HISTORY OF MATHEMATICS EDUCATION IN BRAZIL

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Contents

Summary

The first part of this chapter aims at constituting the History of Mathematics Education in Brazil, conceived as a field of academic research, which subject of investigation is in the aspects of Mathematics Education in Brazil or other countries. In Brazil, this field of research emerged in the early 1990's, from a set of doctoral research conducted within or outside the country. The constitution of this History will be primarily based on analytical characterization of the Brazilian academic production within this field of research. This analytical characterization intends to pay attention to the quantitative and qualitative temporal changes of Brazilian academic research, exclusively from masters dissertations and doctoral theses defended in Brazil, from 1984 to 2010. In turn, the second part of this chapter is guided to the goal of providing a brief overview of the History of Mathematics Education in Brazil, in the Republican period (1889-1980). We have chosen to elaborate this History from philosophical-pedagogical perspectives that have influenced school mathematics education in Brazil, modifying policies, practices, curriculum, teaching and learning practices related to this school subject: 1) empirical-liberal perspectives, especially those based on Auguste Comte's positivism, which guided a number of reforms in public education in the first Brazilian republican phase (1889-1930); 2) modernist perspectives of pragmatic-liberal that guided the First International Renewal Movement of Mathematics Teaching, which impact on mathematics education in Brazil occurred since 1930's until 1960's; 3) structuralist perspectives of pragmatic-technicism that guided the Second International Movement for

Reform of Mathematics Teaching (New Math), which impact on mathematics education in Brazil occurred in the period from 1960 to 1990; 4) constructivist perspectives of pragmatic-liberal that guided state curricular proposals and national curriculum guidelines to mathematics education, after the fall of military dictatorship and the restoration of democracy in the country.

1. History of Mathematics Education in Brazil: A Historical Constitution of a Specific Field of Academic Research

In this section of the chapter, our purpose is to show how the emerging field of scientific academic research, that in Brazil has been called "history of mathematics education", was formed -distinguishing itself from another so-called "history of mathematics" and "history in mathematics education" - within a broader process of emerging of investigative studies of the relationship between history, mathematics and mathematics education.

At least since the beginning of the twentieth century texts have been produced dealing with aspects of the history of mathematics education in Brazil. The first historical writings that we know of are devoted to a mathematics teacher in Brazilian schools and were written by Jose Vieira Fazenda (1874-1917) and published in the Journal of the Historical and Geographical Institute of Brazil in 1909. Entitled "*Brigadeiro Alpoym*", these writings address aspects of the life and work of the first teacher appointed, in 1738, to conduct Artillery classes in Rio de Janeiro: José Fernandes Pinto Alpoym (1698 – 1768).

In the 1950s, Francisco Mendes de Oliveira Castro (1902-1993), a researcher at the Brazilian Center for Physics Research, conducted thorough historical research on Brazilian mathematics, using interviews and documents located particularly in the archives of the Biblioteca Nacional (National Library) of Rio de Janeiro. His studies, entitled *Mathematics in Brazil*, were published in 1953 as a chapter of the book *Science in Brazil*, edited by Fernando de Azevedo (1894-1974). It is important to acknowledge the circulation of his historical text in Brazilian postgraduate education programs beginning in the 1970s, as well as its appropriation by the nascent Brazilian community of historians of mathematics education. From the mid-1980s, the path that, in such programs, led to the first productions of studies investigating the relationship between history, mathematics and mathematics education, has some different characteristics from those of other nations.

A first feature concerns the emergence, in the mid-1960s of the first *strictu sensu* programs of post-graduate studies in education in the country, whose researchers were largely trained school teachers from different disciplines, among them, math.

The first of these programs, at master's degree level, was that of the Catholic University of Rio de Janeiro, started in 1966 (Ramalho, 2006, p.183). In 1984, there were 27 master's programs in education operating in the country. In turn, the programs at the doctoral level began to operate in 1976, and in 1982 seven of them were already in operation (Sousa; Bianchetti, 2007, p. 396).

