

## Book review

### SIXXI – Storia dell'Ingegneria Strutturale in Italia [The History of Structural Engineering in Italy]

Tullia Iori and Sergio Poretti (eds), Gangemi Editore, Rome, Italy, Volume 1, 2014, ISBN 978-88-492-2830-4, €25 paperback; €20 e-book, 159 pp; Volume 2, 2015, ISBN 978-88-492-3036-9, €25 paperback; €20 e-book, 159 pp.

These books are the first two volumes of a series of at least five that will form the published output of a major research project at Rome's Tor Vergata University. The aim of the project is not simply to record Italy's structural engineering history in the twentieth century but, first, to discover and create this history, for history does not exist until someone writes it down. The research has entailed a thorough search through the technical press as well as the archives of firms, institutes and local planning authorities. This has revealed a remarkable wealth of material, not only about well-known engineers such as Nervi and Morandi, and projects such as the rebuilding of bridges after the Second World War, but also about many forgotten achievements.

Each volume has the same distinct sections – an introductory essay is followed by a series of photogenic images of structural icons, and then a number of papers reporting the outcome of specific investigations. Each book ends with two *fotoromanza* – stories in pictures – and a six-page summary of the book in English. Neither the content of the books nor, indeed, the research project as a whole, was planned in detail at the outset; nor is the story simply chronological. The major themes addressed in the research papers have emerged as a result of the research that began in 2013.

The ten main themes reported in these two volumes include: Italy's contribution to developing structural theory in the late-nineteenth century (Manabrea, Castigliano), which established the base from which Italian twentieth-century engineering was able to spring; the tubular-steel centering system for bridges developed by Ferdinando Innocenti; the Italian cement industry; the Experimental Institute for Models and Structures

(ISMES) founded by Arturo Danusso; the 'Italian style' skyscrapers of the 1950s and '60s; the moveable formwork systems for bridge construction developed by Silvano Zorzi; the impact of Luigi Cremona's work on graphical statics in the late-nineteenth century on iron and steel structures; the ingenious slender bridges of Eugenio Miozzi; the role of reinforced concrete in creating Italy's 'empire' in pre-war Africa; and finally, the impact of electronic computation on structural design.

Three of the four photo-stories are devoted to bridges: the diffusion of iron bridges in Italy during the nineteenth century; the early days of reinforced-concrete bridge construction from 1890 to 1935; the massive bridge rebuilding programme in the decade following the end of the Second World War. The remaining story focuses on the decade between 1935 and 1945, during which there was a remarkable spirit of independent experimentation with structures deriving their effectiveness from their three-dimensional form leading, for example, to the extraordinary structures of Nervi (including his boats made of ferrocement), and early hyperbolic paraboloids.

The result (so far) of this unique research project is, at the very least, a superb collection of photographs, many of which were previously unknown. In particular, they document the construction processes for types of construction long-since forgotten and this alone will help engineers faced with assessing many types of existing structure. The large number of photographs make these books very accessible, even to readers who do not know Italian. The content of the books does have a slight bias towards bridges, which partly reflects the passions of the two principal investigators Sergio Poretti and Tullia Iori, but mainly indicates the great prominence that bridges have, even today, in such a mountainous country.

Apart from the technical information contained in the books, their net effect is to present clear evidence of Italy's outstanding civil engineering legacy from the twentieth century and to create a strong sense of the country's engineering heritage. Likewise they cannot fail to inspire new generations of young engineers by showing what their recent ancestors achieved.

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