

# Decision Analysis Today



Vol. 30, No. 2, Aug/Sep 2011

The newsletter of the INFORMS Decision Analysis Society

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## Letter from the President



**Vicki Bier**

First, I would like to thank Jun Zhuang and Heather Rosoff for taking over as coeditors of this newsletter. They did a great job on the most recent newsletter, and will undoubtedly continue to do so for several years.

Also, welcome back to Jeff Keisler, who is playing an active role as Vice President/President-elect and chair of the nominating committee.

In other news, Jim Felli and Martin Schilling will be completing their three-year terms on the DAS Council at the Charlotte meeting. They have helped the Society in a number of important ways during their terms, and I greatly appreciate their service. Most importantly, Jim has now served two years as cluster co-chair for the annual national meeting, and helped to put together some great programs. Jeff and his fellow members of the Nominating Committee, Casey Lichtendahl and Patrick Noonan, have selected an excellent slate of nominees for their Council positions. The biographies and statements of the candidates are elsewhere in this newsletter. The candidates are:

Gilberto Montibeller, Management Science Group, London School of Economics

Larry Neal, Manager of Decision Analysis Consulting, Chevron, Inc.

Heather Rosoff, Center for Risk and Economic Analysis of Terrorism Events, University of Southern California

Jay Simon, Defense Resources Management Institute, Naval Post-Graduate School

As you can see, they span a broad range of interests, both academics and practitioners, and both U.S. and international perspectives. You should be receiving an email ballot from the INFORMS office in the next few weeks; therefore, I would encourage you to read the candidates' position statements, and make sure to vote.

The other four members of the Council – Seth Guikema (Johns Hopkins University), Casey Lichtendahl (University of Virginia), Patrick Noonan (Emory University), and Canan Ulu (University of Texas at Austin) – will continue to serve, along with our Vice President (Jeff Keisler), Secretary-Treasurer (John Butler), webmaster (Jason Merrick), and committee chairs. It is a pleasure to work with all of them. I would especially like to thank our Past President (Jim Smith), who has given generously of his time in advising me and the other officers. Those of you who would like to get more involved in DAS should also feel free to contact Jeff or myself to discuss possible opportunities!

I look forward to seeing many of you in beautiful downtown Charlotte. Jim and Canan, as our cluster co-chairs, have put together an excellent sponsored cluster on decision analysis for the INFORMS Annual Conference. It's hard to believe that it's coming up so soon (November 13-16)!

## Letter from the Editor

Hello Everyone,

Thank you, Vicki, for your nice introduction. First, we encourage everyone to vote for the DAS Council positions. Second, we hope everyone had a great summer and enjoys reading this latest issue of DA Today.

Alec Morton, in DA Around the World, introduces us to Gilberto Montibeller, Kaisa Miettinen and Murat Köksalan, who describe the background and activities of the International Society on Multiple Criteria Decision Making. Bill Klimack recounts the latest

conferences and directs us to the valuable upcoming INFORMS Annual Meeting. Guest writer to DA Practice, Dr. Paul Papayoanou provides us with insight on "Decision Analysis and Game Theory: Competition or Complementarity." In Research, Ralph Keeney helps doctoral students in, "Selecting a Dissertation Topic," and L. Robin Keller and Kelly Kophazi briefly detail the September abstracts from the *Decision Analysis Journal*. In the DAS Community Commentary section, Malcolm Bertoni and Kara Morgan inform us about the National Research Council Committee on Decision Making, and Reginald Wilson challenges us in "Fish & Wildlife Concerns in the midst of Electric Generation." The new Executive Director of SDP, Hilda Cherekdjian tells us all about the Society of Decision Professionals. Karen Jenni, in Ask DAS, provides an end of the summer diversion about the field of decision analysis.

With summer coming to an end, conference season is in full gear. We have a listing of twelve upcoming conferences to brighten your mood. We of course want you to pay special attention to the INFORMS Annual Meeting in Charlotte, North Carolina scheduled for November 13 – 16 and hope you will be able to attend the DAS Business Meeting at 6pm on Monday November 14. Also, for Ph.D. students who are presenting in a session in the Decision Analysis Cluster, they can apply for a travel grant to support their travel/registration expenses to the meeting. WE would also like to point out the call for papers and sessions for the 4th KES International Conference on Intelligent Decision Technologies held in Gifu, Japan and also for the Maritime Risk Symposium in November at Rutgers University.