In these programs, course offerings on the history of Brazilian education contributed to sensitizing teachers of mathematics both to the study of the history of mathematics itself as well as to the history of mathematics education. In fact, among other academic studies that may possibly have been produced under the influence of post-graduate programs in education, we acknowledge here the 83-page monograph entitled *The evolution of public education in mathematics in Brazil* by Antonio Miguel, presented in 1979 as the final work in the discipline "*Evolution of the Brazilian Education*", offered by Professor Casemiro dos Reis Filho, in the post-graduate Program in Education of the Faculty of Education of Campinas State University (UNICAMP).

Then, one can say that the first academic research projects on the history of mathematics education in Brazil were undoubtedly produced in the post-graduate programs in Education.

The first of them was the master's thesis "*Study of the Evolution of Secondary Education in Brazil and Paraná State, with emphasis on Mathematics*", by Antonieta Meneghini Martins (Martins, 1984), which was defended in 1984 at the Faculty of Education at the Federal University of Paraná (UFPr). Martins' purpose was to investigate the factors that might explain changes occurring in the mathematics curriculum in secondary schools in the state of Parana and the rest of Brazil. To do this, she took as reference the teaching programs of the *Pedro II School* in Rio de Janeiro, and a traditional high school in the city of Curitiba in Parana (Miorim, 2005, p. 4).

The second characteristic that marked the history of Brazilian research studies on the relationship between history, mathematics and mathematics education was the emergence of the Ethnomathematics Program proposed by Ubiratan D'Ambrosio and Eduardo Sebastiani Ferreira, researchers at the Institute of Mathematics, Statistics and Computer Science (IMECC) at Campinas State University (UNICAMP). In fact, conducting ethnographic research to identify mathematical knowledge of marginalized cultural groups, based on the belief in the emancipatory pedagogical potential of such knowledge, underscored the need for ethno-mathematical researchers to engage in non-Eurocentric re-readings of the history of mathematics and history of mathematics education.

The third characteristic that marked the history of Brazilian research studies on the relationship between history, mathematics and mathematics education was the organization of a research community with particular interests in historical studies, stemming from discussions that took place in two national workshops on mathematics education research, promoted by INEP (National Institute of Educational Studies and Research Anísio Teixeira) in 1994. These seminars, called "*New Perspectives on Mathematics Education in Brazil*", occurred, in the town of Águas de São Pedro, in the state of São Paulo, from May 1-6 1994, and at the Pontifical Catholic University of São Paulo, from November 27-30 1994.

The constitution of this particular community was only possible because on the one hand, there began to emerge in Brazil - even before the creation of the Brazilian Society of Mathematics Education (SBEM): (http://www.sbem.com.br/) on January 27, 1988 -, isolated criticisms of the mathematics education policies that were being implemented by

the dictatorial government, which were strongly anchored in theoretical educational perspectives that combined structuralist conceptions of how to conceive school mathematics, linear developmental conceptions of how to conceive human cognition and learning school mathematics, and behaviorist conceptions on how to conceive teaching, methods and purposes of school mathematics education. From inside and outside of some Brazilian universities, the dissatisfaction with the unusual structural-behaviorist paradigm that guided the school mathematics education has generated an organized movement around mathematics education with relative autonomy in relation to research in pure and applied mathematics that were being produced in the mathematics departments of these universities. In a short time, this autonomous movement reached a high level of organization, not only by raising awareness among teachers and mathematics teachers' educators from various universities in the country, but also by promoting debates and the production of academic papers specifically focused on mathematics education.

In fact, based on academic papers written by Fiorentini (1994) and Melo (2006), as well as the data base for them published in several issues of the Brazilian journal *Zetetiké*, we can say that by the end of 1993 - and therefore, before the occurrence of the aforementioned seminars promoted by the INEP -, at least 260 master's dissertations and doctoral theses on mathematics education had been defended in Brazil, of which 14 dissertations and three doctoral theses were included in the field of relations between history, mathematics and mathematics education. At least 135 of 260 works had been defended by the end of 1987 – and, therefore, even before the emergence of the *Brazilian Society of Mathematics Education* (SBEM) itself. Many of these early works were produced in the pioneering Master's Degree in Teaching Science and Mathematics offered by the Institute of Mathematics, Statistics and Computer Science from Campinas State University, coordinated by professor Ubiratan D'Ambrosio, through grants provided by the partnership between the Organization of American States (OAS), the Ministry of Education and Culture of Brazil (MEC) and the PREMEM (Program of Extension and Improvement of Education) established in the 1970s.

