The Unpredictable Deviousness of Models

Franco P. Preparata

Department of Computer Science, Brown University
franco@cs.brown.edu

The definition of computation models is central to algorithmic research. A model is designed to capture the essential features of the technology considered, dispensing with irrelevant and burdensome details. In other words, it is a judicious compromise between simplicity, for the ease of analysis, and fidelity (or reflectivity), for the value of the derived predictions. The achievement of this double objective has unleashed an enormous amount of valuable algorithmic research over the years.

However, the pursuit of simplicity may filter out details, once deemed irrelevant, which may later reassert their significance either under technological pressure or under more careful scrutiny. In such instances, the results may be invalidated by the inadequacy of the model, Examples of this situation, drawn from computational geometry, parallel computation, and computational biology, will be reviewed and examined in detail.

D.Z. Chen and D.T. Lee (Eds.): COCOON 2006, LNCS 4112, p. 1, 2006.
© Springer-Verlag Berlin Heidelberg 2006