Introduction to this Special Issue on Stochastic and Cognitive Models of Confidence

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This current issue of six articles and two commentaries is based on a symposium entitled 'Overconfidence: Sources, Implications, and Solutions' that three of us (Budescu, Erev, and Wallsten) organized at the conference on Subjective Probability, Utility and Decision Making (SPUDM-15) that took place in Jerusalem in August 1995. Although based on the presentations, all submissions for this special issue underwent the standard full process of independent peer review.

To understand the symposium and these papers in the context of the recent judgment literature, it is instructive to start by distinguishing two related but distinct goals of judgment research. One goal, which has been pursued for much of the past 30 years, is to understand the relationship between human judgment and the rational prescriptions of Savage's subjective expected utility theory and the principles of Bayesian inference (Rapoport and Wallsten, 1972). The highly influential research program initiated by Tversky, Kahneman, and their students in the early 1970s has focused on this 'rationality goal'. This line of research has generated an impressive list of empirical regularities that systematically violate certain predictions and corollaries of classic probability and utility theory. Because of their nature, some of these phenomena have been labeled biases, and a variety of simple judgmental heuristics that can explain these puzzling violations of rationality have been proposed in the literature (see the reader edited by Kahneman, Tversky, and Slovic, 1982, for a collection of seminal papers). Few research programs in recent memory have been as successful and influential as the 'biases and heuristics' paradigm. (See, for example, Hogarth, 1987, for a list and a classification of the documented cognitive biases.)

A second goal, of more recent origin, is to improve our understanding of judgment processes *per se*. Although this 'process goal' might, in principle, be achieved as a by-product of achieving the rationality goal, many researchers now believe that this is unlikely to be the case. This belief is based on the observations that the differences between human and Bayesian judgments are neither minor (Kahneman *et al.*, 1982) nor consistent (Gigerenzer, 1996; Kahneman and Tversky, 1996). In addition, in many natural settings the Bayesian prescriptions are unclear (e.g. Gilat *et al.*, 1997).

As suggested by its title, the SPUDM symposium focused on one particular judgment phenomenon — overconfidence, the apparant tendency of people to believe their judgments are better than they really are. Early research on this form of 'miscalibration' (cf. Lichtenstein, Fischhoff, and Phillips, 1982) sought to establish the existence and boundary conditions for overconfidence, which is indeed sometimes supplanted by *under*confidence. But more recent work has focused on describing and understanding the underlying mechanisms. Consider, for example, the review by McClelland and Bolger (1994), which lists six different proposed models: the stage model (Koriat, Lichtenstein, and Fischhoff, 1980), the detection model (e.g. Ferrell and McGoey, 1980), the process model (May, 1986), the memory trace model (Albert and Sponsler, 1989), the 'strength and weight model' (Griffin and Tversky, 1992), and a variety of ecological models (e.g. Gigerenzer, Hoffrage, and Kleinbölting, 1991;

Juslin, 1994). To complete this list, we would add stochastic models of judgment (Erev, Wallsten, and Budescu, 1994; Wallsten and Gonzáles-Vallejo, 1994; Pfeifer, 1994). Evidently, not all these models are equally general, nor are they completely distinct. (In fact, there is considerable commonality to some of them, although that is sometimes obscured because of the distinct terminology used in describing them.)

The SPUDM symposium was organized to present a sample of current research efforts in a variety of the model classes noted above. The hope was that this would stimulate even greater attention to the issues as well as careful scrutiny of those particular efforts themselves. The organizers also hoped that the symposium would encourage comparisons among the models and syntheses where appropriate. The overarching goal was to inspire at least some acceleration in progress toward a deeper understanding of overconfidence and, more importantly, the fundamental judgment processes that give rise to it as well as other phenomena. These aspirations are preserved in this special journal issue.

The notion that people are typically overconfident has dominated the literature for the last 20 years (e.g. McClelland & Bolger, 1994), and the papers in this special issue focus primarily on the sources, determinants, and implications of instances of such overconfidence.

Three of the papers highlight stochastic components of judgment: Budescu, Erev, and Wallsten extend to the most common experimental paradigm (the so-called 'choice, half-scale' procedure) the findings of Erev, Wallsten, and Budescu (1994), who demonstrated that adding a random component to a very weak model of judgment provides a sufficient explanation for a variety of calibration phenomena. Budescu, Wallsten, and Au show that, within the framework of Wallsten and González-Vallejo's (1994) stochastic judgment model, the assumption of random error alone does not account for the degree of overconfidence that is observed in actual judgments. Juslin, Olsson, and Björkman review a large number of studies from the perspective of ecological models and demonstrate that the addition of both judgment error and response error substantially improves these models' ability to account for data.

Two of the papers examine confidence judgment tasks that, superficially at least, are quite different in character from those presumed in the previous papers. Those articles also offer qualitatively different accounts. Yaniv and Schul consider the 'complementary' tasks of (at some presumed level of confidence) excluding incorrect options and including correct ones from some initial set. They observe and propose an explanation for the fact that such inclusion and exclusion judgments do not 'add up' the way they 'should'. Koehler and Harvey consider the not-uncommon circumstance whereby one person takes actions and expresses some degree of confidence in the adequacy of those actions, while another simply observes and makes his or her own (normally covert) confidence assessments. They attempt to explain how and why such confidence assessments differ.

Finally, Wallsten, Budescu, Erev, and Diederich provide a broad discussion of criteria for evaluating subjective probability estimates, including confidence judgments. They also present a framework, along with data, for determining the consequences of combining multiple estimates. (Consider, for example, the question of how we should expect the accuracy of the aggregated confidence judgments of a group to compare to the accuracy of its constituent members' individual judgments.) The framework takes into account the underlying structure of the information base and assumes a simple, stochastic cognitive model of judgment. And it yields predictions that are likely to surprise many.

We asked Gideon Keren and also Peter Ayton and Alastair McClelland to apply a critical and integrative eye to the contributions of the other authors in this special issue. Their respective commentaries do indeed identify important common threads and raise a host of questions that must be addressed if we are to achieve further progress in our understanding of judgment processes and their manifestations.

NOTES

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2. Readers should be aware that JBDM manuscripts authored or co-authored by JBDM special issue editors undergo the normal JBDM review process and that decisions about such manuscripts are made by the editor or associate editor of the Journal, not the special issue editors themselves.

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