Congratulations to the 2011 Decision Analysis Practice Competition finalists:

Pu Huang, Dharmashankar Subramanian, Himanshu Sekhar, Sanjay Tripathi, Shanchi Zhan (PRIME (Portfolio Resource and Investment Modeling Engine): A Decision Analysis Tool for Risk-Adjusted Budget Allocation within IBM),

John Tindle (Integrated Decision Analysis: Development of Systems Engineering and Integrated Program Analysis Support (SEIPAS)), and

David Matheson (Innovation Portfolio Management Process/ Strategic and Economic Value Analysis of Innovative New Business Ideas).

The 2011 Decision Analysis Practice Competition was chaired by Bob Bordley, with judges Chris Dalton and Jagpreet Chhatwal. The winner will be announced at a special INFORMS session this fall.

Congratulations to the five finalists of the DAS Student Paper Competition, Turgay Ayer, Ryan Buell, Daniel Feiler, Philip Fernbach, and Erick Moreno Centeno, and the winner Ying He (University of Texas at Austin). The winning paper by Ying He is titled "Utility Functions Representing Preference over Interdependent Attributes." The Student Paper Competition was chaired by Léa Deleris and Jun Zhuang.

We would like to congratulate Don Kleinmuntz for the Frank P. Ramsey Medal, Ali Abbas and James Matheson for the Publication Award, Michael Messner for receiving the 2011 Roger Herriot Award for Innovation in Federal Statistics at the American Statistical Association, and Bob Bordley for being elected a Fellow of the American Statistical Association! We would also like to congratulate Howard Raiffa, Frank Plumpton Ramsey Professor of Managerial Economics Emeritus at the Harvard Business and Kennedy Schools, who will be presented the 2011 Career Achievement Award at the Society for Medical Decision Making. In addition, we would like to thank all the award committee chairs and members for their hard work.

Lastly, we are looking for column editors for both the Research and Education Sections of the newsletter. If you would be interested in filling one of these positions, please contact us. Thank you to our readers for your continued comments and support.

-Heather Rosoff, Jun Zhuang, and Elizabeth Newell

## Upcoming Conferences

September 18 - 21, 2011  
40th Annual Conference of the Operations Research Society of South Africa (ORSSA)  
National University of Science and Technology in Bulawayo, Zimbabwe  
<http://www.orssa.org.za/wiki/pmwiki.php?n=Conf.ORSSA2011>

October 11 - 14, 2011

MODSIM World Conference  
Virginia Beach Convention Center  
Virginia Beach, Virginia  
<http://modsimworldconference.com/index.html>

October 22 - 26, 2011  
Society for Medical Decision Making  
33rd Annual Meeting  
"From Evidence to Decision Making: Role of Behavioral Economics in Medicine"  
Chicago, IL  
<http://smdm.org/2011meeting/index.shtml>

November 4 - 7, 2011  
Society for Judgment and Decision Making Annual Conference  
Seattle, Washington  
<http://www.sjdm.org>

November 7 - 9, 2011  
Maritime Risk Symposium  
Rutgers University  
Piscataway, New Jersey  
<http://cait.rutgers.edu/maritime-risk-2011/>

November 13 - 16, 2011  
INFORMS Annual Meeting 2011  
Charlotte, North Carolina  
<http://meetings2.informs.org/charlotte2011/>

November 19 - 22, 2011  
DSI Annual Meeting  
Boston, Massachusetts  
<http://www.decisionsciences.org/Annualmeeting/default.asp>

December 4 - 7, 2011  
Society for Risk Analysis Annual Meeting  
Charleston, South Carolina  
[http://www.sra.org/events\\_2011\\_meeting.php](http://www.sra.org/events_2011_meeting.php)

December 11 - 14, 2011  
2011 Winter Simulation Conference  
Phoenix, AZ  
<http://www.wintersim.org/>

