

First International Bibliography on the History of Teaching and Learning Mathematics

Compiled for TSG 29 at ICME 10,
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N.B. 1. The emphasis is on recent publications; there is one section, however, on older, ‘‘classical’’ publications.

N.B. 2: The main focus of this bibliography is on the history of institutionalised instruction in schools (ranging in general from primary to secondary schools) and on the formation of teachers for this instruction.

N.B. 3: The abstracts are mainly taken from the database *mathdi* and some from Harm Smid’s bibliography for the ICMI Study volume of 2000, some from the J.W. Dauben/A.C. Lewis Bibliography on the History of Mathematics. The length of the abstracts does not reflect the relative importance of the publication.

General

a) CONCERNING SEVERAL COUNTRIES RESP. INTERNATIONAL PERSPECTIVES

One Hundred Years of L’Enseignement Math ematique. Moments of Mathematics Education in the Twentieth Century. Proceedings of the EM-ICMI Symposium Geneva, 20-22 October 2000, eds. Daniel Coray, F. Furignhetti, H. Gispert, B.H. Hodgson, G. Schubring (Geneva: L’Enseignement Math ematique, 2003).

Rudolph Bkouche, ‘‘La g eom etrie dans les premi eres ann ees de la revue *L’Enseignement Math ematique*’’, eds. Daniel Coray et al., *One Hundred Years of L’Enseignement Math ematique. Moments of Mathematics Education in the Twentieth Century* (Geneva: L’Enseignement Math ematique, 2003), 95-112.

Fulvia Furinghetti, ‘‘Mathematical instruction in an international perspective: the contribution of the journal *L’Enseignement Math ematique*’’, eds. Daniel Coray et al., *One Hundred Years of L’Enseignement Math ematique. Moments of Mathematics Education in the Twentieth Century* (Geneva: L’Enseignement Math ematique, 2003), 19-46.

H el ene Gispert, ‘‘Regards sur l’enseignement des sciences en France et hors de France’’, eds. Bruno Belhoste et al., *Les sciences au lyc ee: un si ecle de r eformes des math ematiques et de la physique en France et   l’ etranger* (Paris: Vuibert, 1996), 231-236.

H el ene Gispert, ‘‘Applications: les math ematiques comme discipline de service dans les ann ees 1950-1960’’, eds. Daniel Coray et al., *One Hundred Years of L’Enseignement Math ematique. Moments of Mathematics Education in the Twentieth Century* (Geneva: L’Enseignement Math ematique, 2003), 251-270.

Gila Hanna, "Journals of Mathematical Education, 1900-2000", eds. Daniel Coray et al., *One Hundred Years of L'Enseignement Mathématique. Moments of Mathematics Education in the Twentieth Century* (Geneva: L'Enseignement Mathématique, 2003), 67-84.

Geoffrey Howson, "Geometry: 1950-70", eds. Daniel Coray et al., *One Hundred Years of L'Enseignement Mathématique. Moments of Mathematics Education in the Twentieth Century* (Geneva: L'Enseignement Mathématique, 2003), 113-131.

Jens Høyrup, "Influences of institutionalized mathematics teaching on the development and organization of mathematical thought in the pre-modern period. Investigations in an aspect of the anthropology of mathematics", *Studien zum Zusammenhang von Wissenschaft und Bildung* (IDM, Materialien und Studien, Band 20. Bielefeld 1980), pp 7-137.

Maria Ângela Miorim, *Introdução à História da Educação Matemática* (São Paulo: Atual Editora, 1998).

Philippe Nabonnand, "Les débats autour des applications des mathématiques dans les réformes de l'enseignement secondaire au début du vingtième siècle", eds. Daniel Coray et al., *One Hundred Years of L'Enseignement Mathématique. Moments of Mathematics Education in the Twentieth Century* (Geneva: L'Enseignement Mathématique, 2003), 229-250.

Gert Schubring, "Essais sur l'histoire de l'enseignement des mathématiques, particulièrement en France et en Prusse", *Recherches en Didactique des Mathématiques*, 1984, 5, 343-385. [There is a Greek translation of it]

The article intends to develop categories enabling to study the history of mathematics education as well in a longitudinal manner for one nation as in a comparative manner for more than one nation. In order to approach the 'reality' of instruction the best, one has to consider the instruction of a school discipline as a 'system'. The role of the teacher and the function of mathematics in schools at the crossroads of liberal education and vocational training show themselves as key accesses to this, with its institutional, cultural, epistemological, and intellectual dimensions. Besides a general overview from the antiquity to present time, the crucial period at the beginning of the 19th century in France and in Prussia is analyzed more in details.

Gert Schubring, *L'histoire de l'enseignement des mathématiques comme sujet de recherche en didactique des mathématiques*, Cahiers de Didactique des Mathématiques, Ed. IREM Université Paris VII (Paris 1986), no.26 (33 S.)

The first part is a brief survey over history of mathematics instruction in Austria, Bavaria, Hanover and Prussia. In the second part the author studies the role of cognitive development, manuals and teaching methods as a category of education research.

Gert Schubring, *The Cross-Cultural 'Transmission' of Concepts - the first international mathematics curricular reform around 1900, with an Appendix on the Biography of F.Klein*. Occasional paper Nr. 92, IDM (Universität Bielefeld), 1987. 39 S.

Gert Schubring, "O primeiro movimento internacional de reforma curricular em matemática e o papel da Alemanha: um estudo de caso na transmissão de conceitos", *Zetetiké*, 1999, 7, no. 11, 29-50.

Gert Schubring, *Analysis of Historical Textbooks in Mathematics. Lecture Notes* (Rio de Janeiro: Pontifícia Universidade Católica do Rio de Janeiro, Departamento de Matemática, 1997). Second, revised edition 1999.

A course of lectures on an important but little-explored subject, the history of mathematics textbooks.

Gert Schubring, *Análise Histórica de Livros de Matemática* (Campinas: Editora Autores Associados, 2003).

Gert Schubring, "L'Enseignement Mathématique and the first International Commission (IMUK): the emergence of international communication and cooperation", eds. Daniel Coray et al., *One Hundred Years of L'Enseignement Mathématique. Moments of Mathematics Education in the Twentieth Century* (Geneva: L'Enseignement Mathématique, 2003), 47-66.

Yasuhiro Sekiguchi, "A history of mathematics education from an international perspective". (English) *Nihon Sugaku Kyoiku Gakkaishi*, 2000, 82(7-8): p. 109-112. Special Issue:

Mathematics education in Japan during the 54 years since the war. Looking towards the 21st century.

International activities on mathematics education have been expanding, especially since the New Math. International meetings, research projects, surveys, publications, partnerships, and so on have become increasingly important. As for Japan, Japan Society of Mathematical Education (JSNE) has played a central role in extending opportunities for Japanese mathematics educators to be involved in international activities.

Man-Keung Siu, "History of (mathematics) teachers" . (French) *Bulletin d' Assoc. Prof. Math. Enseign. Publ.*, 1986, 65 (no.354): 309-319.

The English title of the article presents an attempt, by means of a trifold clutching, to express the interconnection of mathematics, history of mathematics and teachers of mathematics, which can be illustrated in Chinese letters. A balanced lesson imparts skills and knowledge, but also wisdom, whereby wisdom is to be interpreted as an anthropologic opinion as part of human culture.

b) COMPARATIVE ISSUES: CONCERNING THE HISTORY OF SEVERAL SCHOOL SUBJECTS

André Chervel, "L'Histoire des Disciplines Scolaires. Réflexions sur un domaine de recherche", *Histoire de l'éducation*, 1988, 38 : 59-119.

Focussing on the case of France, this paper gives a discussion of the notion of school discipline and presents essential patterns of studying the history for major teaching subjects.

B. Cooper, "On explaining Change in School Subjects", *British Journal of Sociology of Education*, 1983, 4(3), pp 207-222.

Ivor F. Goodman, Stefan Hopmann, Kurt Riquarts (eds.), *Das Schulfach als Handlungsrahmen. Vergleichende Untersuchung zur Geschichte und Funktion der Schulfächer* (Köln: Böhlau, 1999).

General reflections about the history of school disciplines, in a comparative approach (mainly mathematics and natural sciences), for various European countries: England, Germany, Scandinavia.

c) COMPARATIVE ISSUES: HISTORY OF SCHOOL EDUCATION

Stefan Hopmann, *Lehrplanarbeit als Verwaltungshandeln* (Kiel: IPN, 1988).

An essential dimension of the history of mathematics teaching and learning is the analysis of change in curricula and syllabuses. Typically, decisions about the syllabus are a privilege of state administration. This book undertakes a differentiated and sophisticated analysis of this dimension of state administration and provides hence a framework for the history of any school subject.

d) COMPARATIVE ISSUES: TRANSFER, TRANSMISSION, CULTURAL DIFFERENCES, COMPARATIVE HISTORY OF EDUCATION

Christophe Charle, *Les intellectuels en Europe au XIXe siècle, Essai d'histoire comparée* (Paris: Seuil, 1996).

Christophe Charle (ed.), *Les universités en Europe (XIXe-XXe)*, numéro spécial *Histoire de l'éducation* 1990, 45.

S.N. Eisenstadt, *European Civilization in a Comparative Perspective. A Study in the Relations Between Culture and Social Structure* (Oslo: Norwegian University Press, 1987).

Michel Espagne, Michael Werner, "Deutsch-französischer Kulturtransfer im 18. und 19. Jahrhundert. Zu einem neuen interdisziplinären Forschungsprogramm des CNRS", *Francia. Forschungen zur westeuropäischen Geschichte*, 1986, 502-510.

Philologiques I. Contribution à l'histoire des disciplines littéraires en France et en Allemagne au XIXe siècle, eds. Michel Espagne, Michael Werner (Paris: Éditions de la Maison des Sciences de l'Homme, 1990).

Jürgen Schriewer, "Vergleich und Erklärung zwischen Kausalität und Komplexität", eds. H. Kaelble, J. Schriewer, *Diskurse und Entwicklungspfade. Der Gesellschaftsvergleich in den Geschichts- und Sozialwissenschaften* (Frankfurt/M, New York: Campus, 1999), 53-102.

Analysis of Comparisons between civilisations and use of the concept 'functional equivalents' for correspondences.

Transferts. Relations interculturelles dans l'espace franco-allemand (XVIIIe-XIXe siècle), eds. Michel Espagne, Michael Werner (Paris: Éditions Recherche sur les civilisations, 1988).

e) METHODOLOGICAL ISSUES

Antonio Miguel, Maria Ângela Miorim, *A prática social de investigação em história da matemática: algumas considerações teórico-metodológicas*. Artigo completo publicado nos Anais do VI Encontro Brasileiro de Estudantes de Pós-graduação em Educação Matemática (VI EBRAPEM), Vol I (Campinas, SP: Gráfica da Faculdade de Educação da UNICAMP, 2002), 7-17.

Antonio Miguel, Maria Ângela Miorim, "História da Matemática: uma prática social de investigação em construção", *Educação em Revista*, 2002, n. 36, pp. 177-203, Faculdade de Educação da Universidade Federal de Minas Gerais (UFMG).

Gert Schubring, "On the methodology of analysing historical textbooks: Lacroix as textbook author", *for the learning of mathematics*, 1987, 7, 41-51. ("Errata", *ibid.*, 1988, 8, 51).

Gert Schubring, "Historische Begriffsentwicklung und Lernprozeß aus der Sicht neuerer mathematikdidaktischer Konzeptionen (Fehler, "Obstacles", Transposition)", *Zentralblatt für Didaktik der Mathematik*, 1988, 20, 138-148.

Portuguese translation: "Desenvolvimento histórico do conceito e do processo de aprendizagem, a partir de recentes concepções matemático-didáticas (erro, obstáculos, transposição)", *Zetetiké*, 1998, 6, no. 10, 9-34.

The classical motive for the use of the history of mathematics in education, as "motivation", is unsatisfactory. There exists a much more fundamental role for the history of mathematics in the didactics of mathematics. According to modern, subjectivistic/constructivistic views on mathematics, mathematics has not an unique position: its claim to be a objective fault-free science is not justified. There is a connection between mistakes of the students, 'cognitive obstacles' and problems in the historical development of mathematics. There is not only the problem of transition of mathematics as a scientific object into school mathematics, but also the teaching of mathematics has its influences on the development of mathematics itself.

Gert Schubring, "Theoretical Categories for Investigations in the Social History of Mathematics Education and Some Characteristic Patterns", *Mathematics, Education and Society*, C. Keitel, P. Damerow, A. Bishop, P. Gerdes (eds.), Science and Technology Education Document Series No. 35 (Paris: UNESCO 1989), 6- 8. [There is a Spanish translation of it]

Gert Schubring, "A Framework for Comparing Transmission Processes of Mathematics to the Americas", *Revista Brasileira de História da Matemática*, 2002, vol. 2, no. 3, 45-63.

A controversy: Belhoste versus Schubring:

Bruno Belhoste, "Pour une réévaluation du rôle de l'enseignement dans l'histoire des mathématiques", *Revue d'histoire des mathématiques*, 1998, 4 : 289-304

Gert Schubring, "Production Mathématique, Enseignement et Communication. Remarques sur la note de Bruno Belhoste, "Pour une réévaluation du rôle de l'enseignement dans l'histoire des mathématiques" parue dans la RHM 4(1998), p. 289-304", *Revue d'histoire des mathématiques*, 2001, 7: 295-305.

“Historical” or “Classical” Publications

Florian Cajori, *The Teaching and History of Mathematics in the United States* (Washington, D.C.: Government Printing Office, 1890).

A history of mathematics education in the US up to the end of the 19th century, including a detailed report on the situation at the end of that period based on a large questionnaire survey.

S.A. Christensen, *Matematikkens udvikling i Danmark og Norge i det 18. Aarhundrede, en matematisk-historisk undersøgelse* (Odense 1895).

The history of mathematics in Denmark and Norway in the 18.th century, including the history of mathematics education.

E. Greve, H. Rau, „Schulbücher für den mathematischen Unterricht im 19. Jahrhundert“. *Mathematisch-physikalische Semesterberichte*, 6 (1959), 311-336.

Friedrich Grundel, *Die Mathematik an den deutschen höheren Schulen, Teil 1: Von der Zeit Karls des Grossen bis zum Ende des 17. Jahrhunderts*. Leipzig 1928. *Teil 2: Vom Anfang des 18. Jahrhunderts bis zum Anfang des 19. Jahrhunderts*. Leipzig 1929.

Siegmond Günther, *Geschichte des mathematischen Unterrichts im deutschen Mittelalter bis zum Jahre 1525* (Berlin: Hofmann, 1887).

Poul Heegaard, *Der Mathematikunterricht in Dänemark*. (København, Basel und Genf, 1912).

A rather historical report to ICMI on mathematics education at all levels in Denmark.

A.P. Jushkevich, [Mathematics and Mathematics Education in Russia in XVII-XIX centuries] “Matematika i ee prepodavanie v Rossii v XVII-XIX vekah”, *Matematika v shkole* 1947, no.s 1-6; 1948 no.s 1-3.

Felix Klein, „100 Jahre mathematischer Unterricht an den deutschen höheren Schulen“, F. Klein/Riecke: *Neue Beiträge zur Frage des mathematischen und physikalischen Unterrichts*. Leipzig 1904, 63-77.

Felix Klein: „Vom historischen Entwicklungsgang des mathematischen Unterrichts unserer höheren Schulen“. In: idem.: *Vorträge über den mathematischen Unterricht*. Leipzig 1907, 67-99 .

Julius Laumann:, „Materialien zur Geschichte des elementaren Unterrichts in der Geometrie im 16. Jahrhundert“. In: *Zeitschrift für Geschichte der Erziehung und des Unterrichts*, VIII-IX, 1918/19, 87-113.

Walther Lietzmann, „Fünfzig Jahre mathematischer Unterricht, zum fünfzigsten Jahrgang dieser Zeitschrift“. *Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht*, 50 (1919), 1-18.

Wilhelm Lorey, *Staatsprüfung und praktische Ausbildung der Mathematiker an den höheren Schulen in Preußen und einigen norddeutschen Staaten* (Leipzig und Berlin: Teubner, 1911).

Franz Pahl, *Geschichte des mathematischen und naturwissenschaftlichen Unterrichts* (Leipzig: Teubner, 1913).

V.E. Prudnikov , *Russian Mathematics Educators of the XVIII-XIX centuries* 1956 [in Russian]

Rudolf Schimmack, *Die Entwicklung der mathematischen Unterrichtsreform in Deutschland* (Leipzig/Berlin: Teubner, 1911).

E.R. Starke, *Die Geschichte des mathematischen Unterrichts in den Gymnasien Sachsens seit 1700*. Dissertation, Chemnitz 1897.

Foster Watson, *The Beginnings of the Teaching of Modern Subjects in England* (London: Pitman, 1909)

In its way a ground-breaking work, this book, which includes 150 pages on arithmetic, geometry and astronomy teaching, remains fascinatingly informative.

Duncan K. Wilson, *The History of Mathematical Teaching in Scotland: to the End of the Eighteenth Century* (London: University of London Press, 1935).

The development of the teaching of arithmetic and elementary mathematics in Scotland up to the end of the eighteenth century: institutions, textbooks, and teachers.

Georg Wolff, *Der mathematische Unterricht der höheren Knabenschulen Englands* (Leipzig: Teubner, 1915).

F.H. Yeldham, *The Teaching of Arithmetic Through Four Hundred Years* (London: Harrap, 1936)

Content, methods and style of popular arithmetic texts in England from the early sixteenth to the early twentieth centuries.

Africa (Sub-Saharan)

H.U. Emereole, G. Shaka, R. Charakupa, "Brief history of the Secondary School Science Curriculum in Botswana from Pre-Independence to 2000", *CASTME Journal*, 2002, 22(3): 35-40.

Paulus Gerdes, "Mathematics Education in the People's Republic of Mozambique", *Materialien zur Berufspraxis des Mathematikers*, Bielefeld 1980, Heft 25, 127-142.

Paulus Gerdes, "Mathematik in Mozambique - Bildung und Mathematikunterricht", *Materialien zur Berufspraxis des Mathematikers*, Bielefeld 1980, Heft 25, 142-275.

Paulus Gerdes, "Changing Mathematics Education in Mozambique", *Educational Studies in Mathematics*, 1981, 12: 455-477.

Paulus Gerdes, "On culture and mathematics teacher education", *Journal of Mathematics Teacher Education*, 1998, 1(1), 33-53.

Presents a short history of mathematics teacher education in Mozambique since independence in 1975, highlighting the multicultural context and the role of the history of mathematics and of ethnomathematics in teacher education.

Herbert Bhekumusa Khuzwayo, „Occupation of Our Minds: A Dominant Feature of Mathematics Education in South Africa”. P. Gates, & T. Cotton (eds.), *Proceedings of the First International Mathematics Education and Society Conference* (Nottingham: Centre for the Study of Mathematics Education, Nottingham University, 1998), 219-232..

Herbert Bhekumusa Khuzwayo, *Mathematics Education in South Africa: A Historical Perspective from 1948 to 1994*. Research Report No. 7. Department of Mathematics, Physics, Chemistry and Informatics, Royal Danish School of Educational Studies. (Copenhagen, 1997).

I. C. Masinga, "The Development of Mathematics Education in Swaziland in the Past Two Decades", *Proceedings of the 6th Symposium of the Southern Africa Mathematical Sciences Association (SAMSA)* (Dar es Salaam: University of Dar es Salaam, 1987), 215-228.

G. Mmari, "Les mathématiques dans l'enseignement secondaire en République-Unie de Tanzanie », *Studies in Mathematics Education* (UNESCO), 1980, 1, 106-126.

G. Mmari, *On the History of the Mathematical Association of Tanzania* (Dar es Salaam : MAT, 1991).

R. Ogbonna Ohuche, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). Nigeria", *Educational Studies in Mathematics*, 1978, 9: 271-281.

