International Study Group on the Relations Between
the HISTORY and PEDAGOGY of MATHEMATICS
An Affiliate of the International Commission on
Mathematical Instruction

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This and earlier issues of the Newsletter can be downloaded from our website
http://www.clab.edc.uoc.gr/hpm/
These and other news of the HPM group are also available on the website
http://grouphpm.wordpress.com/
(the online and on time version of this newsletter).

NOTE FROM THE CHAIR

Some months ago it seemed that the pandemic may be over, and we looked forward to resuming the teaching and meetings in person. Alas, at the time of this newsletter, the cases in some countries around the world are soaring again – and so we are not yet 'out of the woods'. But there are some reasons for celebration, as well as some time to take stock of what we can do in the next period, until February.

Firstly then, we should remind ourselves that in September the International Mathematics Union celebrated its centenary in person (and online) in Strasbourg, France:
https://imucentennial.math.unistra.fr/

Secondly, we had a successful HPM fully online earlier in the year, in June and will start planning the next one very soon!

Finally, don't forget that we are looking forward to meeting again in person in Salerno, Italy, for the ESU-9 (https://esu9.unisa.it/). Please see further details further in this newsletter – don't miss the deadlines!

As we approach the end of the calendar year, I am also aware that there were discussions last year to update our portal and websites. For this to work, we need some experts, so with this note ***I extend an invitation to those who have enthusiasm for such project.*** Please get in touch with me if you are interested in joining the new web team.

On a more general note, as our Advisory Board has been enlarged last year, I am appealing to new members (and old if they have any new information) to send details of the links to your regional/national societies dedicated to the history of mathematics and education for our websites. This is an important information for novice teachers, academics interested in the history of mathematics, or anyone really who has access to the internet, to see our local organisations and be able to join for some meetings.

I wish you all the best for the impending holiday season.

Snezana Lawrence

Interview with Ubiratan D'Ambrosio (2011)

The International Journal for the History of Mathematics Education

September 2011

In the following pages we reproduce Alexander Karp's interview with Professor Ubiratan D'Ambrosio in 2011.

This text is reproduced with the kindly authorization of *The International Journal for the History of Mathematics Education.*

Interview with Ubiratan D'Ambrosio

In this issue of the Journal, *we continue our publication of interviews with prominent mathematics educators. The following interview with Ubiratan D'Ambrosio was conducted in September 2011.*

Ubiratan D'Ambrosio is Professor Emeritus of Mathematics at the State University of Campinas/UNICAMP, São Paulo, Brazil, where he was an active faculty member from 1972 through 1993. He has been researching social-cultural issues related to mathematics, science, and mathematics education. His areas of study have included history of mathematics and science, and ethnomathematics and ethnoscience (this terminology was coined by him).

D'Ambrosio has served as Vice-President of the International Commission of Mathematics Instruction (1979–1983), President of the Inter-American Committee of Mathematics Education (1979–1987), President of the Sociedad Latinoamericana de Historia de las Ciencias y la Tecnología (1988–1992), President of the International Study Group on Ethnomathematics (1996–2000), President of the Sociedade Brasileira de História da Ciência (1991-1993) and President of the Sociedade Brasileira de História da Matemática/SBHMat (1999-2007).
He is a Fellow of the American Association for the Advancement of Science and a member of the International Academy of the History of Science (2011).
In 2005, he was awarded the Felix Klein Medal from the International Commission on Mathematical Instruction. He is a recipient of the Kenneth O. May Medal in History of Mathematics (2001).

The interview was conducted by Alexander Karp (Teachers College, Columbia University).

School Years

Interviewer: Let's start with your childhood. During your childhood, how did you feel about your mathematics education?

Ubiratan D'Ambrosio: I was raised in the family of a teacher. I remember even in my early childhood my father meeting sometimes with his friends in the evening and all his friends and all our family's friends were teachers. So the atmosphere of my house was that of a house of teachers. Then I started my education. I went to elementary school, but I remember nothing special. I was a good student taking things seriously, but I don't recall any special talk with my father about mathematics. I used to see his books around, but nothing special. And in my junior high school, again, I was a good student just in everything, including mathematics. Even more, I remember that I particularly liked history. I liked to write about history: history of Brazil, history of Europe, but even with my interest in history, nothing much different than in the other disciplines. I simply was a good student. I had good teachers and good memories from my school years.

Interviewer: Could you say, how different was the organization of schooling and of lessons, in particular, with what we typically have now?

Ubiratan D'Ambrosio: At that time in Brazil, the school was organized in the following way. We started with elementary school from seven to eleven years old. Then we moved to junior high school, it was called a gymnasium, and we had four years of this junior high school. And while I was in the elementary school, all classes had a blackboard and the teachers were writing on the blackboard, and we took notes. We had a few books to read. School furniture included special desks with two seats at each desk. Two boys sat at one desk. I said "boys" because it was an all-boys school. I really do not recall anything special. When I moved to junior high school, then something was special—I had a bad experience.

Interviewer: What was it?

Ubiratan D'Ambrosio: My father became my teacher. I went to the second grade in the junior high school, and I got my father as a teacher. He was a very good teacher: even now, sometimes I meet his old students and they all recall him as a very good teacher, they were very fond of him. He was a good teacher loved by the children and by his colleagues; everything was perfect. But his experience as the teacher of his son was not good. I don't know if he had expected more from me than I could do at that time. Also, my schoolmates looked at me in a different way. I think that created a bad experience for me to be his student. This is what I recall. Don't take me wrong: when the year was over, nothing, nothing bad happened, I got good grades, everything was okay, but the tension between us was high. And then I decided to move to another school to avoid having my father again as a teacher. He also agreed to doing this because he did not want to have me in his class. It's hard to explain. Our relationship was very good, no problem at all, but it was uncomfortable to be in his class.

Interviewer: Tell us about different cultural influences. I understood from what I read that your family was very diverse, you are of Italian and Spanish descent, right? And in your education, could you identify any specific features or influences of any of these cultures?