February 8 - 11, 2012  
Operations Research for Surgical Services  
University of Iowa, Carver College of Medicine,  
Department of Anesthesia  
Iowa City, Iowa  
<http://www.anesth.uiowa.edu/portal/>

March 24 - 25, 2012

36th SIAM SEAS Meeting  
 University of Alabama in Huntsville  
 Huntsville, Alabama  
<http://mullai.uah.edu/~ravindra/SEAS2012.html>

May 23 - 25, 2012  
 4th KES International Conference on Intelligent  
 Decision Technologies  
 KES-IDT-2012  
 Gifu, Japan  
<http://idt-12.kesinternational.org>



## DAS Council Elections

### Larry Neal

#### Candidate Statement:



I am very pleased to be presented with the opportunity to put forward my candidacy for the Decision Analysis Society Council. As a long time practitioner and leader of Chevron's DA Community, I have had the good fortune of witnessing decision analysis being applied across the world in a multitude of cultures and situations, from field operations to the executive suite. I believe this rather unique perspective places me in an excellent position to give back to the science and practice of Decision Analysis in a meaningful and significant way through participation in the Decision Analysis Society Council.

If elected, I will work to bring the learnings of these experiences to bear on those issues most important to furthering our profession and realizing the value we all know it can bring when applied properly. My initial focal points would be in the following areas:

- Integration and alignment of research efforts with client needs
- Executive education and championing the value proposition of Decision Analysis
- Creating opportunities for pragmatic application of new and emerging analytical techniques

I call these my initial focal points as I am confident that increasing my contact with such a large body of qualified professionals will open my eyes to new opportunities and options for adding value. Additionally, I believe my experience in the formation of Chevron's global analytic community and development of intellectual property will unveil even more opportunity that I have yet to consider.

Thank you for this opportunity and I look forward to a long and prosperous future for our profession.

#### Biographical Sketch:

My career of nearly 40 years has been spent entirely in the oil and gas industry, 34 years of it with Chevron. I hold a BS degree in Chemistry from California State University, Bakersfield, and a MS degree in Petroleum Engineering from the University of Southern California. I am also a registered Professional Engineer in the State of California.

I am a Fellow and founding member of the Society of Decision Professionals and was recently elected to the Board of Directors. I have also been co-chair of the SDP Certification Council since its inception last year. I am an active member of the Decision Analysis Affinity group, presenting frequently or chairing sessions. I have also been a member of the Society of Petroleum Engineers for over 25 years, publishing occasionally and speaking at events focused on decision making and economic analysis.

I have been affiliated with INFORMS since the early 90's with breaks during work assignments outside the United States. I have most recently participated as a session chair or speaker at the San Diego, Orlando, and Austin meetings as well as a guest attendee at the INFORMS Roundtable. I was part of the Chevron team presented with the DA Practice Award in Austin last year.

Starting out with Chevron as a roustabout in the

oilfields of California, I now manage the Decision Analysis Consulting team in Chevron's Project Resources Company, an internal consultancy overseeing much of Chevron's major capital project portfolio totaling more than \$20 Billion annually. From 1989 through 1992, I lead the team that instituted Chevron's Decision Analysis practices. Currently, as a functional leader in Chevron's large DA Community, I hold several leadership positions including the chair of the DA Steering Committee, charged with the governance of Chevron's analytical standards and processes. I am also the architect of Chevron's proprietary decision analysis software which is used by approximately 1700 Chevron employees across the globe.

My wife Judy and I have been married for 31 years and have two grown children. We reside in Vacaville, California where we pursue our passions for art, fishing, organic gardening, cooking, and the crafts of beer and wine making.

### Jay Simon

#### Candidate Statement:



I am honored to be nominated as a candidate for the Decision Analysis Society Council. DAS has been an important part of my professional life since early in graduate school. I have been a regular attendee and presenter, as well as a session chair, in DAS sessions at INFORMS. I have also been reviewing papers for *Decision Analysis* for several years, and I currently serve on the journal's editorial board. If elected, I will work diligently to promote the interests of DAS and its more than 1000 members to the best of my abilities.