Thus, it was within the broader movement of mathematics education that the results of academic papers written and defended in Brazil since 1984, and in other countries since 1987 became apparent (D'Ambrosio, 1987; Dynnikov, 1991; Neto, 1992; Lins, 1992; Nobre, 1994).

It can then claim to have been the belief in the political, epistemological and pedagogical potential of history in general (and, particularly, histories of mathematics and mathematics education), by a specific autonomous community of mathematics educators, the main motivation, in Brazil, from the early 1990s, that led to the realization of both *Luso-Brazilian Meetings on History of Mathematics* (I LBMHM: Coimbra/Portugal, 1993; II LBMHM: Águas de São Pedro/Brasil, 1997; III LBMHM: Coimbra/Portugal, 2000; IV LBMHM: Natal/Brasil, 2004; V LBMHM: Castelo Branco/Portugal, 2007; VI LBMHM: São João del Rey/Brasil, 2011), as *National Seminars on the History of Mathematics* (I NSHM: Recife/Pernambuco, 1995; II NSHM: Águas de São Pedro/São Paulo, 1997; III NSHM: Vitória/Espírito Santo, 1999; IV NSHM: Natal/Rio Grande do Norte, 2001; V NSHM: Rio Claro/São Paulo, 2003; VI NSHM: Brasília/Distrito Federal,

2005; VII NSHM: Guarapuava/Paraná, 2007; VIII NSHM: Belém/Pará, 2009; IX NSHM: Aracaju/Sergipe, 2011).

It can be said that such belief was also the main reason that led to the establishment, on March 30, 1999, of the *Brazilian Society for the History of Mathematics* (SBHMat) - http://www.sbhmat.com.br/ - during the Third National Seminar on History of Mathematics, held in the city of Vitória, in the state of Espírito Santo (ES).

Under the chairmanship of Professor Ubiratan D'Ambrosio, one of the major initiatives of the SBHMat board was the creation in 2001 of two magazines aimed at the dissemination of specific historical studies related to mathematics and mathematics education: *Revista Brasileira de História da Matemática: an international journal on the History of Mathematics* (RBHM) - under the editorial responsibility of Sergio Nobre, a professor at the Universidade Estadual Paulista (UNESP - Rio Claro - SP) - and the Magazine *História & Educação Matemática*, whose editors were Antonio Miguel and Maria Ângela Miorim, professors at Campinas State University (UNICAMP-SP). The first remains in circulation today, and all the articles published in it can be accessed in full electronic version at the site: http://www.rbhm.org.br/.

From the mid-1990s, the specialization of the specific debate about the history and emergence of research groups focused on specific investigation of this matter and the expressive academic production conducted by them, led to the distinction between three different research fields: *history of mathematics, history of mathematics education* and *history in mathematics education*.

The distinction usually made between these three fields of scientific-academic research is based, first, on the distinction already widely established between *mathematics* and *mathematics education*, both seen as scientific-academic fields of activity which include their own different objects, methods and political-epistemological purposes of research.

There are several ways of conceiving and of distinguishing between *mathematics* and *mathematics education*. In this chapter, they are not seen as a cumulative and universal set of fixed knowledge, but dynamically, as sets of socio-cultural practices that mobilize knowledge, values, emotions, norms, power and memory. Such practices, which can also be seen as *language games*, are modified according to different normative purposes that can guide their performance in different fields of human activity. In turn, fields of human activity are seen as open and mutant forms of cultural, social and political organization constituted and established by human communities based on shared purposes, norms and values. Thus, practices considered mathematical, as well as educational practices that may or may not mobilize practices considered mathematics, can be performed in different fields of human activity, such as: school activity, scientific-academic activity, family activity, nautical activity, commercial activity, economic-finance activity, etc.