Ubiratan D'Ambrosio: No, nothing at all. I was in a Catholic school: religious fathers, religious priests, and I don't recall anything that refers to my heritage. On my father's side, my grandfather was Italian and my grandmother was Spanish. And on my mother's side, both were Italian. So in the home of my grandparents, there was some food that would be of, say, Italian origin or Spanish origin. I knew words that were just, you know, everyday words just like "be quiet," but all in Italian. But there were very few deep cultural Italian or Spanish influences.

So after this bad experience with my father as my teacher, I moved to senior high school. And there was something very important in this period. I was about sixteen years old, and I was a good student—although not the most bright, I had no problems in school: I had good grades and everything and I liked the school. But some students, of course, had problems—either they were not that bright or not that hardworking. My father used to give private lessons on the weekends to groups of students that were preparing to become employees of big banks or of the government. There was a special exam for those preparing to become public employees. These exams required much mathematics, especially some kinds of financial mathematics: interest and all this. Those who wanted to take this exam were often quite grown up, already professionals, say, thirty years old. My father arranged small groups of eight or ten participants and taught them at home—he gave lectures to them and I was always around. I talked with them, very friendly, in a very good atmosphere. And one day, my father said, "Don't you want to help me with this class?" I said, "Well, how?" "Oh, you can do some exercise, some examples of what I teach." I accepted this suggestion. I don't know if he had the intention of preparing me for the profession. I know that it was the first time when I was sixteen or seventeen, I held the chalk at a blackboard with eight or ten students, grown ups, looking at me while I was doing exercise, and I did well. They liked it. I noticed that my father was also happy with this arrangement. And I became a teacher. It was the first time I had someone listening to me, I was at the blackboard explaining, and I think this was my beginning. I finished senior high school when I was eighteen years old. It was time to go to the university.

University Education

Ubiratan D'Ambrosio: I went to the university—we used to call it *faculdade de filosofia, ciencias y letras*: philosophy, science, and letters. This was the place preparing teachers. This place was somewhat in the model of the French *Ecole Normal Superieure*. They had a very strong course in mathematics, a very good curriculum. I was admitted and became a student of mathematics. This was the beginning of my university years.

Interviewer: What was most important and influential for you in your university studies?

Ubiratan D'Ambrosio: The education was organized as a four-year sequence, very much in the European style. The program was very advanced with difficult courses in calculus and geometry. The professors of my professors had been Italian (Fantappiè and Albanese) and French (Weil and Dieudonné). Because there was a lack of teachers, we could be granted an authorization to teach, say, one or two years before getting the university degree. When I moved to my third year in university—that means I was only twenty years old—I received authorization to become a regular teacher in a junior or senior high school, and then I became a professional teacher, with classes of forty students with all the responsibility of a teacher. While I was helping my father, I was

just helping, but when I received this certification, I became a professional. I had a professional status, salary and everything. And then I started my career as a teacher. High school, senior and junior high school. I liked to teach, the students liked me. Sometimes I meet my former students, who are old now, not much younger than me because I was a twenty year old teacher teaching students of sixteen and seventeen, almost the same age as me. I meet them and they are so kind to me, so I think I did well.

As a teacher, I was very concerned with what we could do better in teaching, and this was the beginning of my reflections about mathematics education. I came from a very strong university. The difference between what we did in the elementary or junior high school and what was going on in the university was so big! I thought maybe we could find ways of filling this gap. This was a general reflection and I published a few papers in this period as a teacher.

So I was a high school teacher and my future seemed to be clearly defined. But when I was twenty-five, I learned that in a new school, the University of Sao Paolo, they were looking for young instructors and young assistants. In this school, they hired very good professors in mathematics from Italy. They had an engineering school, which was supposed to be a very high-level school, and they had very good professors for all the areas. They invited me to go there to become an instructor in the engineering school. So I moved from being a teacher in high school to being an instructor, nothing more than giving exercise, not as a real professor, in an university. I became a young assistant to a full professor, Jaurès P. Cecconi, Italian, a former student of Leonida Tonelli.

Interviewer: You wrote that he was very important for you? Why was he so important?

Ubiratan D'Ambrosio: It was a different life. Before, I was teaching high school students, say, forty hours per week. I liked to read, of course. I liked to study mathematics, but I was a high school teacher, that was my profession. And then my life changed: being an instructor in this engineering school was not considered a permanent job. I would keep this job if after five years there I would have a doctorate. I had very few classes per week, about six, and without all the responsibilities of the professor, I had the responsibility of studying to become a researcher. And this was a big change in my life. So I devoted full time to studying with only a few hours per week of teaching, and this was very demanding. My professor, Jaurès Cecconi used to give very difficult and rigorous courses and I had to follow his classes in the first or second year of calculus. It was not calculus, it was really hard analysis. I was a good student, I knew the subject, but now I had to look at it a different way and to prepare to give exercises as an instructor. And Jaurès Cecconi was very keen, specifically about being a teacher. Before going to the class to give his lectures on calculus to freshmen, he would sit a long time with me, his assistant, discussing what his plan was for the lecture. This model of taking so seriously every lecture to freshmen was very, very important for me. I learned what it means to be a professor at the university.

Interviewer: You mentioned somewhere that you wrote a book with your father. That was your first book, was it?

Ubiratan D'Ambrosio: My father was a very inspired and good teacher, and he gave many classes preparing students for exams as I mentioned before. He wrote a very good book about financial mathematics that was very successful—all the students would use this book. Then one day he said, "Well, you are doing higher mathematics research. Why don't we improve my book, putting in some more advanced subjects?" As I told

you, I was always concerned with having more advanced mathematics for elementary teachers. The financial mathematics that my father was teaching was relatively elementary, and, of course, there were possibilities for introducing some calculus there. My father said, "Why don't we write a book, a new version of the book with more advanced mathematics?" And we did this, and so it became a book for a senior high school in the upper level or for community colleges or technical high-school. The book included financial mathematics, some introduction to calculus, linear algebra, some matrices, etc. All these things are useful for people getting involved with economics. And that's how our book was written and it was very successful.

Interviewer: What was your field of doctoral studies?

