



Maria Giuseppina Bartolini, born Milan, November 12th, 1948.
(also known as Mariolina Bartolini Bussi)

CURRICULUM VITAE ET STUDIORUM

2000-today: Full professor of Mathematics Education at the University of Modena and Reggio Emilia;

1998-today: Chair of the University program for pre-primary and primary teacher education;

2000-2002: Director of the University Museum of Science;

2003-today: Director of the Laboratory of Mathematical Machines

1992-today: scientific coordinator of several exhibitions of Mathematical Machines

(<http://www.mmlab.unimore.it/site/home/mostre.html>)

SCIENTIFIC COORDINATION

International

1999-2002 European Project Maths Alive (5th Framework Programme): Principal contractor.

2012-13, chair of the WG 13 on Early Years Mathematics at CERME 8 (Antalya, Turkey)

2013 – Coleader (with Sun Xuhua (Macau University, China) of the “Primary mathematics study on whole numbers” (ICMI study 23)

2014 – invited plenary speaker at 2014 Early Childhood STEM (Costa Mesa, Los Angeles, California).

National coordinator

PRIN 2003: Problems about the teaching and learning of mathematics: meanings, models, theories;

PRIN 2005: Meanings, conjectures, proofs: from basic research in mathematics education to curricular implications;

PRIN 2007: Instruments and representations in the teaching and learning of mathematics: theory and practice.

Regional coordinator (2008-2012): MMLAB-ER.

Co-chair of the interregional project PERCONTARE.

Chair of the program 0-6 for Early years mathematics (Comune di Modena).

Appointed editor of the volume 6.06.44 “Mathematics Education” of EOLSS (www.eolss.net), the Largest Online Encyclopedia chosen by UNESCO as the main vehicle for UNITED NATIONS OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (2005 – 2014)

AWARDS/SHORTLISTS

Director of the project Hands on Maths, shortlisted at the Altran award for innovation (2004):

<http://www.fondation-altran.org>.

Director of the project Perspectiva Artificialis, shortlisted at the 8th PIRELLIINTERNETional award (2004): <http://www.pirelliaward.com/>.

Award (Japan Association of Publishers) “the most beautiful book in 2009 in the area of Natural Science” for the volume (in Japanese):

CONSULTANCIES

Advisor for the French Ministry of Education for "L'enseignement des mathématiques à l'école primaire et au collège" (2012).

Advisor for Teacher Education of the Association "Italia-Birmania".

MEMBERSHIPS

Member of the Executive Committee of the International Commission on Mathematical Instruction (ICMI: 2007-2009 & 2010-2012);

Member of the Italian Commission on Mathematical Instruction (2006-2009);

Member of the editorial board of Educational Studies in Mathematics, Journal of Mathematics Teacher Education, European Mathematical Society Newsletter, Mathematics Education Library (Springer), For the Learning of Mathematics.

Member of the IPC of ICME10 and of the ICMI Study 16 (Challenging Mathematics in and beyond the Classroom).

Member of the international group PME since 1991, vice president from 1993 to 1995.

Member (1992-2000) of the international group Basic Component of Mathematics Education for Teachers (BaCoMET).

INVITATIONS

Visiting professor at the Universities of Bielefeld, Munster, Dortmund, Grenoble, Mexico D.F., Lulea, Auckland (NZ).

Keynote speaker (PME 1991; PME 1995; Portugal, 1997; The Netherlands, 1998, Norway, 1999; Canada, CMSG, Montreal 2000; ICME8, Sevilla; ICM98, Berlin; ICME 11, Mexico 2009; APEC Lesson study Japan 2010; SEMT 11 Prague 2011; IAEDN, Patras 2012).

INTERDISCIPLINARITY

Collaboration with researchers of different areas (Neurosciences, Clinical Psychology, linguistics, Education, Art/Architecture, Scientific Education).

