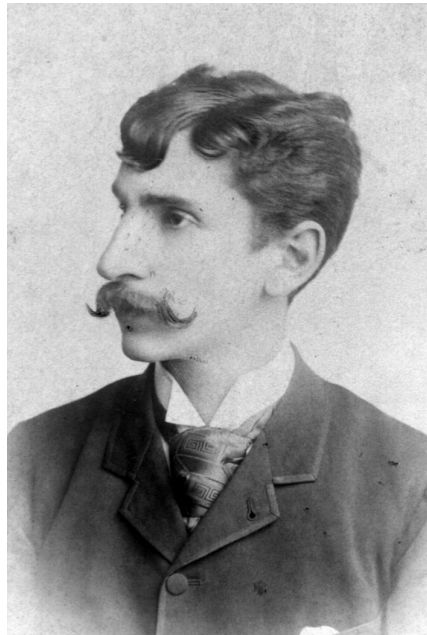


## 12.7 Gino Loria (Mantua, 1862 – Genoa, 1954): Appointed Honorary Member in 1936

Fulvia Furinghetti



### **Biography**

Gino Benedetto Loria was born in Mantua on 19 May 1862 to a well-off Jewish family. His father was Salomon Vita, also called Gerolamo or Girolamo, and his mother Anaide D’Italia. His brother Achille, a notable political economist and professor in various universities, was elected to the Italian Senate.

In the years 1875–1879, he completed the secondary studies at the *Istituto Tecnico Provinciale* of his home town. From 1879 to 1883, he enrolled in the University of Turin, where he received the *laurea* in mathematics with a dissertation entitled “Intorno alla geometria su un complesso tetraedrale”, which was later elaborated into research on spherical geometry. His supervisor was Enrico D’Ovidio (Togliatti 1954, p. 115). In the years 1884–1886, while he was D’Ovidio’s assistant, he published 16 papers about applications of algebraic concepts to geometrical studies, the geometry of straight line and spheres, hyperspatial projective geometry, entities generated by algebraic correspondences between fundamental forms and Cremona spatial transformations (Terracini 1954, p. 403). With Corrado Segre, a major contributor to the early development of algebraic geometry in Italy, he wrote the paper “Sur les différentes espèces de complexes du 20 degré des droites qui coupent harmoniquement deux surfaces du second ordre”, published in the *Mathematische Annalen* (1884, 23: 213–234). At the end of 1883, he went to the University of Pavia for attending an

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advanced course. There he met Eugenio Beltrami who, some years later, encouraged his vocation as a historian.<sup>1</sup>

In 1886 Loria won the chair of higher geometry and 1891 became a full professor at the University of Genoa, where he lived the rest of his academic life. He also taught, on assignment, history of mathematics, analysis and descriptive geometry. In 1903 he married Ida Levi Gattinara and settled permanently in Genoa. He retired in 1935 but continued to be active in research. In Genoa, Loria contributed to establishing the Institute of Mathematics (now Department), which was initially born as a branch of the Naval School in the Engineering Faculty. In 1906 he launched the *Scuola di Magistero* (university courses to prepare elementary, middle, and high school teachers), where he was the director and delivered courses and talks. In 1887 he created the Mathematical Library now in the Mathematics Department; see Togliatti (1973). He was dean of the Faculty of Sciences.

WWII was a difficult time for the Jew Loria due to the racial laws promulgated in 1938 by the Italian government; see Varnier (2002). To escape the racial persecutions, in 1943 he left Genoa and was hosted in the mountains south of Turin by the community of Waldenses. He came back to Genoa in 1945 and continued to study and write papers. He died in Genoa on January 30, 1954. He bequeathed his private library to the Institute of Mathematics of the University of Genoa under the condition that a history of mathematics course should always be held; see Fenaroli, Furinghetti, Garibaldi, and Somaglia (1989, p. 222). It contains a unique collection of books, mathematical journals, journals dedicated to mathematics teaching, and 14,463 offprints sent to him by their authors from all over the world.

Loria received many honours and awards, such as *Prix Binoux* of the Institut de France (twice) and the Silver Medal of the *Association Française pour l'Avancement des Sciences*. He was a member of the *Accademia Virgiliana* in his native Mantua, the *Accademia delle Scienze di Torino*, the *Accademia Nazionale dei Lincei*, and other national and international academies.

