

# Robustness: Where are we now? <sup>1</sup>

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*Abstract:* The development of selected robustness concepts since their inception in the 1960's is sketched and their current status is reviewed.

*Key words:* Linear models, estimation, design, regression.

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*He looked into the water and saw that it was made up of a thousand thousand thousand and one different currents, each one a different colour, weaving in and out of one another like a liquid tapestry of breathtaking complexity; and Iff explained that these were the Streams of Story, that each coloured strand represented and contained a single tale.*

(Salman Rushdie, *Haroun and the Sea of Stories*, 1990)

## 1 The first ten years

A good case can be made that modern robustness begins in 1960, with the papers by J.W. Tukey on sampling from contaminated distributions, and by F.J. Anscombe on the rejection of outliers. Tukey's paper drew attention to the dramatic effects of seemingly negligible deviations from the model, and it made effective use of asymptotics in combination with the gross error model. Anscombe introduced a seminal insurance idea: sacrifice some performance at the model in order to insure against ill effects caused by deviations from it. Most of the basic ideas, concepts and methods of robustness were invented in quick succession during the following years and

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