TABLE OF CONTENTS

	Introduction	1
	I. Geometry and geometry-teaching through the ages $C.\ Mammana\ \mathcal{C}\ V.\ Villani$	1
	II. About the present ICMI study $V.\ Villani$	4
	III. Acknowledgements $V. \ Villani$	7
1.	Geometry: Past and Future	9
	I. Everlasting geometry V. Lundsgaard Hansen	9
	II. Finding room in the curriculum for recent geometry $J.\ Malkevitch$	18
	III. Space and plane A. Douady	25
2.	Reasoning in Geometry	29
	I. About reasoning in geometry R. Hershkowitz	29
	II. Geometry from a cognitive point of view $R. \ Duval$	37
	III. Teaching and learning geometry in contexts M. Bartolini Bussi & P. Boero	52
	IV. Springboards to geometry $R. \ Lehrer \ \mathcal{C} \ T. \ Romberg$	62
	V. The role of pupils' spatial knowledge in the elementary teaching of geometry $R.$ Berthelot & M. H. Salin	71
	VI. Deductive and intuitive approaches to solving geometrical problems K. Lones	78

3.	Geometry in our World	85
	I. Geometry and reality J. Malkevitch	85
	II. Recent applications of geometry $W.\ Meyer$	100
	III. Science and technology in geometry textbooks $P.\ Legi\check{s}a$	106
4.	Computer Technology and the Teaching of Geometry	109
	Introduction I. Osta	109
	I. Visual phenomena in the teaching/learning of geometry in a computer-based environment	440
	C. Laborde	113
	II. Proof in dynamic geometry contexts C. Hoyles & K. Jones	121
	III. CAD tools and the teaching of geometry $I.\ Osta$	128
	IV. The computer as a context for new possible geometrical activities	
	$K.\text{-}D. \ Graf \ \mathscr{C} \ B. \ Hodgson$	144
5.	Geometry in the Classroom	
	R. Douady & B. Parzysz	159
6.	The Evolution of Geometry Education since 1900	193
	I. The British experience H. B. Griffiths	194
	II. The evolution of curricula as indicated by different kinds of change in geometry textbooks M. Galuzzi, M. Neubrand & C. Laborde	204
	III. General tendencies in the development of geometry teaching in the past two decades	
	$H.\ B.\ Griffiths\ {\it \&ff}\ M.\ Neubrand$	223

	vii
Appendix: Influences of history and the general social development on the teaching of geometry $M.\ Galuzzi\ \mathcal{C}\ M.\ Neubrand$	229
7. Changes and Trends in Geometry Curricula	235
I. General considerations on curricula designs in geometry V. Lundsgaard Hansen	235
II. Examples of curricula designs in geometry:	243
• Dynamic geometry in the Colombian school curriculum C. E. Vasco	243
• Geometry in Egypt G. K. Gholam	248
\bullet Geometry in the Polish school: present state and perspectives J. Tocki & S. Turnau	252
• Geometry in China: the teaching material S. Tang & F. Zhang	254
• The geometry curriculum in Germany: past and future trends <i>M. Neubrand</i>	257
III. Looking towards the 21st century: possible trends in geometry curricula	
$V.\ Lundsgaard\ Hansen$	260
8. Assessment in Geometry	263
I. Dimensions of geometry and assessment $M.\ Niss$	263
II. Assessing reasoning abilities in geometry J. Pegg, A. Gutiérrez & P. Huerta	275
9. Teacher Qualifications and the Education of Teachers $M.\ Niss$	297
10. The Way Ahead V. Villani on behalf of the International Program Committee	319

Bibliography	329
Appendix Perspectives on the Teaching of Geometry for the 21st Century (Discussion Document for an ICMI Study)	337
List of Participants to the Catania Conference	347
Addresses of the Contributors	348
Index	351