From the Editors

Group Decisions, Preference Elicitation, Experienced Utility, Survival Probabilities, and Portfolio Value of Information

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This "From the Editors" column is co-authored by Editor-in-Chief Rakesh K. Sarin and former Editor-in-Chief L. Robin Keller. Our first article, by Ralph L. Keeney, presents "Foundations for Group Decision Analysis." The second article is "Toward an Improved Methodology to Construct and Reconcile Decision Analytic Preference Judgments" by Richard M. Anderson and Robert Clemen. Next, Manel Baucells and Rakesh K. Sarin discuss "Determinants of Experienced Utility: Laws and Implications." The fourth paper, "Estimating Second Order Probability Beliefs from Subjective Survival Data," is by Péter Hudomiet and Robert J. Willis. The final paper, by Kun Zan and J. Eric Bickel, is on "Components of Portfolio Value of Information."

Key words: decision analysis, behavioral decision making, biases, craving, environment, epistemic probability beliefs, expected utility, experienced utility, group decision analysis, group decisions, habit formation, multiattribute value theory, portfolio decision analysis, projection bias, satiation, subjective expectations, survival, time and budget allocation, value of information, variety seeking, editorial

I shall be telling this with a sigh somewhere ages and ages hence; two roads diverged in a wood, and I, I took the one less traveled by, and that has made all the difference.   Robert Frost, poet

This "From the Editors" column is co-authored by Editor-in-Chief Rakesh K. Sarin and former Editor-in-Chief L. Robin Keller, because the papers were all submitted before this year and were thus accepted by Keller.

The first article, by Ralph L. Keeney, "Foundations for Group Decision Analysis," develops a general group decision analysis model. In this paper the author extends the logic of Pratt, Raiffa, and Schlaifer (1964), developed for individual decisions, to group decisions. The focus of the paper is to provide prescriptive guidance in settings where a committee or a group is collectively responsible for the decision. The key feature that separates this paper from a voluminous literature in group decisions is that individuals in the group are permitted to have both different objectives and different events and therefore different frames for the same decision problem. Using a set of decision analysis assumptions for the

group decision, it is shown that the group expected utility is the weighted sum of individual expected utilities. The model presented in the paper is consistent with the "additive collective choice rule" used by Dyer and Miles (1976) for selecting the trajectory pair for NASA's Mariner Jupiter/Saturn 1977 project.

Group decisions are made every day in a myriad of contexts in both private and public organizations. The result of this paper will encourage a prescriptive decision analysis approach to group decisions resulting in more thoughtful decisions. Prior *Decision Analysis* papers on group decisions include Bordley (2009), Dias and Sarabando (2012), Ewing and Baker (2009), Rios and Rios (2009), and Schilling et al. (2007).

The second article in this issue, "Toward an Improved Methodology to Construct and Reconcile Decision Analytic Preference Judgments" by Richard M. Anderson and Robert Clemen, provides a process for eliciting preferences that reduces or eliminates biases. A vast amount of behavioral research has demonstrated that tradeoffs and preferences are highly volatile and depend on the framing of the decision problem and on the elicitation method. This is highly

problematic for decision analysis, which assumes a reasonably stable and consistent set of preferences. If revealed preferences depend on the questions asked, then which questions and therefore which preferences are the right ones to use in the prescriptive analysis? The authors recognize that people are learning about their preferences during elicitation and therefore the decision analytic technique should facilitate this process. They propose and demonstrate a three-step process of training, practice, and application to elicit decision weights and find that the resulting weights seem to be bias free.

Because of observed biases in preference assessments, researchers have proposed equal weighting or other simple rules. These simplifications, though appropriate in some contexts, produce clearly suboptimal results. This paper gives the decision analysis community the hope that, for important decisions, one can use the prescriptive approach and elicit inputs required by the model in a reliable way. Other papers in *Decision Analysis* that deal with preference elicitation are Gregory et al. (2005) and Jacobi and Hobbs (2007).

Our third article is by Manel Baucells and Rakesh K. Sarin on "Determinants of Experienced Utility: Laws and Implications." The key premise of this paper is that our choices today influence our satisfaction in the future. It is, however, far from clear what the choices are that will improve life satisfaction or well-being (experienced utility). This paper advocates six laws that determine experienced utility. These laws capture habit formation and satiation. The implications of these laws such as wanting versus liking, crescendo, recharge periods, variety seeking, and craving are explored. These laws explain the puzzle that more money, beyond the amount needed for basic needs, does not improve well-being. Further, the sixth law, projection bias, gives the paradoxical result that higher income may lead to lower well-being because of incorrect predictions.

