

Book review: *Images of Italian Mathematics in France: The Latin Sisters, from Risorgimento to Fascism* (F. Brechenmacher *et al.*, eds.), Birkhäuser, 2016

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The book under review, the outcome of a multidisciplinary workshop, concerns views of nineteenth- and twentieth-century Italian mathematics in France, and the interactions between French and Italian mathematicians during this period. As the introductory chapter explains, the shared Latin culture of France and Italy during this period has often been emphasized (both at the time and in subsequent scholarship), but there were also significant links between Italy and Germany, its fellow European newcomer. Although this book focuses on French–Italian interactions, it does so with the latter in mind. Moreover, whereas previous studies of the mathematics of these two nations have focused on the impact of French mathematics on Italy, more attention is paid here to French views of Italian mathematics. Although most of the chapters are structured around the work and views of individual mathematicians, a broad range of topics is touched upon: the development of specific branches of mathematics, for example, or fora for contacts between mathematicians, such as the International Congresses.

The first chapter, by Pierre Crépel, concerns the representation of Italian mathematicians in French biographical dictionaries of the nineteenth century, and is presented as the starting point for further biographical work. The chapter begins with a survey of such dictionaries, with an indication of how French historians had neglected the Italian mathematicians of the eighteenth century, but then started to give them better coverage in the nineteenth. The writers of the biographies also receive some attention here: identifying people who understood both Italian and mathematics was sometimes a challenge for the dictionaries' editors.

In Chapter 2, penned by Frédéric Brechenmacher, we turn to the view of Italian mathematics that emerges from a study of Camille Jordan's scientific correspondence, much of the Italian portion of which relates to his contributions to the journal *Annali di matematica pura ed applicata*. Amongst other topics, this chapter also looks at Italian reactions to Jordan's *Traité des substitutions et des équations algébriques* (1870) — in particular, the difficulties that Francesco Brioschi and Luigi Cremona experienced with Jordan's group-theoretic approach to the study of lines on a cubic surface. The final part of the chapter turns to the role played by Jordan in establishing links between the École polytechnique and Italian institutions, and highlights the differences between perceptions of mathematics in France and Italy.

The Italian connections of a different French mathematician, Émile Picard, are the subject of the third chapter, by Aldo Brigaglia, which focuses on different approaches to the study of algebraic surfaces. The difficulties of translating from one (broadly speaking, geometrical) mathematical language into another (more analytical) are considered in particular.

In Chapter 4 (Angelo Guerraggio, Frédéric Jaëck, and Laurent Mazliak) the focus switches to an Italian mathematician, Vito Volterra, and his French readers, Jacques Hadamard and Maurice Fréchet, and how they criticized and extended his work in mathematical physics and early functional analysis. The interactions between Volterra and his French counterparts at the International Congresses of Mathematicians are emphasized as having established their connection and sustained their correspondence.

Chapters 5 (Erika Luciano) and 6 (Paola Cantù) take Giuseppe Peano as their central figure, the former considering the influence that his school of mathematical logic had on the teaching of real analysis in France, and the latter focusing on its impact on French logic. A major figure in Chapter 5 is the logician Louis Couturat, who played a key role in the popularization of Peano's views in France. Chapter 6 places the focus on French philosophers, who had traditionally ignored logic as a discipline. However, under

the influence of Peano's writings, the philosopher Louis Rougier became heavily involved in the study of symbolic logic, and sought thereby to reinvigorate the subject in France, and to promote interaction between philosophy and science.

The seventh chapter, by Rosanna Tazzioli, looks to the influence and reception in France of Tullio Levi-Civita's work in applied mathematics; his interactions with Henri Villat receive particular attention, as does his rigorous approach to the subject (i.e., not relying on physical evidence). Some comments appear here on the interaction of Italian mathematicians with the fascist regime, a theme that is picked up again in the eighth and final chapter, by Annalisa Capristo, on (French mathematicians and) the 1928 International Congress of Mathematicians in Bologna. This was the first ICM since before the First World War at which all nations were represented, and the French participants were sharply divided into those who did and did not favour the readmission of German mathematicians. The chapter considers the correspondence of the local organizer Salvatore Pincherle with members of both parties, and his efforts to avoid a French boycott of the congress.

Unfortunately, the book's presentation leaves something to be desired: there are quite a few typos, for example, that should have been picked up by careful proof-reading; some of the cross-references are rather clumsy, and there are also some very awkward page-breaks. Moreover, the book is not as easy to navigate as it might have been, since it lacks a subject index (although it does have a name index).

Complaints about presentation aside, however, the content of the book is fascinating, and covers ground that has not been dealt with in any great detail elsewhere (or at least not in English). The range of topics dealt with, from applied mathematics to mathematical logic, provides what feels like a comprehensive view of the interaction between the two mathematical communities in question. Moreover, the focus on individuals, and the extensive use of their correspondence, serves to bring this interaction to life. As in any such collection of essays, the quality of writing varies from chapter to chapter, but the contributions to the book complement each other nicely, with the result that a well-rounded picture emerges of the links between two significant sections of the European mathematical community in the later years of the nineteenth century, and the early part of the twentieth.