RESEARCH INTERESTS

RESEARCH FOR INNOVATION

I have actively worked for the constitution and the international acknowledgement of the paradigm of 'research for innovation', typical of many studies of the Italian research community on mathematics education..

SEMIOTIC MEDIATION

I have published studies on semiotic mediation, drawing on the seminal work of Vygotskij and relating this construct to cases of innovation with strong components of social interaction and the presence of artefacts.

MATHEMATICS TEACHER EDUCATION

The studies on students' processes have been interlaced for many years with studies on teacher education. The international contacts and the expertise in pre-service teacher education (started in 1998) have been exploited as from 2008 in 5 projects I am chairing (with some international publications):

- In-service teacher education for pre-primary school

(<http://www.mmlab.unimore.it/site/home/bambini-che-contano.html>)

- Pre-service and in-service teacher education for primary school about the method of problems with variation (<http://www.mmlab.unimore.it/site/home/shuxue-matematica.html>).

- In-service teacher education for primary school about dyscalculia and learning difficulties (PERCONTARE: <http://www.mmlab.unimore.it/site/home/progetto-per-contare.html>).

- In-service teacher education for secondary school about the laboratory of Mathematical Machines (MMLAB-ER: <http://www.mmlab.unimore.it/site/home/progetto-regionale-emilia-romagna.html>).

SOME INTERNATIONAL PUBLICATIONS

ARTICLES IN REFEREED JOURNALS

- 1 BARTOLINI BUSSI M.G., MARTIGNONE F. (2013), Cultural issues in the communication of research on mathematics education, *For the Learning of Mathematics*.
- 2 BARTOLINI BUSSI M.G., CORNI F., MARIANI C., FALCADE R. (2012), Semiotic mediation in mathematics and physics classrooms: artifacts and signs after a Vygotskian approach, *Electronic Journal of Science Education*, 16 (3), <http://ejse.southwestern.edu/issue/archive>.
- 3 BARTOLINI BUSSI M.G. (2011). Artifacts and Utilization Schemes in Mathematics Teacher Education: the Case of Positional Representation of Numbers in Primary School. *JOURNAL OF MATHEMATICS TEACHER EDUCATION*, vol. 14; p. 93-112, ISSN: 1386-4416
- 4 BARTOLINI BUSSI M.G., TAIMINA D., ISODA M. (2010). Concrete models and dynamic instruments as early technology tools in classrooms at the dawn of ICMI: from Felix Klein to present applications in mathematics classrooms in different parts of the world. *ZDM – THE INTERNATIONAL JOURNAL ON MATHEMATICS EDUCATION*, vol. 42; p. 19-31, ISSN: 1863-9690
- 5 M. MASCHIETTO, BARTOLINI BUSSI M.G. (2009). Working with artefacts: gestures, drawings and speech in the construction of the mathematical meaning of the visual pyramid. *EDUCATIONAL STUDIES IN MATHEMATICS*, vol. 70 (2); p. 143-157, ISSN: 0013-1954
- 6 BARTOLINI BUSSI M.G. (2007). Semiotic mediation: fragments from a classroom experiment on the coordination of spatial perspectives. *ZDM – THE INTERNATIONAL JOURNAL ON MATHEMATICS EDUCATION*, vol. 39 n. 1-2; p. 63-71, ISSN: 1863-9690
- 7 BARTOLINI BUSSI M.G. (2005). When Classroom Situation is the Unit of Analysis: The Potential Impact on Research in Mathematics Education. *EDUCATIONAL STUDIES IN MATHEMATICS*, vol. 59; p. 299-311, ISSN: 0013-1954
- 8 BARTOLINI BUSSI M.G., BAZZINI L. (2003). Research, practice and theory in didactics of mathematics: Towards dialogue between different fields. *EDUCATIONAL STUDIES IN MATHEMATICS*, vol. 54 (2-3); p. 203-223, ISSN: 0013-1954
- 9 BARTOLINI BUSSI M.G., BONI M. (2003). Instruments for semiotic mediation in primary school classrooms. *FOR THE LEARNING OF MATHEMATICS*, vol. 23 (2); p. 12-19, ISSN: 0228-0671
- 10 BARTOLINI BUSSI M.G., BONI M., FERRI F., GARUTI R.. (1999). Early Approach to Theoretical Thinking: Gears in Primary School. *EDUCATIONAL STUDIES IN MATHEMATICS*, vol. 39; p. 67-87, ISSN: 0013-1954
- 11 BARTOLINI BUSSI M.G., MARIOTTI M. A. (1999). Semiotic Mediation: from History to Mathematics Classroom. *FOR THE LEARNING OF MATHEMATICS*, vol. 19 (2); p. 27-35, ISSN: 0228-0671
- 12 BARTOLINI BUSSI M.G. (1998). Drawing Instruments: Theories and Practices from History to Didactics. *DOCUMENTA MATHEMATICA*, vol. Extra Volume ICM98; p. 735-746, ISSN: 1431-0635
- 13 BARTOLINI BUSSI M.G. (1996). Mathematical Discussion and Perspective Drawing in Primary School. *EDUCATIONAL STUDIES IN MATHEMATICS*, vol. 31; p. 11-41, ISSN: 0013-1954