M. El Sawi, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). Sudan", *Educational Studies in Mathematics*, 1978, 9: 317-330.

B. R. Seka, *History of Mathematics in Tanzania* (Dar es Salaam: Institute of Education, 1987).

Mohamed El Tom, "Problems of Curriculum Development in Sudan", eds. Marilyn Zweng et al., *Proceedings of the Fourth International Congress on Mathematical Education* (Boston: Birkhäuser, 1983), 366-368.

A. Williams, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). Sierra Leone", *Educational Studies in Mathematics*, 1978, 9: 24297-302.

Arab Countries

Mahdi Abdeljaouad, « L'enseignement des mathématiques en Tunisie au XIXe siècle », *Cahiers de Tunisie*, 1986, T.41-42, n°151-154, pp. 247-263.

This is the first part of a study on the teaching of mathematics in nineteenth century Tunisia. We start by introducing the historical context, in particular the reforms promoted by Mehemet Ali in Egypt and by Chekir Sahab at-Tabaa and Mustapha Khaznadar in Tunisia, then we describe the teaching of mathematics in the traditional school system at the Zitouna and the parallel development of a modern educational system embodied by the Military school of Bardo (1840-1864) and by College Sadiki (1875).

Mohamed Hichem Bougamra (1983), *L'Enseignement de la langue arabe et de la littérature arabes à la Nizamiyya de Bagdad*, Thèse de doctorat d'Etat, Université de Tunis.

Ahmed Djebbar, « Quelques aspects de l'algèbre dans la tradition mathématique arabe de l'Occident Musulman », in *Actes du 1^{er} colloque maghrébin sur l'histoire des mathématiques arabes*, Alger, 1986, pp. 101-123.

Ahmed Djebbar, "The Content of Mathematics Teaching in North Africa in the Middle Ages and its Role in Present Day Teaching", *Mathematics, Education and Society*, C. Keitel, P. Damerow, A. Bishop, P. Gerdes (eds.), Science and Technology Education Document Series No. 35 (Paris: UNESCO 1989), 3-4.

Ahmed Djebbar, « Quelques éléments nouveaux sur l'activité mathématique arabe dans le Maghreb Oriental », in *Actes du 2^{ème} colloque maghrébin sur l'histoire des mathématiques arabes* (Tunis, 1988), pp. 53-73.

Ahmed Djebbar, « L'enseignement mathématique dans les madrasa de Tlemsen », in *Les activités mathématiques dans les villes du Maghreb Central (IXe - XVe siècles)* (pré-publication, Orsay 1991).

Ahmed Djebbar, « Ba^cdh an-Nashatat ar-Ryadhiya fil Maghrib al-Kabir Ma bayan al-Qarnayn at-Tasic wat Tasic Ashar al-Miladiayni », (Quelques éléments sur les activités mathématiques dans le Grand Maghreb entre le IXe et le XVe siècles), in *Actes du Colloque national sur l'histoire des mathématiques arabes*, Gardaya, Algérie, 1993, pp. 1-38.

George Makdisi, "The Rise of Colleges. Institutions of Learning in Islam and the West (Edinburgh: Edinburgh Univ. Press, 1981).

Badiollah Rostami, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). Iran", *Educational Studies in Mathematics*, 1978, 9: 255-260.

Gert Schubring, « Tendances actuelles des recherches sur l'histoire institutionnelle des sciences et leur application à la culture islamique », in *Actes du 5^{ème} colloque maghrébin sur l'histoire des mathématiques arabes* (Hammamet, 1994), pp. 273-283.

Mohamed Souissi, „L'enseignement des mathématiques en langue arabe, au Maghreb en général et en Tunisie en particulier, au XIXe siècle et au début du XXe siècle“, in *Tarikh ar-Riyadhiyat bil-^cArabiya*. (Actes du 3e Colloque maghrébin d'histoire des mathématiques arabes, Tipaza 1-3 décembre 1990), pp31-38. (en langue arabe). (1990)

Gregg De Young, "The Khulasat al-Hisab of Baha al-Din al-'Amili and The Dar-i-Nizami in India", *Indian Society for History of Mathematics*, 1986, 8:n°s. 1-4, pp.1-15.

Il présente avec beaucoup de détails l'enseignement des mathématiques dans l'Inde Islamique au Moyen-Age.

Moussa Zammouli, Le résumé d'un préprint en arabe de Moussa Zammouli dont un paragraphe porte sur l'enseignement des mathématiques dans les pays islamiques. (Tébessa, 2002).

Asia/China
(Japan: see below)

Wei Gengren (ed.), [History of lower & upper secondary mathematics education in China] *Zhongguo zhongxue shuxue jiaoyushi*. (Chinese) (Beijing, China: Renmin jiaoyu chubanshe, 1986).

A. J. Gunawerdana, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). Sri Lanka", *Educational Studies in Mathematics*, 1978, 9: 303-316.

J. N. Kapur, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). India", *Educational Studies in Mathematics*, 1978, 9: 245-253.

J. N. Kapur, "A brief history of mathematics education in India", *Ganita-Bharati*, 1988, 10: 31-39.

Tang Kwok Chun, "Social origins of secondary mathematics knowledge in Hong Kong" and Macau. (English) *Mathematics Education and Society*. Proceedings First international mathematics education and society conference, eds. Peter Gates, Tony Cotton, (Nottingham, Centre for the Study of Mathematics Education, 1999), p. 120-123.

This paper is a historical study of the infiltration of Western mathematics textbooks into Hong Kong and Macau before the Second World War. By tracing the origin of the textbooks in these two planes, different socio-political influences on textbook adoption can be illuminated. European influences are examined first due to the colonial status of both area; and US influence via the Chinese Kuomintang is then investigated. (Abstract)

L. B. Pascua, "Secondary Mathematics Education in the Philippines Today", Gary Bell (ed.), *Asian Perspective on Mathematics Education* (Australia: The Northern Rivers Mathematical Association, 1993), 160-172.

Orasri Pukaram, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). Thailand", *Educational Studies in Mathematics*, 1978, 9: 331-337.

S. M. Sharfuddin, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). Bangladesh", *Educational Studies in Mathematics*, 1978, 9: 159-170.

Man-Keung Siu. "Mathematics Education in Ancient China: What Lesson Do We Learn from It?", *Historia Scientiarum*, 1995, 4: 223-232.

Most problems in classical Chinese mathematics were couched in a practical, applied way, and that was generally taken as the justification of mathematics. This contrasts with Greek conceptions of mathematics, as seen for example in Plato, and may have contribute to a loss of esteem for the subject over time.

Man-Keung Siu, Alexei Volkov, "Official curriculum in traditional Chinese mathematics: How did candidates pass the examinations?" *Historia Scientiarum*, 1999, 9 (1): 87-99.

Park Han Shik, [Korean History of Mathematics Education] *Hankook Soohak Kyoyooksa*. (Korean) (Seoul: Daehan Kyokwaseo Choosikhoesa, 1991).

Park Han Shik, "Historical development of mathematics education in Korea". (English), *Asian perspectives on mathematics education. Maths x language = language x maths*, ed. G. Bell (Mathematical Association; New England Univ., Armidale/Australia, 1993), p. 136-148.

Without understanding the historical traditions and the constraints which act in Korean mathematics education, we may not understand how mathematics education in Korea can be improved. Therefore, this chapter will examine the historical development of mathematics education in Korea, and then provide a few suggestions for improvement. (orig.)

Du Shiran (ed.), [The complete works of Li Ran and Qian Baocong on history of science] *Li Ran Qian Baocong kexueshi quanji*. (Chinese) (Shenyang, China: Liaoning jiaoyu chubanshe, 1998).

Frank Swetz, *Mathematics Education in China: its Growth and Development* (Cambridge, Mass.: MIT Press, 1974).

Discusses the position of mathematics in the traditional education system, the effects of the system on mathematical thinking and instruction, and the reforms from 1870 to 1970.

Frank J. Swetz, "Mathematics for Social Change: United States experience in the Philippines, 1898-1925". *Bulletin of the American Historical Collection*, Jan-March 1999, 27: 61-80.

Alexei Volkov, "On the origins of the Toan phap dai thanh (Great Compendium of Mathematical Methods)." Y. Dold-Samplonius et al. (eds.), *From China to Paris: 2000 years transmission of mathematical ideas* (Stuttgart: Franz Steiner Verlag, 2002), pp. 369-410.

Comparative analysis of a Vietnamese textbook.

Wu Wenjun (ed.), [A series of history of mathematics in China] *Zhongguo shuxueshi daxi*. (Chinese) (Beijing, China: Beijing shifan daxue chubanshe, 1998)

Xu Yibao, "Mathematics textbooks and terminology. The impact of Calvin Winson Mateer's work on the transformation of traditional Chinese mathematics education into a modern one". (English) *Proceedings of the HPM 2000 conference - History in mathematics education: challenges for a new millennium*. Vol. 1. Editor(s): Wann-Sheng Horng; Fou-Lai Lin (Taiwan, Dept. of Mathematics 2000). p. 71-73

This paper will examine the mathematics textbooks compiled by Mateer for his school and for the Educational Association of China, as well as his work on English-Chinese mathematical terms. It will focus on their impact on the modernization of Chinese mathematical education, and on the unification of Chinese mathematical terminology under China's Department of Education in 1909. After establishing the general background of the mathematical textbooks available to the Chinese, this paper goes on to analyze Mateer's five textbooks: Bi Suan (Arithmetic, published in 1878); Xing Xue (New Geometry in Chinese, published in 1885); Dai Shu Bei Zhi (The Outline of Algebra, published in 1887); Dai Xing He Can (Analytical Geometry, published in 1887); Wei Ji Feng (The Integral and Differential Calculus, published in 1890).

Wang Yushen, Liu Dun (eds.), [A series of history of mathematics in China] *Zhongguo shuxueshi daxi*. (Chinese) (Shijiazhuang, China: Hebei kexue jishu chubanshe, 2001).

He Zhenbang (ed.), [The complete works of Ma Zhonglin on mathematics education] *Ma Zhonglin shuxue jiaoyu lunwenji*. (Chinese) (Nanjing, China: Jiangsu jiaoyu chubanshe, 1993).

Ma Zhonglin (ed.), [History of mathematics education] *Shuxue jiaoyushi jianbian*. (Chinese) (Nanning, China: Guangxi jiaoyu chubanshe, 1991).

Australia

A. L. Blakers, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). Australia", *Educational Studies in Mathematics*, 1978, 9: 147-158.

N.F. Ellerton, M.A. Clements, « Reshaping School Mathematics in Australia 1788-1988". *Australian Journal of Education*, 1988, 32(3) p. 387-405.

Examination of Australia's educational history reveals the origins of three traditions of school mathematics: (1) many groups of society will not benefit from mathematics beyond arithmetic; (2) the purpose of mathematics is preparation for higher education; and (3) rote methods, rigid curriculum, prescribed texts, and written examinations are desirable.

M.A. Clements, *Mathematics for the minority: Some historical perspectives of school mathematics in Victoria* (Victoria: Gelong, 1989).

Belgium

G. Noel, [The evolution of mathematics teaching in French-speaking Belgium]. "Evolution de l'enseignement des mathématiques en Belgique francophone ». (French) *Plot. Bulletin des Regionales APMEP de Poitiers, Limoges et Orleans-Tours*. 1993, no.63: p. 36-41.

Guy Noel, [Teaching mathematics –why and to whom?] “Pourquoi, pour qui enseigner les mathématiques?. Une mise en perspective historique de l'évolution des programmes, au XXème siècle, en Belgique”. [French], *Zentralblatt für Didaktik der Mathematik*, 2002, 34(4), 110-119.

The evolution of education in Belgium is described from 1830 to our days. The mastery of education has always been a subject of disputes between the political forces in presence. With the flow of years, more attention is paid to social considerations and the necessity of a more democratic educational system arises. Simultaneously, the pedagogical ideas change and active methods of teaching are promoted, although not always used. Different school systems still coexist. However, except for philosophical and religious education, the differences between them tend to diminish. This is in particular the case for mathematics teaching whose evolution is also described with some details.

Brazil

Elizabete Burigo, “Matemática moderna: progresso e democracia na visão de educadores brasileiros nos anos 60”, *Teoria & Educação*, 1990, n. 2, 255-265.

Bruno A. Dassie, João Bosco Pitombeira Carvalho, José Lourenço Rocha, “Uma coleção revolucionária”, *História & Educação Matemática*, v.2, n. 2, jun/dez de 2001 e jan/dez de 2002, 9-36.

An analysis of the conceptions of Euclides Roxo, an influential mathematics educator in Brasil in the first half of the twentieth century, and his textbook collection.

Bruno Alves Dassie, “Breve contextualização da Confêrencia: A Matemática e o curso secundário”, ”, *História & Educação Matemática*, v.2, n. 2, jun/dez de 2001 e jan/dez de 2002, 37-38.

Introduction to the documentation of the contributions to the important debate about the curricular reform in Brasil about 1930, reproduced in the following parts:

Euclides Roxo, “A Matemática e o curso secundário”, *ibid.*, 39-60.

M. Ramalho Novo: “Questões do Ensino: A Matemática no Pedro II”, *ibid.*, 61-64.

T. Cel. Sebastião Fontes, “O Futurismo e a Matemática”, *ibid.*, 65-74.

Joaquim I. De Almeida Lisboa, “Os Programs de Matemática do Colégio Pedro II”, *ibid.*, 75-82.

Professor de Matemática do Colégio Pedro II, “O Ensino da Matemática na Escola Secundária”, *ibid.*, 83-107.

André Luiz Mattedi Dias, “Da bossa das matemáticas à educação matemática: defendendo uma jurisdição profissional”, *História & Educação Matemática*, 2, jun/dez de 2001 e jan/dez de 2002.

Dario Fiorentini, Antonio Miguel, Maria Ângela Miorim, “Contribuição para um Repensar ...a Educação Algébrica Elementar”, *Pro-Posições*, 1993, 4, 1(10) : 78-91.

Dario Fiorentini, “Alguns modos de ver e conceber o ensino da matemática no Brasil”, *Zetetiké*, 1995, no. 4, 1-37.

Maria Laura Magalhães Gomes, “Dois tempos e modos de ensinar a aritmética”, *História & Educação Matemática*, v. 2. jun/dez de 2001 e jan/dez de 2002.

Ana Kaleff, “A educação matemática na Universidade Federal Fluminense: um relato do desenvolvimento histórico dos cursos de formação de professores de matemática”, *Boletim GEPEN*, Fevereiro 2001, no. 38, 9-33.

A history of the evolution of the teacher training programs for future mathematics teachers, since 1949, at one of the major universities in the state of Rio de Janeiro, including the effects of the “modern mathematics”.

Antonio Miguel, Maria Ângela Miorim, Dario Fiorentini, “Álgebra ou Geometria: para onde pende o pêndulo?”, *Pro-Posições*, 1992, 3, nº 1 (7), 39-54.

Antonio Miguel, Maria Ângela Miorim, Dario Fiorentini, “Ressonâncias e Dissonâncias do Movimento Pendular entre Álgebra e Geometria no Currículo Escolar Brasileiro”, *Zetetiké*, 1993, 1 (1): 19-39.

Maria Ângela Miorim, *Introdução à História da Educação Matemática* (São Paulo: Atual Editora, 1998). See also General

Maria Ângela Miorim, Antonio Miguel, “A constituição de três campos afins de investigação: história da matemática, educação matemática e história & educação matemática”. *Revista Teoria e Prática da Educação*, 2001, 4, n. 8, 35-62.

Maria Ângela Miorim, Antonio Miguel, *Os logaritmos na cultura escolar brasileira* (Rio Claro: Publicação da Sociedade Brasileira de História da Matemática, 2002).

Maria Ângela Miorim, et al.. “Por que Bhaskara? », *História & Educação Matemática*, v. 2. jun/dez de 2001 e jan/dez de 2002.

Maria Antonieta Martins, *Estudo da evolução do ensino secundário no Brasil e no estado do Paraná com ênfase na disciplina de Matemática*. Diss. Mestrado em Educação, UFPR, Curitiba, 1984.

João Bosco Pitombeira, "O cálculo na escola secundária - algumas considerações históricas", *Cadernos Cedes* (São Paulo), no. 40, 1996, 62-80.

João Bosco Pitombeira Carvalho, “Euclides Roxo e as polêmicas sobre a modernização do ensino da matemática”, ed. Wagner Rodrigues Valente, *Euclides Roxo e a modernização do ensino de matemática no Brasil* (São Paulo: Sociedade Brasileira de Educação Matemática, 2003), pp. 86-158.

Circe Mary S. Silva, “A faculdade de Filosofia, Ciências e Letras da USP e a formação de professores de Matemática”. In: *23a. Reunião Anual da ANPED, 2000, Caxambu. Anais da 23a. Reunião Anual da ANPED.*, 2000.

Circe Mary S. Silva, Wellington. K. Evangelista, “A Matemática no ensino secundário no Ginásio Espírito-Santense”, In: *III Seminário Nacional de História da Matemática, 1999, Vitória. Anais do III Seminário Nacional de História da Matemática*. (Vitória: Edufes, 1999), p.537 – 548.

Circe M. S. Silva, Wellington. K. Evangelista, Viviane. L. Ferreira, “Evolução histórica do ensino da Matemática no Espírito Santo”, In: *II Congresso Luso-Brasileiro de História da Educação, 1998, São Paulo. Atas*. São Paulo: Escrituras Editora e Distribuidora de Livros, 1998, v.1, p.207 – 215.

Circe M. S. Silva, “A preparação pedagógica dos professores de Matemática da Faculdade de Filosofia Ciências e Letras -FFCL da USP”. *Cadernos de Pesquisa em Educação PPGE/UFES*. Vitória: 2002, 8, n.15, p.8-37.

Circe M.S. Silva, “Formação de professores e pesquisadores de Matemática na Faculdade Nacional de Filosofia (FNFI)”. *Cadernos de Pesquisa da Fundação Carlos Chagas*. Campinas: 2002, n.117, p.103 - 126 .

Circe M. S. Silva, “A Formação de Professores de Matemática: Preocupações Recentes e Antigas”. *Caderno de Pesquisas*, n.5, 1998.

Circe M.S Silva, “A História da Matemática e os cursos de formação de professores”, *Formação de professores de Matemática: uma visão multifacetada*.(Porto Alegre: Edipucrs, 2001).

Wagner R. Valente, *Uma História da Matemática Escolar no Brasil (1730-1930)* (São Paulo: Editora Anna Blume, 1999).

Wagner R. Valente, “Euclides Roxo e o movimento de modernização internacional da matemática escolar”, ed. Wagner R. Valente, *Euclides Roxo e a modernização do ensino de matemática no Brasil*. São Paulo: Sociedade Brasileira de Educação Matemática, 2003, pp. 46-85.

Wagner R. Valente, ed., *O Nascimento da Matemática do Ginásio* (São Paulo: Editora Anna Blume, 2004).

Various authors investigate different aspects of the modernization of school mathematics in Brazilian secondary schools from the 1930s on, with special emphasis on the Colégio Pedro Segundo, the leading secondary school

Ana Paula Werneck, João Bosco Pitombeira de Carvalho, Deborah Silva Enne, Monica Baptista da Costa, Priscilla Rangel Cruz, [Debates over the 1930-1942 reforms of mathematics education]. "Os debates em torno das reformas do ensino de Matemática: 1930-1942". (Portuguese) *Zetetiké*. 1996, 4(5), 49-54.

During the period from the late 20's to the early 40's there were lively discussions in Brazil concerning the teaching of mathematics. Although these discussions should be viewed as part of the much more general debate about educational reforms in Brazil, they have their own dynamics and actors. This paper presents some of the principal themes and actors of the discussions about a new mathematics teaching in Brazil: traditional teaching as opposed to the trends present in Europe and the United States since the beginning of the century; the "revolution" in mathematics teaching was strongly supported by Euclides Roxo, who yielded great influence, because of his official position as head of Colegio Pedro II. Arlindo Vieira, on the other hand, represented brilliantly the traditional catholic teaching, centered mainly on the study of the classics.

