THE HPM GROUP: PAST, PRESENT AND FUTURE

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ABSTRACT

This paper presents the HPM group from four perspectives. The first is a personal perspective of the development of the group by one of its initiators. The second considers the changing themes and participants of the HPM over the 50 years of its existence. The third looks at the development of the HPM by way of the HPM Newsletter. Finally, the last perspective is a forward-looking one examining some questions that the HPM will have to confront in the coming years.

Introduction

The International Study Group on Relations between the History and Pedagogy of Mathematics, HPM, was established at the ICME meeting in Karlsruhe in 1976. With nearly fifty years behind it, HPM-11 provided an opportunity to reflect on the past, present, and future of HPM itself, leading to the panel discussion on which this paper is based.

The paper presents the HPM from four different perspectives and is, accordingly, divided into four parts. The first is a brief personal perspective of the development and prehistory of the group by one of its initiators. The second part looks at the HPM from the point of view of its themes and participants, how these have evolved from the organization's early days to the present. The third considers the HPM from the perspective of HPM Newsletter, which began not long after the study group itself was established. Like the second part, one sees in this third part the changing faces of the participants and key figures of the HPM through the list of editors and subscribers of the newsletter as well as changing aspects of interest in the organization.

While the first three parts are mostly retrospective, the fourth part looks towards the future and suggests four domains in which work of the HPM should continue or expand. For the panel, this part was meant to spark discussion among the participants; for the reader, it is meant to stimulate reflection on questions worth pursuing.

1 Beginnings of HPM Group (Leo Rogers)

The British Society for the History of Mathematics (BSHM) was founded in 1971, and has built an international reputation for promoting historical studies of mathematics and the use of the history of mathematics at all levels in mathematics education in order to enhance the teaching of mathematics for the public benefit (Wilson & Flood, 2021). In the first meeting of BSHM on 2 July 1971, there were a talk of Arthur Morley (Nottingham College of Education) on "The history of mathematics in colleges of education" and a talk of Leo Rogers (Digby Stuart College) on the "Relations between the History and Pedagogy of Mathematics".

The International Congress on Mathematical Education – 2 (ICME) was organised in Exeter, England in 1972. My Research supervisor was David Wheeler, who was one of the local organising Committee, and so I proposed a study group on "Relations Between the History and Pedagogy of Mathematics". Since Philip Jones was author of the first article in the 31st Yearbook NCTM entitled *The History of Mathematics as a Teaching Tool,* I asked Philip Jones if he would join me to be co-chair of this group at ICME 2. With the support of these colleagues my proposal was accepted.

At ICME 3 in 1976 at Karlsruhe, the ICMI Executive Committee approved the affiliation of the new Study Group, under the title “International Study Group on Relations between the History and Pedagogy of Mathematics” (ISGHPM) cooperating with the International Commission on Mathematical Instruction. The list of eight “principal aims” of the HPM Study Group had been given in 1976 (Rogers, 1978, p. 76):

1. To promote international contacts and exchange information concerning:
   a) courses in history of mathematics in universities, colleges and schools;
   b) the use and relevance of history of mathematics in mathematics

teaching; c) views on the relation between history of mathematics and mathematical education at all levels.
2. To promote and stimulate interdisciplinary investigation by bringing together all those interested, particularly mathematicians, historians of mathematics, teachers, social scientists and other users of mathematics.
3. To further a deeper understanding of the way mathematics evolves, and the forces which contribute to this evolution.
4. To relate the teaching of mathematics and the history of mathematics teaching to the development of mathematics in ways which assist the improvement of instruction and the development of curricula.
5. To produce materials which can be used by teachers of mathematics to provide perspectives and to further the critical discussion of the teaching of mathematics.
6. To facilitate access to materials in the history of mathematics and related areas.
7. To promote awareness of the relevance of the history of mathematics for mathematics teaching in mathematicians and teachers.
8. To promote awareness of the history of mathematics as a significant part of the development.

