

the latter is dependent on the former is open to dispute; e.g., some differences could be the result of diet. But again it gets complicated. Discussing race, Jackson claims, 'To portray the debate as merely between the constructivist (race is simply ideological) versus the essentialist (race is genetic) is too simplistic to represent accurately the debate's complexity' (p. 155).

The author's BA with Honors is from Cornell where he studied German literature plus molecular and cell biology. He followed this with a PhD in the history of science at Cambridge. The book has a glossary for those who might not be too sure of some of the many technicalities (do you know what chemokines are or epitopes?).

In short, it is not an easy read but worth the effort if you wish to read about the real world with all its contingencies and uncertainties.

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Wolfgang König. *Der Gelehrte und der Manager – Franz Reuleaux und Alois Riedler*. Stuttgart: Franz Steiner Verlag, 2014. Pp. 334. €59.00.

In his book 'The Savant and the Entrepreneur', Wolfgang König vividly describes the lives of two eminent historical figures of German mechanical engineering: Franz Reuleaux (1829–1905) and Alois Riedler (1850–1936). Reuleaux is best known for his declaration that the German products shown at the world fair in Philadelphia (1876) were 'cheap and nasty'. He was also author of 'Theoretische Kinematik' (*Theoretic Kinematics*, 1875), a much discussed theory of mechanical engineering. Riedler was a leading figure in the so called 'Technikerbewegung' (engineers' movement). He played a prominent role in the German polytechnic institute's fight to obtain the right to award doctorates, which was eventually granted in 1899/1900. The two men also stand for two distinct directions in the development of engineering sciences during the second half of the nineteenth and the early twentieth century: the scientification of engineering, a position Franz Reuleaux proclaimed; and the practical orientation of engineering, a standpoint for which Alois Riedler argued. Through the telling of the stories of these two engineering professors, König informs the reader about the history of engineering sciences, the advance of polytechnic institutes into technical universities, the emancipation of the engineering profession and some general developments of mechanical engineering between 1850 and 1930. König admits that writing two entangled biographies does come with some redundancies. Furthermore, readers acquainted with his earlier publications about the two professors will find some familiar thoughts and details. The book is based on an impressive abundance of archival sources, but the many cross references

between chapters make it sometimes tedious to find a particular source.

Chapter one provides the reader with basic biographical information about the two engineers; the next chapter looks at their political and societal activities, such as Reuleaux's involvement in German colonial affairs and Riedler's contributions to (higher) education policy. Chapter three focuses on Riedler's role in the 'engineers' movement' and his struggle for the societal recognition of the engineering profession. The next and main chapter of the book, describes the two men's reflections on technology and engineering sciences. In his theoretical work, Reuleaux developed a set of basic engineering terms and a symbolic language; his aim was to identify basic laws of technology that would finally help to formulate a theory of invention. In contrast, Riedler was sceptic of the scientification of engineering; for him technology was ground in experimental, practical knowledge, and he argued for the establishment of large engineering laboratories at the polytechnic institutes. In chapter five, König characterises Reuleaux as civil servant and Riedler as academic entrepreneur. The latter had a large private drawing office that he also used for his academic activities. Under the title 'The more danger, the more honour', the final chapter shows both professors as notorious 'brawlers' involved in many (academic) fights with engineering colleagues and industrialists. In his brief summary, König emphasises the crucial role Reuleaux and Riedler both played in the emancipation of technology and engineering science. Despite their achievements, however, both are almost forgotten.

In sum, König has written an important book about the academic and scientific development of German mechanical engineering between 1850 and 1930 as seen through the lens of two important but historically neglected protagonists. However, the biographical narratives sometimes tend to give individual psychological explanations for certain developments that could better be traced in the habitual dispositions of engineering professors. For example, many of Reuleaux and Riedler's colleagues also enjoyed public academic battles. These fights were typical occurrences of a chauvinistic society, in which professional honour was highly valued; and, furthermore, these struggles were a necessary and integral part of the emancipation of the field of engineering sciences around 1900.

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Victor Margolin. *World History of Design: Two-volume set*. London: Bloomsbury, 2015. Pp. 592 and pp. 948; illus. 880 B/W; 120 colour. £395.00.

Victor Margolin's *World History of Design* is a highly ambitious and complex work; it is, indeed, difficult to do it justice in a short review. The set of two