But if the distinction we establish between "mathematics" and "mathematics education" legitimizes the distinction between the "history of mathematics" and "history of mathematics education", the distinction between the latter and that of "history in mathematics education" becomes acceptable when we consider a number of studies have been conducted in many countries. These studies have been guided primarily by the

common purpose of promoting improvements in teaching and learning of mathematics, based on the establishment of links between histories - and more specifically histories of mathematics and mathematics education - school mathematics education and mathematics education that are part of teachers' education and mathematics education research. In Brazil, these research studies are usually included in the research field "history of mathematics education" since, although such studies still need to make use of histories of mathematics and mathematics education, they are not necessarily required to be conducted using typically historical methods of academic research. In order to place it more precisely, in contrast to the other two fields mentioned here, we are going to describe as follows, conceptions and purposes that guide actions in each (cf. Miorim & Miguel, 2001; Miguel & Miorim, 2002a; Miguel & Miorim, 2002b; Miguel, 2003):

History of Mathematics - History of mathematics is much more complex and diverse than the studies of the development of mathematical ideas or concepts in time. In this field of scientific-academic activity, we have included studies based on research practices conducted by historical methods investigating, in any times or context, any aspects of different fields of human activity in which mobilizing practices of mathematical culture are carried out for different purposes other than those intentionally educational in nature, such as: the mobilizing practices unique to mathematical culture; works, artifacts, knowledge, discourses, values, norms and powers mobilized by such practices; practices of control, evaluation, disposal, validation and legitimation of knowledge associated with these practices; people, cultural groups and communities of practice involved in such practices; the nature and the social uses of knowledge involved in such practices; and social institutions that promoted and financially supported carrying out these practices.

History of Mathematics Education - History of mathematics education is much more complex and diverse than merely conducting diachronic studies of the development of educational ideas or doctrines related to teaching and learning mathematics. In this field of scientific- academic studies, we have included studies based on research practices conducted by historical methods investigating, in any times or context, any aspects of different fields of human activity in which mobilizing practices of mathematical culture are carried out for intentionally educational purposes, such as: mobilizing practices unique to mathematical culture for intentionally educational purposes; works, knowledge, discourses, doctrines, theories, pedagogical perspectives, buildings, artifacts, school materials and teaching methods, public policy related to mathematics education, national and international movements of curricular reforms, laws, regulations, school archives, educational programs, curricula, values and powers involved in such practices; control practices, evaluation, disposal, validation and legitimation of knowledge, methods and theories associated with these practices; people, cultural groups and communities of practice involved in such practices; the nature and the social uses of knowledge involved in such practices; social institutions that promoted and financially supported carry out these practices.

History in Mathematics Education - Also "history in mathematics education" presents itself now as a complex and diverse field of scientific-academic activity. In it, we have included studies based on research practices conducted by different methods or combinations of methods that emerged in the social sciences and humanities, and

investigating different uses of history - and, particularly, the history of mathematics and mathematics education -, as well as of the potential, implications, and problematizations of these uses in different fields of human activity in which mobilizing practices of mathematical culture are carried out for intentionally educational and/or investigative purposes.

The boundary lines we have established between these three fields should not be regarded as rigid definitions and much less consensual agreement. However, we think that the intent of this classification/typification is to highlight political-epistemological and methodological differences and disagreements that, in Brazil, really manifest in the research practices of a heterogeneous academic community of researchers involved in conducting investigative studies of the relationship between history, mathematics and mathematics education.

Thus, one can say that today, in Brazil, the research fields of *history of mathematics*, *history of mathematics education* and *history in mathematics education* - even though they are made jointly within the same movement with common motivations in relation to the recognition of the importance and need for the promotion of historical discourse, and yet they have been developed by the same seemingly homogeneous community of researchers - have been slowly differentiating between themselves, due to the awareness and clarification of diverse practices and purposes that guided the actions within these fields of research.

In Brazil, the first books that attested to the autonomy of these fields of research were: *Introduction to the history of Mathematics Education* (Miorim, 1998), A history of school Mathematics in Brazil: 1730-1930 (Valente, 1999) and *History in Mathematics Education: challenges and proposals* (Miorim & Miguel, 2004). Moreover, in 2010, a special issue of BOLEMA (Bulletin of Mathematics Education) was devoted to the history of mathematics education (BOLEMA, vol. 23, no. 35A and n. 35B).