I have recently become involved with the DAS website, and I believe that a strong and accessible web presence would substantially increase awareness of our community. If elected, I will strive to expand this presence by providing and seeking further relevant content for the current site, and by establishing a DAS presence on social media and networking sites such as Facebook and LinkedIn. This is particularly important for connecting with the newest generation of professionals in related fields within academia and

industry, who are less likely to have more traditional ties to our society and our field.

As an academic teaching DA concepts to military and civilian defense professionals worldwide, I observe repeatedly the clear benefit these ideas and tools provide to decision makers at all levels of organizations. We are a community particularly adept at bridging the gap between theory and practice. I would like to help ensure that DAS will continue to foster communication and collaboration between academics and practitioners.

#### Biographical Sketch:

Jay Simon is an Assistant Professor at the Defense Resources Management Institute of the Naval Postgraduate School in Monterey, CA. He teaches a wide range of topics in quantitative analysis, decision maker preferences, uncertainty, and risk to military officers (and civilians working in defense) from all over the world. He received his Ph.D. in Operations & Decision Technologies from the University of California, Irvine, and both his M.S. in Management Science & Engineering and his B.S. in Mathematical & Computational Science from Stanford University. His main research focus is multi-attribute preference modeling, particularly involving outcomes which occur over time, space, or groups of people. His current research is related to intertemporal preferences, altruistic utility, and various defense-related topics.

### Heather Rosoff

#### Candidate Statement:



I am honored to be nominated for election to the Council of the Decision Analysis Society. DAS has played a significant role in my career development, and I would love the opportunity to serve the professional community.

As a Policy Analyst by training, I am committed to bridging the gap between theory and practice. DAS has a great record of enabling the exchange of ideas and experiences among those engaged in Decision Analysis. If elected, I would work hard to ensure that such dialogue is both sustained and expanded upon. I believe it is important for community members to share their lessons learned

from research and applied experiences; however equally important is communicating about what is most needed to further the appreciation of the value-added of our field. In addition to encouraging members to take advantage of DAS conference sessions and networking events, I would work with the Council to establish additional forums, both web-based and region specific (e.g. local chapter meetings and/or brownbag presentations), to encourage ongoing communication and discussion of needs and emerging ideas. I believe these sessions would be most successful if some were organized solely for DAS members while others involved collaboration with other INFORMS societies.

If elected, I would also focus on increasing student involvement. As a former student, and now as the co-editor of the Decision Analysis Today newsletter, I have witnessed the move to improve services for student members through travel grants, the student paper award, and the inclusion of columns and announcements for students in the newsletter. I would like to continue these efforts by seeking more active involvement and immersion of students in DAS activities. One idea is for more student involvement in the development of the newsletter. In addition, I would like to establish web-based discussion forums exclusively for students so that they might speak more freely and comfortably about decision analysis topics. Some of these discussion forums would be led by a thought leader in the field to help encourage conversation that is both instructive and structured.

Thank you again for the nomination.

### Biographical Sketch:

I am a postdoctoral researcher at the U.S. Homeland Security Center for Risk and Economic Analysis of Terrorism Events (CREATE). My research focuses on using risk and decision analytic techniques to study the uncertainties surrounding terrorism. I completed my doctoral degree in Public Policy under Detlof von Winterfeldt at the University of Southern California's (USC) School of Policy Planning & Development and master's degree in System's Safety and Security at USC's Viterbi School of Engineering. I am also the co-editor of the Decision Analysis Today newsletter.

## Gilberto Montibeller

### Candidate Statement:



I am thankful for the kind invitation by the DAS nominations committee to be a candidate for the DAS council in the upcoming election. As a relatively recent member of the DA society, I am deeply impressed by its professionalism and efficiency, both in organizing events and in developing its flagship journal, *Decision Analysis*; as well as by the friendly atmosphere of its meetings and the quality of research that its members produce.

However, there are, in my view, some key aspects that the DA Society could develop further and it is in this context that I see my candidacy.