CHAPTERS in VOLUMES

- 1 BARTOLINI BUSSI M.G., MARTIGNONE F. (2013), Manipulatives in mathematics education, in S. Lerman (ed.), *Encyclopedia of Mathematics Education*, Article ID: 313272 · Chapter ID: 93, <http://www.springerreference.com/docs/navigation.do?m=Encyclopedia+of+Mathematics+Education+%28Humanities%2C+Social+Sciences+and+Law%29-book188>
- 2 M. MASCHIETTO, BARTOLINI BUSSI M.G. (2011). Mathematical machines: from history to mathematics classroom. In: O. Zaslavsky, P. Sullivan. *Constructing Knowledge for Teaching Secondary Mathematics Tasks to enhance prospective and practicing teacher learning*. vol. 6, p. 227-245, New York Dordrecht Heidelberg : Springer, ISBN/ISSN: 9780387098111
- 3 BARTOLINI BUSSI M.G. (2010). Historical Artefacts, Semiotic Mediation and Teaching Proof. In: HANNA GILAH, JAHNKE HANS NIELS, PULTE HELMUT, . *explanation and proof in mathematics: philosophical and educational perspectives*. p. 151-168, BERLIN: Springer, ISBN/ISSN: 978-1-4419-0575-8
- 4 BARTOLINI BUSSI M.G., BONI M (2009). The early construction of mathematical meanings: Learning positional representation of numbers. In: OSCAR A. BARBARIN, O. Barbarin, B. Wasik. *Handbook of Child Development and early education: research to practice*. p. 455-477, NEW YORK: Guilford Press, ISBN/ISSN: 978-1-60623-302-3
- 5 BARTOLINI BUSSI M.G., M. MASCHIETTO (2008). Machines as tools in teacher education. In: D.Tirosh, T.Wood. *Tools and Processes in Mathematics Teacher Education, The International Handbook of Mathematics Teacher Education*, vol. 2. vol. 2, p. 183-208, ROTTERDAM: Sense Publisher, ISBN/ISSN: 978-90-8790-544-6
- 6 BARTOLINI BUSSI M.G., MARIOTTI M.A. (2008). Semiotic Mediation in the Mathematics Classroom: Artefacts and Signs after a Vygotskian Perspective. In: L. English, M. Bartolini, G. Jones, R. Lesh, B. Sriraman, D. Tirosh. *Handbook of International research in Mathematics education (2nd edition)*. p. 746-783, New York: Routledge Taylor & Francis Group, ISBN/ISSN: 978-0-8058-5876-1
- 7 BARTOLINI BUSSI M.G., BONI M., FERRI F. (2007). CONSTRUCTION PROBLEMS IN PRIMARY SCHOOL A CASE FROM THE GEOMETRY OF CIRCLE. In: BOERO P. eds. *Theorems in school: from history, epistemology and cognition to classroom practice*. p. 219-247, ROTTERDAM: Sensepublishers, ISBN/ISSN: 90-77874-21-6
- 8 BARTOLINI BUSSI M.G. (2005). The meaning of conics: historical and didactical dimensions. In: KILPATRICK J., HOYLES C., SKOVSMOSE O, VALERO P. EDS.. *Meaning in Mathematics Education*. vol. 37, p. 39-60, NEW YORK: Springer, ISBN/ISSN: 0-387-24039-X
- 9 BARTOLINI BUSSI M.G., MARIOTTI M. A., FERRI F. (2005). SEMIOTIC MEDIATION IN THE PRIMARY SCHOOL: DÜRER'S GLASS. In: HOFFMANN H., LENHARD J., SEEGER F.. *Activity and Sign – Grounding Mathematics Education(Festschrift for Michael Otte)*. p. 77-90, NEW YORK: Springer, ISBN/ISSN: 0-387-24269-4
- 10 ARZARELLO F., BARTOLINI BUSSI M.G., ROBUTTI O. (2002), Times in the Didactics of Mathematics: a methodological challenge, in L. English, M. Bartolini, G. Jones, R. Lesh, D. Tirosh. *Handbook of International research in Mathematics education (1st edition)*, p. 525-552, Mahawah NJ: Lawrence Erlbaum Associates.
- 11 ARZARELLO F., BARTOLINI BUSSI M.G. (1998). Italian Trends in Research in Mathematics Education: A National Case Study in the International Perspective,. In: KILPATRICK J., SIERPINSKA A.. *Mathematics Education as a Research Domain : A Search for Identity*. vol. 2, p. 243-262, DORDRECHT: Kluwer, ISBN/ISSN: 0-7923-4948-2
- 12 BARTOLINI BUSSI M.G. (1998). Joint Activity in the Mathematics Classroom: a Vygotskian Analysis. In: SEEGER F., VOIGT J. WASCHESHO U.. *The Culture of the Mathematics*

