

**Excursion 2 Tour I: Induction and Confirmation** (*Statistical Inference as Severe Testing: How to Get Beyond the Statistics Wars*)

*Tour Blurp.* The roots of rival statistical accounts go back to the logical Problem of Induction. (2.1) The logical problem of induction is a matter of finding an argument to justify a type of argument (enumerative induction), so it is important to be clear on arguments, their soundness versus their validity. These are key concepts of fundamental importance to our journey. Given that any attempt to solve the logical problem of induction leads to circularity, philosophers turned instead to building logics that seemed to capture our intuitions about induction. This led to confirmation theory and some projects in today's formal epistemology. There's an analogy between contrasting views in philosophy and statistics: Carnapian confirmation is to Bayesian statistics, as Popperian falsification is to frequentist error statistics. Logics of confirmation take the form of probabilisms, either in the form of raising the probability of a hypothesis, or arriving at a posterior probability. (2.2) The contrast between these types of probabilisms, and the problems each is found to have in confirmation theory are directly relevant to the types of probabilisms in statistics. Notably, Harold Jeffreys' non-subjective Bayesianism, and current spin-offs, share features with Carnapian inductive logics. We examine the problem of irrelevant conjunctions: that if  $x$  confirms  $H$ , it confirms  $(H \& J)$  for any  $J$ . This also leads to what's called the tacking paradox.

**Excursion 2 Tour 1 concepts:** the *asymmetry of induction and falsification*; argument, sound and valid; enumerative induction (straight rule); problem of induction; confirmation theory (and formal epistemology); statistical affirming the consequent; guide to life; paradox of irrelevant conjunction, tacking paradox; Likelihood ratio [LR] between  $H$  and  $\sim H$ ; the concept "entails severely", Bayes-Boost (B-boost), absolute vs incremental confirmation; Fisher and Peirce on the faulty analogy between deduction and induction; Likelihood Ratio [LR]