*Further international outreach.* While the society has members from all over the world, I believe it would benefit from a more international outreach. This would not only increase the Society's scope and influence, but also could bring different perspectives and ideas, as well as challenging problems from developed and developing countries to be analyzed with our powerful decision analytic tools. I hope that my background, as a Brazilian-British citizen, working as an academic in London, and as a consultant in Europe and in South America, could help the Society in this context. I also believe that the Society should extend its arms to continents that have been relatively neglected, such as South America and Africa, and would proactively find opportunities for outreach in these continents.

*Enhancing the links with Multi-Criteria Decision Making.* While DA is larger than modeling decisions with multiple objectives, this is an important branch of the field, as the presentations during the INFORMS conferences, and the papers in *Decision Analysis*, show. As an active member of the International Society of Multi-Criteria Decision Making (MCDM), and an area editor (value & utility) of the *Journal of Multi-Criteria Decision Analysis*, I believe that there are many opportunities for cross fertilization of ideas between DA and MCDM. From the DA perspective this would extend the frontiers of research involving decisions with multiple objectives, for instance considering the assessment of continuous alternatives, further researching links between optimization and

evaluation of discrete alternatives, and the modeling of preferences which are not necessarily provided *a priori*. In this sense, I would actively search for chances to enhance the links, and to further exchange ideas, between these two communities.

*Promoting research and applications of facilitated Decision Analysis.* I believe Europe, and Britain in particular, has much to offer to Decision Analysis in terms of better understanding the organizational, social and behavioral aspects involved in DA practice. One of my key research interests is indeed on what we call “facilitated decision analysis”, where the decision analyst works also as a facilitator to the decision making group. There is a wealth of knowledge that could be, I hope, of great use to any member that is interested in using DA in practice - and even to those that are only interested in knowing how DA could be used in practice! Not to mention that this is, in my view, an important research topic for a community who wants its methods to be employed in supporting real-world decision making and to have an impact on organizations. I would do my best to increase the awareness of these issues within the society and to collaborate in efforts for knowledge dissemination and development within this stream of research.

### Biographical Sketch:

Gilberto is tenured Lecturer in Decision Sciences (the British equivalent of an Associate Professor), in the Management Science Group, Department of Management, at the London School of Economics.

With a first degree in Electrical Engineering (UFSC, Brazil, 1993), he started his career as an executive at British and American Tobacco in Brazil. Moving back to the academia, he was awarded a Masters (UFSC, 1996) and a PhD in Production Engineering (UFSC/University of Strathclyde, UK, 2000). He then continued his studies as a Post-Doctoral Fellow in Management Science at the University of Strathclyde (2002-2003).

He is area editor of the *Journal of Multi-Criteria Decision Analysis* and has served as a member of the executive committee of the *International Society of Multi-Criteria Decision Making*. His research, which focuses on the many facets of using Multi-Criteria Decision Analysis to support strategic decision making in a facilitated mode, has been published in journals such as the *European Journal of Operational Research*, *Decision Support Systems* and *OMEGA*.

One of his papers, on the integrated use of multi-criteria analysis and scenario planning, was awarded the Wiley Prize in Applied Decision Analysis.

Gilberto is a regular speaker at LSE Enterprise executive training courses and runs a course on Strategic Decision Making for the LSE Executive Summer School program. He has held visiting positions at the Warwick Business School (UK) and the International Institute for Applied Systems Analysis (IIASA, Austria). He is a visiting associate professor at the University of Sao Paulo (Brazil).

An expert on Multi-Criteria Decision Analysis, he has extensive experience in applying it during the past 15 years, consulting to both private and public organizations in Europe and South America. He is a partner in Decision Consulting Ltd, a niche consultancy focused on providing facilitated decision analysis to support strategic decision making.