The book (Loria, 1937a) containing Loria's selected papers mentions 278 titles. Raymond Clare Archibald (1939, pp. 17–30) lists 360 publications, 17 entries in the *Enciclopedia Italiana*, 4 edited works, 4 prefaces and several contributions to the journal *L'Intermédiaire des Mathématiciens*. The *database* edited by Aldo Brigaglia, Ciro Ciliberto e Edoardo Sernesi lists 998 titles. This copious production mainly concerns three domains of research: geometry, history of mathematics and mathematics teaching. Loria's research in geometry developed mainly in the wake of the previous generation, instead of following the new trend of the geometrical studies carried out in Italy in the field of algebraic geometry (Archibald 1939, pp. 11–17; Terracini 1954, pp. 409–421; Pepe 2001). Meanwhile, Loria became more and more engaged in historical research. In the field of history of mathematics he reached an international reputation so that Archibald (1939 p. 5) claimed he was “the dean of mathematical historians in Italy”. The first relevant work in history was *Il passato ed il presente delle principali teorie geometriche* published in 1887 (*Regia Accademia delle Scienze di Torino, Memorie* s. 2, 35: 327–376), which in 1896 became a book (Loria 1896). This work had many translations. In 1893 he published his famous treatise *Le scienze esatte nell'antica Grecia* (*Regia Accademia delle Scienze di Modena, Memorie, Sezione di Scienze* s. 2, 10: 3–168 and 11: 3–237); this treatise had further editions, also as a book (Loria 1914a). In the guide book to the study of history of mathematics *Guida allo studio della storia delle matematiche* (1915. Milan: Hoepli), Loria recommended that mathematicians researching history use the rules followed in their research in mathematics (p. 7). In the article on cataloguing books entitled “Sui metodi di compilazione dei cataloghi bibliografici.

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<sup>1</sup> (Loria 1914a, p. V) and Loria, Gino. 1926. Durante quarant'anni d'insegnamento: confessioni e ricordi. *Il Bollettino di Matematica* s. 2, 5: 65–77.

Pensieri e desideri” (*Bollettino di Bibliografia e Storia delle Scienze Matematiche*. 1900. 3, July, August, September: 65–70), we find the following important advice: people who are in charge of the conservation of manuscripts shouldn’t forget that a library is a laboratory, not a museum (p. 70).

In 1897 Loria published a 24-page supplement to the mathematics journal *Giornale di Matematiche* dealing with history of mathematics. In the following year, he succeeded in having an autonomous journal for historical studies entitled *Bollettino di Bibliografia e Storia delle Scienze Matematiche*, known as *Bollettino di Loria*. This journal was, with the *Bibliotheca Mathematica* of Gustav Eneström (founded in 1884), an international landmark for publications on the history of mathematics. The *Bollettino* was issued until 1919; in 1922 it appeared as a section of the journal for mathematics teachers *Il Bollettino di Matematica*, see (Furinghetti 2006). One of Loria’s aims was to contribute to creating the figure of the professional historian of mathematics. Giacardi (2013) illustrates Loria’s contribution to the development of historical studies in Italy.

As told before, Loria had contacts with scholars all over the world. His books on history were reviewed in foreign journals. He wrote articles on the history of mathematics in various countries: see (Loria 1919a; 1919b; 1927). He was an active participant in the International Congresses of Mathematicians (ICMs) as a speaker, as chairman of sessions and as a member of the International Program Committee (in Rome). In the ICM of Zurich (1897), Heidelberg (1904), Rome (1908), Bologna (1928) and Zurich (1932), he presented contributions on history and in 1904 on mathematics teaching, see (Loria 1905a). In the ICM of 1932, he presented the report of the ICMI inquiry on teachers, see (Loria 1932b).

Evidence of the large appreciation of Loria’s action at the national and international level is the book (Loria 1936) for the celebration of his retirement, which contains a selection of his articles. This book was sponsored by Loria’s Italian colleagues, teachers (mainly of Genoa and surroundings), and international colleagues. Among the latter, there are Archibald, Fernando de Vasconcellos, Henri Fehr, Lucien Godeaux, Jacques Hadamard, George Sarton, and David E. Smith.

### ***Contribution to Mathematics Education***

In the field of mathematics education, Loria was active at the international and national levels. He took part in the debate on the geometrical syllabus in Great Britain, which developed in the last decades of the nineteenth century, see (Loria 1889; 1893a) and published articles in *The Mathematical Gazette* and other foreign journals. From 1904 he was a member of the editorial board of *L’Enseignement Mathématique* and was among its main contributors. He was one of the reactors to the article of Smith published in this journal in 1905, which advocated more international cooperation and the creation of a commission aimed at studying instructional problems in different countries. Giacardi (2019) reports that Loria contributed to the preparation of the didactic section in the ICM of Rome through contacts with David E. Smith.