- Classroom. Analyses and Changes. p. 13-49, CAMBRIDGE: Cambridge University Press, ISBN/ISSN: 0-521-57798-5
- 13 BARTOLINI BUSSI M.G. (1998). Verbal Interaction in Mathematics Classroom: a Vygotskian Analysis. In: STEINBRING H., BARTOLINI BUSSI M. G., SIERPINSKA A.. Language and Communication in the Mathematics Classroom. p. 65-84, RESTON, VA: National Council of Teachers of Mathematics, ISBN/ISSN: 0-87353-441-7
 - 14 BARTOLINI BUSSI M.G., PERGOLA M. (1996). History in the Mathematics Classroom: Linkages and Kinematic Geometry. In: JAHNKE H. N, KNOCHE N., OTTE M.. History of Mathematics and Education: ideas and Experiences. vol. 11, p. 36-67, GOETTINGHEN: vandenhoeck & ruprecht, ISBN/ISSN: 3-525-40318-6
 - 15 BARTOLINI BUSSI M.G. (1994). Theoretical and Empirical Approaches To Classroom Interaction. In: R. BIEHLER, R. SCHOLZ, R. STRASSER, B. WINCKELMANN. Didactics of Mathematics as a Scientific Discipline. vol. 13, p. 121-132, DORDRECHT: Kluwer Academic Publishers, ISBN/ISSN: 0-7923-2613-X