France

18TH CENTURY

Pierre Costabel, "L'Oratoire de France et ses collèges", René Taton (ed.), *Enseignement et diffusion des sciences en France au XVIII^e siècle* (Paris: Hermann, 1986), 66-100.

François de Dainville, "L'enseignement scientifique dans les collèges des Jésuites", René Taton (ed.), *Enseignement et diffusion des sciences en France au XVIII^e siècle* (Paris: Hermann, 1986), 27-65.

Maria Laura Magalhães Gomes, "Um livro didático da França iluminista: a aritmética de Condorcet", *Zetetiké*, vol. 9, n. 15/16, 2001, pp. 119-153.

Robert Lemoine, "L'enseignement scientifique dans les collèges Bénédictins", René Taton (ed.), *Enseignement et diffusion des sciences en France au XVIII^e siècle* (Paris: Hermann, 1986), 101-123.

19TH AND 20TH CENTURIES

Michel Armatte: "Mathématiques «modernes» et Sciences Humaines", eds. Bruno Belhoste et al., *Les sciences au lycée: un siècle de réformes des mathématiques et de la physique en France et à l'étranger* (Paris: Vuibert, 1996), 77-88.

Michèle Artigue "Réformes et contre-réformes de l'enseignement de l'analyse au lycée (1902-1994)", eds. Bruno Belhoste et al., *Les sciences au lycée: un siècle de réformes des mathématiques et de la physique en France et à l'étranger* (Paris: Vuibert, 1996), 195-217.

Teresa Assude, Hélène Gispert: «Les Mathématiques, le recours à la pratique : une finalité ou une démarche d'enseignement », eds. D. Denis, P. Kahn, *un nouveau regard sur l'école républicaine. enquête sur les disciplines dans le dictionnaire de pédagogie de Ferdinand Buisson*, CNRS Editions. forthcoming September 2003

This paper discusses mathematics teaching for students between the age of 11 to 15 years.

Bruno Belhoste, [Teaching at secondary level in France and the development of science during the 1900s. The reform of curricula in 1902.] « L'enseignement secondaire français et les sciences au début du 20^e siècle. La réforme de 1902 dans plans d'études et des programmes ». (French) *Revue d'Histoire des Sciences*, 1990, 43(4), p. 371-400.

In this article I examine the place of scientific teaching in secondary educational system in France during the 1900s. The reform of 1902 unified the secondary educational system and increased the amount of time spent teaching science. A commission whose dominant members were academics re-examined and revised the mathematics and physics syllabuses. The experimental method was introduced into the new physics syllabus. The elements of analysis became a regular part of the new syllabuses for courses in advanced mathematics.

Bruno Belhoste, [Mathematics education in France in the beginning of 19th century.] "L'enseignement des mathématiques en France au début du XIX^e siècle ». (French) *Cahiers de Didactique des Mathématiques*, 1994, no.14-15, p. 161-169.

The text reports about the organisation of mathematics education in France at the beginning of 19th century, its position in the school system and its main properties during this period, emphasising the preparatory education to main schools which is an originality of the French system.

Bruno Belhoste, *Les sciences dans l'enseignement secondaire français: textes officiels / réunis et présentés*. vol. 1 1789 - 1914 (Paris: Inst. Nat. de Recherche Pédagogique/ Vuibert 1995).

Bruno Belhoste, H. Gispert, N. Hulin (eds.), *Les sciences au lycée: un siècle de réformes des mathématiques et de la physique en France et à l'étranger* (Paris: Vuibert, 1996).

Bruno Belhoste, «L'histoire de l'enseignement au collège et au lycée», ed. Marc Legrand, *Profession Enseignant, Les Mathématiques au Collège et au Lycée* (Paris: Hachette, 1997), 368-387.

Rudolf Bkouche, "La place de la géométrie dans l'enseignement des mathématiques en France: de la réforme de 1902 à la réforme des mathématiques modernes", eds. Bruno Belhoste et al., *Les sciences au lycée: un siècle de réformes des mathématiques et de la physique en France et à l'étranger* (Paris: Vuibert, 1996), 121-137.

Rudolf Bkouche : « Variation autour de la réforme de 1902/1905 », ed. Hélène Gispert, *La France Mathématique*, La Société Mathématique de France (18670-1914), SFHST et SMF (1991), 181-214.

Renaud d'Enfert, *Les Mathématiques dans l'enseignement primaire, Textes Officiels (1789-1914)* (Paris: INRP, 2003).

This is the companion volume to Belhoste's documentation 1995 for secondary schools. The volume reproduces a complete collection of the official regulations concerning mathematics instruction at French primary schools. A systematic introduction provides a historical survey.

Helene Gispert, [Mathematics teaching, goals and addressees. A historical review of the evolution of the French syllabus in the 20th century]. "Pourquoi, pour qui enseigner les mathématiques? Une mise en perspective historique de l'évolution des programmes de mathématiques dans la société française au XXème siècle ». (French) *Bulletin - APMEP*. 2002, 81 (no.438): p. 36-46.

Hélène Gispert, [Teaching mathematics -- why and to whom?]. "Pourquoi, pour qui enseigner les mathématiques?. Une mise en perspective historique de l'évolution des programmes de mathématiques dans la société française au XXème siècle. [French], *Zentralblatt für Didaktik der Mathematik*, 2002, 34(4), 158-163.

Evolutions of mathematical curricula in French society have been marked by the successive answers institutions have given to the following question since one century: Why and whom teaching mathematics? Here I present two of these, one given in 1908 and one in 1967. Each symbolises a breaking period of reforms in secondary mathematics teaching in France. We will see in the two first part of this paper that they belong to two different worlds, with social, institutional, ideological and mathematical specific features. In the third part, I'll focus on geometry, showing the effects of the different answers concerning the public and the aims of mathematics teaching.

Hélène Gispert, Nicole Hulin: «L'enseignement des mathématiques dans ses liens à d'autres disciplines, une perspective historique », *Bulletin de l'union des professeurs de spéciales, mathématiques, physique, chimie, informatique*, 2000, 192 : 10-15.

M. Henry, [Teaching of probability calculus in secondary education. Historical, epistemological and didactical perspectives]. "L'enseignement du calcul des probabilités dans le second degré. Perspectives historiques, épistémologiques et didactiques ». *Repères IREM*. 1994, no.14: p. 69-104.

In the first paragraph there are didactic discussions of the programs about teaching of probability in Lyceum form 1991, and of the introduction of the concept of probability under the perspective of two contradictory and complementary approaches: probability as a priori value that makes use of the information in relation to conditions of uncertain experience, and to their symmetry, or as an a posteriori evaluation on the basis of observed frequencies. The second paragraph gives an outline of history and epistemology of the probability concept, from the appearance of a scientific proceeding by Plato and Aristotle across the birth of probability calculus (Bernoulli, Bayes, d'Alembert), to the mathematical development of this calculus (Laplace, Poincaré,

Kolmogorov, present progresses: determinism and complexity, probability and statistics). The third paragraph gives practical proposals for a frequentistic approach in university teaching, for the introduction of a probabilistic model in grade 11 and of proceeding in grade 12.

Jean Itard, «L'évolution de l'enseignement des mathématiques de 1872 à 1972» *Essais d'histoire des Mathématiques*, réunis et introduits par R. Rashed (Paris: Blanchard, 1984), 353-359.

André Revuz, „Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). France”, *Educational Studies in Mathematics*, 1978, 9: 171-181.

Gert Schubring 1984, see: General

Germany/Austria

E. Bremer, [After Schürmann's arithmetic textbook. In reminiscence of the 150th anniversary of the death of the master of arithmetic]. “Nach Schürmanns Rechenbuch (Daniel Schürmann (1752-1838), Mitglied der Mathematischen Gesellschaft Hamburg): Zum 150. Todesjahr des bergischen Rechenmeisters“. (German) *Mitteilungen der Mathematischen Gesellschaft in Hamburg*, 1989. p. 703-726 .

Together with biographical data on Daniel Schürmann, a school-reformer and master of arithmetic, the contribution contains especially a description of the arithmetic textbook published by him (for teachers and already advanced pupils) and a reprint of some pages from this book.

Peter Damerow, *Die Reform des Mathematikunterrichts in der Sekundarstufe I: eine Fallstudie zum Einfluß gesellschaftlicher Rahmenbedingungen auf den Prozeß der Curriculum-Reform*. Band 1: *Reformziele, Reform der Lehrpläne* (Stuttgart: Klett-Cotta, 1977).

Wolfgang Eccarius, „Über einen Aspekt des Zusammenhangs zwischen der Entwicklung der Fachwissenschaft Mathematik und dem Mathematikunterricht der höheren Schulen im Deutschland des 19. Jahrhunderts“. In: Akademie der Wissenschaften der DDR, Institut für Theorie, Geschichte und Organisation der Wissenschaft: *Wissenschaft und Technik –Humanismus und Fortschritt. Kolloquien* Heft 22. Berlin 1981, 43-48.

Wolfgang Eccarius, *Mathematik und Mathematikunterricht im Thüringen des 19. Jahrhunderts. Eine Studie zum Alltag einer Wissenschaft zwischen 1800 und 1915*. Habilitationsschrift Pädagogische Hochschule „Dr. Theodor Neubauer“ Erfurt/Mühlhausen, 1987.

Wolfgang Eccarius, „Zur Geschichte der Mathematiklehrerbildung in Thüringen im Verlaufe des 19. Jahrhunderts“, *Wissenschaftliche Zeitschrift der Pädagogischen Hochschule „Dr. Theodor Neubauer“ Erfurt/Mühlhausen*, 1988, 24: 156-166.

Wolfgang Eccarius, „Statistische Angaben zur Gruppe der Thüringischen Mathematiklehrer des 19. Jahrhunderts“, *Wissenschaftliche Zeitschrift der Ernst-Moritz-Arndt-Universität Greifswald, Mathem.-naturwiss. Reihe*, 1989, 38: 18-24.

Lutz Führer, 300 years theory of public mathematics education in Germany. “Dreihundert Jahre Theorie des öffentlichen Mathematikunterrichts in Deutschland.“ (German) *Beiträge zum Mathematikunterricht*. Vorträge auf der 34. Tagung fuer Didaktik der Mathematik (Hildesheim: Franzbecker, 2000), p. 19-26

Warum Theorie des Mathematikunterrichts? Begriffe, Begründungen und Zielsetzungen sind spätestens dann notwendig, wenn Unterricht ausserfachlich gerechtfertigt werden muss. Angesichts der heutigen Globalisierungs-, Kapitalisierungs- und Spartendenzen steht zu befürchten, dass demnächst wieder neue Reputations- und Verteilungskämpfe ausbrechen. In solchen Zeiten - noch dazu nach oder vor der Jahrtausendwende- empfiehlt es sich, einmal über die Gründe nachzudenken, die zu einem flächendeckenden Pflichtfach Mathematik in Deutschland geführt haben. Warum 300 Jahre? Als der allgemeine Mathematikunterricht mit dem preussischen Staatsschulwesen entstand, muss es einen bewussten Konsens über seine Funktionen gegeben haben. Die staatlichen Behörden hatten damals aus guten Gründen noch nicht die Gewohnheit, ihre Hintergedanken öffentlich kundzutun. Es bleibt also nichts anders übrig, als dem bildungstheoretischen Common Sense um 1800 in Preussen nachzuspüren. Dabei wird sich zeigen, dass viele Grundsätze und Begriffe der heutigen Mathematikdidaktik und -pädagogik schon im 18. Jh. ausformuliert

worden waren, dass diese Grundsätze aber noch um 1800 anders verstanden wurden als heute. (Aus der Einleitung)

Barbara Gärtner, *Johannes Widmann's arithmetic book 'Behende vnd hubsche Rechenung'. The text type 'arithmetic book' in the early Modern Age. Johannes Widmanns 'Behende vnd hubsche Rechenung'. Die Textsorte 'Rechenbuch' in der Frühen Neuzeit.* (German) (Tübingen: Niemeyer, 2000).

In the early Modern Age, some texts in German language were written for a non-literate public, the arithmetic books. These and other texts (also in other languages) are investigated with a pragmatically oriented model for text analysis and integrated in the German history of text sorts within an European history of civilization. Here, the archetype of an arithmetic book is presented in a complete edition, the work of J. Widmann (around 1460/5 until later than 1504), including information on the author's life and work, a mathematical-historical categorization, as well as a short comment, an index of measures, and a glossary.

E. Hentschel, Siegbert Schmidt (eds.), [Arithmetic books for teaching in primary schools]. *Rechenbücher für den Unterricht in der Elementarschule. Vom Ende des 18. Jahrhunderts bis zum Kaiserreich in Auszügen.* (German) (Köln: Boehla, 1993).

Die Bücher dieser Reihe wollen mithelfen, das Bild des Elementarschulunterrichts in der Vergangenheit fach- und allgemeindidaktisch genauer zu erfassen. Dazu werden einerseits Schulbücher als Ganztexte vorgestellt, ferner von Fachwissenschaftlern ausgewählt und eingeleitet. Vor allem geht es dabei um Werke des 18. und 19. Jahrhunderts, wo der Eigenwert und die Originalität vieler Schulbuchkonzeptionen eine summarische Darstellung mehrerer als unangemessen erscheinen lassen. Nach einer Einleitung zur Rechendidaktik in Deutschland in der ersten Hälfte des 19. Jahrhunderts wird die Auswahl der hier dargestellten Rechenbücher begründet. Folgende Rechenbücher werden als Nachdruck dargestellt: 1. Busse: Gemeinverständliches Rechenbuch für Schulen, 2. Krancke: Arithmetisches Exempelbuch für Volksschulen, 3. Diesterweg/Heuser: Praktisches Rechenbuch, 4. Hentschel: Aufgaben zum Kopfrechnen.

Ingrid Hupp, *Arithmetik- und Algebralehrbücher Würzburger Mathematiker des 18. Jahrhunderts.* (German) [Dissertation] (München, Inst. für Geschichte der Naturwissenschaften, 1998).

Arithmetic and algebra textbooks written in the 18th century by three mathematicians from Würzburg, Germany are analysed.

Heide Inhetveen, *Die Reform des gymnasialen Mathematikunterrichts zwischen 1890 und 1914* (Bad Heilbrunn, 1976).

Heide Inhetveen, „Zur Geschichte des Mathematikunterrichts“, F. Rieß (ed.), *Kritik des mathematisch-naturwissenschaftlichen Unterrichts* (Frankfurt/M, 1977), 139-206.

H.N. Jahnke, „Die Schulmathematik in der neuhumanistischen Bildungsreform des frühen 19. Jahrhunderts“, *Zentralblatt für Didaktik der Mathematik*, 1985, 17(1):14-20.

Although already during the 18th century there were attempts to give mathematics a place at the Prussian grammar school, it was in the beginning of the 19th century that these attempts were met with success. The most comprehensive attempt was the program designed by Süvern and Tralles, a program in which algebra and analytic geometry were dominant. But this program was too comprehensive and controversial to implement. During the first half of the century a more elementary and synthetic program was developed, based on four hours a week, that was generally accepted.

Maria Koth, „Zur Entwicklung der gymnasialen Reifeprüfung aus Mathematik in der Zeit von 1850 bis 1918“, *Didaktikhefte. Österreichische Mathematische Gesellschaft. Schriftenreihe zur Didaktik der Mathematik an Höheren Schulen. Heft 32. Dezember 2000*, 107-140.

History of the mathematical content of the final exams at the secondary schools in Austria: analyses and documents.

Katja Krüger, *Erziehung zum funktionalen Denken: zur Begriffsgeschichte eines didaktischen Prinzips* (Berlin: Logos-Verlag, 1999 [erschienen] 2000).

Olaf Neumann, Menso Folkerts, Carl Gustav Reuschle (1812-1875) - a gymnasium teacher for mathematics, physics and geography from Stuttgart. „Carl Gustav Reuschle (1812-1875) - ein Stuttgarter Gymnasialprofessor fuer Mathematik, Physik und Geographie“. (German), *Mathematik im Wandel. Anregungen zum faecheruebergreifenden Mathematikunterricht. Bd. 2.* ed. Michael Toepell (Hildesheim: Franzbecker, 2001). p. 220-227.

Bertold Picker, [Origin of arithmetics teaching in Germany, its didactical principles and methodic ideas.] „Die Ursprünge des arithmetischen Unterrichts in Deutschland, seine didaktischen Prinzipien und methodische Ideen“. (German)

Sachunterricht und Mathematik in der Primarstufe, Teil 1. Feb 1990, 18(2) p. 84-91; Teil 2: Mar 1990, 18(3) p. 116, 125-130; Teil 3: 18(5), p. 226-233 ; Teil 4: Jun 1990, 18(6), p. 257-273.

Starting from the beginning of the educational system during the medieval age of Charlemagne, the development of monastical schools and of civic Latin schools in Germany is discussed.

First the arithmetic methods of the Middle Ages are explained: calculation with one's fingers, the abacus used in monasteries and the beginning of calculation with numbers. Then the development of German elementary schools, especially also of schools for girls, is outlined and the influence of religious, philosophical and educational trends on the development of arithmetic teaching in the 16th and 17th century is explored.

The third part studies the profession of the "Rechenmeister".

The last part of the article deals with Adam Riese's arithmetic books. First of all, the division and systematic of the books themselves are described, then a look is taken at the methodics of dealing with the individual tasks. Finally, 'calculating at the abacus' and 'calculating with numbers' are consecutively described in detail for the basic operations 'according to Adam Riese'

Kurt Richter, The first thirty years of ZMNU - Problems and subject contents of mathematics instruction. "Die ersten dreissig Jahre ZMNU - Probleme und Inhalte zum Mathematikunterricht". (German) *Mathematik im Wandel. Anregungen zum fächerübergreifenden Mathematikunterricht. Bd. 2.* ed. Michael Toepell (Hildesheim: Franzbecker, 2001), p. 256-265.

The contribution reports about an investigation of the first thirty years' issues of the German ZMNU "Zeitschrift fuer mathematischen und naturwissenschaftlichen Unterricht" (journal for the teaching of mathematics and natural sciences). It turns out that their contents are historical witnesses of the development of the current comprehension of the subject content and importance of mathematical-scientific subjects which are also important for the current reform of mathematics education.

Henrik Radatz, [Mathematics teaching at the time of National Socialism]. "Der Mathematikunterricht in der Zeit des Nationalsozialismus". (German) *Zentralblatt für Didaktik der Mathematik*, 1984, 16(6): p. 199-206.

The consequences of the National Socialist seizure of power on mathematics teaching at school are described and discussed: the new role of mathematics teaching in the educational subject canon, the attempts to adjust to the popular educational aims, and the introduction of racist ideas to mathematics teaching. The concrete changes with regard to guidelines, methods and textbooks are described with the help of examples, most of them from primary school level. This paper is mainly concerned with giving a commented account of this epoch in the history of German mathematical didactics

Herwig Saeckl, [The reception of the concept of function at the nineteenth century universities and schools. A case study on the social history of mathematics with special consideration of Bavaria]. *Die Rezeption des Funktionsbegriffs in der wissenschaftlichen Basis an Hochschule und Schule im neunzehnten Jahrhundert. Eine Fallstudie zur Sozialgeschichte der Mathematik mit besonderem Blick auf Bayern.* (German) May 1984. Diss.

This doctoral thesis examines the acceptance and spreading of the concept of function in schools and university in Germany with a special look at the situation in Bavaria

Herwig Saeckl, [On the controversy between arithmetisation and illustration in mathematics education at school and university about 1900]. "Zur Auseinandersetzung über Arithmetisierung und Anschauung im Mathematikunterricht an Schule und Hochschule um 1900". (German) *Zentralblatt für Didaktik der Mathematik*, (Dec 1984), v. 16(6): p. 195-199.

