Scientific Creativity as a Combinatorial Process: The Chance Baseline – *Dean Keith Simonton (Psychology), University of California*

According to Ockam's Razor, or the Law of Parsimony, the simpler theory should be preferred over the more complex theory when they are otherwise equal. It is argued that combinatorial models offer the simplest explanation for the key phenomena that characterize scientific creativity. In particular, such models can account for the central features of scientific careers and scientific communities. In the case of careers, the models account for individual differences in productive output, longitudinal changes in that output as contingent on disciplinary characteristics, and the probabilistic relation between quantity and quality of output. In the case of communities, the models explain the phenomenon of multiple discovery and invention, including the distribution of multiple grades and temporal separation and individual differences in multiple participation. The models are then integrated with empirical research regarding creative scientists, research programs, professional activities, research collaborations, peer review, and individual-field-domain effects. These successful explanatory applications suggest that combinatorial models provide the baseline for comparing theoretical explanations that presume that scientific creativity requires something more than chance, such as genius, logic, or zeitgeist.