2. The past of HPM Group (Évelyne Barbin)

In this overview, we indicated the forms of the meetings of the HPM Group and we presented the types of participants in HPM meetings and their evolution. Next, we would like to examine the themes of the HPM Group. We begin by summarizing the aims of HPM Group as they were in 1976 and then we look at the Announcements and the Proceedings of the meetings. We will observe that themes changed, some were introduced, some disappeared or reappeared; at the same time, and perhaps as a result of changing emphases, types of participants also changed.

2.1 HPM sessions and HPM meetings

From 1980 until 1992, the Congress ICME proposed HPM sessions organized by the Chair of HPM. In this period, George Booker also organized the first HPM satellite meeting in Adelaide in 1984. In 1988, Florence Fasanelli

organized the second HPM meeting in Florence, following which ICME-6, held in Budapest, included HPM sessions and a panel on "History and teaching", organized by Ubiratan d'Ambrosio, Chair of HPM.

There were no HPM sessions in ICME-10 in Copenhagen (1994) but ICME organized that year two Topic Study Groups with historical themes: "The role of the history of mathematics in mathematics education" and "The history of the teaching and the learning of mathematics". They were organized by two teams of chairs and members, invited by ICME. The first indicated TSG stayed in ICME Congress until 2024, but not the second one.

2.2 Participants in HPM meetings (1980-2020)

In the period 1980-1992, participants of HPM meetings and HPM sessions were mainly historians of mathematics, mathematicians and teacher educators. The next period 1996-2004 saw several changes, from the point of view of the number and type of participants in the HPM meetings. HPM-4 (Braga, 1996) was organized in conjunction with the Second "European Summer University on epistemology and history of mathematics" (ESU). There were more than 550 participants, with many secondary school teachers. HPM-5 (Taipei, 2000) was organized with many secondary teachers also. There were also secondary teachers in HPM-6 (Uppsala, 2004), organized in conjunction with the Fourth ESU. Thus, from 1996, secondary school teachers participated in the HPM meetings, offering workshops as well as oral presentations and plenary lectures.

There were several researchers on mathematics education in HPM-7 (Mexico, 2008), and both HPM-8 (Daejon, 2012) and HPM-9 (Montpellier, 2016) included teachers and researchers on mathematics education. HPM-10 (Macao, 2020) did not take place as planned because of Covid pandemic (an abridged conference was held online). Thus, from 2008, HPM meetings have been open to historians of mathematics, mathematicians, teacher educators, secondary teachers and researchers in mathematics education. The proportions of the different profiles vary from one HPM meeting to another, in particular regarding secondary school teachers. In addition, some participants fall under several profiles.

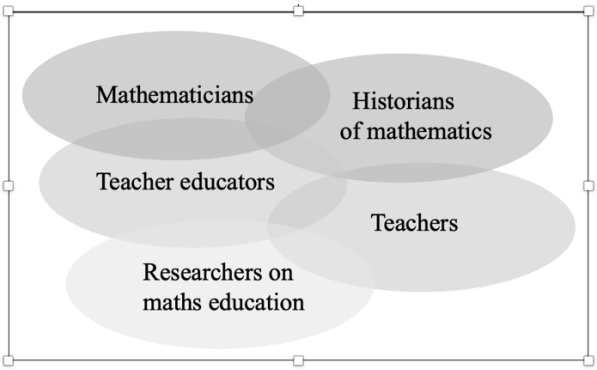

Figure 1. Three successive waves of participants at the HPM meetings

2. 3 Themes of HPM meetings (1976-2024)

The list of eight "principal aims" of the HPM Study Group in 1976 can be summarized in eight themes (Fig. 2).