In a series of lectures in the years about 1900 Felix Klein and Alfred Pringsheim discussed the right way of entering mathematics - especially of treating real analysis at university and 'Technische Hochschule'. They started by discussing the famous Weierstrassian rigour, but this discussion of an apparently purely mathematical problem was, however, embedded in a complex surrounding. An important part of that surrounding was the teaching of mathematics at the 'Höhere Schule', but also questions of training teachers and engineers, the discussion between 'Humanismus' and 'Realismus' and - last not least - the role of mathematics in general culture.

Michael Sauer, „Es schärfet des Menschen Verstand...“. Die Entwicklung des Rechenunterrichts in der preussischen Volksschule. *Zeitschrift für Pädagogik*, 1991, 37.: 371-395.

Siegbert Schmidt, [Didactics of arithmetic at teacher training colleges of the Rhineland in the 19th century]. “Zur Rechendidaktik an den Rheinischen Lehrerseminaren im 19. Jahrhundert“. (German) *Zentralblatt für Didaktik der Mathematik*, 1985, 17(1): p. 7-14.

The outline of an empirical historical investigation on the arithmetical instruction and arithmetic education in the teacher training colleges of the Rhineland during the 19th century (1819 - 1872) is given. This study is not only based on printed materials but in an important measure on archival materials, too; objectives as well as social functions of didactical knowledge shall be analysed. Fundamental orientations of that former elementary teacher training (emphasis on moral education, restriction of intellectual education to a measure officially regarded as 'strict necessary') and the stable core of the contents of arithmetical instruction in the teacher training colleges are described. The approach of the study is outlined with respect to these topics: - initial arithmetical instruction in the elementary school and the 'principle of intuition', - the 'principle of self-activity' and the elementary arithmetical instruction, - the tendency of application within elementary arithmetical instruction.

Siegbert Schmidt, *Rechenunterricht und Rechendidaktik an den Rheinischen Lehrerseminaren im 19. Jahrhundert: eine Studie zur Fachdidaktik innerhalb der Volksschullehrerbildung an Lehrerseminaren, 1819-1872* (Köln: Böhlau, 1991).

Jürgen Schönbeck, [The mathematics educator Peter Treutlein]. “Der Mathematikdidaktiker Peter Treutlein“. (German) *Der Wandel im Lehren und Lernen von Mathematik und Naturwissenschaften. Bd. 1.*, ed. J. Schönbeck, (Weinheim: Deutscher Studienverlag, 1994). p. 50-72.

The nineteenth century is often regarded as the classical period of geometry. Especially projective geometry seemed to be the most basic kind of geometry since Euclidean and non-Euclidean metrics could be generated within projective spaces. Therefore projective geometry became an important part of all geometrical curricula. This influence of geometry on education at school level can be studied in the work of the german mathematician Peter Treutlein (1845 - 1912). He was much interested in the reorganization of the three types of secondary school, in the modernization of the mathematical curriculum and in the teaching of geometry. And he was convinced "that in a world dominated by scientific methods the history of science should be the keystone of higher education."

Gert Schubring, *Die Entstehung des Mathematiklehrerberufs im 19. Jahrhundert. Studien und Materialien zum Prozeß der Professionalisierung in Preußen (1810-1870)* (Weinheim/Basel: Beltz 1983). Second edition: Weinheim: Deutscher Studien Verlag 1991.

Under the influence of the neo humanistic educational reform in the beginning of the 19th century, mathematics became one of the main topics on the Prussian grammar schools. The government deliberately created a class of teachers with a high scientific and social status, to which to math teachers belonged. Although math teaching after the first decades of the century had also it set backs, the creation of the professional math teacher was an important result of this reform.

In contrast to earlier more pedagogical historical accounts of mathematics teaching, this aims for the first time, to give an account of the reality of the mathematics teaching profession. Based on social-historical methodology, and thorough local, regional and central archive studies, the volume contains analyses, social-statistical data, individual case studies and documents.

Gert Schubring, see General, 1984 : RDM

Gert Schubring, "Die Geschichte des Mathematiklehrerberufs in mathematikdidaktischer Perspektive", *Zentralblatt für Didaktik der Mathematik*, 1985, 17, 20-26.

The history of curriculum reforms shows that the teacher is the central figure in these reforms. It's therefore interesting to study the role and position of the math teacher during the first half of the 19th century, when math education was made compulsory on the grammar schools of quite some countries. Closely related to the role of the math teacher was the introduction of a class system based on age groups.

This paper discusses the function of the mathematics teaching profession for investigations into the history of mathematics teaching, and describes how the variance of the roles associated with this profession is

connected with different attitudes to education and with the social distribution of knowledge. The mathematics teacher as a scientific profession was constituted with the establishment of a general and public education system in Prussia; the problems involved in realising successful instruction indicate, however, fundamental questions on the cultural function of mathematics

-, "Zur Geschichte der Entstehung des Mathematiklehrerberufs - Systematische Hauptlinien und methodische Probleme inhaltspezifischer Bildungsgeschichte", *Zentralblatt für Didaktik der Mathematik*, 1985, 17: 95-100.

Gert Schubring, *Bibliographie der Schulprogramme in Mathematik und Naturwissenschaften (wissenschaftliche Abhandlungen) 1800-1875* (Bad Salzdetfurth: Franzbecker 1986).

This bibliography is a documentation of the school programmes, or to be more precise of the dissertations as a contribution to the annual school programmes in mathematics and natural sciences at grammar schools in the German states up to 1875. This form of publication was deliberately selected by the Prussian Ministry for Culture as one of the means for giving grammar school teachers a leading social function as desired by the Ministry. The dissertations written by the teachers also served to document the academic standard of the teachers to the public of the community concerned. The aim of this bibliography is to serve as an instrument in research concerned with the professionalisation of teachers in higher education.

Gert Schubring, "Mathematisch-naturwissenschaftliche Fächer", *Handbuch der deutschen Bildungsgeschichte, Band III, 1800-1870*, Hrsg. E. Jeismann, P. Lundgreen (München: Beck 1987), 204-220.

Gert Schubring, editor of the thematic issue: *Quellen zur Geschichte des Mathematikunterrichts, der Zeitschrift Der Mathematikunterricht*, 34 (1988), 34:1

Gert Schubring, "Der Lehrer: "ein Organ seines Lehrbuchs"? Staatliche Vorschrift kontra methodische Autonomie (1829)", *Der Mathematikunterricht*, 1988, 34:1, 4-29. [The teacher: an agent in the service of the textbook. State regulations against methodical independence (1829)].

In the first half of the 19th century in most European countries mathematics became part of a schoolsystem, aiming at general education. In several countries, like France, Austria and most German states, the central government monopolized the publishing of mathematic textbooks, partly on principal grounds, partly because of the supposed incompetence of the teachers. In Prussia, things went differently. The state for principal reasons, based on the neo humanistic philosophy, abstained from publishing and prescribing the textbooks itself. From 1810 on, teacher training in Prussia was thoroughly, so there shouldn't be practical reasons either for a dominating position of the state on the schoolbook market.

Since the teacher as well as the textbook have a central impact on the real situation of teaching, and since especially the cooperation of these two main variables determines the characteristic stream of the teaching process, it is, in the author's view, of a great systematic importance to examine the historical development of the cooperation of these two variables at a time when general educational systems started to be established. The contribution, in order to make the connections clearer, presents documents showing controversial discussions in Prussia around 1829 and thus wants to offer an insight into structural factors. For an easier judgment the 'Prussian' case is presented in this introduction as part of an international development. At the same time the effects of the respective constellation teacher - textbook on knowledge, another variable of school-teaching, are discussed.

Gert Schubring, "Ein früher "Aufruf: Rettet die mathematisch - naturwissenschaftliche Bildung!" - Die Denkschrift Schellbachs von 1860", *Der Mathematikunterricht*, 1988, 34:1, 30-72. [An early 'appeal': save the mathematical-scientific education. Schellbachs memorandum of 1860.]

The contribution describes the problems of the scientific and didactic training of teachers in the 19th century and the integration of mathematics lessons at that time in concepts for general education and their concrete realization in school forms. Particularly it points out the tensions on mathematics caused by splitting up the parallel forms grammar school and intermediate school.

-, "Differenzierung und Institutionalisierung von Wissen - Die Wirkung von Lehrplänen am Beispiel der Entstehung der Schulmathematik". *Zugänge zur Geschichte staatlicher Lehrplanarbeit*, ed. St. Hopmann (IPN Kiel, 1988), 143-167.

Gert Schubring, "Die Mathematik - ein Hauptfach in der Auseinandersetzung zwischen Gymnasien und Realschulen in den deutschen Staaten des 19. Jahrhunderts", *Bildung, Staat und Gesellschaft im 19. Jahrhundert. Mobilisierung und Disziplinierung*. Hrsg. K.-E. Jeismann. (Stuttgart: F. Steiner 1989), 276-289.

Gert Schubring, "Warum Karl Weierstraß beinahe in der Lehrprüfung gescheitert wäre", *Der Mathematikunterricht*, 1989, 35: 1, 13-29. [Why Karl Weierstrass was likely to fail his teaching certificate].

Am Beispiel der Lehramtsprüfung von K. Weierstraß werden die damaligen Wissensanforderungen an Mathematiklehrer diskutiert.

Gert Schubring, "Zur Modernisierung des Studiums der Mathematik in Berlin, 1820-1840", *AMPHORA. Festschrift für Hans Wußing zu seinem 65. Geburtstag*. Hrsg. S.S. Demidov et al. (Basel: Birkhäuser 1992), 649-675.

Gert Schubring, "Felix Kleins Gutachten zur Schulkonferenz 1900: Initiativen für den Systemzusammenhang von Schule und Hochschule, von Curriculum und Studium". *Der Mathematikunterricht*, 2000, 46(3) p. 62-76.

Mit der ersten Publikation der Endfassung zweier Gutachten Felix Kleins vom 21. und 22. Mai 1900 zur Schulkonferenz und einem Vergleich dieser Gutachten mit Kleins Entwürfen gibt Gert Schubring einen Einblick in die Entwicklung von Kleins Konzeptionen am Wendepunkt und Beginn seines Interesses an Fragen des mathematischen Schulunterrichts sowie in den Systemzusammenhang von Maßnahmen zu Schule und Hochschule.

Horst Struve, [Interactions between geometry and geometry teaching in the 19th century. Pt. 1.] "Wechselwirkungen zwischen Geometrie und Geometrieunterricht im 19. Jahrhundert. T. 1." (German) *Der Wandel im Lehren und Lernen von Mathematik und Naturwissenschaften. Bd. 1.*, ed. J. Schoenbeck, et al. (Weinheim: Deutscher Studienverlag, 1994), p. 152-168.

In the last century there were important developments in geometry as well as in didactics of geometry. On the one hand projective geometry was founded by Poncelet and non-euclidean geometries were discovered by Gauss, Bolyai and Lobatschewski. On the other hand starting from the synthetic methods of the ancient Greeks the teaching methods were refined, especially by taking into account transformations. In this article the mutual influence of these two fields - geometry and didactics of geometry - is investigated. \par Bericht über ein Projekt "Wandlungen im Grundlagenverständnis der Geometrie und deren Auswirkungen auf den Geometrieunterricht" an der Pädagogischen Hochschule Heidelberg.

Renate Tobies, [Felix Klein and the German Society of teachers in mathematics and in the sciences]. "Felix Klein und der Verein zur Förderung des mathematischen und naturwissenschaftlichen Unterrichts". (German) *Der Mathematikunterricht*, 2000, 46(3): p. 22-40.

Renate Tobies analysiert Felix Kleins Verhältnis zum Verein zur Förderung des mathematischen und naturwissenschaftlichen Unterrichts, erörtert, warum der Mathematikprofessor 1894 den Kontakt zu diesem Lehrerverein suchte, welche Rolle die Ferienkurse für in der Praxis tätige Lehrer dabei spielten, welchen Anteil Klein bei der Vorbereitung der Jahresversammlung des Foerderevereins 1895 in Göttingen hatte und wie er ab 1898 -- gemeinsam mit diesem Verein -- Diskussionen plante, um Fragen der Hochschul- und Schulbildung abzustimmen.

Greece

Athanasios Gagatsis, «L'influence des géomètres français de 1830 à 1884 », *Répères IREM*, 1994, no. 17, 47-69.

In Greece the teaching of geometry has been used as a bridge between the modern and the ancient Greece, characterised by a long tradition in the education of Euclidean geometry. A study of particularities in the historical development of geometry education allows to reveal some contradictions just related to its Greek origin, which offer criteria for a division into three periods. The first of these periods covers the foremost fifty-five years of the modern Greek State between 1830 and 1884. The analysis of this period concerns Legendre's Elements of geometry, the education system in Greece, mathematics in school curricula, the teaching methods, and the geometry textbooks.

Nikos Kastanis, "Euclid must go – we shall not be national underbidders". A historico-didactical approach of this Antiphasis in our school [in Greek], (Groupe pour l'histoire des mathématiques, Thessaloniki, no. 2, 1986),

Nikos Kastanis, "The Influence of French mathematics in the neohellenic mathematical culture on the period 1800-1840 [in Greek]", in : N. Kastanis, *Opseis tis Neoellinikis Mathematikis*

Paideias – Aspects of the Neohellenic mathematical [in Greek], Thessaloniki, 1998 (205 pp.), 173-205.

Other chapters on: Byzantine and post-Byzantine mathematical education in the 15th century; historical background of the first printed Greek mathematical book; the fate of linear perspective in neohellenic education; first algebra book in neohellenic mathematical education

Nikos Kastanis, *I Eisagogi ton Mathematikon sti Neohelleniki Paideia. I Algebra kai o Apeirostikos Logismos*. [The introduction of mathematics into the neohellenic Education] Dissertation University Thessaloniki 2001. [in Greek]

Nikos Kastanis and Y. Thomaidis “The reformations of the Greek Mathematics Education of second half of 20th century: a problematique frame”, *Contemporary Education*, Part I, 2003, 130, pp 78-92; Part II, 2003, 131, pp 127-137.

Charalambos Toumasis, “The epos of Euclidean geometry in Greek secondary education (1836-1985): pressure for change and resistance”. *Educational Studies in Mathematics*, 1990, 21(6): p. 491-508.

The study of geometry as a school subject generally presents pedagogical and epistemological interest because it brings to light the developmental trends and characteristics of this most ancient branch of mathematics, as well as the factors which contributed to the shaping of its educational value. These factors may be economical, political, social and scientific and they manifest themselves either locally or at a wider range each time. In this paper we try to present the development of school geometry in contemporary Greece, since the era in which the secondary education system was established (1836), up to today. The main purpose, of course, is not to describe facts but to identify and interpret the phenomenon of the incredible endurance which Euclid's Elements have presented, during the last 150 years, as the basic component of school geometry in Greece. School geometry in Greece presents special interest and it can be considered an exceptional phenomenon. This changing in accordance with modern educational and pedagogical considerations and the removal of the 'Elements' was confronted with powerful barriers up to the present. Every time an effort was made to revise the content of school geometry, those who exercised control over the mathematics curriculum reacted strongly against the new innovations, providing educational, philosophical and ethnic arguments.

Charalambos [M.] Toumasis, “Study on the history of mathematics education in Greece”. (Greek) Educational Review. Periodical Publication of the Greek Educational Society No. 16/92. *Paidagogike Epitheorese. Periodike Ekdose Tes Paidogogikes Hetaireias Hellados*. 16/92. Greek Educational Society (Greece) Thessalonike. 1992. p. 59-73

The purpose of this article has been to discuss some issues and problems concerning the study of the history of Mathematics Education in Greece as well as to present the current status of this research in this country. The first part of the article is concerned with the value of studying the history of Mathematics Education to broaden the basis on which we form judgements and plan strategies for Mathematics Education today. The second part presents the Greek research experience in this area. The third part deals with the most considerable problems that the historiography of Greek Mathematics Education faces and in the fourth part some major research questions are suggested for future study. The key idea that the future perspectives are based on is that the developments of mathematics Education have not only to be viewed within a changing mathematical context, but also within the relevant socio-economical, political and educational setting. Therefore, the problems of the history of Mathematics Education does not lie wholly within the domain of mathematics but one needs to study them within its broader historical context to see how Mathematics Education in Greece had interacted with, and responded to, general social and educational changes.

Konstantina Zormbala, “Greek students in German Universities in the 19th century”, Proc. of the 3rd International Conference *The times of History: For a history of childhood and youth*, pp. 55-62, 1998. [in Greek]

Konstantina Zormbala, "A Greek Geometry Textbook of the 19th Century: Influences of Mathematical Science on Axiomatic in School", *Sudhoffs Archiv*, 2002, 86:2, 198-219.

Hungary

Maria Halmos, Tamas Varga, , “Change in Mathematics Education since the late 1950’s - Ideas and realisation (An ICMI Report). Hungary”, *Educational Studies in Mathematics*, 1978, 9: 225-244.

Italy

Anonymous, „Celebrazione del sessantennio di vita della Società “*Mathesis*”, *Atti della società italiana di scienze fisiche e matematiche “Mathesis”*, 1956, fasc. 2, 9-31.

Anonymous, „La “*Mathesis*” e l’ansia di rinnovamento della scuola“, *Periodico di matematiche*, s.V, 1972, 49, n.1/2, 5-10.

F. Arzarello, 'La scuola di Peano e il dibattito sulla didattica della matematica', ed. A. Guerraggio, *La matematica italiana tra le due guerre mondiali* (Bologna: Pitagora, 1987), 25-41.

The paper discusses the debates on the programmes for mathematics teaching in Italian secondary schools around 1900.

Mario Barra, M. Ferrari, F. Furinghetti, N.A. Malara, & F. Speranza (editors), *Italian research in mathematics education: common roots and present trends*, Quaderno TID - CNR, serie FMI, 1992 n.12.

L. Besana, & M. Galuzzi, 'Geometria e latino: due discussioni per due leggi', in G. Micheli (editor), *Storia d'Italia. Annali 3: Scienza e tecnica nella cultura e nella società dal Rinascimento a oggi* (Torino: Einaudi, 1980), 1285-1306.

A. Borrelli, A. & R. Gatto, 'L'insegnamento delle scienze', in AA.VV. *Napoli e la Campania nel Novecento. Diario di un secolo*, v.III (Napoli: Edizioni del Millennio, 2002), 675-783.

L. Branciforte, & R. Tazzioli, 'La presenza delle donne nella matematica e nel suo insegnamento', ed. C. Dollo, *Per un bilancio di fine secolo. Catania nel Novecento* (Catania, 2002), 95-112.

G. Cosentino, „L'insegnamento delle matematiche nei collegi gesuitici nell'Italia settentrionale“, *Physis*, 1971, 13, 205-217.

Raffaella Franci, 'L'insegnamento della matematica in Italia nel Tre-Quattrocento', *Archimede*, 1988, 40: 182-194.

Fulvia Furinghetti & A. Somaglia, „Giornalismo matematico ‘a carattere elementare’ nella seconda metà dell’Ottocento“, *L'insegnamento della matematica e delle scienze integrate*, 1992, 15: 815-852.

Fulvia Furinghetti, «Les mathématiques dans l’enseignement secondaire supérieur en Italie: une réforme par siècle », in B. Belhoste, H. Gispert & N. Hulin (editors), *Les sciences au lycée. Un siècle de réformes des mathématiques et de la physique en France et à l’étranger* (Paris: Vuibert - INRP, 1996), 259-272.

Fulvia Furinghetti, [The Italian tradition of the teaching of geometry]. “La tradizione italiana nell’insegnamento della geometria”. (Italian) *La Matematica e la sua Didattica*, 1998, no.2: p. 176-198.

Fulvia Furinghetti, Il *Bollettino della Mathesis* dal 1909 al 1920: pulsioni tra temi didattici internazionali e nazionali. *PRISTEM/Storia. Note di matematica, Storia, Cultura*, 2001, n.5, 31-58.