Ubiratan D'Ambrosio: My research and my instructorship, while I was doing my doctorate, were in analysis; my field of research for the doctorate was calculus of variation and measure theory, what was called geometric metric theory. It was very advanced because Cecconi was really on the front line—he was a very, very strong mathematician.

Further Career in Education

Interviewer: Moving to your further career when you became a professor yourself and started teaching regular courses in different places, in the United States or in Brazil, what were your favorite courses?

Ubiratan D'Ambrosio: When I became a professor, I liked to teach the more advanced courses, and, of course, I taught calculus: every university college teacher in Brazil and the United States would teach calculus. When I was approaching finishing my doctorate, I started to have the responsibility of being the professor in the equivalent of a teacher's college. My courses were mainly on introductory topology and on functional analysis. My first job in the United States was as a research associate at Brown, and at that time, Brown was moving into a new degree called the Master of Arts in Teaching, M.A.T. And my advisor at Brown, Wndell H. Fleming, offered me the opportunity of teaching in the M.A.T. I was a research associate, with not much money. I was married, and had two children. This suggestion was most welcome because I had decided—because of the military coup in Brazil—to stay in the States. My adviser knew that I had experience as a teacher in Brazil, both as a high school teacher, and as a teacher preparing future teachers. And he offered me this opportunity of doing some classes in this Master of Arts in Teaching. So much of my experience in teaching in the USA was in the graduate program, and this was very rewarding. I was so happy with this Master of Arts in Teaching, the courses, because I could do more advanced mathematics for people who would go on to teach, and this was very good. I enjoyed it. My idea had always been to bring more advanced mathematics to elementary education. And it still prevails. Then from Brown, I moved to Buffalo, and in Buffalo I was also involved with graduate courses. I became the Director of Graduate Studies, the Graduate Chairman of the Department of Mathematics. SUNY at Buffalo had a very strong Ph.D. program and I got involved with graduate courses. Most of my teaching was in graduate classes, and always in the line of analysis, calculus of variations, and functional analysis, as these were my main subjects. In Buffalo, I had my first Ph.D. student, T.K. Puttaswamy, now an Emeritus professor at Ball State University. His research was on stability of differential equations and it was a very good experience to be a graduate advisor. I am still good friends with him, and with all my former advisees. Puttaswamy became

involved with the History of Mathematics and he is now writing a book on the history of Indian mathematics.

Ethnomathematics

Interviewer: Let's talk about ethnomathematics. How did it happen that after this career in pure mathematics, you moved into thinking and discussing historical and social aspects?

Ubiratan D'Ambrosio: Cecconi used to say me: "You have to know the classics. Go to the classic papers." I was working on very advanced stuff, the geometric measure theory. But Cecconi repeated, "In order to understand this, you have to learn about the classics and the problems in the classics." So among my readings were many historical papers. I had to read important papers from the beginning of the nineteenth century and of the eighteenth century, and I think this developed my feelings towards history. I liked history, reading these old papers, trying to understand what they had to do, what were the difficulties, the problems. I'd say this was my initiation as a historian. And then I moved to the States and started to have my graduate students. I was in Brown University, an important center for the History of Mathematics, and I benefited so much from the extraordinary library on the history of mathematics of Brown. But in this period I did not publish any research in the history of mathematics, it was only part of my preparation to do research in more advanced stuff.

When I was in SUNY at Buffalo, the university decided to join UNESCO in a graduate program in Africa. It was a marvelous project that UNESCO got involved in. One country, the Republic of Mali decided that instead of sending students abroad to get a degree, they would rather keep them at home, learning here about all of what's going on in the country —this was in the early years of independence – and to bring the teachers to teach them in Mali. Of course, they could not hire very good active researchers in many fields like physics and chemistry where you need labs. Even in mathematics, you need a library. Then they had a very bright idea, "We'll have professors not living in Bamako, in Mali, but coming every two or three months, coming for two or three weeks." And this was a project initiated by UNESCO and they invited universities from all over the world to join this program. They invited SUNY Buffalo to be part of this project. SUNY directed the invitation to me. I think it's because I was the graduate chairman. So I was invited to join this UNESCO project, and then I started to go to Mali every two or three months to stay two or three weeks there to teach and advise graduate students, the same thing and at the same level of what I was doing in Buffalo. I would advise some students to get a doctorate at the same level as Buffalo. The students were very bright. Every trip to Bamako, I would bring books and papers necessary for their research. All this with UNESCO support, so there was no problem in moving and in traveling with lots of books because UNESCO would take care of this. I had a diplomatic passport. That was my experience in Africa. While I was there, of course you don't teach twelve hours a day. You have a few hours of teaching and then you have much leisure time—you go around seeing the country. When my students realized that I was very respectful of their culture, they were very eager to show it to me. And so I started to move around. Mali was probably the most important African empire in the twelfth century and the thirteenth century, very important, and I had my lessons in the history of Africa and in particular of Mali. It was for me a sort of course, like a graduate course in African history. I was paying much attention to the

history of architecture and technology and all this. Mali had a great success in it and I would say to myself "to do all this, they needed very strong mathematics. But this mathematics had nothing to do with mathematics that was being done in Europe." I think this was the beginning of my thinking about the mathematics that is so important for the cities—the construction, the buildings. I'm talking about what was before the colonization. They were good in another kind of mathematics, not the European mathematics. I think these were the earliest ideas that I had about ethnomathematics. However, while I was in Africa, although I wrote a few pieces about it, the idea of ethnomathematics was not yet ready.

Later, I was invited to develop a similar program in Latin America. When you go to Peru, you see the Incan civilization. You go to the Central America, you see the Mayan. And you go to Brazil, you see the Amazon. The same idea that I had in Africa repeated here. They must have their own mathematics to do all this. So by '74 or '75, I think I had already identified this strong cultural component that paved the way to do mathematics in different cultural environments. Every region has different conditions, social, cultural, meteorological, natural, everything is different. So the ideas that were basic in building up a theory like mathematics were different in different places of the world.