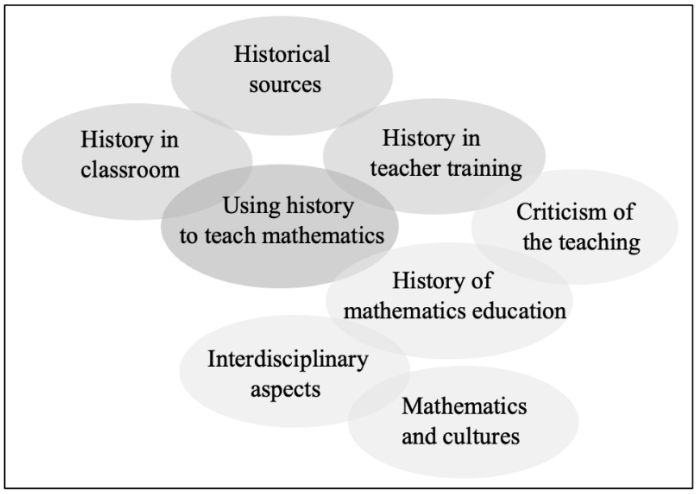

Figure 2. Eight themes for HPM Group (1976)

Four themes, however, predominated during the period 1980-1988: "History in classroom"; "Using history in teaching"; "Epistemological aspects"; "History of mathematics education". The volume edited after HPM-3 (1992) presents two new themes: "Historical sources" and "Original sources in the classroom" (Calinger, 1996). Papers coming from HPM-4 and ICME-8 (1996) contained new themes also, for example, "General ideas on the use of history in teaching" and "The use of history in teachers' training" (Katz, 2000). Two new

themes concerned with interdisciplinary and epistemological aspects of history of mathematics in mathematics teaching appeared in HPM-6 (2004). Figure 3 represents all the themes introduced in the period 1980-2004 during which period teacher educators and secondary teachers also began participating in the meetings.

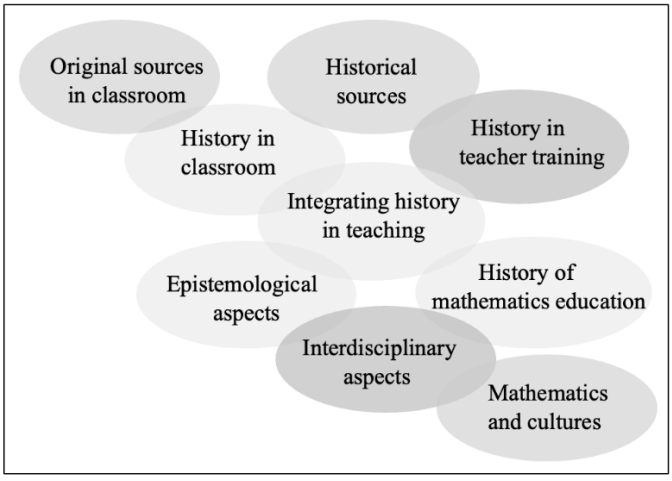

Figure 3. Four waves of themes (1980-2004)

HPM-7 (2008-Mexico) did not include additional themes to those included in HPM-6. But two themes disappeared, “The use of history in teachers training” and “Historical topics”; in this meeting where several participants are researchers on mathematics education. Seven themes were proposed in HPM-8 (2012) which have remained in all the last meetings, HPM-9 (2016), HPM-10 (2020) and HPM-11 (2024). In these last meetings two new themes have appeared, “Theoretical frameworks” and “Teaching materials”, while two other themes have been removed, “In teachers' training”; “Historical topics and sources” (Fig. 4).

These changes corresponded to the arrival of researchers in mathematics education who focused on didactical materials for teachers. Thus, “Integration of history in classroom” was replaced by “Implementation of teaching materials”. Owing to the production of adequate materials by these researchers, the training of teachers in the history of mathematics no longer seemed urgent, nor did studies on historical topics and sources. The theme “criticism of teaching” was present in 1976 but it did not appear as such then. It may have been addressed in some papers or in panels, but it does not seem to have an immediate link with the concern for “teaching and learning in the classroom”.