A.C. Garibaldi, „Matematica e matematici gesuiti a Genova tra Sei e Settecento“, in Atti del Convegno Internazionale di studi *I gesuiti tra impegno religioso e potere politico nella Repubblica di Genova*, Quaderni Franzoniani, v. V, fasc. 2 (Genova, 1992), 115-125.

Romano Gatto, *Tra scienza e immaginazione. Le matematiche presso il Collegio gesuitico napoletano (1552-1670 ca.)* (Firenze: Olschki, 1994).

Livia Giacardi, „Gli "Elementi" di Euclide come libro di testo. Il dibattito di metà Ottocento in Italia“, in Conferenze e seminari, 1994-1995', *Associazione Mathesis e Seminario T. Viola*, (Torino, 1995), 175-188.

Livia Giacardi & C.S. Roero, „La nascita della Mathesis (1895-1907)“, eds. L. Giacardi & C.S. Roero, *Dal compasso al computer*, Associazione Mathesis (Torino, 1996), 7-49.

Livia Giacardi, «Les Éléments d'Euclide comme manuel de géométrie élémentaire. Le débat italien à la moitié du XIX siècle», Congresso internazionale "Histoire de la lecture des anciens en mathématiques", Marsiglia 19 ottobre 1995.

Livia Giacardi, "Matematica e humanitas scientifica. Il progetto di rinnovamento della scuola di Giovanni Vailati", *La Matematica nella Società e nella Cultura. Bollettino della Unione Matematica Italiana*, Serie VIII, 1999, 3-A: 317-352.

Livia Giacardi, "Educare alla scoperta. Le lezioni di Corrado Segre alla Scuola di Magistero", *La Matematica nella Società e nella Cultura. Bollettino della Unione Matematica Italiana*, Serie VIII, 2003, 6-A: 141-164.

Livia Giacardi, *L. Cremona, G. Vailati, e C. Segre. Tre diversi approcci al problema dell'insegnamento della matematica fra '800 e '900*, Atti XXIII Congresso UMI-CIIM. (in print)

M. Gliozzi, „Storia dei programmi d'insegnamento scientifico nella scuola popolare“, *Cultura popolare*, 1964, 36: 295-312.

Silvio Maracchia, „Cent'anni fa: il ritorno di Euclide“, *Cultura e scuola*, 1967, 6: 237-241.

Silvio Maracchia, "Storia dell'insegnamento matematico nella scuola italiana", *Corso di aggiornamento sulla matematica moderna*, Provveditorato agli studi di Siena, (Siena, 1972), 185-195.

Silvio Maracchia, [Developments and modifications of geometry curricula in Italy]. "Sviluppi e mutamenti nei programmi della geometria in Italia". (Italian) *La Matematica e la sua Didattica*, 1998, no.1: p. 45-66.

W. Maraschini, Marta Menghini, [The Euclidean method in teaching geometry]. "Il metodo euclideo nell'insegnamento della geometria". (Italian) *Educazione Matematica*, 1992, 13(3): p. 161-180.

The discussion regarding geometrical education is often characterized by two opposing opinions: transformation geometry or Euclidean tradition. This article gives a good presentation of the didactic discussion of the last hundred years considering especially the development of the syllabus in Italy.

C. Marchionna Tibiletti, „Breve storia della "Mathesis"“, *Periodico di matematiche*, s.V, 1979, 55, n.2-3: 81-87.

Marta Menghini, „Die euklidische Methode im italienischen Geometrieunterricht seit 1867“, *Der Wandel im Lehren und Lernen von Mathematik und Naturwissenschaften*, Band I (Heidelberg, Deutscher Studien Verlag: Weinheim 1994), 138-151.

The problem of geometry teaching is an age-old one in the history of teaching and of mathematics syllabuses. Even today, in Italy, there are arguments about the choice between "traditional Euclidean geometry" and so-called "transformation geometry". In Italy the "traditional route" is deductive and synthetic teaching of geometry via axioms and theorems, as done in Euclid's Elements. The tradition begins when, in 1867, Euclid's Elements were introduced as a textbook. The aim of this introduction was to improve Italian secondary schooling: geometry, and thus the Euclidean approach, was seen as "mental gymnastics". This reform of geometry teaching continued, with few arguments, until the early 20th century, with permanent effects on Italian teaching. This reform involves discussion about "rigid body motions" and about the "purity" of geometry. This was the situation in Italy up until the European reforms of the '50s. The Erlangen program was eventually accepted, but on the basis of a re-working due to Enriques and his student P. Libois. The (few) supporters of Italian reform had more contact with Libois than with the supporters of linear algebra.

Pietro Nastasi, „La Mathesis e il problema della formazione degli insegnanti“, *Note di Matematica, Storia e Cultura*, 2001, n. 5: 59-119.

A. Natucci, „L'evoluzione dell'insegnamento della matematica elementare nell'ultimo secolo“, *Giornale di matematiche di Battaglini*, s.6, 1965-67, 2: 160-172.

C.S. Roero, , 'Alcune iniziative nella storia della Facoltà di Scienze MFN di Torino per promuovere la cultura matematica fra gli insegnanti: le Scuole di Magistero, l'operato di Peano, il Centro di Studi Metodologici', Associazione Subalpina Mathesis: *Conferenze e Seminari 1998-1999* (Torino, 1999), 188-211.

Luigi Pepe, “La crisi dell'insegnamento scientifico dei gesuiti a Ferrara e l'inizio dell'attività didattica di Teodoro Bonati”, ed P. Castelli. “*In supreme dignitatis*”: per la storia dell'Università di Ferrara, 1391-1991 (Firenze: Olschki, 1995), pp. 61-74.

-, “Per una storia degli insegnamenti matematici in Italia”, ed. S. Invernizzi, *Giornate di Didattica, Storia ed Epistemologia della matematica in ricordo di Giovanni Torelli* (Trieste, Università degli Studi, 1996), pp. 101-116.

-, “Matematica e fisica nei collegi del Settecento”, *Studi Settecenteschi*, 1998, 18: pp. 407-420.

Gert Schubring, "Euklid versus Legendre in Italien", *Mathematik erfahren und lehren*. Festschrift für Hans-Joachim Vollrath, Hrsg. Günter Pickert, Ingo Weidig (Stuttgart: Klett 1994), 188-194.

Gert Schubring, „Neues über Legendre in Italien“, eds. W. Hein, P. Ullrich, *Mathematik im Fluß der Zeit* (Augsburg: Rauner, 2004), 256-274.

Rossana Tazzioli, Maria Becchere, “Il concetto di volume nei libri di testo: una analisi storico-critica nell'ambito dell'evoluzione dei programmi (1867-1986)”, *L'educazione matematica*, serie VI, 2, 2000, p. 102-115.

Elisabetta Ulivi, „Mode didattiche: il fusionismo“, *Archimede*, 1977, 29: 211-216.

Elisabetta Ulivi, „Sull'insegnamento scientifico nella scuola secondaria dalla legge Casati alla riforma Gentile: la Sezione fisico-matematica“, *Archimede*, 1978, 30: 167-182.

Elisabetta Ulivi, [For a biography of Antonio Mazzinghi, master of abacus of the 14th century]. “Per una biografia di Antonio Mazzinghi, maestro d'abaco del XIV secol”. (Italian) *Bollettino di Storia delle Scienze Matematiche*. (Jun 1996) v. 16(1) p. 101-150.

Antonio Mazzinghi was a very important master of abacus in Florence in the 14th century, he was the best algebraist of the 14th and 15th centuries. Until now all that we knew about his life were some biographical notes contained in some manuscripts of the 15th century. After a long and careful search in the Archives of Florence, Ulivi has found a lot of interesting documents about Antonio that confirm and improve our previous knowledge. The paper contains the transcription of all most important documents. (ZfM)

Vincenzo Vita, *I programmi di matematica per le scuole secondarie dall'unita d'Italia al 1986. Rilettura storico-critica* (Bologna: Pitagore, 1986).

Vincenzo Vita, [Teaching geometry in secondary schools and its historical development]. “La didattica della geometria nella scuola secondaria e la sua evoluzione storica”. (Italian) *Archimede*, 1990, 42(2) p. 74-79.

After Coppino's law (1867), fixing Euclides' 'Elements' as a textbook for geometry in all Italian secondary schools it was not possible in Italy to have a more natural teaching of geometry because the author of the textbooks did not follow the (too few) new suggestions of authorities and new syllabuses very well. Now there is a further syllabus to be experimented with in some (vocational) schools, but there are no new textbooks, following its suggestions. This paper is very important because it is written by a high official of the Italian ministry of education.

Vincenzo Vita, [The teaching of geometry in a proposal of Giovanni Vailati]. “L'insegnamento della geometria in una proposta di Giovanni Vailati”. (Italian) *Educazione Matematica*, 1992, 13(2): p. 71-84.

In 1909, Giovanni Vailati, as a member of a reform commission for education at secondary schools, presented a detailed program for teaching in geometry. In the surrounding field of school education, this program is discussed in Italy and compared to present tendencies and courses of study.

Japan

Annick Horiuchi, " Sur la recomposition du paysage mathématique japonais au début de l'époque Meiji ". eds. C. Goldstein et al., *L'Europe mathématique* (Paris: Editions de la Maison des sciences de l'homme, 1996), p. 221-248.

Annick Horiuchi, "Entre science et art, les écoles de mathématiques japonaises (wasan) au XIXe siècle", eds. J.P. Berthon et J. Kyburz, *Japon pluriel 2*, Actes du deuxième colloque de la Société française des études japonaises (Paris: Ph. Picquier, 1998), pp. 247-256.

Annick Horiuchi, "Kikuchi Dairoku, un mathématicien à l'époque de la modernisation", *Daruma*, Revue d'études japonaises, n° 12/13, Automne 2002 / Printemps 2003.

Annick Horiuchi, "Langues mathématiques de Meiji: à la recherche du consensus?", eds. Pascal Crozet et A. Horiuchi, *Traduire, transposer, naturaliser: la formation d'une langue scientifique moderne hors des frontières de l'Europe au XIXe siècle* (Paris : L'Harmattan, 2004) (forthcoming).

Yasuo Iijima, "Trends of arithmetic education in the Taisyō period, from the view of living arithmetic movement". (Japanese; English) *Mathematics education in Japan 1996. Philosophies of mathematics education in the twentieth century. JSME yearbook*. Vol. 2. Japan Society of Mathematical Education (JSME), (Tokyo: Japan Society of Mathematical Education, 1997), p. 65-76.

Mathematics education in Japan in the Taisyō period did not undergo a great change, as a whole, from that of the Meiji period. However, during the Taisyō period, a great reform of arithmetic education in the next period - the great revision of national textbook -- was prepared. Under the influence of Perry's Movement in mathematics education, the advancement of psychology and thoughts of liberal education, new arithmetic movement and living arithmetic movement appeared. Several leading advocates were: Takeshi Sato, Seijō elementary school; Yoshinori Katori, elementary school attached to Chiba normal school (later, Seikei elementary school); Jingo Shimizu, elementary school attached to Nara women's higher normal school; Yoshie Iwashita, elementary school attached to Tokyo women's higher normal school; Kyoichi Nakano, elementary school attached to Hiroshima higher normal school; and others. In this article, an approach is made by taking the view of their theories and practices.

Osamu Kota, "A history of calculus education in Japan". (English) *Proceedings of the HPM 2000 conference - History in mathematics education: challenges for a new millennium*. Vol. 1. Editor(s): Wann-Sheng Horng; Fou-Lai Lin (Taiwan, Dept. of Mathematics 2000), p. 54-62

In former times, calculus was a branch of higher mathematics and was taught only in post-secondary level. The idea of differential and integral calculus was introduced into school mathematics in Japan by a drastic change of the curriculum in 1942. However, this curriculum was not carried out completely due to the World War II. After the War, elements of calculus were introduced into upper secondary mathematics systematically, and, as a result of the spread of upper secondary education, 'popularization of the calculus' has been made. However, there remain problems concerning calculus education, so calculus education should be improved. (Author's abstract)

Naomichi Makinae, "The brief sketch of mathematics education for immediately follow the World War II in Japan". (English) *Proceedings of the HPM 2000 conference - History in mathematics education: challenges for a new millennium*. Vol. 1., eds. Wann-Sheng Horng; Fou-Lai Lin (Taiwan, Dept. of Mathematics 2000), p. 63-70 .

The purpose of this paper is to outline and state the feature of mathematics education immediately followed World War II in Japan. A historical survey of GHQ/SCAP Records were conducted, which resulted in the following three observations. 1. Japanese mathematics education immediately followed the war age was established while there were two comparing positions: accepting American progressive education and keeping Japanese pre-war education. 2. Under the leadership of C.I.E., Japanese ministry officers were forced to lower the level of mathematics teaching and develop experimental units for subject matter. 3. Japanese ministry officers tried to make sure that mathematical significance was not lost in these experimental units. (Author's abstract)

Kawajiri Nobuo, "Mathematics education in the Meiji period: a change from traditional Japanese mathematics to European mathematics". (Japanese; English), *Mathematics education in Japan 1996. Philosophies of mathematics education in the twentieth century. JSME*

yearbook. Vol. 2 Japan Society of Mathematical Education (JSME), (Tokyo: Japan Society of Mathematical Education, 1997), p. 3-15.

The status of mathematics education during the Meiji Period has been well studied especially from a factual point of view. However, there are some facets that have received little attention. One such facet is the relationship between the mathematics education in the Meiji Period and the characteristics of the mathematics that was introduced from Europe. The author throws some light on the topic by looking at the characteristics of Wasan (traditional Japanese mathematics) and historical changes in the concepts of European mathematics.

Atsumi Ueda, "A history of mathematics education in Japan before World War II." (English) *Nihon Sugaku Kyoiku Gakkaishi*, 2000, 82(7-8): p. 107-108. Special Issue: Mathematics education in Japan during the 54 years since the war. Looking towards the 21st century.

With the Meiji restoration, Western mathematics was introduced in Japan. We needed about 30 years to standardize the curriculum of mathematics in primary and secondary schools. But it went the contrary to the so-called Perry-movement. To innovate it, we had to wait for the advent of Green Cover in primary school and the outcome of the reconstruction movement in secondary school.

The following categorization is given by Yasuhiro Sekiguchi just for convenience.

Educational Reform

Wataru Uegaki, "On Japanese adaptation of international reformation movement in mathematical education". (Japanese) *Bulletin of the Faculty of Education, Mie University, Educational science*, 1998, 49: 49-72.

Eiji Sato, [Traces of industrialism in "mathematics education reform movement"]. "'Sugaku kyoiku kaizo undo' ni okeru sangyo shugi no keifu". (Japanese) *Kyoshoku Kenkyu*, 2001, no. 11: 11-19.

Educational theories

Tsutomu Okano, [Some problems on the criticism of "the mental discipline" in the history of arithmetic teaching]. "Sanjutsu kyoikushi ni okeru 'keishiki toya' hihan no monndai". (Japanese) *Bulletin of the Faculty of Education, Hokkaido University*, 1991, no.56: 115-141.

Eiji Sato, [Reexamination of Fujisawa Rikitaro's theory of mathematics education: On the relation between "arithmetic" and "algebra"]. "Fujisawa rikitaro no sugaku kyoiku riron no saikento: 'Sanjutsu' to 'daisu' no kanren ni chumoku shite". (Japanese) *Japanese Journal of Educational Research*, 1995, 62(4): 20-29.

Eiji Sato, [The controversy on "sansugaku" (arithmetic mathematics) and "sanjutsu" (arithmetic) at Tokyo Sugakugaisha Yakugo Kai]. "Tokyo sugakugaisha Yakugo Kai ni okeru 'sansugaku' to 'sanjutsu' wo meguru ronso". (Japanese) *Bulletin of the Graduate School of Education, the University of Tokyo*, 1995, 35: 295-303.

Eiji Sato, The continuation of "riron-ryugi-sanjutsu" (theoretical arithmetic) and its historical context. (Japanese) *Journal of Japan Society of Mathematical Education*, 1997, 79(no. 3): 24-31.

Eiji Sato, [Intuition and logic in mathematics education of Ogura Kinnosuke]. "Ogura Kinnosuke no sugaku kyoiku ni okeru chokkan to ronri". (Japanese) *Bulletin of the Graduate School of Education, the University of Tokyo*, 1997, 37: 231-239.

Education System

Wataru Uegaki, [Historical investigation on the adoption process of the Western mathematics in the "Educational System" of the Meiji 5th]. "Meiji 5 nen ni okeru yosan saiyo katei ni kansuru jidai kousho". (Japanese) *Shuzan Sunju*, 1998, no. 82: 2-13.

Wataru Uegaki, [From the arithmetic education at the dawn]. "Reimeiki no sanjutsu kyoiku kara". (Japanese) *Shuzan Sunju*, 1998, no. 82: 14-20.

Wataru Uegaki, [A new investigation into the process of change from Wasan (traditional Japanese mathematics) to the Western mathematics]. "Wasan kara yosan e no tenkan katei ni kansuru aratanaru kousho". (Japanese) *Aich University of Education, Ipusiron*, 1998, no. 40:

87-103.

Wataru Uegaki, [A historical investigation into the meanings of "Wasan" (traditional Japanese mathematics) and "Yousan" (the Western mathematics)]. "'Wasan' to 'Yosan' no gogi ni kansuru siteki kousho". (Japanese) *Bulletin of the Faculty of Education, Mie University, Educational science*, 1999, 50: 13-29.

Wataru Uegaki, [The establishing process of school subjects during the post-war chaos and reconstruction: On arithmetic and mathematics]. *Shusen chokugo no konran to saiken no jiki ni miru kyouka no seiritsu katei: Sansu-sugaku no baai* (Report of Research Project, Grant-in-aid for Scientific Research, 2001). (Japanese)

Shinya Yamamoto, "The Entering Rate to Secondary Schools in Kumamoto Prefecture from 1924 to 1936". *Journal for Historical Studies in Mathematics Education*, 2001, 1, 28-34. (In Japanese)

Course of Study

Naomichi Makinae, "A Study on the 'Abilities Chart' in Mathematics Education Immediately after World War II: Through Comparing with Virginia State Course of Stud". *Journal for Historical Studies in Mathematics Education*, 2001, 1, 3-14. (In Japanese)

Mathematics Teachers

Eiji Sato, [The teaching certification examination problems of "mathematics" and their analysis]. "'Sugaku' no shiken mondai to sono bunseki". (Japanese) In "Bunkenn" Kenkyukai (ed.), *"Bunken" shiken mondai no kenkyu: Senzen chuto kyoin ni kitai sareta senmon-kyoshoku kyoyo to gakushu* (Gakubunsha, 2003 p. 73-107).

Curricula of Arithmetic

Tsutomu Okano, [The formation process of "surishiso" as a goal of arithmetic teaching]. "Sanjutsu kyoiku no mokuteki to shiten no 'surishiso' no keisei katei: kyoiku naiyo ron tono kanrende". (Japanese) *Bulletin of the Faculty of Education, Hokkaido University*, 1990, no.54: 127-154.

Wataru Uegaki, "On the Arithmetic Curriculum in Mie Prefecture in *Gakusei* Period". *Journal for Historical Studies in Mathematics Education*, 2001, 1, 15-20. (In Japanese)

Wataru Uegaki, [A study on arithmetic education during *Gakusei* period]. "'*Gakusei*' ki ni okeru sanjutsu kyoiku no kenkyu" (Report of Research Project, Grant-in-aid for Scientific Research, 2003). (Japanese)

Textbooks of Arithmetic

Tsutomu Okano, [An analysis of arithmetic textbook: On the first grade "Shogaku sanjutsu"]. "Sansu kyokasho bunseki no kokoromi: 'Shogaku sanjutsu' dai ichi gakunen wo taisho to shite". (Japanese) *Kyojugaku no Tankyu*, 1987, no.5: 117-157.