Therefore, it can be argued that, currently, such academic research fields already have their own histories, which legitimates our purpose in this paper, restricting ourselves to only focus on and characterize the constitution and development, in Brazil, of the research field of *history of mathematics education.*

Thus, the history of mathematics education, besides having the possibility of being seen as the development in time of a school discipline that comes from continually participating in the education of most Brazilian citizens who, from the proclamation of the Republic, have had increasing access to school, can also be seen as an autonomous field of scientific-academic research.

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Miguel A. (2003). *Perspectivas teóricas no interior do campo de investigação 'história na educação matemática'*. In: TEIXEIRA, Marcos V.; NOBRE, Sérgio R. (Orgs.). Anais do V Seminário Nacional de

História da Matemática, pp. 19-48, ISBN 85-89097-11-0. Universidade Estadual Paulista (UNESP) - Rio Claro (SP): Sociedade Brasileira de História da Matemática (SBHMat). [In this article, the author constitutes and characterizes the set of academic works that discuss the uses of history in mathematics education as an autonomous field of research in relation to the fields of history of mathematics and history of mathematics education].

Miguel A, Miorim, M. A. (2002a). *A prática social de investigação em história da matemática: algumas considerações teórico-metodológicas*. In: Anais do VI Encontro Brasileiro de Estudantes de Pós-graduação em Educação Matemática (VI EBRAPEM), Vol I, 2002, pp. 7-17. ISBN: 85-86091-53-7. Campinas, SP: Gráfica da Faculdade de Educação da UNICAMP. [In this article, the authors present some theoretical and methodological considerations about the social research practice in the history of mathematics education in Brazil].

Miguel, A., Miorim, M.A. (2002b). História da Matemática: uma prática social de investigação em construção. *Educação em Revista*, 36, 177-203. [This text highlights the historical constitution and the social practice of investigation of the history of mathematics in the national and international scene].

Miguel A., Miorim M. A. (2004). *História na Educação Matemática: Propostas e Desafios*, 194pp. Belo Horizonte, Autêntica, 1rd Ed. [This book looks the history of mathematics, history of mathematics education and how these two areas can relate to mathematics education].

Miguel A., Vilela D. S. (2008). Práticas escolares de mobilização de cultura matemática. *Cadernos CEDES*. V. 28 (74). Campinas. Jan/abril. [In this article, the authors present and problematize different theoretical perspectives that, from the late 19th century, have impacted the Brazilian school mathematics education].

Miorim M. A. (1998). *Introdução à História da Educação Matemática*, 121 pp. São Paulo-Brazil, Atual Editora, 1rd Ed. [This book presents the major issues and the most significant moments of teaching mathematics through the ages].

Miorim M. A. (2005a). *Relações entre história e educação matemática: um olhar sobre as investigações brasileiras*. Anais do 1º SPHEM – Seminário Paulista de História e Educação Matemática, promovido pelo IME-USP e pela SBEM-SP e ocorrido de 10 a 12 de outubro de 2005 no IME-USP, São Paulo-SP. [This paper discusses characteristics of Brazilian research on relations between history and mathematics education and was presented at a Brazilian conference called *Seminário Paulista de História da Educação Matemática*, held in Universidade de São Paulo, in 2005].

Miorim M. A. (2005b). *Livros didáticos da matemática no período de implantação do movimento da matemática moderna no Brasil*. In: CONGRESSO IBERO-AMERICANO DE EDUCAÇÃO MATEMÁTICA, 5, Porto, 2005. Actas... Porto: Faculdade de Ciências da Universidade do Porto, CD-ROM, 20p. [This paper analyzes Brazilian textbooks of the period of modern mathematics and was presented at the Ibero-American Congress of Mathematics Education, held at the University of Porto, Portugal, in 2005].

Miorim M. A. (2006). A Biblioteca Pedagógica Brasileira da Companhia Editora Nacional e o Ensino de Matemática: Livros, Autores e Estratégias Editoriais. *Horizontes*, 24 (1), 9-21. [This article presents a historical study of publications related to the mathematics education of the Companhia Editora Nacional produced between the 1930s and 1950s].

Miorim M. A. (2009). A Escrita de Livros Didáticos de Matemática na Década de 1920: o Caso de Saverio Cristofaro. *Zetetiké*, 17 (32), 135-164. [This article presents a historical study of the book "How to learn Mathematics" published in 1929].