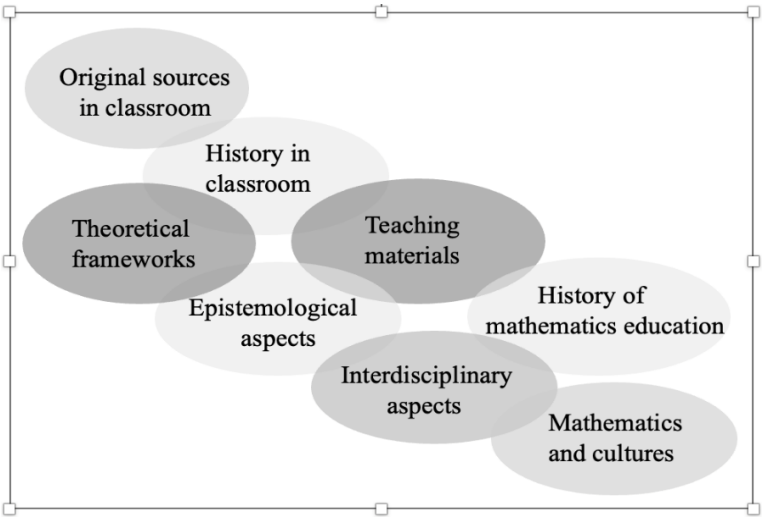

Figure 4. Themes in last HPM meetings (2012-2024)

3. The history of HPM Group through the Newsletter (Hélder Pinto)

Many of the changing themes and participants in the HPM meetings, as discussed in the previous section, find a different kind of expression in the HPM Newsletter. The HPM Newsletter is the tool used by the HPM Group and by its Chairs to communicate with all members of the Group and other interested people in this field. It is distributed by e-mail three times a year (March, July and November) and is also published on the Group's institutional website.[1] The newsletter is coordinated by an editorial team and publishes texts by the editors, by the HPM Chair, members of the HPM Group, and others who wish to contribute news, comments, interviews, book reviews, dissemination of congresses, working progress, etc. It should be noted that the Newsletter is not a scientific journal (it does not have blind peer reviews); however, it sometimes publishes short texts on the history of mathematics, for example, *Volume of a sphere in Ancient China and India* (R. C. Gupta, HPM NL, 75, Nov. 2010), *Arthur Cayley and Mathematics Education* (T. Crilly, 68, Jul. 2008) and *Power of Innovation: A Historical View* (W.-S. Horng, 54, Nov. 2003).

[1]The website (https://hpm.sites.uu.nl/newsletter/) is hosted by Utrecht University. Readers can find there an archive containing almost every issue of the HPM Newsletter.

The Newsletter was created in the 80's (see, for instance, Lawrence, 2005) with the aim of serving as a mean of communication for the Group, and at that time the Newsletter was sent to all its readers by post. Initially, publication had a single editor, but in recent years the option was for a larger team. This can be seen in Table 1, which presents a list of all editors throughout the newsletter's existence (the order of the editors is the same as in the newsletters).

N.º	Dates	Editor(s)
1-4	Missing	Leo Rogers (UK)
5-6	Oct.83-Feb.84	Charles V. Jones (Can) and others (North American Edition)
7-16	Oct.84-May.88 (11 is missing)	Charles V. Jones (Canada)
17-38	Winter89-Jul.96	Victor Katz (USA)
39-44	Nov.96-Aug.98	Gerard J. Buskes (USA)
45[2]-56	Nov.00- Mar.04	Peter Ransom (UK) (nº 46 first to appear online)
57-68	Nov.04-Jul.08	N. Kastanis (Greece), C. Weeks (UK) and B. Smestad (Norway)
69-75	Nov.08-Nov.10	C. Weeks (UK) and B. Smestad (Norway)
76-78	Mar.11-Nov.11	B. Smestad (Norway), S. Lawrence (UK), H. Pinto (Portugal) and K. Clark (USA). In 2011 a *WordPress* version appeared in https://grouphpm.wordpress.com/
79-80	Mar.12-Jul.12	B. Smestad (Norway), S. Lawrence (UK), H. Pinto (Portugal), K. Clark (USA) and L. Puig (Spain)
81-103	Nov.12-Mar.20	S. Lawrence (UK), H. Pinto (Portugal), K. Clark (USA) and L. Puig (Spain)
104-113	Jul.20-Jul.23	S. Lawrence (UK), H. Pinto (Portugal), L. Puig (Spain) and G. FitzSimons (Australia)

