Parameters, Probabilities and Progress

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7 July 2014

Abstract

In the search for good GFD approximations, parameters are tortured willy-nilly, even into the small π regime. The aim of parameter selection is less clear in applied context of model improvement or of forecasting in support of decision making. In the perfect model scenario, there exists for each parameter a True value and the aim is one of parameter estimation. It is argued in actual simulation problems, the task is one of parameter selection; parameter estimation is ill-posed here in that the challenge is one of indeterminacy not uncertainty. It is argued that (structural) model inadequacy weakens the role of the probability calculus (and thus Bayesian methods) in a manner reminiscent to that in which nonlinearity discredited root-mean-square statistical evaluation.

It is argued that odds equivalent to model-based probabilities are not sustainable outside the perfect model scenario: that the house may be driven bankrupt unless it breaks the modern symmetry between odds and probabilities, allowing implied probabilities to sum to more than one. Yet our forecasting models are show to contain valuable information even with current parameter values. The questions posed search for guidance on how to proceed rationally with model development and evaluation, and either to identify a more quantitative goal for model improvement beyond "making better decisions with them than without them" or to embrace this goal and let go of irrelevant bells and whistles applicable in the perfect model scenario.