The Third International Congress of Mathematics Education in Karlsruhe in '76 was a very important opportunity for me to give one of the main lectures on related topics. I was not talking about ethnomathematics, but I was talking about these social, cultural, and political issues that would be the ground on which ethnomathematics would grow. And this was, I think, the first conference, an international conference, where these ideas were presented. In '78, there was the International Congress of Mathematicians in Finland. Finland is very far from both Africa and Latin America. Those who had been living there, say, two or three thousand years ago, had, like the Egyptians, the Babylonians, the Greeks, the Romans, to solve problems to survive, however. How did they construct their buildings? They had no buildings there, they had igloos. How did they count time? How would they build the means to survive in those conditions in the Arctic Circle? I thought that the Inuit, the Sami and the Eskimos probably did what those Indian Amazonians did or what those in Africa did. They built all their own ways of surviving, their own ways of explaining nature, of understanding nature, and they built their own science and mathematics as a basic tool for all the other sciences. Of course, I understand science and mathematics in a broad sense, as the art and techniques of knowing and doing, understanding and explaining.

Then I started thinking, how would I express these ideas? I like to play with language, with words, and I tried to build a word that would mean the mathematics for these ancient Finnish people, and I came up with a very funny word. Then I said to myself, why don't I use Greek roots instead of using Finnish roots? Thus "ethnomathematics" came.

Interviewer: You said once—I'm citing from your presentation at the Conference in Rome—that ethnomathematics does not propose to replace academic mathematics by folkloric mathematics. So can you summarize how you think ethnomathematics should live together with academic mathematics? How should it develop?

Ubiratan D'Ambrosio: We are in a global world. Globalization is really the big thing that happened in the relatively recent history. Since we had humans standing up, they started to walk, walk around the world. But in the thirteenth, fourteenth, and fifteenth

centuries, this took a different dimension. They started to go around the world and then the new economic system emerged, capitalism. Capitalism started the colonial process. In this globalization, the kind of knowledge that was of the conquerors spread throughout the world. This was a very efficient way of dealing with what became the modern stuff of civilization, technology and all this. This is based on mathematics. Based on what kind of mathematics? On the mathematics that was developed from the Mediterranean tradition. And this became the imprint of modern civilization. You cannot do anything that is modern if you don't have this kind of mathematics and science backing you. So this is why I said, no, it's impossible to replace it with anything else.

On the other hand, people have cultural roots. They look for an identity. One of your first questions today was about the influence of Spanish or Italian in my early childhood. You cannot deny that you have roots, roots from your culture, from your language, from your ways of dealing with nature. All these roots are contained in the ethnomathematical knowledge. So it's very difficult for one to deny these roots, even if we accept the need for other kinds of knowledge. So what are we doing? What I feel is it's a very appropriate way of dealing with ethnomathematics in this world. You have to claim to be able to deal with both. We are talking in English. If you started questioning me in Russian, nothing will work! We have to talk in English, but when I am at home, when I am with my intimate circle, my language is Portuguese. I believe when you go back to your family, you speak in Russian.

Interviewer: That's true!

Ubiratan D'Ambrosio: We cannot deny our roots, even if we accept the other because it's absolutely necessary for life in a global world.

On the Development of Research in Mathematics Education

Interviewer: You have spent a long time in research in mathematics education. Let's have a look at the history of research in our field. What can you say about any important changes in style or paradigm or research studies in mathematics education during, say, the last thirty years or forty years?

Ubiratan D'Ambrosio: I think the major change was not in mathematics, but in society in general. When I was a child or even a teacher, even at the beginning of my teaching profession, making a phone call was quite a problem. I moved to the city called Sao Carlos, which is not even three hundred kilometers out Sao Paolo. If I wanted to talk with my family, I would ask for a telephone connection and they would say, "Well, you have to come back in five or six hours just to make the connection." Really, the world was so different. When I needed a paper to do my research in calculus of variations that was not in the library of the university, I would have to write to a colleague of Cecconi or Cecconi would do this for me. It was necessary, for example, to write to his colleague in Italy, asking for this paper. This colleague would go to the library, make a photograph of the paper, and would send it back to Cecconi. It would take three or four months for the paper to arrive. It's a different world.

This change is very strongly noticed by the children, and you see, teaching in my early years as a student and as a teacher was very different. Our function as teachers was to deliver some knowledge to the students, and the students would receive this knowledge in a sort of passive way. The teachers were the agents of education, and the

students were the receivers. Now, things changed so much because of the things that are happening today in this world. Sometimes, the students are much more learned than I am, than the teachers are. They have more time to learn about the world. They have more time to live in the world than their teachers. So they are very learned individuals. When I have a problem with my computer, if my grandchildren of thirteen or fourteen are around, they come and solve it.

The relationships between teachers and students have a different character. You do not come imposing your way of looking at things because this is the way. No, children have their own way of looking into things. So what we have to do is, in a sense, negotiate with them in the sense of saying, "Look, what I know is a more efficient way to do something, that's why it's advisable for you to learn my way." But they would say, "But my way is good too." Well, we have to respect their ways. This makes education a very different relationship between teachers and students. And this, I think, is the big, big change that we have to face in education, in general.

In mathematics education, there is much resistance to this because a lot of teachers would say students, "You know nothing about mathematics." It's not true because they know lots of mathematics, but in a different way. I said before about my conception of ethnomathematics, it should go together with the dominating mathematics. The same is true with the knowledge that students receive in school and outside of school. Regarding research in mathematics education, I believe it should look more closely to this sophisticated kind of relationship, more than just looking into the subject as something that has to be transmitted.

On the History of Mathematics Education

Interviewer: The history of mathematics education is an emerging research field to some extent, so we are always asking about specific interests in this field. What is interesting to explore and study in the history of mathematics education to you? Which directions? Which topics?

Ubiratan D'Ambrosio: When you are studying the history of mathematics education, you have to look into society. You have to look at what's happening in society that has generated this interest in this kind of knowledge, mathematics knowledge. To do history of mathematics education is mainly to do a general history. History of mathematics is not a good guide for the history of mathematics education. You need to explore the social history.