[2] Number 45 was wrongly published as number 44. Please, see Editorial from the Newsletter number 46.

114-Present	Nov.23-Present	S. Lawrence (UK), Janet Barnett (USA), L. Puig (Spain) and Antonio Oller-Marcén (Spain)

Table 1. List of Editors of the HPM Newsletters

At the early years, there were two newsletters, one in the HPM Group and the other in the Americas section, publications; these later merged into the single newsletter that appears today (Fasanelli & Fauvel, p. xiii):

> By 1984 the two newsletters had in effect amalgamated and henceforth (from what was called issue no. 7) there was one HPM Newsletter, edited until 1988 by Charles Jones, with occasional special supplements for the Americas Section. It was at the 1983 Michigan NCTM meeting, mentioned below, that Charles Jones agreed to be the editor of the Newsletter. The intention was that the Newsletter would have a calendar of upcoming events, a guest editorial, a 'Have You Read?' column and short reviews and announcement of meetings and activities. (…) By 1988 there were 2500 on the mailing list with readers on every continent (except Antarctica) and in 62 countries.

At present, the Newsletter contains the following sections in almost every issue: «Note from the Chair», «Conference Reports», «Announcements of Events» (from the HPM Group but also from others like the European Society for Research in Mathematics Education and the British Society for the History of Mathematics and even local events such those organized by IREM and others in Europe, North Africa, USA and Asia) and «Have you read these» (in this section are indicated many papers from this field, some special numbers and it's published many Book Reviews; in the last years a strong contribution is done by MAA Convergence, spreading several significant images from the History of Mathematics. Less prevalent nowadays are the sections «Have you been here?», «Work in progress» and «Interview»; notice that in the past this last section was very common and it should be highlighted the Newsletter number 100 (March 2019) that have interviews with the majority of the previous HPM chairs: Roland Stowasser (Germany), Ubiratan D'Ambrosio (Brazil), Christian Houzel (France), Florence Fasanelli (USA), Fulvia Furinghetti (Italy), Constantinos Tzanakis (Greece), Evelyne Barbin (France) and Luis Radford (Canada).

Inevitably in an organization existing for more than 50 years, many obituaries have been published over the years honouring many of the colleagues who have contributed to the growth of the Group; the first one was

the obituary of John Fauvel (UK), in July 2001 who was chair of the Group from 1992 to 1996.

It should also be noted that two numbers of the year 2012 (79 and 80) were translated to Spanish with the help of the Asociation Peruana de Investigación en Education Matemática (the contact was due the colleague Maria del Carmen Bonilla, who is the distributor of the Newsletter in Peru); this kind of initiative should perhaps be put on the table again so that Newsletter could have more interested readers, since many pre-university teachers and students have difficulty reading in a language other than their native one.

Today, the Newsletter continues to be a valuable organ of the HPM group through the voluntary contributions of its editors and all those who contribute texts, reviews and other news. The goodwill and efforts of the pioneers in creating an effective and comprehensive vehicle of information and for sharing ideas is still strong today but cannot be taken for granted. Notice, as example, the words of the chair of HPM in 2000, when, due to various circumstances, there was a short hiatus in the publication of Newsletter (Van Maanen, 2000):

> After 22 issues (Nos. 17-38) of the HPM Newsletter edited by Victor Katz, Gerard Buskes took over in the summer of 1996, and edited six issues, the last one being No. 44 (August 1998). Various problems urged Gerard to step down as the editor in 1999; since that time the editorship is vacant. This is a serious drawback for HPM, since the Newsletter has always been the main uniting force in this informal group, which can work without money since - except for the U.S. - the regional distributors have support from their institutions in order to print and distribute the issues. Active steps are under way in order to restore the Newsletter as a mirror and focus of HPM's activities; a number of possibilities are currently being investigated.