MONOGRAPHS

International

- 1 ISODA M., BARTOLINI BUSSI M.G. (2009). Encyclopedia of Curves (in Japanese). Tokyo: kyoritsu-pub, p. 1-306, ISBN: 978-4-320-01907-2
- 2 ENGLISH L. D., BARTOLINI BUSSI M.G., JONES G. A, LESH R. A, SRIRAMEN B, TIROSH D. (2008). HANDBOOK OF INTERNATIONAL RESEARCH IN MATHEMATICS EDUCATION (SECOND EDITION). NEW YORK: Routledge (Taylor & Francis Group), p. 1-925, ISBN: 978-0-8058-5876-1
- 3 ENGLISH L. D., BARTOLINI BUSSI M.G., JONES G. A, LESH R. A, TIROSH D. (2002). HANDBOOK OF INTERNATIONAL RESEARCH IN MATHEMATICS EDUCATION (FIRST EDITION). MAHAWAH NJ, Lawrence Erlbaum Associates, p. 1-873.
- 4 STEINBRING H., BARTOLINI BUSSI M.G., SIERPINSKA A. (eds.) (1998), Language and communication in the mathematics classroom. Reston VA: National Council of teachers of Mathematics. P. 1-351. ISBN 0-87353-441-7.

National

- 5 BACCAGLINI FRANK A., RAMPLOUD A. BARTOLINI BUSSI M.G. (2012), Informatica zero: un percorso formativo per insegnanti di scuola dell'infanzia e primaria, Fano (PU): Edutouch.p. 1-125, ISBN 978-88-97899-11-2.
- 6 BARTOLINI BUSSI M.G. (2008). Matematica: I numeri e lo spazio. Bergamo: Edizioni junior. ISBN 978-88-8434-371-2.
- 7 BARTOLINI BUSSI M.G., M. MASCHIETTO (2006). Macchine Matematiche: dalla storia alla scuola. MILANO: Springer, ISBN: 978-88-470-0402-3

PROCEEDINGS (INTERNATIONAL CONFERENCES only recent ones)

- 1 BARTOLINI BUSSI M. G., SUN X., RAMPLOUD A. (in press), A dialogue between cultures about task design for primary school, Oxford: ICMI Study 22.
- 2 BARTOLINI BUSSI M.G. (in press), BAMBINI CHE CONTANO: A LONG TERM PROGRAM FOR PRESCHOOL TEACHERS DEVELOPMENT, Antalya: CERME 8.
- 3 BARTOLINI BUSSI M.G., CANALINI R., RAMPLOUD A. (2012), Word problems in different cultural traditions, Patras: Innovative Approaches in Education: Design and Networking, 45-64, ISBN: 978-960-87091-5-7, 978-960-8611-7-0.

- 4 BARTOLINI BUSSI M.G., R. Garuti, F. Martignone, M. Maschietto (2011). Tasks for teachers in the MMLAB-ER Project. In: Proceedings of the 35th Conference of the International group for the Psychology of Mathematics Education. Ankara, July 10-15, 2011, Ankara: B. Ubuz, vol. 1, p. 127-130, ISBN/ISSN: 9789754292626
- 5 BARTOLINI BUSSI M.G., R. Canalini, F. Ferri (2011). Towards cultural analysis of content: Problems with variations in primary school. In: Proceedings of International Symposium on Elementary Maths teaching 11. Prague, August 21-26, 2011, PRAGUE: Charles University, p. 9-21, ISBN/ISSN: 9788072905096
- 6 BARTOLINI BUSSI M.G. (2009). In search for theories: polyphony, polysemy and semiotic mediation in the mathematics classroom. In: Proceedings of the 33rd Conference of the International Group for the Psychology of Mathematics Education: In search for theories in mathematics education. Thessaloniki, 19-24 luglio 2009, Thessaloniki: Aristotle University of Thessaloniki & University , vol. 2, p. 121-128, ISBN/ISSN: 9789602436523.
- 7 BORBA M. C. , BARTOLINI BUSSI M.G. (2008), Resources and technology throughout the history of ICMI, in M. Menghini, F. Furinghetti, L. Giacardi, F. Arzarello (eds), The first century of the International Commission on Mathematical instruction (1908-2008). Reflecting and shaping the world of mathematics education, p. 289-300. Rome: Istituto Enciclopedia Italiana. ISBN: 978-88-12-00015-9.