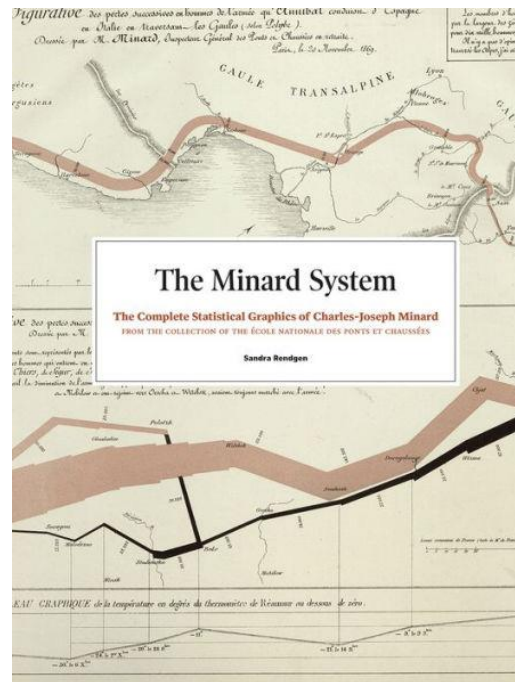


Sandra Rendgen
 The Minard System:
 The Complete Statistical
 Graphics of Charles-Joseph
 Minard

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Sandra Rendgen's *The Minard System* is a high-quality, beautifully illustrated A4 format hardback. This is an appropriate medium for the subject matter, namely the works of Charles-Joseph Minard, the nineteenth-century French civil engineer best known for his infographic and cartographical work. Rendgen's stated aim is to explore this oeuvre as a system for displaying information, and to familiarise the public with Minard's full catalogue.

Rendgen resoundingly achieves the second aim by reproducing, in high resolution, the 61 known statistical maps and diagrams he created, as well as a list of twelve more technical drawings. The catalogue is well annotated and arranged diachronically, effectively reading like a cartographical biography. Up to a point, that is. Very little is known of Minard's cartographic output during his long career with the French transport infrastructure agency *Corps des ponts et chaussées*, as almost all of his known maps were produced after he retired. Rendgen is, of course, restricted by available material, and she does sketch out his background, contemporary reception and legacy in an introductory chapter. What is clear is that Minard's career prepared him well for developing visualization methods for large spatiotemporal datasets. It also provided him with extensive training in drafting, planning and constructing infrastructural features.

A tour of Minard's catalogue takes the reader through early temporal histograms, to dense weighted networks of transported goods and people, to yearly comparative flow maps of, for instance, mineral fuels transported to France in the 1850s, goods transported in the country in the same period, and European cotton imports before and during the American Civil War. The reader sees him develop methods of displaying quantitative information, such as proportional pie charts and squares, and various ways of indicating magnitude by the thickness and tint of the line. Minard's catalogue shows a man first looking inward to the French infrastructure he knew so well, and later outward, interpreting world events through his unique method of mapping.

The catalogue – and to be clear, most of the volume is dedicated to it – shows Minard's abilities to arrange complex information in a visually cohesive and legible manner. But as

Rendgen points out, in spite of his cartographic abilities, Minard often chose to de-emphasise topographic exactness in favour of visual clarity. Rendgen (p. 25) describes Minard's treatment of cartography as an 'auxiliary canvas', or backdrop to the drama of statistical storytelling. This has made him a controversial figure in cartographical circles, but his decision to escape the tyranny of precise geographical position greatly contributes to the continuing relevance of Minard's work to contemporary spatial visualization.

Rendgen's *The Minard System* is a thoughtful, beautifully produced book, and a fitting encomium to a pioneer of non-Euclidean cartography. It is a highly accessible portal into Minard's oeuvre which is equally likely to appeal to cartographic professionals and the wider public.