For the future, the Newsletter should encourage more colleagues from other parts of the world who are not currently represented in the HPM Group, such as Mexico, Eastern Europe, Turkey, Middle East, Iran, India, China, North and South Africa, etc. Another suggestion for the Newsletter is to create a «Funding Opportunities» section where suitable open calls/grants/prizes for HPM field would be publicised and help to boost the creation of networks of researchers who can apply for these same calls. The Newsletter should also try to increase the participation of the high school teachers in order to favour the establishment of more teacher–researcher

collaborations, for instance, in the context of teacher in-service training and curricular reforms.

4 Out of the past and into the future of the HPM: Questions for reflection (Michael N. Fried)

This final section will be more pointedly forward looking than the previous sections. We propose four domains to focus our reflections on who we are and where we ought to go as a group wishing to advance the history of mathematics in mathematics education. We do not assert in any way that these are the only domains possible, but they are ones that arise naturally from the history of the HPM. Indeed, some of the questions within these domains have accompanied the HPM from the beginning, though often their meaning, urgency, or even whose character as questions has changed or developed.

4.1 Domain 1: History of Mathematics & Pedagogy of Mathematics

The full name of HPM is, with my emphasis, International Study Group *on Relations between* History and Pedagogy of Mathematics. What is the *nature* of those relations? Are they such that history of mathematics is another approach for advancing the learning of school mathematics? Or are they such that a focus on history of mathematics redefines mathematics education? It is a question, in a way, of part and whole. In other words, is the history of mathematics a part of mathematics education, only a certain aspect of mathematics education? Or is it, in effect, the whole of mathematics education from which ideas to be studied can be derived?

4.2 Domain 2: Teacher-Training & Professional Development

So the question we might ask is whether history in teacher training should be a matter of teaching teachers history *or* teaching teachers to teach history? This, of course, is related to the previous question in perhaps a more radical spirit, for it asks whether history of mathematics should be for the classroom at all but only for the deepening of teachers' knowledge (just as advanced courses in pure mathematics help teaching only indirectly by making teachers' own mathematical knowledge more profound).

4.3 Domain 3: History of Mathematics & Ethnomathematics

The relationship between HPM and ethnomathematics raises questions as to the purview of historical thinking. Is it an overextension of the reach of history of mathematics? Or is it, rather, a *natural* extension of thinking of history of mathematics as the mathematics of cultures of the past? One might well argue that when historical research loses sight of the grounding of history in cultural settings it begins to see mathematical as a historical, that is, unconditioned and independent of time, people, and place. On the other hand, the history of mathematics is clearly not identical with ethnomathematics. So where does one draw the line? And how firmly should a line be drawn, if at all, in the HPM?

4.4 Domain 4: History of Mathematics & Mathematics Education Research

A proposal for an international journal under the auspices of the HPM was prepared by request for the HPM Advisory Board first by Evelyne Barbin & David Pengelley in April 2017 and then revised by Michael N. Fried and Tinne Hoff Kjeldsen in January 2018. The proposal for the international journal recognized the need to define the nature of the papers. This raises general questions about research and HPM. In particular:

- What *is* the nature of research into the relations between history of mathematics and mathematics education?
- Is it really the case that *empirical* research is what is needed?
- What kinds of assumptions do we make when we claim that the questions that concern us in HPM are empirical in character? (Do we, for example, assume a kind of naturalness of studying via history, something like the ontogeny-phylogeny argument?)
- Should HPM research be something different from mainstream mathematics education research?

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