Tsutomu Okano, [The introduction process of multiplication of natural numbers in "Shogaku sanjutsu"]. "'Shogaku sanjutsu' ni okeru shizensu no johu no donyu katei". *Niigata University, Faculty of Education, Kyoiku Jissen Kenkyu Shido Center Kenkyu Kiyo*, 1992, no.11: 75-86.

Tsutomu Okano, [The logic of teaching multiplication of natural numbers in "Shogaku sanjutsu" (1): On the treatment of distribution law]. "'Shogaku sanjutsu' ni okeru shizensu no johu shido no ronri (1): Bunpai hosoku no atsukai wo chushin ni". (Japanese) *Memoirs of the Faculty of Education, Niigata University, natural sciences*, 1992, 34 (no. 1): 1-8.

Tsutomu Okano, [The logic of teaching multiplication of natural numbers in "Shogaku sanjutsu"(2): On the treatment of commutative and associative laws]. "'Shogaku sanjutsu' ni okeru shizensu no johu shido no ronri (2): Kokan hosoku - ketsugo hosoku no atsukai wo chushin ni".

(Japanese) *Memoirs of the Faculty of Education, Niigata University, natural sciences*, 1993, 34(no. 2): 75-80.

Wataru Uegaki,: On a phase of textbooks for arithmetic in the period from 1872 to 1879. (Japanese) *Journal of Japan Society of Mathematical Education*, 1998,. 80(no. 6): 9-16.

Wataru Uegaki,: Re-study on the source book of Shogaku Sanjutsu-sho (Elementary text of arithmetic). (Japanese) *Journal of Japan Society of Mathematical Education*, 2001, 76 (supplementary issue): 3-16.

Tsutomu Okano, [The process of change in the construction principles of instructional contents at the arithmetic textbooks in Meiji kenteiki period: On the properties of fraction, comparison of sizes, the addition and subtraction at the second half of the first stage and the second stage]. "Meiji kenteiki sanjutsu kyokasho ni okeru kyoiku naiyo kosei kosei genri no henyo katei: Dai I ki kouki oyobi dai II ki ni okeru, bunsu no seishitsu, daisho kankei, kaho-genpo wo taisho toshite". (Japanese) *Japanese Journal of Curriculum Studies*, 2002, 11: 29-44.

Wataru Uegaki & Makoto Murakami, "On the compilation of the arithmetic text for higher primary school". (Japanese) *Bulletin of the Faculty of Education, Mie University, Educational science*, 2002, 53: 1-7.

Katsuhiko Suda, [Fundamentals and basics of science education in textbooks: During the formation of public school system in Japan]. *Kyokasho ni miru kagaku kyoiku no kiso · kihon: Nihon no koukyoiku seiritsu · keiseiki ni gentei shite* (Report of Research Project, Grant-in-aid for Scientific Research (C)(2), 2003). (Japanese)

H. Matsumoto, "A Study of the Arithmetic Textbook Reform Conference at the Ministry of Education in Japan: Focusing on Jingo Shimuzu's Report at the Teachers' Meeting of Attached Primary School of Nara Female Higher Normal School". *Journal for Historical Studies in Mathematics Education*, 2002, 2, 31-36. (In Japanese)

Fraction

Tsutomu Okano, [The logic of instruction contents and material construction of fraction in "Shogaku sanjutsu": From its introduction to the teaching of its addition and subtraction]. "Shogaku sanjutsu' ni okeru bunsu no kyoiku naiyo - kyozaikosei no ronri: Donyu kara kaho - genpo no shido made." (Japanese) *Memoirs of the Faculty of Education, Niigata University, natural sciences* (1994) v. 35 (no. 2) p. 95-127.

Wataru Uegaki, [A historical study on the origin of fraction]. "Bunsu no kigen ni kansuru shiteki kosatsu". (Japanese) *Bulletin of the Faculty of Education, Mie University, Natural science* (1996) v. 47 p. 1-17.

Tsutomu Okano, [The introduction processes of fraction in the arithmetic textbooks in Meiji kenteiki period: On the ways of meaning formation and explanation]. "Meiji kenteiki sanjutsu kyokasho ni okeru bunsu no donyu katei: Imizuke - setsmei no hoho ni chakumoku shite". (Japanese) *Research Journal of Educational Methods* (1999) v. 25 p. 79-87.

Tsutomu Okano, [The construction of instructional contents of fraction in the arithmetic textbooks in Meiji kenteiki period: From the definition to the addition and subtraction at the first half of the first stage]. "Meiji kenteiki sanjutsu kyokasho ni okeru bunsu no kyoiku naiyo kousei: Dai I ki · zenki ni okeru teigi kara kaho · genpo made wo taisho to shite". (Japanese) *Japanese Journal of Curriculum Studies* (2001) v. 10 p. 1-17.

Tsutomu Okano, "The construction of the contents of multiplication of fractions in the arithmetical textbooks from 1886 to 1894". (Japanese) *Journal for Historical Studies in Mathematics Education* (2002) (no. 2) p. 1-11.

Tsutomu Okano, „The Construction of the Contents of Multiplication of Fractions in the Arithmetical Textbooks from 1886 to 1894”. *Journal for Historical Studies in Mathematics Education*, 2002, 2, 1-11. (In Japanese)

Tsutomu Okano, [Fractions in the history of mathematics education: Historical position of the textbook "Atarashii su: Bunsu (kaiteiban)"]. "Sugaku kyoikushi no naka no bunsu: Jugyosho 'Atarashii su: Bunsu (kaiteiban)' no rekishiteki ichizuke". (Japanese) *Kyojugaku no Tankyu* (2003) (n. 20) p. 73-83.

Abacus

Wataru Uegaki, [The origin and change of the term "Shuzan" (calculation on the abacus) in Japan]. "Nihon ni okeru yogo 'shuzan' no kigen to sono suii". (Japanese) *Shuzan Shunju* (1999) (no. 83) p. 2-16.

Wataru Uegaki, "A study on the reconstructional movement of the calculation with abacus (soroban) in the Meiji middle period". (Japanese) *Bulletin of the Faculty of Education, Mie University, Educational science* (2000) v. 51 p. 1-20.

Textbooks of Secondary School Mathematics

Eiji Sato, [Mathematics education during the war: Comparison of approved textbooks for junior high school first and fifth classes]. "Senjiki no sugaku kyoiku: Chugakko yo issyu kentei kyokasho to goshu kentei kyokasho no hikaku" wo chushin to shite". (Japanese) *The Japanese Journal of Curriculum Studies* (2001) (no. 10) p. 17-29.

Kunio Ota, "On the Stop Gap Textbooks for Secondary Schools in 1946". *Journal for Historical Studies in Mathematics Education*, 2002, 2, 12-21. (In Japanese)

Teaching of Secondary School Mathematics

Eiji Sato, [Formation and spread of "school mathematics" in secondary education]. "Chuto kyoiku ni okeru 'gakko sugaku' no keisei to huku". (Japanese) *Journal of Japanese History of Education* (1999) (no. 18) p. 1-26.

Eiji Sato, [The emergence and its change of mathematics for girls' high schools: Comparison with textbooks for junior high schools]. "Koto jogakko yo no sugaku no shutsugen to sono henka: Chugakko yo kyokasho to no hikaku kento". (Japanese) *Bulletin of the Graduate School of Education, the University of Tokyo* (1999) v. 39 p. 393-401.

Eiji Sato, [Historical development of mathematics education at secondary schools in modern Japan]. *Kindai nihon no chuto gakko ni okeru sugaku kyoiku no shiteki tenkai* (Doctoral dissertation, University of Tokyo, 2002).

K. Kataoka, "Mathematics Lessons Based on the 1942-43 Mathematics Syllabi around the End of World War II". *Journal for Historical Studies in Mathematics Education*, 2002, 2, 22-30. (In Japanese)

Teaching of Function

Masahura Nakanishi, "On Ryoichiro SATO's Teaching of Functions". *Journal for Historical Studies in Mathematics Education*, 2001, 1, 21-27. (In Japanese)

Teaching of Secondary Geometry

Wataru Uegaki & Yuko Yamamoto, "A historical study on the definition of similar figures". (Japanese) *Bulletin of the Faculty of Education, Mie University, Educational science* (1995) v. 46 p. 63-77.

Wataru Uegaki, & Yuko Yamamoto, "A study on the evolution of the definition of similar figures". (Japanese) *Bulletin of the Faculty of Education, Mie University, Educational science*

(1996) v. 47 p. 1-45.

Wataru Uegaki & Yuko Yamamoto, [A historical study on the similitude ratio and its representation]. "Sojihi to sono hyogen ni kansuru shiteki kosatsu". *Bulletin of the Center for Educational Research and Training, Mie University* (1996) (no. 16) p. 15-27.

Shinya Yamamoto, "On the reform of the teaching of geometry in secondary schools in the 1920s." (Japanese) *Memoirs of the Faculty of Education, Kumamoto University, Humanistic science* (1996) (no. 45) p. 13-31.

Shinya Yamamoto, ["Constructions of new figures" in Treutlein's "die geometrische Anschauungsunterricht"] "Treutlein no 'kikagakuteki chokkan kyoju' ni okeru 'shin zukei no kousei'". (Japanese) *Kyushu Sugaku Kyoiku Gakkai Shi* (1998) (no. 5) p. 57-65.

Eiji Sato, [The formation and acceptance of Kikuchi Tairoku's ideas on geometry teaching]. "Kikuchi Tairoku no kikagaku kyoiku shiso no keisei to juyo". (Japanese) *Journal of History of Science, Japan* (1999) (no. 209) p. 27-35.

Shinya Yamamoto, The influence of "Meran Vorschläg" (1905) on Japanese mathematics education: Teaching of the concept of function in M. Kuroda's geometry textbook (1916). (Japanese) *Journal of JASME: Research in Mathematics Education* (2000) v. 6 p. 25-33.

Shinya Yamamoto, [Epistemological backgrounds of Treutlein's "die geometrische Anschauungsunterricht"] "Treutlein no kikagakuteki chokkan kyoju no ninshikironteki haikai". (Japanese) *Memoirs of the Faculty of Education, Kumamoto University, Humanistic science* (2000) (no. 49) p. 201-213.

Shinya Yamamoto, The meaning of spatial imagination in geometrical intuitive instruction of P. Treutlein. (Japanese) *Journal of JASME: Research in Mathematics Education* (2001) v. 7 p. 105-116.

Taro Fujita, "The Study of Elementary Geometry (1903) by Godfrey and Siddons: The Role of Experimental Tasks in the Teaching of Geometry". *Hiroshima Journal of Mathematics Education*, 2001, 9, 11-19.

Taro Fujita, *The Reform of School Geometry in the early 20th Century in England and Japan: The Design and Influences of the Textbooks by Godfrey and Siddons*. Unpublished Ph.D. Thesis, Research and Graduate School of Education, University of Southampton, UK 2002.

Taro Fujita, and K. Jones, "The Bridge between Practical and Deductive Geometry: developing the "geometrical eye"." In A. D.Cockburn & E. Nardi (Eds), *Proceedings of the 26th Conference of the International Group for the Psychology of Mathematics Education*, Vol 2 (pp. 384-391). (Norwich, UK: University of East Anglia, 2002).

Taro Fujita, and K. Jones, "The design of geometry textbooks for secondary schools : The place of experimental tasks". In Pope, S. and McNamara, O. (Eds.), *Research in Mathematics Education*, Volume 5. London: British Society for Research into Learning Mathematics. (in press).

S. Yamamoto, *Taisho Showa shoki no chugakko kika kyoujushi kenkyu: P. Treutlein no "kikagakuteki chokkan kyoju" no juyo to teichaku* [A study on history of teaching of geometry at junior high schools during Taisho and early Showa periods: Acceptance and establishment of "die geometrische Anschauungsunterricht" of P. Treutlein]. Report of Research Project, Grant-in-aid for Scientific Research (C)(2), 1999. (No. 09680279). (In Japanese)

Latin America

Barrantes, Hugo and Angel Ruiz, The History of the Inter-American Committee on Mathematics Education. With an introduction by Ubiratan D'Ambrosio. (*La historia de comite*

interamericano de educación matemática). [In Spanish.] Colección Enrique Pérez Arbelaez, 13. (Bogotá: Academia Colombiana de Ciencias Exactas, Físicas y Naturales, 1998).

B. J. Wilson, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). West Indies", *Educational Studies in Mathematics*, 1978, 9: 355-379.

Netherlands

Danny J. Beckers, [Jacob de Gelder and the didactics of mathematics] "Jacob de Gelder en de didactiek van de wiskunde" (Dutch), *Euclides*, 1996, 71 (8): 254-262.

The author reports the didactical ideas of the highly productive mathematical textbook author Jacob de Gelder. De Gelder's textbooks were recommended for use in mathematics instruction by the Dutch government and would dominate the Dutch schoolbook market for the Latin schools from 1820 until 1840.

Danny J. Beckers, [Geometry teaching in 18th century Holland] "Meetkunde-onderwijs in 18de-eeuws Nederland" (Dutch), *Nieuwe Wiskrant*, 1996, 15,(3): 18-21

Danny J. Beckers, [Mathematics is the order of the day. Societies and mathematics education outside formal education on The Netherlands 1780-1830] "Het is al Mathesis dat de klok slaat": Genootschappen en Wiskundeonderwijs in Nederland buiten het reguliere onderwijs om (1780-1830)", (Dutch), *De Negentiende Eeuw*, 1998, 22, (4): 220-234.

Around 1800, mathematical schools emerged in several of the Dutch cities. These schools were either attached to a local Society or originated from the activities of a group of local mathematical devotees.

D.J. Beckers, [A.C. Clairaut and the history of mathematics] "A.C. Clairaut en de geschiedenis van de wiskunde" (Dutch), *Euclides*, 1998, 73 (4): 111-114

A.C. Clairaut's textbooks on geometry and algebra were immensely popular in France. The author shows in which sense the French textbook author's didactical approach was inspired by history (as Clairaut stated himself) and what the role of his textbooks was in Eighteenth Century Dutch mathematics teaching

Danny Beckers, [P.J. Baudet (1777-1885) and the didactic of mathematics]. "P.J. Baudet (1777-1858) en de didactiek van de wiskunde." (Dutch) *Euclides. Vakblad voor de Wiskundeleraar*, 1999, 75(2): 39-45.

The author reports Baudet's contribution to the development of mathematical education in the beginning 19th century. Baudet's popular books often written in the form of a dialogue included aspects like learning by problem solving and applications of mathematics

Danny J. Beckers, "'Come Children!': some changes in Dutch arithmetic textbooks, 1750-1850", *Paradigm*, I-27,1999, 18-25.

Two arithmetic textbooks are put forward as being paradigmatic for arithmetic education in the Netherlands around 1800. Before 1800 the (in)famous *Cijfferinge* by Willem Bartjens. After 1800 the *Allereerste gronden der Cijferkunst* by Jacob de Gelder. The author discusses several aspects of these textbooks, illustrating shifting interests in the goals of arithmetic education in the Netherlands.

Danny J. Beckers, "'My little arithmeticians!': Pedagogic ideals in Dutch mathematics education, 1790-1840", *Pedagogica Historica*, 2000, 36: 979-1001.

During the first half of the 19th century mathematics textbooks for lower and middle class education were often used to confront the pupil with middle class values. Attitude towards study, general knowledge and morals made their appearance in mathematics textbooks. This form of mathematics education gradually disappeared by the middle of the century. Three hypotheses are formulated which could explain the disappearance of the phenomenon.

Danny J. Beckers, [A honest and studious girl" arithmetic teaching for girls in The Netherlands 1790-1850] "Een braaf en leerzaam meisje": rekenonderwijs voor meisjes in Nederland" 1790-1850 (Dutch), *Gewina*, 2000, 23: 107-122.

Several arithmetic textbooks for girls were published in the Netherlands during the Nineteenth Century. It is noted that more girl-like stories are used for phrasing of some of the problems, but both in content and didactical approach this arithmetic for girls show remarkable resemblance to textbooks for boys.

Danny J. Beckers, [In much wisdom is much grief. J.W. Karsten and his Peoples Geometry] “‘In veel Wijsheid is veel Verdriet’: J.W. Karsten en zijn Volks-Meetkunde” (Dutch), *Euclides*, 2001, 77 (6): 145-149

Among the early Nineteenth Century Dutch mathematics textbooks the *Volksmeetkunde* (popular geometry) by J.W. Karsten is a very special book. It may be viewed as an exponent both of the attempts to enlighten the masses and the will to disseminate mathematical knowledge. The author discusses both the content of the book and the cultural background against which it was published

Danny J. Beckers, [The Despotism of mathematics. The rise of the propedeutical function of mathematics in The Netherlands 1750-1850] “*Het despotisme der Mathesis*”. *Opkomst van de propaedeutische functie van de wiskunde in Nederland 1750-1850*. (Dutch) Ph.D. Dissertation, Nijmegen University 2003.

From the second half of the 18th century on mathematics became more prominent in education. The rise of this function, the ideas behind it and the discussion it provoked are discussed in this dissertation.

Danny J. Becker, Harm J. Smid (eds.), [The Elements of Arithmetic] *Grondbeginselen der Rekenkunde* (Dutch), Hilversum 2003

Reproduction of a textbook from 1829, with an extensive introduction. The textbook was published by a local mathematical Society in the city of Leyden. This Society, *Mathesis Scientiarum Genitrix*, dating from 1785, played for almost 200 years an important role in the Leyden educational system. One of the reasons for publishing this textbook was the introduction of the decimal system in The Netherlands

Klaas van Berkel, [Dijksterhuis. A Biografy] *Dijksterhuis. Een biografie* (Dutch) Amsterdam 1996

Extensive biography of the well known historian of mathematics who also dominated the developments in Dutch mathematics education during the interbellum.

Klaas van Berkel, [The birth of a journal]. “De geboorte van een tijdschrift.” (Dutch) *Euclides. Vakblad voor de Wiskundeleraar*, 1999-2000, 75(4): 111-116.

The author reminds of the first edition of the 'Bijvoegsel van nieuw tijdschrift voor wiskunde', an addition to a new journal of mathematics in 1924. This insert turned out to be a base for didactical discussion of mathematics instruction and from this the journal *Euclides* resulted.

K. Blom, [On the certificates of ability] *Van de acten van Bekwaamheid* (Dutch), Master Thesis University of Utrecht, 1998.

Hans Freudenthal, “Change in Mathematics Education since the late 1950’s - Ideas and realisation (An ICMI Report). The Netherlands”, *Educational Studies in Mathematics*, 1978, 9: 261-270.

Fred Goffree, Martinus van Hoorn, Bert Zwaneveld (eds) [Hundred years mathematics education: a Jubilee volume] *Honderd jaar wiskundeonderwijs: een jubileumboek*. (Leusden: Nederlandse Vereniging van Wiskundeleraren, 2000)

This volume was published on the occasion of the 75th anniversary of the founding of the first Dutch association of math teachers. It contains 32 articles of 30 authors, describing various aspects of 100 years of mathematics education in The Netherlands..

Marjolein Kool, [The art of numbers. A study of Dutch arithmetic books of the 15th and 16th century, with a glossary of arithmetical term] *Die conste vanden getale. Een studie van Nederlandstalige rekenboeken uit de vijftiende en zestiende eeuw, met een glossarium van rekenkundige termen*. Hilversum 1999.

In this doctoral thesis, a collection of 36 books on arithmetic (by part handwritten), dating from the 15th and 16th century, written in Dutch, are discussed. They were written for the so-called “French schools”, to learn future merchants the new Hindu Arabic number system. The writers also had to create new Dutch words for the various concepts and procedures the used and described. Their books had a long lasting influence on Dutch arithmetic

Ed de Moor, [From "vormleer" to realistic geometry: a historical-didactical study of geometry teaching to children of 4-14 years old in The Netherlands in the 19th and 20th century] *Van vormleer naar realistische meetkunde : een historisch-didactisch onderzoek van het meetkundeonderwijs aan kinderen van vier tot vertien jaar in Nederland gedurende de negentiende en twintigste eeuw* = From "vormleer" to realistic geometry (Utrecht: Univ., 1999).