For example, I have been giving a few lectures about Galois, on the bicentennial of Galois. To this end I got involved in thinking about the history of mathematics education in the beginning of the nineteenth century. What was happening there? Why did they develop new forms of mathematics education? The famous institutions of higher and secondary education emerged then. A lot of new mathematics books were published. A new concept of book publishing started in the beginning of the nineteenth century. Why all this? Well, you have to understand what the social process was in Europe, then with Napoleon, etc. And that is why I believe that the history of mathematics education must be a history of *society*, and out of this, you see what kind of mathematics responded to the society's moments in this period. This is the way I see it. In different periods, society needs people with some specific kind of knowledge, with specific competencies and skills. It is a specific mathematics that corresponds to these

competencies and skills. This leads us to fit mathematics education into societal priorities. Hence, the History of Mathematics Education tells us how the teaching of mathematics, and even the development of mathematics as a field of knowledge, responded to societal priorities.

Interviewer: Thank you for this interview.

ESU 9
9th EUROPEAN SUMMER UNIVERSITY ON THE HISTORY AND EPISTEMOLOGY IN MATHEMATICS EDUCATION

18-22 July 2022

University of Salerno
(Department of Mathematics)
Fisciano (SA), Italy

Website: https://esu9.unisa.it

SECOND ANNOUNCEMENT

EXTENDED DEADLINES

30 November 2021: deadline for submitting Abstracts of proposals for all types of activities.

31 December 2021: Notification of acceptance or not of the submitted proposals.

31 January 2022: Deadline for submission of revised abstracts.

General Activities

A Summer University (SU) on the History and Epistemology in Mathematics Education began as an initiative of the French Mathematics Education community in the early 1980's. From those meetings emerged the organization of a SU on a European scale and became the European Summer University (ESU) on the History and Epistemology in Mathematics Education. The first ESU was organized in Montpellier (France), 1993. The principal aims of the ESU are:

- to provide a forum for presenting research in mathematics education and innovative teaching methods based on a historical, epistemological and cultural approach to mathematics and their teaching, with emphasis on actual implementation;
- to offer an opportunity for mathematics teachers, educators and researchers to share their historical knowledge, their teaching ideas and classroom experience related to this perspective;
- in this way, to motivate further collaboration along these lines, among members of the mathematics education community in Europe and beyond.

Scientific Activities

The ESU is more a collection of intensive courses than a conference for researchers. It is a place where teachers and researchers meet and work together. It is also a place where beginners, more experienced researchers and teachers present their teaching experience to the benefit of the participants and get a constructive feedback from them—and it refers to all levels of education, from primary school to tertiary education, including in-service teachers' training. The programme and activities of ESU-9 are structured around the following main themes:

Theme 1: Theoretical and/or conceptual frameworks for integrating history and epistemology of mathematics in mathematics education;
Theme 2: History and epistemology in students and teachers mathematics education: Curricula, courses, textbooks, and didactical material of all kinds - their design, implementation and evaluation;
Theme 3: Original historical sources in teaching and learning of and about mathematics;
Theme 4: Mathematics and its relation to science, technology, and the arts: Historical issues and socio-cultural aspects in relation to interdisciplinary teaching and learning;

Theme 5: Topics in the history of mathematics education;
Theme 6: History of mathematics in Italy.

Scientific program will be structured along these themes, consisting of a few plenary lectures & a panel, as well as, parallel sessions of oral presentations, short communications and posters, for participants, who want to speak about their own experience, or research. A major part of the programme, however, consists of workshops.

In the updated website you find:

The *second announcement* at
https://esu9.unisa.it/wp-content/uploads/2021/10/esu9-2ndannouncementv2.pdf

Please note the information about the fees:
Early registration (before February 28, 2022): 220 Euro (170 Euro for students and school teachers)
Late registration (before 31 May 2022): 270 Euro (220 Euro for students and school teachers)

The *pre-registration form* at
https://forms.gle/YKYaw8eG8opMiToN
Please note:
ESU-9 is open to European participants and participants coming from other countries.
Registration will be closed on 31 may, 2022.
Participants who wish to register later should contact esu9.sa@gmail.com

The plenary talks:

THEME 1
ABRAHAM ARCAVI, Weizmann Institute of Science, Israel
"Roles of the history of mathematics in the mathematical knowledge for teaching"

THEME 2
DOMINIQUE TOURNÈS, Université de la Réunion, France
"What history training for future mathematics teachers? Personal experiences and reflections"

THEME 3
MARIA ROSA MASSA-ESTEVE, Universitat Politècnica de Catalunya – Barcelona Tech (Spain)
"The Use of Original Sources in the Classroom for Learning Mathematics"

THEME 4
MICHEL ROELENS, UCLL Hogeschool, Campus Diepenbeek, Belgium
"Algorithms before computers"

THEME 5
ANA MILAN GASCA, Università di Roma 3, Italy
"A hidden thread: ideas and proposals on children's mathematics education in history"

THEME 6
MARIA TERESA BORGATO, Università degli Studi di Ferrara, Italy
"The History of Mathematics in Italy through the ages: sources, correspondences, and editions".

THEME 7
Special lecture
PEDRO MANUEL BAPTISTA PALHARES,
University of Minho, Portugal
Ethno + mathema + tics: The legacy of Ubiratan D'Ambrosio

The *submission form* for *workshops* and *oral presentations* at https://esu9.unisa.it/submission/ to be sent it in electronic form to esu9.sa@gmail.com

Please note: **EXTENDED DEADLINES**
30 November 2021: deadline for submitting Abstracts of proposals for all types of activities.
31 December 2021: Notification of acceptance or not of the submitted proposals.
31 January 2022: Deadline for submission of revised abstracts.

The official languages of ESU-9 are English, French and Italian.

1) *Workshops* consist in studying a specific subject and having a follow-up discussion. The workshop organizer prepares, presents and distributes the historical/epistemological or pedagogical/didactical material, which motivates and orients the exchange of ideas and the discussion among the participants. Participants read and work on the basis of this material (e.g. original historical texts, didactical material, students' worksheets etc). Workshops will be scheduled in parallel sessions and will vary in duration (*1.5 hours for workshops based on didactical – pedagogical material; 2 hours for workshops based on historical and/or epistemological material*). It is preferable to organize Workshops in English. Nevertheless, workshop organizers who intend to organize their workshop in another official language are advised and encouraged to prepare copies in English of the material to be distributed to the participants (e.g. slides, worksheets etc).
2) *Oral presentations* will be allocated a 30-minute time slot each (25 minutes for presentation and 5 minutes for discussion), scheduled in parallel sessions. It is an activity in the spirit of a conventional research conference. Oral presentations can be delivered in any of the official languages. However, for presentations not in English, presenters will be asked to use two sets of slides; one set in the language they are going to give their presentation, and one set in English.