## Recognition

### Announcing the Finalists for the 2011 Decision Analysis Practice Competition

There were many exceptional nominations for the decision analysis practice award in 2011. These nominations represented the best work of the practitioner community and were both innovative and had substantial practice impact. From these many excellent nominations, the practice committee selected the following three finalists. The three finalists, the best of the best, are:

#### **PRIME (Portfolio Resource and Investment Modeling Engine): A Decision Analysis Tool for Risk-Adjusted Budget Allocation within IBM:**

Pu Huang, Dharmashankar Subramanian, Himanshu Sekhar, Sanjay Tripathi, Shanchi Zhan, IBM

#### **Integrated Decision Analysis: Development of Systems Engineering and Integrated Program Analysis Support (SEIPAS).** John Tindle, TASC (The Analytic Services Corporation)

#### **Innovation Portfolio Management**



**Process/ Strategic and Economic Value Analysis of Innovative New Business Ideas.** David Matheson, SMARTORG

In the grand tradition of the Olympics, these finalists will present their work at a special INFORMS session. At the decision analysis awards session, the winner of the competition will be announced and both runner-ups will be recognized.

All members are encouraged to view this competition.

On behalf of the Decision Analysis Practice Competition Committee,

Bob Bordley (Chair) General Motors Corporation;  
Chris Dalton, Syncopation Software, Jagpreet Chhatwal, Univ. Pittsburgh (formerly of Merck)

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### Results of DAS Student Paper Competition

We received 62 valid submissions to the DAS student paper competition this year. The review process was very tough and we were impressed by both the quality and quantity of the submissions. We are pleased to announce the top six finalists (listed alphabetically by last names):

- Turgay Ayer (University of Wisconsin-Madison) "A POMDP Approach To Personalize Mammography Screening Policies"
- Ryan Buell (Harvard University) "The Labor Illusion: How Operational Transparency Increases Perceived Value"
- Daniel Feiler (Duke University) "Biased Judgment in Censored Environments"
- Philip Fernbach (Brown University) "When Good Evidence Goes Bad: The Weak Evidence Effect in Judgment and Decisionmaking"
- Ying He (University of Texas at Austin) "Utility Functions Representing Preference over Interdependent Attributes"
- Erick Moreno Centeno (Texas A&M University) "An Axiomatic Metric for Aggregating Incomplete Rankings"

Our committee of judges reviewed these six papers and we are very pleased to announce **the winner** of the 2011 DAS student paper award is:

**Ying He (University of Texas at Austin) for his paper "Utility Functions Representing Preference over Interdependent Attributes."**

Special thanks to our committee of judges for their review of these papers. The committee consisted of Jagpreet Chhatwal, Albert Mannes, and Canan Ulu. Thanks,

2011 DAS Student Paper Award Committee Co-Chairs:

Léa Deleris  
Research Staff Member and Manager  
IBM Technology Center, Dublin, Ireland  
Email: [lea.deleris@ie.ibm.com](mailto:lea.deleris@ie.ibm.com)

Jun Zhuang  
Assistant Professor in Industrial and Systems Engineering  
University at Buffalo, State University of New York  
Email: [jzhuang@buffalo.edu](mailto:jzhuang@buffalo.edu)

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### Frank P. Ramsey Medal Results

The Frank P. Ramsey Medal was created to recognize distinguished contributions to the field of decision analysis and stands as the highest honor of the Decision Analysis Society.

The 2011 Ramsey Committee of the Decision Analysis Society is pleased to announce that Don Kleinmuntz has been selected as the recipient of the 2011 Ramsey Medal.

Dr. Don N. Kleinmuntz is the President of Strata Decision Technologies and has held academic positions at the University of Texas, MIT and the University of Illinois. The award will be presented at the INFORMS Annual Meeting in Charlotte in November.

The members of the 2011 Ramsey Award Committee were David Bell, Jim Dyer, Ron Howard, Jim Smith, and Detlof von Winterfeldt (chair).

Please join us in congratulating Dr. Kleinmuntz on this award!

-Sent on behalf of 2011 Ramsey Award Committee.

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### **2011 Roger Herriot Award for Innovation in Federal Statistics at the American Statistical Association**

Another occasion to celebrate - Michael (Mike) Messner received the 2011 Roger Herriot Award for Innovation in Federal Statistics at the American Statistical Association last week. The award recognizes him for his "key innovations in introducing Bayesian statistics and hierarchical modeling to inform probabilistic risk analysis for drinking water standards and for his significant contributions to Statipedia for collaboration in Federal statistics." Mike works for the Environmental Protection Agency as a mathematical statistician.