In the beginning of the 19th century Pestalozzi's *Formenlehre* (in Dutch: *Vormleer*) was introduced in Dutch primary schools, marking the start of formal education in geometry in schools. *Vormleer* was abolished at the end of the century, leaving geometry almost absent in primary schools. In secondary school traditional Euclidean geometry was taught. From the sixties of the 20th century on an approach in the spirit of realistic math education brought geometry back in primary schools and revitalised geometry teaching in primary schools.

Ed W.A. de Moor, "Vormleer- an Innovation that failed", *Paedagogica Historica*, new series, XXXI-1 103-13, 1995.

Under the influence of Pestalozzi a Dutch variant of his *Formenlehre* was introduced in the beginning of the 19th century in Dutch primary schools. In 1857 it became even prescribed by the law on primary education. But in 1889 it unexpectedly was eliminated from a new law and replaced by drawing.

Ed W.A. de Moor, [100 years of "Vormleer": a failure] "100 jaar vormleer: een mislukking". *De negentiende eeuw* (Dutch), 20(2), 113-128, 1996.

See the item above

Ed W.A. de Moor, [Tatiana Ehrenfest Afanasjewa was right] "Het 'gelijk' van Tatiana Ehrenfest Afanasjewa" (Dutch), *Nieuwe Wiskrant*, 12, 4, 1993 15-24.

Tatiane Ehrenfest-Afanaseva, married with the physicist Paul Ehrenfest, lived in Holland from 1912 until her death in 1964. She was the founder and leading figure of the " Mathematics Working Group", of which Freudenthal was one of the most important members. During the first decades the ideas of the working group did not have much influence, but in the long run they proved to be crucial for the development of the "Realistic Math" movement in The Netherlands.

Ed W.A. de Moor, [Jan Versluys and the beginnings of teaching methodology] "Jan Versluys en het ontstaan van de vakdidactiek" (Dutch), *Nieuwe Wiskrant*, 14,1, 1994, 8-13.

Jan Versluys (1845-1920) published the first book on teaching methods of mathematics in The Netherlands. By his numerous schoolbooks and his activities in all kind of organisations he exerted an enormous influence on mathematics education in The Netherlands in the decades around 1900.

Ed W.A. de Moor, [The displeasure of Dijksterhuis] "Het ongenoegen van Dijksterhuis" (Dutch), *Nieuwe Wiskrant*, 15, 4, 11996, 22-26

E.J. Dijksterhuis played a major role in mathematics education in the interbellum. He strongly opposed all ideas of the renewal of geometry teaching as proposed by Tatiana Ehrenfest. A result of his activities was the founding of *Euclides* in 1924, until today the magazine of the Dutch Math teachers association.

Harm Jan Smid, [An ill considered novelty? Introduction, extent, content and significance of mathematics education on French and Latin schools 1815-1863] *Een onbekookte nieuwigheid? Invoering, omvang, inhoud en betekenis van het wiskundeonderwijs op de Latijnse en Franse scholen 1815-1863*, Doctoral Thesis University of Delft, 1997.

Mathematics education on secondary schools started in The Netherlands in 1815, when it was made compulsory for Latin schools. Although the start was difficult, after some decades appropriate books were available and a corps of teachers who had in general a satisfactory knowledge of mathematics was doing the job. Due to the influence of the entrance exams of the Military and Civil Academies, mathematics became also on the more modern French schools an important topic. When in 1863 the *HBS*, the Dutch version of the German *Realschule*, came into being, the teaching of mathematics on that school could build on foundations laid in the years before.

Harm J. Smid, [The significance of David van Dantzig for mathematics education] "De betekenis van David van Dantzig voor het onderwijs in de wiskunde", in: G. Alberts en H. Blauwendraat (eds), *Uitbeelden in Wiskunde. Proceedings symposium Van Dantzig 2000*. (Dutch) Amsterdam 2000 (CWI-Publications), 39-57.

David van Dantzig published in 1928 and 1929 some articles on mathematics education which influenced the young Hans Freudenthal. Later on, in the fifties, he advocated a math curriculum that was more orientated toward societal needs.

Harm J. Smid, [Mathematics education in the 19th century. A disputed success story] "Wiskundeonderwijs in de negentiende eeuw. Een omstreden succes-verhaal", (Dutch) *De Negentiende Eeuw*, 22, 4, 1998, 209-219.

In the first half of the 19th century mathematics education gained a prominent position in the Dutch educational system. But this position was heavily criticized by the teachers of the traditional grammar schools

Harm J. Smid, "A conflict at the Leyden gymnasium" , Proceedings of the first European Summer University on the History and Epistemology in Mathematics Education, Montpellier 1995, 393-399.

Around 1824 a conflict arose between the headmaster and the mathematics teacher of the Leyden gymnasium, about the organization and content of the math teaching on that gymnasium. This conflict is illustrative for the problems math teaching encountered in the first decades of the 19th century.

M.P. Traas, [The history of the slide rule in connexion with societal developments] *De geschiedenis van de rekenlineaal in samenhang met de maatschappelijke ontwikkelingen*. Masters Thesis University of Groningen, 1996.

The slide rule was invented in the first half of the 17th century and in the centuries thereafter gradually improved and its possibilities extended. Until the introduction of electronic devices it was an indispensable tool for engineers and physicists. The slide rule was introduced in mathematics education in the Netherlands in 1968, but soon became old fashioned after the introduction of the electronic calculator.

J. Wansink, "Some aspects of the development of the Dutch mathematical schoolbookmarket from 1800 to 1940", *Nieuw Archief*, 1978, 206-230.

A survey of the textbooks used in mathematics education in The Netherlands for almost one century and a half. With a description of the didactical developments in this period.

Poland

Aniela Ehrenfeucht, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). Poland", *Educational Studies in Mathematics*, 1978, 9: 283-295.

Portugal

Ugo Baldini, "L'insegnamento della matematica nel collegio di S. Antão a Lisboa, 1590-1640", *A Companhia de Jesus e a missão no Oriente* (Lisboa, 2000), 275-310.

Ugo Baldini, "The Teaching of Mathematics in the Jesuit Collages of Portugal, from 1640 to Pombal", L. Saraiva, H. Leitão (eds.), *The Practice of Mathematics in Portugal* (Coimbra, Imprensa da Universidade de Coimbra, 2004), 293-465, 631-758.

Jaime Carvalho e Silva, "O pensamento pedagógico de José Sebastião e Silva", *Boletim da Sociedade Portuguesa de Matemática*, 1995, 32: Agosto.

The article analyses the pedagogical ideas of the mathematician José Sebastião e Silva, the leader of Modern Mathematics Movement in Portugal.

Jaime Carvalho e Silva (Coord.), *Antologia de textos essenciais sobre a História da Matemática em Portugal* (Lisboa: Sociedade Portuguesa de Matemática, 2002).

The book compiles significant texts from the history of mathematics and of mathematics teaching in Portugal, for instance texts written by Luis Albuquerque, Garção Stockler, Rodolfo Guimarães, Ruy Luis Gomes and Vicente Gonçalves.

Rogério Fernandes, [The arithmetic teaching in Portugal at the end of the XVIIIth century.] "O ensino da aritmetica elementar em Portugal nos finais do seculo XVIII". (Portuguese) *Quadrante. Revista Teorica e de Investigacao*, 1997, 6(1): 51-58.

R. Fernandes, *A pedagogia portuguesa contemporânea* (Lisboa: Instituto de Cultura Portuguesa, 1979).

The book is, in general, about the history of pedagogy in the beginning of 20th century in Portugal and, in particular, about the mathematician and teacher Bento de Jesus Caraça.

R. Fernandes, *História da Educação em Portugal* (Lisboa: Livros Horizonte, 1988).

The book gives a broad view about the history of education in Portugal.

R. Fernandes, „A cultura matemática na escola portuguesa: uma sondagem histórica”, E. Veloso e H. Guimarães (Org.), *Actas do ProfMat 89* (Lisboa: Associação de Professores de Matemática, 1990).

The article describes from an historical point of view the mathematics culture in the portuguese schools.

A. Nóvoa, *A Imprensa de Educação e Ensino. Repertório Analítico (Séculos XIX e XX)* (Lisboa: Instituto de Inovação Educacional, 1993).

The *Repertório* is an important source to investigate the history of education in Portugal since it compiles, organizes and summarizes all the pedagogical magazines and newspapers edited during 19th and 20th centuries; includes the great majority of magazines concerned about the mathematics teaching.

J. Sebastião e Silva, “A teoria dos logaritmos no ensino liceal”, *Gazeta de Matemática*, 1942, *Ano III*, 12, 10-13.

J. Sebastião e Silva, “Acerca do ensino dos logaritmos”, *Gazeta de Matemática*, 1943, *Ano IV*, 13, 8-14.

Articles written by José Sebastião e Silva on the teaching and learning of logarithms at high school and at university in the 40s.

Scandinavia

B. Alseth, Trygve Breiteig, & G. Brekke, [Evaluation of Reform 97 with focus on Mathematics] *Evaluering av Reform 97. Endringer og utvikling ved R97 som bakgrunn fore videreplanlegging og justering - matematikkfaget som kasus*. Rapport 02/2003. Notodden: Telemarksforsking (Norway, 2003).

Chapter two covers the norwegian history from 1940 to 1997.

Guðmundur Arnlaugsson, and Sigurður Helgason, *Stærðfræðingurinn Ólafur Dan Daniélsson. Saga brautryðjanda*. (Reykjavík, 1996). 90 pages.

[The Mathematician Ólafur Daniélsson. A History of a Pioneer.]

Guðmundur Arnlaugsson, cand. mag., a mathematics teacher, writes about the person and the mathematics teacher Ólafur Dan Daniélsson (1877 – 1957), tells memoirs of his teaching and gives an account of his mathematics textbooks. The mathematician Sigurður Helgason, Ph.D. writes about his mathematical work.

Guðmundur Arnlaugsson (1913 – 1996), cand. mag., was mathematics teacher at Reykjavík Gymnasium, associate professor at the University of Iceland and principal at Hamrahlíð Gymnasium in Iceland.

Sigurður Helgason, Ph.D, professor at Massachusetts Institute of Technology.)

Otto B. Bekken, *On the Cubus Perfectus of the Algorismus in Hauksbok*. (Agder Distrikthøgskole, fagseksjon for matematikk 1986). Skrifter 1986:2.

Otto B. Bekken, and Marit Christoffersen, *Algorismus i Hauksbok*. (Agder Distrikthøgskole, fagseksjon for matematikk, fagseksjon for norsk 1985). Skrifter 1985:1.

Kristín Bjarnadóttir, „Algorismus. Study the Masters“. Otto B. Bekken, and Reidar Mosvold (eds.): *The Abel – Fauvel Conference*. Kristianssand. June 12 – 15, 2002 (Nationellt Centrum för Matematikutbildning, Göteborgs Universitet. Göteborg, 2003), p. 99-108.

Peter Bollerslev, (ed.): *Den ny matematik I Danmark – en essaysamling*, 1979.

[An anthology on New Math. in Denmark] . Contemporary history seen fra a 1979 perspective

Johan Dahlin, *Upprättning till matematikens historia i Finland. Från äldsta tider till Stora Ofreden*. (Nikolaistad: Wasa Tryckeri-Aktiebolag, 1897).

(History of Mathematics and teaching of Mathematics in Finland before 1800. Language: Swedish)

Fr. Fabricius-Bjerre, „matematikkens stilling i den højere skole fra 1850 til vore dage“. *Matematisk Tidsskrift A*, 1927, 57-104.

[Mathematics in senior secondary School in Denmark 1850 – 1927

Gunnar Gjone, “*Moderne matematikk*” i skolen. *Internasjonale reformstræbelser og nasjonalt læreplanarbejd*. (Oslo, March 1983).

(Modern mathematics in Norway in an international perspective)

Loftur Guttormsson, Fræðslumál. *Upplýsingin á Íslandi. Tíu ritgerðir*. Ingi Sigurðsson (ed). P. 149 – 182. Hið íslenska bókmenntafélag (Reykjavík 1990).

(This is an article about education in the period of the Enlightenment and its prelude, the Pietism, roughly 1740 – 1860. The enlightenentalists made some effort to improve the education of the general public in writing and arithmetic but a legislation about these subjects was first set in 1880.

Loftur Guttormsson (1938 –) is professor in history at the University of Iceland.

Hans Christian Hansen, „Poul la Cours indførelse af matematikken i den danske folkehøjskole“. *Normat*, 1981, 29 (4): pp 176-186. English summary p. 196.

(The introduction of the subject Mathematics into the danish folk high school I 1878)

Hans Christian Hansen, [School arithmetic and mathematics 1739-1958]. *Fra forstandens slibesten til borgerens vaerktøj. Regning og matematik i folkets skole 1739-1958*. (Danish) Jan 2002. 202 p. Ser. Title: Papers from DCN - Dansk Center for Naturvidenskabsdidaktik. v. 16.

(*The history of Mathematics in danish primary and junior secondary schools from 1739 to 1958*)

Bengt Johanson, „Mathematics as a school subject in Sweden – a historical perspective“, eds. Otto B. Bekken, and Reidar Mosvold, *The Abel – Fauvel Conference* Kristianssand. June 12 – 15, 2002 (Nationellt Centrum för Matematikutbildning, Göteborgs Universitet. Göteborg, 2003), 157-162.

Anna Kristjánsdóttir, , *Stærðfræðinám. Meginstefnur og viðfangsefni*. Kennaraháskóli Íslands. Reykjavík, April 1996. 28 pages.

[Mathematics Education. Main Aims and Tasks.]

In this paper a short account is given of the history of mathematics teaching in Iceland. Chapter 1 concerns the period from the Enlightenment in the second part of the 18th century to 1965. Chapter 2 concerns the period 1965 – 1975 when ‘modern mathematics’ was taken up in Iceland.

Anna Kristjánsdóttir (1941 –) is professor of mathematics teaching in Högskolen i Agder. Kristianssand, Norway.)

Reidar Mosvold, [Curriculum development in a historical perspective with a focus on mathematics of daily life] *Læreplanutvikling i historisk perspektiv- med fokus på "hverdagsmatematikk i dagliglivet"*. Rapport 08/2002 Telemarksforsking-Notodden (Norway, 2002).

Aatu Nykänen, *Alkeisgeometrian opetuksesta Suomessa, erityisesti oppikirjojen kehitystä silmällä pitäen* (Jyväskylä: K.J. Gummerus, 1945).

History of teaching of geometry in Finland before 1945

Helle Pilemann, *Retorik eller realitet? Anvendelser af matematik i det danske gymnasiums matematikundervisning i perioden 1903-88*. Tekster fra IMFUFA , Tekst 325 , Roskilde 1996. 272 pp. (*Applications of mathematics in danish senior secondary schools 1903-88*)

Johan Prytz, „An early Swedish textbook in calculus“, eds. Bekken, Otto B. and Reidar Mosvold, *The Abel – Fauvel Conference*. Kristianssand. June 12 – 15, 2002 (Nationellt Centrum för Matematikutbildning, Göteborgs Universitet. Göteborg, 2003), 147-156.

Eva Rønn, „Matematikundervisningen i folkeskolen 1958-1975“. *Uddannelseshistorie* 1986, 66-94.

Ragnar Solvang, [The school mathematics in Norway at the time of Abel]. “Skolematematikken i Norge paa Abels tid“. (Norwegian) *Nordisk Matematisk Tidsskrift. Normat*. (2001) v. 49(3) p. 111-138.

This article deals with the development of the school mathematics in Norway during the period 1800-1830 with the primary emphasis on 1815-1830. The most important person behind this development was Bernt Michael Holmboe, who also was Niels Henrik Abel's teacher of mathematics. Holmboe wrote four textbooks for the Cathedral schools, and the first two of these are reported in this article. They are about arithmetic and geometry. (orig.)

Heimir Þorleifsson, *Saga Reykjavíkurskóla, I*. Bókaútgáfa Menningarsjóðs. Reykjavík 1975. [The history of the Reykjavík School, the Learned School (1846–1904) and the Reykjavík Gymnasium (1904 –]

It contains a complete account of the syllabus and teachers of mathematics in this school which was the only learned school in Iceland up to 1927.

Heimir Þorleifsson (1936 –), *cand. mag. in history, is history teacher at Reykjavík Gymnasium.*)

Spain

Victor Arenzana, *La Enseñanza de las Matemáticas en España en el Siglo XVIII*. (Zaragoza: Publicaciones del Seminario Matemático García de Galdeano, 1987).

Maria Cinta Caballer, "El Álgebra en los libros de texto de la enseñanza secundaria en 1898", eds. Elena Ausejo, Carmen Beltrán, *La Enseñanza de las Ciencias: Una Perspectiva Historica*. Cuadernos de Historia de la Ciencia. 11-II (Zaragoza, Universidad de Zaragoza, 2000), 691-706.

J. M. Núñez Espallargas, J. Servat Susagne, "Los programas de enseñanza de la Matemática y de la Ciencia en Los Institutos de Zaragoza, Pamplona y Logroño del Archivo Histórico de la Universidad de Barcelona", eds. Elena Ausejo, Carmen Beltrán, *La Enseñanza de las Ciencias: Una Perspectiva Historica*. Cuadernos de Historia de la Ciencia. 11-II (Zaragoza, Universidad de Zaragoza, 2000), 657-670.

Mariano Hormigón, "L'histoire de l'enseignement des mathématiques en Espagne", *Histoire et Épistémologie dans l'Éducation Mathématique. Actes de la Première Université d'Été Européenne*, Montpellier 19-23 Juillet 1993 (IREM de Montpellier, Montpellier [1995]), 351-362.

Christian Martín Rubio, "Análisis de la Educación Secundaria en el primer tercio del siglo XX", eds. Elena Ausejo, Carmen Beltrán, *La Enseñanza de las Ciencias: Una Perspectiva Historica*. Cuadernos de Historia de la Ciencia. 11-II (Zaragoza, Universidad de Zaragoza, 2000), 621-656.

Fernando Vea Muniesa, *Las Matemáticas en la Enseñanza Secundaria en España en el Siglo XIX*. Cuadernos de Historia de la Ciencia, vol. 9 I and 9 II (Zaragoza: Universidad de Zaragoza, 1995).

Maria Angeles Velamazan, Maria Carmen Beltrán, "Un método experimental en la enseñanza de la Geometría: Fernando García San Pedro (1746-1854) y la geometría del movimiento", eds. Elena Ausejo, Carmen Beltrán, *La Enseñanza de las Ciencias: Una Perspectiva Historica*. Cuadernos de Historia de la Ciencia. 11-II (Zaragoza, Universidad de Zaragoza, 2000), 543-552.

Angela Velamazan, *La Enseñanza de las Matemáticas en las Academias Militares en España en el Siglo XIX*. Cuadernos de Historia de la Ciencia, vol. 7 (Zaragoza: Universidad de Zaragoza, 1994).

United Kingdom

Taro Fujita, "The Study of Elementary Geometry (1903) by Godfrey and Siddons (1): Roles of experimental tasks in the teaching of geometry". (English), *Hiroshima Journal of Mathematics Education*, 2001, 9: 11-19.

In this paper, I examine the role of experimental tasks in Elementary Geometry (1903) by Godfrey and Siddons, which is considered one of the most important geometry textbooks in the history of the teaching of geometry. The roles of experimental tasks were preparations for deductive geometry, and, even though it is implicit, the verification of geometrical facts. Furthermore, Godfrey recognized general educational value of experimental verification in geometry teaching. (Author's abstract)

Geoffrey A. Howson, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). Great Britain", *Educational Studies in Mathematics*, 1978, 9: 183-223.

Geoffrey Albert Howson, *A history of mathematics education in England* (Cambridge: Univ. Pr., 1982).

