in spring and summer. We enter the house, turn the corner twice and there's Henry sitting in his room. My first thought: unbelievable, I want to look that good at 96! Funnily enough, I jumped from English to German, so: “Hallo Henry, wie geht es Dir? Wir haben uns lange nicht gesehen!” ("Hello Henry, how are you? We haven't seen each other for a long time!") And he also replies in German: “Gut soweit, wie schön, dass wir uns wiedersehen!") “Good so far, how nice to see you again!" We sit down to lunch in the dining room and talk about all sorts of things, only to get back to modeling. I tell him that Gloria Stillman received the Henry Pollak Award in 2023, which he didn't know and was very pleased about, or that the next ICTMA will be in Linköping, Sweden.

Henry Pollak with Rita Borrromeo Ferri, January 2024, Summit, New Jersey, USA

Henry told me about modeling examples that he finds interesting, such as how a supermarket should be optimally arranged so that customers buy the most expensive goods. I showed him some modeling tasks of mine. He particularly liked this one: 'Model how much energy is consumed for the air conditioning of the Al Bayt soccer stadium in Qatar during a 90-minute World Cup match. Consider under which conditions Qatar can still meet the claim of a climate-neutral World Cup.' Through this exchange, I finally asked Henry what I had always wanted to know: During your time at Bell Laboratories, was there a situation, or rather THE sparkling moments, where you realized that mathematical modeling should be taught in school?

We're sitting at the table, lunch is over. I actually have to look at my watch, because there are still 60 minutes until the train leaves for New York City and it takes 20 minutes to get from the house to Summit Station. And I'm asking this complex question, I think! Cathy comes into the room and says she'll remind us of the time. All right, says Henry, I'll have to be really brief then, this is a challenge! Rita, now I'll tell you what it was really about these sparkling moments. Henry starts by telling me, that he was already doing very innovative interdisciplinary work at Bell Labs in the 1960s. Only back then, and I see a slight grin flit across his face, the importance of working interdisciplinary wasn't emphasized as much as it is today! In Bell Labs, people worked on complex problems, Henry continues. Especially when I was a young researcher there. Colleagues would come to me and say: "Hey Henry, we've got a math problem, can you solve it?" I took the problem back to my room and pondered, told Henry, these problems were always complex, precisely because they came from different disciplines. So, what I did was absolutely logical, Henry said, because I went to every single colleague in their rooms and asked them where this problem actually came from. After a few rounds with my colleagues, I often realized that the problem was posed incorrectly in context. That is why the resulting math problem didn't make sense at first. What I ended up doing, Henry's blue eyes sparkle as he says this, so I reformulated the question in the way my colleagues had probably described it. Then I looked at how I could solve it mathematically. Yes, I solved problems in a way that hadn't been done before.

Cathy comes into the room and says that we still have 15 minutes until departure. "We'll make it," says Henry. He concentrates and continues.
For the complex modeling at that time, I only had the mathematics and digital tools that were available, emphasizes Henry. But I then improved the modeling process, the procedure, more and more. And I had actually solved a previously unsolved problem at Bell Labs. Then, I transferred this modeling process into my model of modeling – applicable mathematics and applied mathematics – starting from a real problem – there's a cycle! This way of working and thinking, together with the interdisciplinarity and my problem-solving skills, that's what shaped and inspired me at Bell Labs! Those were the sparkling moments you asked for Rita! I wished for engineering students to become math teachers and for school children to learn mathematical modeling! That's how it was, “Das ist die Wahrheit!” (“That's the truth!").
The afternoon with Henry and Cathy was lovely. I'm getting a bit cold here at Summit Station while I wait for my train, which unfortunately arrives 20 minutes late. Almost like the German railroad system, I think. I warm my hands on my hot coffee mug. As the train gently jolts me back to New York City, I am very glad that I had the chance to see Henry again. Did I tell you that I brought Henry "Manner"? Manner wafers come from Vienna and are small wafers made from cocoa hazelnut cream. They are also available in other flavors. “They're eaten quickly," Cathy said when I gave Henry the package.
The train pulls into Penn Station and my two great daughters, who accompanied me to New York this time, are already waiting for me. "How was your afternoon with Henry?", they both ask me almost simultaneously. "Wonderful," I say enthusiastically, and “Das ist die Wahrheit! ("That's the truth!")

Recent Dissertation

- Sindura Kularajan completed her PhD in mathematics education at Texas State University (Texas, USA) in May 2023. Her dissertation was entitled: “STEM Undergraduates' Structural Conception of Situational Attributes”. Her committee chair was Jennifer Czocher.

Recent Publications

Biccard, P. (2024). Productive Struggle in Mathematical Modelling. *The Mathematics Enthusiast*, *21*(1–2), 99–112. https://doi.org/10.54870/1551-3440.1620

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Please send future contributions to the editor by email <greefrath@uni-muenster.de>. The next newsletter will be published in October 2024. We are interested in your contributions to any of the current sections including project reports and problems.