Miorim M.A., Miguel A. (2001). A Constituição de Três Campos Afins de Investigação: História da Matemática, Educação Matemática e História & Educação Matemática. *Teoria e Prática da Educação*, 4 (8), 35-62. [This article presents the historical circumstances that have taken the history of mathematics, the mathematical education and the study of the relationships between the history of mathematics and the mathematical education to constitute three autonomous fields of investigation].

Nakashima M. N. (2007). *O papel da imprensa no movimento da Matemática Moderna*. Dissertação (Mestrado), PUC-SP, São Paulo. [This text analyzes the treatment given by the press to the Movement of New Mathematics in Brazil (MMM), especially in the State of São Paulo].

Nobre S. R. (1994). *Über die Mathematik in Zedlers 'Universal-Lexicon' (1732-1754): Ein historisch-kritischer Vergleich mit der Mathematik bei Christian Wolff*. Doutorado em História da Matemática. Sektion Mathematik e Karl Sudhoff Institut da Universidade de Leipzig. [This thesis gives a history about the "Universal-Lexicon" of Christian Wolff].

Oliveira Filho F. (2009). *O SMSG e o Movimento da Matemática Moderna no Brasil*. Dissertação (Mestrado em Educação Matemática) – Universidade Bandeirante de São Paulo, São Paulo. [This research analyse textbooks elaborated in USA, wich were used in Brazil at New Mathematics. The research sources included interviews, analysis of that text books and the translations for the Portuguese of works of School Mathematics Study Group (SMSG)].

Orlandi E. P., Lajolo M., Ianni O. (1997). *Sociedade e linguagem*. Campinas: Editora da UNICAMP. [This book analyzes the relationship between the Comte's positivism and Brazilian symbols like the Brazilian flat and hymn]

Pereira P. C. (2010). *A Educadora Maria Laura: contribuições para a constituição da Educação Matemática no Brasil*. Tese (Doutorado em Educação Matemática) — Centro das Ciências Exatas e Tecnologias, PUC-SP, São Paulo. [This work analyzes the contributions of professor Maria Laura Mouzinho Leite Lopes to the Brazilian Mathematical Education. It uses the metodology of oral history.]

Pirassinunga A. (1958). *Ensino militar no Brasil* (colônia). Rio de Janeiro: Biblioteca do Exército Editora. [This book gives us a panoramic view about the military school, in Brazil Colonia]

Ramalho B. L. (2006). 40 anos da pós-graduação em educação no Brasil: produção do conhecimento, poderes e práticas. *Revista Brasileira de Educação*, vol. 11, n. 31, jan./abr. pp. 182-185. [In this article, the author analyzes the forty years of existence of post-graduate education in Brazil.]

Revista Atualidades Pedagógicas. (1952). São Paulo: Ed. Nacional, ano III, n. 17, p. 1-48, set./out. [This is a magazine published by National Publishing Company, in 1952, which features articles from different disciplines of the Brazilian school curriculum, as well as information about textbooks published in Brazil.]

Rocco C. M. K. (2010). *Práticas e discursos: análise histórica dos materiais didáticos no ensino de geometria.* Dissertação (Mestrado em Educação Científica e Tecnológica), Centro de Ciências Físicas e Matemáticas, UFSC, Florianópolis.[This research evidences the elements that can help to understand how the didactic materials was inserted in practice pedagogic of teaching Geometry. To this, it returned to the decades of 1960 and 1970]

Romanelli O. O. (1990). *História da Educação no Brasil (1930/1973).* Petrópolis: Vozes. [This book presents a historical study of Brazilian education in the period 1930 to 1973.]

Roxo E. (1937). *A matemática na escola secundária.* São Paulo: Nacional. [This book presents proposals for school teaching in mathematics that were being discussed in various countries since the establishment of the International Commission for the Teaching of Mathematics in 1908.]

Santos A. A. (2010). *Elza Furtado Gomide e a participação feminina no desenvolvimento da matemática brasileira no século XX*. Dissertação (Mestrado em História da Ciência) — Centro de Ciências Exatas e Tecnologia, PUC-SP, São Paulo. [This study approaches the process of institutionalization of the Brazilian mathematics, more specifically, in the institut of Filosofia Sciences and Letters of the University of São Paulo. It focus Elza Furtado Gomide academic path.]