The website for the award (which has not yet been updated to show the 2011 recipient) is at:

<http://www.amstat.org/sections/ssoc/rogerherriot.html>.

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### **Adam Borison, PhD, Joins Navigant's Energy Practice**

**Adam Borison** joined Navigant as a Director based out of the San Francisco, CA office.

Dr. Borison is currently involved primarily in market assessment, investment analysis and risk management in power and fuels. He has twenty-five years of direct and advisory experience at the senior executive level with a particular focus on electric power and oil/gas, and is an internationally-recognized expert in decision analysis, real options, risk management and related methods. Dr. Borison has led a broad range of engagements in investment strategy, M&A, risk management, project planning and evaluation, product R&D, capital allocation, regulatory policy and

litigation/arbitration. His recent work has focused on major capital and fuel issues, ranging from biomass development in Asia to oil field valuation in the Middle East to aging coal plant management in North America.

Before joining Navigant, Dr. Borison worked as a Senior Vice President in the Energy and Infrastructure Practice at NERA. Dr. Borison was previously a Partner with PricewaterhouseCoopers and led the firm's Applied Decision Analysis group. Dr. Borison co-founded Stratelytics, a consulting firm specializing in the application of advanced analytics to strategy, valuation and risk in the energy industry. He also co-founded Agni, a venture-funded India-focused biomass energy company.

Dr. Borison is on the adjunct faculty at Stanford where he co-teaches a graduate project course on Clean Energy Development. Previously, he served on the visiting faculty at U.C. Berkeley and the University of Cambridge. He holds a BS in Biochemistry from Yale, a Masters in Public Policy from Harvard, and a PhD in Management Science & Engineering from Stanford, where his thesis was on electric utility capacity expansion planning under uncertainty.

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### **2011 Career Achievement Award**

Howard Raiffa, Frank Plumpton Ramsey Professor of Managerial Economics Emeritus of the Harvard Kennedy and Business Schools, will be presented the 2011 Career Achievement Award at the Society for Medical Decision Making. The Career Achievement Award recognizes distinguished senior investigators who have made significant contributions to the field of medical decision making.

The 33rd annual meeting of the Society for Medical Decision Making will be held in Chicago on October 22-26, 2011. To get more details, go to [www.smdm.org](http://www.smdm.org).

## Job Postings

Three job listings are included in this edition of the newsletter. Additional postings can be found at: <http://jps.informs.org/> and <http://www.orms-today.org/classifieds/>.

**Enrich Consulting, Inc.** is seeking a **Senior Engagement Manager** who is interested in both quantitative modeling and managing client engagements. Enrich provides R&D portfolio management solutions to the pharmaceutical, energy, and high-tech industries. Our unique blend of enterprise software and consulting uses proprietary modeling tools and methodologies from the fields of decision analysis, economics, and management science. The position will be based in our San Jose, CA headquarters.

### Engagement Managers at Enrich are entrusted with the following responsibilities:

- Lead implementations of the Enrich Portfolio System (EPS) software that evaluate individual R&D initiatives and R&D portfolios:
  - Manage day-to-day responsibilities on client engagements
  - Work closely with clients to understand key business issues and translate them into business and financial models
  - Work with other Enrich personnel to develop and implement comprehensive financial models
  - Direct modeling activities of Enrich personnel to ensure deliverables and schedules are successfully achieved
  - Play a leading role in assisting clients with the development of their portfolio processes and the adoption of decision analytic techniques
  - Develop and summarize insights for communicating to clients
  - Lead training sessions on the EPS and decision analysis
- Contribute to marketing activities, including discussions with potential clients and participation in industry conferences

- Help to develop new approaches to problems and expand applications to new industries

### Qualified candidates have:

- BA, MS, or PhD in Operations Research, Applied Math, Physics, Engineering, Economics or related field  
-OR-  
MBA with a concentration in quantitative business forecasting, decision making, or market analysis
- 5-15 years of work experience in a quantitative position in the management consulting, pharmaceutical, biotechnology, and/or high-technology industries
- Experience creating financial models for R&D valuations and/or R&D portfolio management
- Demonstrated leadership skills in multiple settings and ability to manage many priorities and multi-task
- Willingness to travel up to 25%

Interested candidates should email a cover letter (please note your work authorization) and résumé to [careers@enrichconsulting.com](mailto:careers@enrichconsulting.com). For more details, please see the attached job description or visit [www.enrichconsulting.com](http://www.enrichconsulting.com).