Further information:
About the venue:
The *Campus of Fisciano* is located in the periphery of Salerno (https://web.unisa.it/vivere-il-campus/unisa-experience/campus-map).

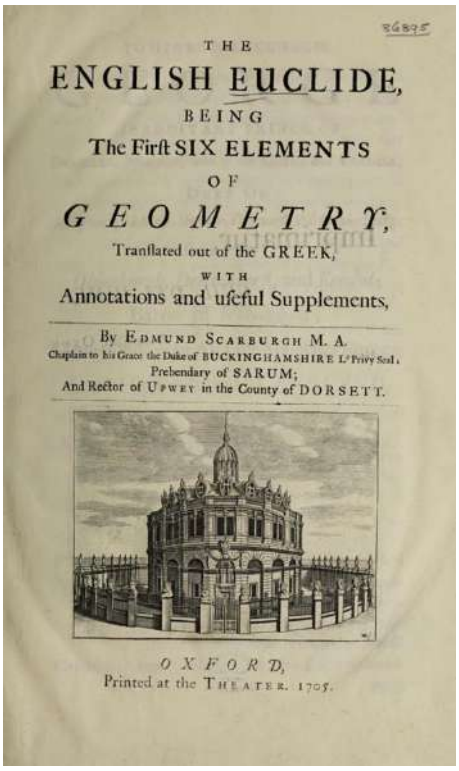
Accommodation is possible near the Campus or in the centre of Salerno (in this case a shuttle service will be available). You will soon find information about the hotels in the website.
The area includes several UNESCO heritages, such as the *Amalfi coast* and *Paestum*, which will be destinations for excursions (https://web.unisa.it/en/campus-life/surroundings).
About COVID: more than 82% of the Italian population is fully vaccinated. The risk of infection is very low.
Prevention measures are still active, so at the moment to enter closed places, and to travel with busses, trains and planes it is necessary to have a "Green – Pass" and a mask.

MAA Convergence Student Activities from the Lives and Works of Mathematicians and More

Since 2004, MAA *Convergence* has been both an online journal on the history of mathematics and its use in teaching, and an ever-expanding collection of online resources to help its readers teach mathematics using its history. We highlight here some of our newest articles offering a variety of resources for use in your classroom.

Ada Lovelace (1815–1852) in 1836, by Margaret Sarah Carpenter. Government Art Collection.

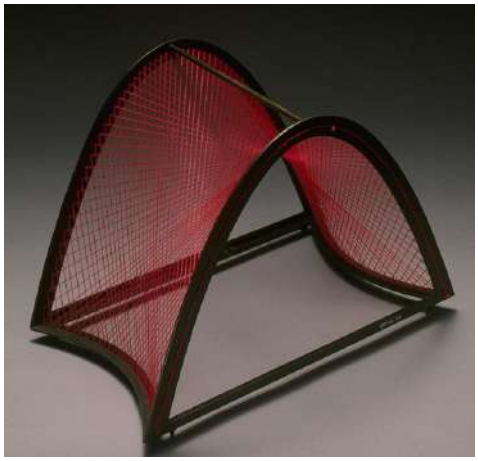
Editorial board member Adrian Rice presents readers with ten problems from Ada Lovelace's correspondence course on calculus with Augustus De Morgan that shed light on common confusions that still arise today in "Helping Ada Lovelace with her Homework: Classroom Exercises from a Victorian Calculus Course." After instructors and students wrestle with these problems, they can examine the provided solutions. Meanwhile, in "The Life of Sir Charles Scarburgh," fellow associate editor Mike Molinsky uncovers biographical information for a figure from the history of English medicine and discusses his association with Mathematical Treasures, including several featured in Convergence's extensive collection.


THE
ENGLISH EUCLIDE,
BEING
The First SIX ELEMENTS
OF
GEOMETRY,
Translated out of the GREEK,
WITH
Annotations and useful Supplements,
By EDMUND SCARBURGH M. A.
Chaplain to his Grace the Duke of BUCKINGHAMSHIRE L^d Privy Seal,
Prebendary of SARUM;
And Rector of UPWEY in the County of DORSETT.
OXFORD,
Printed at the THEATER. 1705.

The 1705 edition of Euclid's *Elements of Geometry* to which Scarburgh may have contributed. Internet Archive.

Günhan Caglayan's article, "Algebra Tiles Explorations of al-Khwārizmī's Equation Types," combines algebra tiles with the classification of equations proposed by the medieval Arabic mathematician al-Khwārizmī to help students visualize algebra in a new way. Additionally, thanks to Ximena Catepillán and Samuel Navarro, an article we announced in June is now available in a Spanish translation: "Misterios Matemáticos de Rapa Nui con Actividades para el Aula de Clases," by Ximena Catepillán, Cynthia Huffman, and Scott Thuong. Please contact the editors to discuss translations of other existing articles.

Peggy Aldrich Kidwell has established a new series, "Keys to Mathematical Treasure Chests," with an initial installment on "19th-century String Models." Contributions will offer examples of how online databases of mathematical objects can be mined to unlock the collections that they preserve for use in research and teaching. As above, the editors are happy to discuss your topic ideas.



Ludwig Brill's model of a hyperbolic paraboloid, 1892. Smithsonian Institution negative number NMAH-97-9530.

The 20th entry in "A Series of Mini-projects from TRansforming Instruction in Undergraduate Mathematics via Primary Historical Sources" from the TRIUMPHS team is "The Logarithm of -1: A Mini-Primary Source Project for Complex Variables Students" by Dominic Klyve. Daniel E. Otero's fifth episode in his series of curricular units based on primary source texts for use in teaching and learning trigonometry is "al-Bīrūnī Does Trigonometry in the Shadows." It introduces students to the genesis of the trigonometric quantities tangent, cotangent, secant ,and cosecant in the context of timekeeping by the Sun as explored in al-Bīrūnī's 11th-century work The Exhaustive Treatise on Shadows.