Silva A. D. (1928). *Collecção da Legislação Portugueza*. Legislação de 1775 a 1790. Lisboa: Typografia Maigrense. [This is a collection of laws that prevailed in Portugal in the period 1775 to 1790, which is accessible on the site http://www.iuslusitaniae.fcsh.unl.pt.] Acesso em 10/01/2011.

Silva C. M. S. (1999). *A Matemática Positivista e sua difusão no Brasil*. Vitória: EDUFES. [This book analyzes the positivist paradigm in mathematical Education, in Brazil].

Silva C. M. S. (2001). *A Faculdade de Filosofia, Ciências e Letras da USP e a formação de professores de Matemática*. Disponível em: www.anped.org.br/1925.html. Acesso em 10/12/2011. [In this article, the author addresses the issue of mathematics teachers' education in the Faculty of Philosophy, Sciences and Letters, University of São Paulo (USP), in Brazil, in the 1930s].

Silva C. P. (1989). *Uma historia social do desenvolvimento da matemática superior no Brasil: 1810-1920*. Tese de Doutorado. São Paulo (SP): Universidade de São Paulo.[This thesis is made through

characterization of the Brazilian intellectual middle, In the period of 1810 to the decade of 1920, as well as through the analysis of the theories on Mathematics presented to the Military School to obtaining the doctor's degree in Mathematical Sciences and later in Physical sciences and Mathematics].

Silva J. C. (2004). Utopia positivista e instrução pública no Brasil. Revista *HISTEDBR On-line*. n. 16. p. 10-16. Campinas. [This paper tells how the Comte's moral education was diffused in elementary schools, in Brazil].

Silva L. M. T. (2008). *Sociedade de matemática de São Paulo:* um estudo histórico-institucional.. Dissertação (Mestrado em Educação Matemática). Instituto de Geociências e Ciências Exatas, UNESP, Rio Claro. [This research aims to contribute to the investigations of the History of the Mathematics in Brazil focusing on the Society of Mathematics of São Paulo, that was founded in 1945 and dissolved in 1972].

Siqueira Filho M. G. (2008). ALI IEZID IZZ-EDIM IBN SALIM HANK MALBA TAHAN: episódios do nascimento e manutenção de um autor-personagem. Tese de Doutorado. Campinas (SP): Faculdade de Educação, UNICAMP, Campinas (SP). [This thesis aims to discuss aspects of life and work of Malba Tahan, a character created by Brazilian mathematics professor Julio Cesar de Mello e Souza].

Soares F. (2008). Ensino de Matemática e matemática moderna em congressos no Brasil e no mundo. *Rev. Diálogo Educ.*, Curitiba, v. 8, n. 25, p. 727-744, set./dez. [This article presents the proposals of modern mathematics discussed in Educational Congress occurred in Brazil and other countries].

Struik D. (1989). *História concisa das matemáticas.* Lisboa: Gradiva. [In this book the author develops a world history of mathematics, from its origins to the 19th century].

Souza S. Z., Bianchetti L. (2007). Pós-graduação e pesquisa em educação no Brasil: o protagonismo da ANPEd. *Revista Brasileira de Educação*, vol. 12, n. 36, set./dez., pp. 388-409. [In this article, the authors present a history of Brazilian institution called the "National Association of Postgraduate Studies and Research in Education (ANPEd)", which in 2007 celebrated 30 years].

Souza G. D. (2005). *Educação matemática na CENP: um estudo histórico sobre condições institucionais de produção cultural por parte de uma comunidade de prática*. Tese de doutorado. Faculdade de Educação da Universidade Estadual de Campinas (FE-UNICAMP). [This research analyzes the constitution of a denominated state organ Coordenadoria of Teaching and Pedagogic Norms (CENP), belonging to the State General office of Education of the State of São Paulo, as well as the formation and performance of the team of Mathematics inside of CENP. It aims to light up the discipline and professional conducts and social practice of the teaching of school Mathematics].