Loria’s main contribution to the activity of the Commission was the inquiry into the theoretical and practical education of mathematics teachers in different countries launched by the International Commission on the Teaching of Mathematics in 1914. The results were to be presented at the next ICM in 1916 in Stockholm. Because of WWI and the subsequent dissolution of the Commission the work was suspended for over 14 years, and the report was presented at the ICM of Zurich in 1932, see (Loria 1932). Its full text was published in *L’Enseignement Mathématique* (Loria 1933). The same issue also contains the reports by the national delegations, some of which had already appeared in journals of their respective countries.

In 1936 on the occasion of the ICM in Oslo, the International Commission on the Teaching of Mathematics gave the title of “honorary member” to Loria (together with eight other scholars) for his contribution to the activities of the Commission.<sup>2</sup>

One of the main interests of Loria was the education of mathematics teachers, which was a theme debated in Italy in his times. At the second national congress of *Mathesis* (Italian Society of Mathematics Teachers), he discussed the situation in Italy on this theme, see (Loria and Padoa 1909). He supported the institution of the *Scuola di Magistero* and announced, with regret, its suppression starting from the academic year 1920–1921 (Loria 1921b, p. 149). Some years later, he expressed the legitimate worry of high school teachers that their abilities were not recognised (Loria 1924, p. 23). Loria was an active member of *Mathesis*; for a long time, he was the president of the Ligurian section of this association and organised regular local meetings with teachers. Most of these teachers were females, and in the meeting minutes there is an echo of the discussions about women’s difficulties in having access to teaching in secondary school. Then Loria had the opportunity to reflect on a theme (the relationship of women with mathematics), which he had treated from a historical point of view at the beginning of the century in the talk “Donne matematiche” (Women mathematicians) delivered at the *Accademia Virgiliana* of Mantua. The text of this talk was published in (*Atti e Memorie Della R. Accademia Virgiliana di Mantova* (biennium 1901–1902. 1903. 21: 75–98). This text was translated into French (*Les femmes mathématiciennes*. 1903. *Revue Scientifique*, column “Histoire des sciences”, 4, 20: 385–392). Later on, Loria published his answer to the comment of Józefa Joteyko that appeared in the same journal (*Encore les femmes mathématiciennes*. 1904. *Revue Scientifique*, column “Variétés”, s. 5, 1: 338–340).

Loria attentively followed the various events of the school world. He reviewed various textbooks for secondary schools in didactic journals and participated in the conferences on mathematics teaching. In particular, he took part in the debate on the renewing of mathematics programmes: see Loria (1906a; 1909). Thanks to his international connections, he was well informed of the programmes developed abroad; in particular, he was interested in the reform of secondary school in Germany (Loria 1906b). Of course, he devoted much thought to the teaching of geometry, which was one of the fields of his mathematical research. The teaching of geometry is the subject of the seminal paper (Loria 1893b), where he combined his knowledge of geometry with his knowledge of the history of its teaching. Though he was convinced of the importance of rigor, he was aware of the students’ low interest in geometry, (*ibidem*, p. 98–99), and then he was favourable to any legitimate means to enlivening and keeping awake this interest. His project for teaching geometry was to present this subject not as a dead language but as a living language (*ibidem*, p. 110). In the paper (Loria 1900), he considered with interest the fusionism, a method of teaching geometry by blending plane and spatial geometry. Loria’s commitment to teaching mathematics was recognised internationally. About the situation of the teaching of geometry in Italy Cajori (1910) wrote:

This recent Italian emphasis upon extreme rigor has led to deplorable results with the less gifted pupils, and a reaction appears to be setting in. Under the leadership of Loria and Vailati, a movement is on foot favoring greater emphasis upon intuition, the introduction of some modern geometrical notions, the fusion of geometry with arithmetic, and the concession to the demands for practical applications made by this age of industrial development. Italy is entering upon a reform much like that of Germany and France. (p. 192)

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<sup>2</sup> See *Comptes rendus du Congrès International des Mathématiciens, Oslo 1936*, Oslo: A. W. Brøggeres Boktrykkeri. 1937. Vol. 2, p. 289.



A similar appreciation was expressed by Klein (Klein, Felix. 2016. *Elementary Mathematics from a Higher Standpoint: Geometry*, Vol. 2, Gert Schubring Trans. Berlin: Springer, pp. 249–250).

Geometry was one of the poles for Loria's action in approaching the problem of mathematics teaching. The other pole was the history of mathematics, which was his other main field of research. In the paper (Loria 1899) he outlines a programme addressed to mathematics students who will become school teachers. This programme focuses on topics they will cover in their teaching. In this way he aims at overcoming the sense of daunting isolation felt by young persons just graduated in mathematics as they start teaching in secondary school. To this purpose, he suggested a 2-year course on the history of mathematics to be introduced in the Faculty of Sciences (*ibidem*, p. 20). In his project, the teaching of the history of mathematics should become as a coupling link between secondary and university education (*ibidem*, p. 22).

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#### **Photo**

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