See all of these articles and more at MAA Convergence:

http://www.maa.org/press/periodicals/convergence

Interested in contributing? We'd love to hear from you at convergence@maa.org!

Convergence publishes expository articles on the history of topics in the grades 8–16 mathematics curriculum; translations of primary sources suitable for classroom use; classroom activities, projects, or modules for using history to teach mathematics; and classroom testimonials after applications of such activities, projects, or modules. Additionally, we welcome submissions related to the following Convergence features:

• Mathematical Treasures, a collection of images of historical mathematical texts or objects for use in the classroom.

• “Problems from Another Time,” highlighting historical problems.
• “On This Day,” a listing of three or four historic mathematical events that happened on any given date.
• “Today's Quotation,” a quotation about mathematics from a historical figure selected from a searchable database of quotations.
• “Conference Calendar,” an up-to-date guide to conferences and events around the world that feature or include the history of mathematics and its use in teaching.

For more details on Convergence’s submission and refereeing process, see our Guidelines for Authors.

Amy Ackerberg-Hastings,
Independent Scholar, USA

Janet Barnett,
Colorado State University – Pueblo, USA
Editors, *MAA Convergence*

Have you read these?

Bender, A., & Beller, S. (2021). Ways of counting in Micronesia. *Historia Mathematica, 56*, 40–72.

Carman, C. (2021). The gravitational influence of Jupiter on the Ptolemaic value for the eccentricity of Saturn. *Archive for History of Exact Sciences*, *75*(4), 439–454.

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Wilson, R. & Flood, R. (2021). The BSHM: the first fifty years. *British Journal for the History of Mathematics*, *36*(2), 76-94.

Philosophy of Mathematics Education Journal

No. 37 (August 2021)

http://socialsciences.exeter.ac.uk/education/research/centres/stem/publications/pmej/pome37/index.html

Dedicated to the memory of
UBI D'AMBROSIO

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Felix Klein: Visions for Mathematics, Applications, and Education

Dear colleagues,

I would like to inform you that the extended English Felix Klein biography has been published.

Tobies, Renate:
Felix Klein: Visions for Mathematics, Applications, and Education
Revised by the Author and Translated by Valentine A. Pakis
(Vita Mathematica, Vol. 20).

Birkhäuser/Springer Nature Switzerland: Cham 2021 (XX + 677pp., 46 Figures, 10 Tables, ISBN 978-3-030-75784-7).

See:
https://link.springer.com/book/10.1007%2F978-3-030-75785-4

https://link.springer.com/content/pdf/bfm%3A978-3-030-75785-4%2F1.pdf

Renate Tobies

Announcements of Events

ICHME 7
Seventh International Conference on the History of Mathematics Education

19-23 September 2022
Mainz, Germany

First Announcement

We are calling for papers for this seventh Conference, presenting original research on the history of mathematics education.
The main thematic issues of the Conference will be:
1 - to compare recent research on the history of mathematics education at the international level;
2 - to highlight and analyse the interrelations between the history of mathematics and the history of mathematics education;
3 - to explore new methods of research, interpretation, and evaluation of sources;
4 - to enrich the history of education with a comparative approach to the mathematical
contents taught;
5 - to take into account the sociological context to analyse the educational and professional scope of mathematics education;
6 - to analyse the dissemination of conceptions and reforms in mathematical education internationally.

The history of mathematics education is now a well-established area of research. The major moment in its modern development was the creation and work of TSG 29, the history of mathematics teaching and learning, at ICME 10 in 2004, in Copenhagen. Since then, it has been a subject of interest in various international meetings, e.g., at the ICME, HPM, CERME, and ESU conferences and an object of many studies and publications.
The first specialized research conference, entitled "Ongoing Research in the History of Mathematics Education", held in Garðabær near Reykjavík (Iceland) in 2009, led to a series of such specialized conferences. This will be the seventh international conference, this time held in Mainz, Germany. It will be the continuation of the successful work of the first six conferences, in Iceland (2009), Portugal (2011), Sweden (2013), Italy (2015), The Netherlands (2017) and France (2019).

Abstracts of proposed contributions must be submitted before February 1, 2022.

To register to ICHME7 send an Email to Natalia Poleacova (npoleaco(at)uni-mainz.de) with the subject "ICHME7_registration_Name" and the completed form, which can be found on the homepage:
https://ichme7.uni-mainz.de/fb-08-ichme7/registration/

To submit the abstract one should send it attached to an Email to Natalia Poleacova (npoleaco(at)uni-mainz.de) with the

subject "ICHME7_abstract_Name", as described at https://ichme7.uni-mainz.de/fb-08-ichme7/abstracts/

The decision about the acceptance of proposals will be communicated by April 1, 2022.

Abstracts should be in English and about one page (ca. 500 words), in word. References must be included. The abstract needs to include an explanation, with references, of why your proposed presentation is a relevant addition to the body of knowledge of the History of Mathematics Education. Regarding the choice of topics for presentations, there will be no restriction in terms of time periods.
There will be no possibility for a revision of abstracts, once submitted.

A publication of the Proceedings is planned. Submissions will be peer-reviewed.