Historical development over four centuries seen through contextualised studies of nine major educational figures: Robert Recorde, Samuel Pepys, Philip Dodridge, Charles Hutton, Augustus de Morgan, Thomas Tate, James Wilson, Charles Godfrey, and Elizabeth Williams.

The author follows the history and development of mathematics teaching by looking at the careers of some individuals in detail. Nine biographical essays of characters representing different ages, traditions, interests and attitudes constitute the bulk of the work. The mathematical education of each character and his/her

contribution to mathematics education are described and set in a national context. An appendix containing a selection of syllabuses, examination papers etc. dating from 1800 onwards gives the flavour of school, university and training college mathematics over the years. The author's aim throughout has been to demonstrate how a knowledge of the history of mathematics education can increase our understanding of present problems and provide guidelines for future action

H.L. Philip, *The higher tradition. A history of public examinations in Scottish schools and how they influenced the development of secondary education*. 1992.

The author reports on the history of Scottish public examinations from its historical background, the Education Act in 1872, making attendance at school compulsory between the ages of 5 and 13 to present times.

Micael H. Price, *Mathematics for the Multitude? A History of the Mathematical Association* (Leicester: The Mathematical Association, 1994).

This book provides a history of the internal development of the English mathematical association, including the contributions of leading individuals since its formation. The Association's history up to 1993 is located within a broad context of changes in the educational system, developments in educational and mathematical thought, the growth of professionalism, and wider social, political and economic forces which influence the curriculum. The book's title suggests a major theme which can be traced throughout the period covered: the gradual movement from mathematics, beyond arithmetic, for the mainly male minority, towards a growing range of mathematical and learning opportunities for the 'multitude', in primary schools, in secondary schools of various types, in technical institutions, and in higher education and teacher training. The author hopes that this book will be of interest not only to the mathematics education community in the UK and overseas, but also to historians of education and mathematics, and to all concerned with the dynamics of curriculum change.

Michael Price, "Historical perspectives on English school mathematics, 1850-1950", *Zentralblatt für Didaktik der Mathematik*, 1985, 17(1): 1-6.

This paper provides an overview of sources, themes and methodology in the history of English school mathematics, 1850 - 1950. Historical, sociological and curricular perspectives in the field are all considered, and the survey of sources embraces unpublished theses and dissertations as well as published articles and books. In relation to methodology, the distinction between the rhetoric and the reality is emphasized as is the problematic nature of capturing the latter. In the discussion of themes, the major variables of time and institutional context are highlighted, and various instruments of control and change in the curriculum are distinguished. The shifting internal state of school mathematics itself, its components and relationships are also not neglected.

Michael Price, "Mathematics in English education 1860-1914: Some questions and explanations in curriculum history", *History of Education*, 1983, 12(4): 271-284.

Leo Rogers, "Conflict and compromise: the evolution of the mathematics curriculum in nineteenth century England". *Histoire et épistémologie dans l'éducation mathématique - De la maternelle à l'université. (Geschiedenis en Epistemologie in de Wiskundendidactiek - Van de kleuterschool tot de universiteit)*. Actes. Part 1. ed. Patricia Radelet-de Grave, 1999. p. 309-319 3. universite d'ete Europeenne sur histoire et epistemologie dans l'education mathématique, Louvain-la-Neuve (Belgium).

This paper explores the social and ideological background which determined the kind of mathematics taught to different groups of people during the early part of the nineteenth century in England. These ideologies arose in and were transmitted through institutions which determined choices and decisions about what was valued as scientific knowledge. The mathematics taught in the universities and in the Public Schools was determined by a classical liberal ideology, whereas the mathematics taught in elementary schools and colleges was driven by a practical ideology of utility, democracy and social justice. The consequences of this conflict can be seen in our current school mathematics curriculum in England. Some observations are also made on the historiographical problems of the history of mathematics education. (orig.)

Georg Wolff,

URSS/Russia

F.S. Avdeev, T.K. Avdeeva, [*The Beginning of the Way*] "Nachalo puti". *Matematika v shkole*, 2002, no. 8, 2-6.

I.K. Andronov [Fifty Years of Development of Secondary School Mathematics Education] *Polveka rasvitiia shkol'nogo matematicheskogo obrasovania v SSSR*. (Moscow 1967).

R.Z. Guschel', [On History of Mathematics and Mathematics Education. Resource Guide]. *Is istorii matematiki i matematicheskogo obrasovania. Putevoditel' po literature* (Yaroslavl', 1999).

R.Z. Guschel', [On International Reform Movement in Mathematics Education at the Beginning of the 20th century]. "O megdunarodnom dvigenii po reformirovaniu matematicheskogo obrasovania v nachale XX stoletia", *Mathematicheskoe Prosveschenie*. Series 3, 2003, issue 7, 39-44

Iu. A. Drobyshev (2001) *On History of Russian Geometry Textbooks*. (Is istorii ruskogo uchebnika geometrii). Kaluga, KGU

Iu. A. Drobyshev, I. V. Drobysheva (2002) (ed.) *Issues in Mathematics Teacher Education: History of Mathematics and History of Methods*. (Aktual'nye problemy podgotovki budushego uchitelia matematiki. Istoriko-matematicheskii I istoriko-metodicheskii aspekty). Collected papers. Issue 4. Kaluga, KGU

B.V. Gnedenko (and others), [Seventy years of development of school education in mathematics in the Soviet Union]. "Razvitie shkol'nogo matematicheskogo obrazovaniya v Sovetskom Soyuze za 70 let." (Russian) *Matematika v shkole*, 1987, 53(6) p. 6-14.

The paper describes the development of school education in mathematics since 1918; the relevant documents, curricula, projects, and reforms. The contemporary situation and the present tasks.

Alexander Halameiser, [History of the development of mathematics education in Russia/SU]. "Geschichte der Entwicklung des Mathematikunterrichts in Russland/SU". (German) *Mathematik im Unterricht. Mitteilungen der Arbeitsgemeinschaft der Mathematikprofessoren des Landes Salzburg*. (Dec 1992) (no.16) p. 1-21.

Der Autor berichtet über die Entwicklung des Mathematikunterrichts in Russland vom 17. Jahrhundert bis zur Gegenwart, dabei stellt er Persönlichkeiten vor, die den Mathematikunterricht beeinflusst haben und erläutert Schwerpunkte und Besonderheiten des Unterrichts anhand von jeweilig typischen Aufgabenstellungen.

A.P. Jushkevich, [History of Mathematics in Russia before 1917] *Istoria matematiki v Rossii do 1917 goda* (Moscow, 1968).

Alexander P. Karp, [Classic of Genuine Education. To 150th anniversary of A.P.Kiselev] *Klassik real'nogo obrasovania. K stopiatidesiatiletii so dnia rodenia A.P.Kiseleva* (St. Petersburg, SMIO PRESS, 2002). Also in *Matematika v shkole*, 2002, no. 8, 7-11.

Alexander P. Karp (1998) *Algebra Graduation Exams in Russia over the last 100 years* (Pis'mennye vypusknye eksameny po algebra v Rossii sa 100 let). St.Petersburg.

Ju. M. Koljagin, [Russian Schools and Mathematics Education: Our Pride and our Pain.] *Russkaya schkola i matematicheskoe obrasovanie. Nascha gordost' i nascha bol'*. (Moscow: Prosveschenie, 2001).

This book is strongly influenced by political views of the author. His agenda includes identifying those culpable for the problems of Russia's schooling. In particular, he is interested in exploring the role played by non Russian nationals in Russia's education.

N.V. Metel'skii, [History of Methods of Mathematics Instruction] *Ocherki istorii metodiki matematiki* (Minsk, 1968).

[Major Results and Prospects in Methods of Teaching School Subjects in the XX century.] *Osnovnye itogi stanovlenia predmetnyh metodik v XX veke i perspektivy ih rasvitiia*. Collected papers. Issue 2. (Saint Petersburg, Kul't-Inform-Press, 2002).

Svetlana Petrova, "La réforme de Kolmogorov de l'enseignement des mathématiques en Union soviétique", eds. Bruno Belhoste et al., *Les sciences au lycée: un siècle de réformes des mathématiques et de la physique en France et à l'étranger* (Paris: Vuibert, 1996), 311-318.

T.S. Poljakova, [History of Russian Secondary School Mathematics Education. XVIII century.] *Dva veka. Kniga I: Vek vosemnadcatyi* [Two centuries. Volume I: The eighteenth century]. (Rostov-na-Donu: Izd-vo Rostovskogo pedagogiceskogo universiteta, 1997).

Cultural and political context, institutional history, textbooks used, selected biographies.

T.S. Poljakova (1997) *Historical Perspective on Methods of Teaching in Mathematics Teachers Education*. (Istoriko-metodicheskaya podgotovka uchitelia matematiki). Rostov on Don.

T.S. Poljakova, [History of Mathematics Education in Russia.] *Istoria matematicheskogo obrazovania v Rossii*. (Moscow: MGU, 2002).

I. Prints, [Development of mathematics instruction in Estonia.] "Matematiikka opetuksen kehittyminen Virossa". (Finnish) *Dimensio*, 1989, 53(2): 20-23.

The first schoolbook for mathematics instruction was published in Estonia in 1806. The Germans had a strong influence also in mathematics instruction. At the beginning of this century academic mathematics and the first highschool ('Gymnasium') was established in Estonia. Persons of strong influence were Prof. Sarv and Raego. Sarv claimed to teach set theoretical concepts already on the school level. Raego, who had many contacts to Germany and was especially influenced by the ideas of Klein, said that the learning of mathematics should help to educate the students' mental discipline. After the war the soviet school system was also installed in Estonia. This was combined with some difficulties, also in mathematics instruction. After 1965, special Estonian books and 'new mathematics' were introduced in the mathematics classes in Estonia. In the present one is going to introduce also computers in mathematics instruction.

V.E. Prudnikov, [Russian mathematics educators of XVIII-XIX centuries] *Russkie pedagogi-matematiki XVIII-XIX vekov* (Moscow, 1956).

I.Z. Shtokalo *Istoria matematicheskogo obrazovania v SSSR* [History of Mathematics education in USSR], Kiev, Naukova dumka, 1975. [in Russian]

R.S. Cherkasov, [History of Russian Secondary School Mathematics Education.] "Istoria otechestvennogo schkol'nogo matematicheskogo obrazovania", *Matematika v shkole*, 1997, no. 2, 83-91.

The development of general education and of the subject school mathematics in Russia from the beginning of 1700 to the 1930s is described. \par Waehrend es in Europa schon im 14.--17. Jh. eine verbreitete Grund- und Hauptschulbildung gab, begann dies in Russland erst 200 Jahre spaeter. Die Etappen: 17.--18. Jh. -- die Periode der Gruendung der ersten geistlichen Schulen. 1850--1860 Erste wissenschaftliche Forschungen ueber Didaktik der Mathematik. Die Schulprogramme wurden von den bekannten Mathematikern N. Fuss und dem Astronomen S. Rasumovskij ausgearbeitet. 1860--1900 die Periode der Entwicklung der Massenhauptschulbildung. Breite Eroerterung der Probleme der Didaktik der Mathematik. 1900--1917 Allrussische Kongress e der Mathematiklehrer. 1918--1932 die Periode der Entstehung der nachrevolutionaeren Schulen. Neue Wege der Mathematikbildung. Der Beitrag wird fortgesetzt.

USA/Canada

Amy K. Ackerberg-Hastings, *Mathematics is a Gentleman's Art. Analysis and Synthesis in American College Geometry Teaching, 1790-1840* (2000 Ames/Iowa. Iowa State Univ. Diss. Thesis).

The study presents a detailed analysis of key persons as mathematics professors and as textbook writers at American colleges (Jeremias Day, John Farrar, Charles Davies) and their respective context.

Nadine Bednarz, Teaching mathematics -- why and to whom?. "Pourquoi et pour qui enseigner les mathématiques?. Une mise en perspective historique de l'évolution des programmes au Québec au XXème siècle ». (French) *Zentralblatt für Didaktik der Mathematik*, 2002, 34(4): 146-157.

The history of reform in the teaching of mathematics in Quebec since the start of the 20th Century has been strongly influenced by a social and political context that gives meaning to its particular orientation. In this paper, we attempt to trace the important moments in the evolution of the teaching of mathematics through the roles and missions that successive governments have given to schooling and subsequent curricular reforms. Our analysis shows that the teaching of mathematics has evolved from an essentially practical role, prior to 1945, to a double role that is both practical and cultural, in the 1950s, with the balance tipped in favor of the practical role. In the 1960s, the political will for universal education and, more recently, the concern over forming persons who can adapt to a constantly evolving society, are gradually pushing the Quebec curricula towards major changes. Mathematics is presented as a powerful tool that gives one a handle on reality, a complement of culture and an important language that is essential to the communication of ideas. Throughout the various reforms, these two finalities - the practical and the cultural - are constantly present, varying in

importance and meaning with the successive roles attributed to schools. Our analysis shows a strong pragmatic anchoring of the first mathematics programs in Quebec, one that has not disappeared over time. The gradual curricular changes show, however, a progressive integration of the cultural formation role of mathematics.

James K. Bidwell, Robert G. Clason, *Readings in the History of Mathematics Education* (Reston, Va.: National Council of Teachers of Mathematics, 1970).

Substantial excerpts from major documents spanning the period 1831-1959 in the US.

Eileen Frances Donoghue, *The origins of a professional mathematics education program at teachers college* (1987 New York, Columbia Univ., Teachers College, Diss., 1987).

Eileen Frances Donoghue, "History of Mathematics Education in the United States", *Encyclopedia of mathematics education*, ed. Louise S. Grinstein (New York: Routledge Falmer, 2001), 323-330.

James T. Fey, "Change in Mathematics Education since the late 1950's - Ideas and realisation (An ICMI Report). U.S.A.", *Educational Studies in Mathematics*, 1978, 9: 339-353.

Hartzler, Stanley James: *Secondary algebra textbooks in the United States 1806-1982 : selected descriptions and historical trends* (Austin, Tex., Univ. of Texas, Diss., 1982).

Keith Hoskin, "Textbooks and the Mathematisation of American Reality: the Role of Charles Davies and the US Military Academy at West Point", *Paradigm* 13 (1994), 11-41.

The period 1830 to 1860 marks the emergence of American colleges and high schools as institutions providing differentiated curricula, in a classroom setting, following a regular progression over a number of years. These developments owe much to the work of Charles Davies at West Point.

Phillip S. Jones, and Arthur Coxford (eds.), *A History of Mathematics Education in the United States and Canada* (Reston, Va.: National Council of Teachers of Mathematics, 1970). 1970 Yearbook

Emphasizes curricular and methodological changes in the elementary and secondary schools, and the issues and forces causing the changes. Extensive bibliography.

Jeremy Kilpatrick, [The reform of the school mathematics curriculum in U.S. after 1900: reality and imagination.] "La riforma dei programmi di matematica negli stati uniti a partire dal 1900: realtà e immaginazione". (Italian; English) *L'Educazione Matematica*, 1994, 15(2): 117-131.

French original: "Réformer les programmes de mathématiques aux U.S.A. depuis 1900 : réalité et imaginaire", eds. Bruno Belhoste et al., *Les sciences au lycée: un siècle de réformes des mathématiques et de la physique en France et à l'étranger* (Paris: Vuibert, 1996), 247-258.

The varied history of efforts regarding reforms of mathematical education in the United States of America, including the development of mathematical didactics as a scientific subject is presented. It is, however, portrayed in simplified terms that a pragmatic trend dominated: the school lesson was more regarded as a technological problem ("find out what is wrong and replace it with something that works") than a problem of human communication and human values.

Paul Lavoie, "Enseigner les mathématiques au Québec (1800-2000): l'émergence d'une spécialité", *Bulletin AMQ*, 2004, 44, 14-38.

Separate printing of Chapter 7 in the handbook: Stanic, Kilpatrick (eds.), *A History of School Mathematics* (NCTM 2003).

Stephen B. Maurer, Harold B., Leo J. Schneider, "The American High School Mathematics Examination: a 50 year retrospective" *Mathematics Competitions. Journal of the World Federation of National Mathematics Competitions*, 2001, 14(2): 45-66.

On February 9 1999, students across America participated in the American High School Math Exam. The first such exam was given in 1950. Thus, the 1999 version is the 50th. Perhaps this is a good time to look at the history of the exam, its sponsorship, and its evolution-and important changes to begin in the year 2000. We conclude this article with a Special Fiftieth Anniversary AHSME, which includes one question from each of the first 50 editions of the AHSME. The AHSME is constructed and administered by the American Mathematics Competitions (AMC) whose purpose is to increase interest in mathematics and to develop problem solving ability through a series of friendly mathematics competitions for junior (grades 8 and below) and senior high school students (grades 9 through 12). As you read below how the AMC exams have evolved, you will see that they have moved towards greater participation at many grade levels, much less emphasis on speed and intricate calculation, and greater emphasis on critical thinking and the interrelations between different parts of mathematics. (Introduction)

L. Poirier, [Evolution of the importance of mental arithmetic in Quebec syllabuses]. “Evolution du rôle et de l'importance du calcul mental dans les programmes d'études quebécois ». *Bulletin AMQ*. (May 1990) v. 30(2) p. 5-10.

The role of mental arithmetic in Quebec syllabuses and textbooks of the years 1872 until today is investigated.

Susan Ross, Mary Pratt-Cotter, “Subtraction in the United States: an historical perspective”. (English) *The Mathematics Educator* (Athens). An Official Publication of the Mathematics Student Association, University of Georgia. (Sum 1997) v. 8(1) p. 4-11.

This is a review of the historical development of subtraction algorithm used in the United States. The algorithms used to teach subtraction today have changed very little since the 1940's. However, significant changes occurred during the late 1800's and early 1900's (Brownell, 1939; Brownell & Moser, 1949; Wilson, 1934). Different algorithms were used and developed that had a major impact on the way subtraction is taught today, as will be discussed later. By going back and exploring other algorithms, we may rediscover different ways of teaching subtraction that might benefit some of today's students.

Sharon L. Senk, Denisse R Thompson, “School mathematics curricula: Recommendations and issues”, eds. Sharon L. Senk, et al. *Standards-based school mathematics curricula. What are they? What do students learn?*. (Mahwah, NJ: Erlbaum. 2003), p. 3-27

In this chapter the authors provide some historical background to place the current curriculum reform efforts in perspective, and a summary of recommendations to reform school mathematics made during the 1990s. They also discuss issues that arise when conducting research on student outcomes.

George Milan Alexander Stanic, *Why teach mathematics?: A historical study of the justification question* (1983 Madison, Wis., Univ. of Wisconsin, Diss.).

George Milan Alexander Stanic, “ The growing crisis in mathematics education in the early twentieth century.” *Journal for Research in Mathematics Education*, 1986, 17(3):190-205.

This article is based on a dissertation completed at the University of Wisconsin-Madison, 1983. An earlier version was presented at the annual meeting of the American Educational Research Association, Apr 1984.

The place of mathematics in the American school curriculum was challenged during the early years of the twentieth century. Specifically questioned was the requirement that all high school students take mathematics. By the 1930s, mathematics educators were speaking of the situation as a crisis. The crisis had grown in the context of major social changes arising from intense urbanization, industrialization, and immigration around the turn of the century; America's involvement in World War I; and the Great Depression. Along with significant growth in the school population had come a perceived decrease in the quality of that population. It was within this historical context that mathematics educators responded to suggested changes in the curriculum. Some of their responses may have exacerbated the crisis about which they were so concerned.

A History of School Mathematics, eds. George M. A. Stanic and Jeremy Kilpatrick, 2 vol.s, (Reston/Va.: NCTM, 2003).

Its 38 chapters deal mainly with the history of mathematics education as an academic discipline, there are, however, also chapters on mathematics teaching, e.g. analysis of 19th century textbooks and of 20th century (by K. M. Michalowicz and E.F. Donoghue), too, and of mathematics teaching in the second half of the 20th century – thus being a follow-up study to the 1970 NCTM Yearbook.

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