A prior paper in *Decision Analysis* surveying risk-taking behavior in real-world decisions is Baucells and Rata (2006).

The fourth paper, "Estimating Second Order Probability Beliefs from Subjective Survival Data," by Péter Hudomiet and Robert J. Willis, uses an econometric model to estimate personal longevity. The estimation of personal longevity or the probability of living for the next 10–20 years is important in financial as well as personal life planning. The current method used by the Health and Retirement Study asks: "What is the percent chance that you will live to be [TARGET AGE] or more?" This method produces a biased response with a large number of responses heaped on values of "0," "50," or "100." The authors' model provides a better estimate of probability of survival. Based on a sample of about 13,000 people, the authors show that people place too much weight on parents' age at death in forming expectations about their own longevity but underweight factors such as health behavior.

Other papers in *Decision Analysis* that deal with probabilities of survival are Foschi and Spizzichino (2012) and Zimper (2011). A key feature of Hudomiet and Willis (2013) is to treat probability as being ambiguous, i.e., a person has second order probability beliefs. In subjective expected utility theory a rational person should simply take the mean of the second order distribution and treat it as the personal probability. In a direct elicitation of the mean probability, however, the authors correctly note that people provide a biased response. Their modal response model overcomes the shortcoming of the mean model and provides a better fit with the data.

Papers dealing with ambiguity that have appeared in *Decision Analysis* are Paté-Cornell and Dillon (2006), Baillon (2008), and Ni et al. (2013).

Our final paper, by Kun Zan and J. Eric Bickel, on "Components of Portfolio Value of Information," deals with portfolio decision analysis. The results of this paper are useful in shaping corporate strategy. The central problem in portfolio decision analysis is the selection of an optimal portfolio of projects under a budget constraint. The decision maker could maximize expected net present value (NPV) of the portfolio subject to the budget constraint. The decision maker could also obtain additional information about the NPV of each project. This information is used to update the probability distribution of project NPV. With the aid of the information, hopefully, the decision maker obtains a higher expected NPV of the portfolio. The portfolio value of information is simply

the incremental expected NPV of the portfolio with information over that without information. The key contribution of this paper is to dissect the portfolio value of information into two parts: value of information that comes from better prioritization of projects and from ability to exclude projects that do not meet a performance threshold. Other papers in *Decision Analysis* that relate to this work are Bickel (2006, 2008), Delquié (2008), and Keisler (2004).

The five papers in this issue all seek to improve the reach of decision analysis. Decision analysis for individual decision making has been quite successful in improving decisions in a wide variety of contexts. Formal procedures for group decision making either make too simplistic assumptions or provide negative results, e.g., the famed Arrow Impossibility Theorem. The first paper, Keeney (2013), provides a foundation for group decision analysis in a general setting requiring very few assumptions of coherence among individuals. Individuals need only follow some rationality requirements for themselves and for the group but are free to choose their own objectives and events of interest. Hopefully organizations will follow the process for group decision making outlined in this paper.

Decision analysis has been challenged by behavioral findings that preferences are not stable and are in fact constructed during the elicitation process. Anderson and Clemen (2013) rise to the challenge of Tversky, Sattath, and Slovic (1988) and rather than fight with their assertion of unstable preferences, use it to their advantage by developing a method that capitalizes on the process of preference construction. The net result is the reduction or the elimination of bias in preference weights.

Socrates and Aristotle regarded that all subordinate goals—including health, wealth, and virtue—are sought because of the human desire to be happy. Data show that happy people tend to be more productive, healthier, and have better social relationships. Baucells and Sarin (2013) lay out six laws of experienced utility that explain how happiness works and why it is so often elusive. One implication of these laws is that without proactive choice, life imbalance may occur, resulting in reduced life satisfaction.

In western countries, most notably the United States, the key risk for retirees is the longevity risk. Mortality tables provide average risks and are not

adapted to an individual's background and health conditions. People are notoriously poor in estimating probability of surviving 10 or 20 years as they overweigh genetic factors and underweigh the behavioral (diet and health habits) factors. Hudomiet and Willis (2013) use an econometric model to provide insights into the determinants of individual-level uncertainty about personal longevity.

Finally, Zan and Bickel (2013) develop a tool for assessing portfolio value of information. To be useful in practice, they break the value of information into two parts: the incremental value that comes from a better prioritization of projects and the incremental value that comes from ability to exclude projects that are below some threshold.

Without good decision processes people and organizations follow "Parkinson's Law of Triviality" and devote too much time on trivial decisions and too little on decisions of strategic importance. The five papers in this issue all aim to improve decision making for important classes of decision problems.

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