Jörg Zender and Ysette Weiss

(local chairs)

Forthcoming BSHM Meetings

The British Society for the History of Mathematics
http://www.bshm.ac.uk/events

Christmas Meeting

11 December, 2021
Warwick, UK

Confirmed speakers:
Deborah Kent:
"Fit for making a decent observation"? Photography and the British eclipse expedition of 1871

Christos Papadimitriou:
The foundational crisis in maths and the making of Logicomix

Alex Aylward:
Between authority and obscurity: R. A. Fisher and the mathematization of biology

Tony Crilly (on Cayley)

Philip Beeley (on Thomas Harriot)

Aoife Kearins:
The impact of the penny post on mathematical collaboration and inclusion

David Dunning:
"Contact with Real Computing": Abstraction and Physics in Christopher Strachey's Programming Research Group

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Area	Name and address	Email address
Argentina	Juan E. Nápoles Valdés, Lamadrid 549, (3400) Corrientes, ARGENTINA	napoles4369@gmail.com
Australia	Gail FitzSimons, 68 Bradleys Lane, Warrandyte, Victoria 3113, AUSTRALIA	gfi@unimelb.edu.au
Austria	Manfred Kronfellner, Institute of Discrete Mathematics and Geometry, Vienna University of Technology, Wiedner Haupstr. 8-10, A-1040 Wien, AUSTRIA	m.kronfellner@tuwien.ac.at
Belgium and The Netherlands	Steven Wepster, Mathematical Institute, Utrecht University, Budapestlaan 6, P.O. Box 80010, 3508 TA Utrecht, NL	S.A.Wepster@uu.nl
Canada	Thomas Archibald, Mathematics Department, Acadia University, Wolfville, NS B0P1X0, CANADA	Tom.Archibald@acadiau.ca
China	Ma Li, Linkoping University, ITN, SE - 601 74 Norrkoping, SWEDEN	ma_li@mac.com
Colombia	Edgar Alberto Guacaneme, Facultad de ciencia y tecnología, Universidad Pedagógica Nacional – Bogotá, COLOMBIA	guacaneme@pedagogica.edu.co
Denmark	Tinne Hoff Kjeldsen, Department of Mathematical Sciences, University of Copenhagen. Universitetsparken 5, 2100 Copenhagen Ø, DENMARK	thk@math.ku.dk
France	Evelyne Barbin, Centre François Viète, Faculté des sciences et des techniques, 2 Chemin de la Houssinière, BP 92208, 44322 Nantes cedex, FRANCE	evelyne.barbin@wanadoo.fr
Germany	Gert Schubring, Inst. f. Didaktik der Math., Universitaet Bielefeld, Postfach 100 131, D-33501, Bielefeld, GERMANY	gert.schubring@uni-bielefeld.de
Hungary	Kati Munkácsy, Eötvös Loránd University, Centre of Mathematics Education, Budapest, street Pázmány 1/c, HUNGARY	katalin.munkacsy@gmail.com
Iceland	Kristín Bjarnadóttir, University of Iceland, School of Education, v. Stakkahlid 105 Reykjavík, ICELAND	krisbj@hi.is
Iran	Mohammad Bagheri, P.O.Box 13145-1785, Tehran, IRAN	sut5@sina.sharif.edu
Israel	Ted Eisenberg, Mathematics Department, Ben Gurion University of the Negev, Beer-Sheva 84105, ISRAEL	eisen@math.bgu.ac.il eisenbt@barak-online.net
Italy	Marta Menghini, Dipartimento di Matematica (Universita` La Sapienza), Piazzale A. Moro 5, 00185 Roma ITALY	marta.menghini@uniroma1.it
Japan	Osamu Kota, 3-8-3 Kajiwara, Kamakura Kanagawa-ken, 247-0063 JAPAN	kota@asa.email.ne.jp
Malaysia	Mohamed Mohini, Department of Science and Mathematical Education, Universiti Teknologi Malaysia, 81310 Johor, MALAYSIA	mohini@fp.utm.my
Mexico	Alejandro R. Garciadiego, Caravaggio 24, Col. Nonoalco Mixcoac Del. Benito Juárez 03700 México, D. F. MÉXICO	gardan@servidor.unam.mx
Morocco	Abdellah El Idrissi, E.N.S. B.P: 2400 Marrakech, 40 000, MOROCCO	a_elidrissi@hotmail.com
New Zealand	Brenda Bicknell, Faculty of Education, University of Waikato, Private Bag 3105, Hamilton 3240, NEW ZEALAND	bicknell@waikato.ac.nz

Area	Name and address	Email address
Other East Asia	Gloria Benigno, Department of Education, Culture and Sports, Region X, Division of Misamis Occidental, Oroquieta City, PHILLIPINES	glorya4444@yahoo.com
Peru	María del Carmen Bonilla, Calle Reni 272, San Borja, Lima 41. Lima, PERU.	mc_bonilla@hotmail.com
Poland	Ewa Lakoma, Institute of Mathematics Military University of Technology Warsaw, POLAND	ewa.lakoma@wat.edu.pl
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Southern Africa	Marcos Cherinda**,** Universidade Pedagogica, Campus de Lhanguene, Faculdade de Ciencias Naturais e Matemática, CP 4040, Maputo, MOZAMBIQUE	mCherinda@up.ac.mz
Spain and Portugal	Carlos Correia de Sá, Dep. Matemática Pura; Faculdade de Ciências da U. do Porto; Rua do Campo Alegre, 687 P - 4169 - 007 Porto, PORTUGAL	csa@fc.up.pt
Taiwan	Wann-sheng Horng, Math Dept NTNU, 88 Sec.4, Tingchou Rd., Taipei, TAIWAN	horng@math.ntnu.edu.tw
Turkey	*- still vacant -*	
United Kingdom	Snezana Lawrence, Middlesex University, London, England, UK	snezana@mathsisgoodforyou.com
United States of America	David L. Roberts, Prince George's Community College, Largo, Maryland, USA	robertsdl@aol.com

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Items for the Newsletter should be sent to the editors, preferably by email (see addresses below).
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No.	Deadline for material	Sent to distributors
109	**12 February 2022**	**March 2022**
110	12 June 2022	July 2022
111	12 October 2022	November 2022

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Editors:
Snezana Lawrence, snezana@mathsisgoodforyou.com
Helder Pinto, hbmpinto1981@gmail.com
Luis Puig, luis.puig@uv.es
Gail FitzSimons, gfi@unimelb.edu.au

A note from the Editors

The Newsletter of HPM is primarily a tool for passing along information about forthcoming events, recent activities and publications, and current work and research in the broad field of history and pedagogy of mathematics. The Newsletter also publishes brief articles which they think may be of interest. Contributions from readers are welcome on the understanding that they may be shortened and edited to suit the compass of this publication.