Tassinari E. N. C. (1999). *A voz do passado e a memória dos homens: um estudo sobre os periódicos (1974-1979) antecedentes ao e do BOLEMA - Boletim de Educação matemática (1985-1994) da Pós-Graduação em educação matemática, do IGCE da UNESP, Campus de Rio Claro, São Paulo.* Universidade Presbiteriana Mackenzie. Dissertação (Mestrado) São Paulo.[This research aims to answer, "Why pedagogical magazines are edited? ". It establish the life of BOLEMA - Bulletin of Mathematical Education, edited by the Masters degree in Mathematical Education, of I.G.C.E., UNESP, Campus of Clear Rio, State of São Paulo, Brazil].

Teixeira A. M. R. (2000). *A sinfonia dos números - Maria Fialho Crusius: uma vida dedicada à educação matemática na UPF*. Dissertação (Mestrado). Universidade de Passo Fundo. [The objective of this research is to rescue the history of the Mathematical Education in Passo Fund University, state of Rio Grande do Sul, starting from a teacher's life - Maria Fialho Crusius -, whose history is interrelated with the history of the mathematical teaching in that university].

Valente W. R. (1999).*Uma história da matemática escolar no Brasil*: 1730-1930. São Paulo: Annablume. [In this book the author presents a history of school mathematics in Brazil, from 1730 to 1930].

Valente W. R.(2000). Positivismo e matemática escolar dos livros didáticos no advento da República. *Cadernos de Pesquisa*. N. 109. p 201 – 212. Março. [This paper discusses if Positivist Mathematics occurs in text-books or not. The author concludes that a such mathematics didn't exist, instead positivism was strongly insert at the teaching process in elementary schools].

Vieira A. (1935). *A decadência do ensino no Brasil - suas causas e remédios.* Rio de Janeiro: F. Briguiet & Cia. [In this book, Father Vieira, who works at Catholic College Saint Inacio, analyzes the Brazilian

teaching in 1930s. Vieira set the teaching difficulty in educational proposals that emphasizes the practice].

Vieira A. (1936). *O problema do ensino secundário.* Rio de Janeiro: Livraria Jacintho. [This book contains professor Vieira's articles which had been published in Brazilian national newspapers in the 1930s. In these articles Vieira fights against the modernist proposals for the school teaching of mathematics in Brazil].

Vieira V. D. (2008). *Goyaz, seculo XIX:* as matemáticas e as mudanças das práticas sociais de ensino. Tese de Doutorado. Rio Claro (SP): Instituto de Geociências e Ciências Exatas, UNESP, Rio Claro (SP). [This thesis searches historical school practices in the education through the classes of Arithmetic and Geometry in state of Goiás, Brazil, between 1831 and 1907. To develop such study, the author used as methodology the documental research].

Biographical Sketches

Antonio Miguel is a professor in the Department of Education and Cultural Practices (DEPRAC), Faculty of Education, at the State University of Campinas (UNICAMP), Brazil, where he earned the master's and doctorate degrees in Education. At both the graduate and postgraduate levels, he teaches courses related to school education, and particularly to mathematics education. He is a member of the research groups HIFEM (History, Philosophy, and Mathematics Education) and PHALA (Education, Language, and Cultural Practices). In the first, he has conducted research studies on histories of mobilizing practices of mathematics culture in different contexts of human activity and, specially, in the context of school educational activity. In the second, he has developed investigative studies on deconstructive and non-disciplinary school education inspired, especially in Wittgensteinian perspective.

Maria Ângela Miorim is a professor in the Faculty of Education at the State University of Campinas (Unicamp), Brazil. She has been the coordinator (in collaboration with Antonio Miguel and Arlete de Jesus Brito) the research group HIFEM (History, Philosophy, and Mathematics Education), affiliated with CEMPEM (Circle of Study, Memory, and Research in Mathematics Education). She obtained her master's degree in mathematics and a PhD in mathematics education at the State University of Campinas. As professor at Campinas-São Paulo, she is working on mathematics teacher education (pre-service) and postgraduate studies in mathematics education. Her research interests are in *history of mathematics education* and *history in mathematics education.* She has been editor of the *Zetetiké* – Journal of Mathematics Education at the State University of Campinas.

Arlete de Jesus Brito has a post-doctorate degree from University of Bielefeld, Germany. She is Professor at UNESP – State University of São Paulo -, campus Rio Claro, Brazil. Her researches are about relationships between History and Mathematical Education.