### Post-Doctoral Fellow University of Maryland School of Medicine

#### Position Description:

The Department of Radiation Oncology at the University of Maryland, School of Medicine is recruiting for TWO post-doctoral fellow positions to carry out research in applications of OR techniques in radiation therapy. Good knowledge in at least one of

the listed areas is preferred: solving large-scale problems using exact/heuristic optimization techniques, high-throughput computing environment or GPU, machine learning, image processing and analysis. Candidates for this position must have a Ph.D. in industrial engineering, computer science, mathematics, electrical and computer engineering, medical physics, biomedical engineering, or related field. Successful applicants must be highly motivated and must have strong programming (C/C++ and Matlab) skills.

Interested applicants should mail or send electronically their curriculum vitae to:

Hao Howard Zhang, Ph.D.  
 Department of Radiation Oncology  
 22 South Greene St  
 Baltimore MD 21201  
[hzhan001@umaryland.edu](mailto:hzhan001@umaryland.edu)

**Preferred start date no later than October 1<sup>st</sup>, 2011**

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### **Stanford University**

Department of MANAGEMENT SCIENCE &  
 ENGINEERING

### **Faculty Opening**

We invite applications from individuals working at the frontiers of Management Science & Engineering, broadly defined, including candidates from engineering and the mathematical, medical, physical, and social sciences. Appointments are to tenure-line junior faculty positions at the Assistant or untenured Associate Professor level. Please visit our website for more information about the MS&E Department at <http://www.stanford.edu/dept/MSandE/>.

An earned Ph.D., evidence of the ability to pursue a program of research, and a strong commitment to graduate and undergraduate teaching are required. A successful candidate will be expected to teach courses at the graduate and undergraduate levels and to build and lead a team of graduate students in Ph.D. research.

Applications should include a resume, brief statements of research and teaching interests, and the names and e-mail addresses of at least three referees. Candidates should apply online at:

<http://www.stanford.edu/dept/MSandE/cgi-bin/about/search.php>

Applications will be accepted until January 15, 2012. The review of applications will begin on October 1, 2011. Interviews will begin prior to January 31, 2012. Therefore, applicants are encouraged to apply early.

Stanford University is an equal opportunity employer and is committed to increasing the diversity of its faculty. It welcomes nominations of and applications from women and members of minority groups, as well as others who would bring additional dimensions to the university's research and teaching missions.

## **Travel Fund**

We are happy to announce that Ph.D. students who are presenting in a session in the Decision Analysis Cluster can apply for a travel grant to support their travel/registration expenses to the INFORMS Annual Meeting 2011 in Charlotte, NC. The funds for this grant are provided by the Decision Analysis Society. Qualified students must be:

1. A Ph.D. student.
2. A DAS member (if you are not a DAS member, please consider becoming one – membership is free for students).
3. Presenting in a session in the Decision Analysis cluster at the Inform's Annual Meeting in Charlotte, NC.

Interested students please send an e-mail to Canan Ulu at [canan.ulu@mcombs.utexas.edu](mailto:canan.ulu@mcombs.utexas.edu) or Jim Felli at [jcfelli@lilly.com](mailto:jcfelli@lilly.com).

The total award is \$600 per year and a maximum of 4 students will split that total. Preference will be given to students who are presenting for the first time, have not received a grant in the past, on the job market or

traveling great distances.

## Scholarships

Dear INFORMS Students:

We want to make you aware of a tremendous scholarship-for-service opportunity to fully fund your undergraduate or graduate education. The SMART (Science, Mathematics, and Research for Transformation) Program will pay for all educational expenses for a B.S., M.S. or Ph.D. program in a STEM discipline, and then provide scholars unique opportunities to work as research scientists or engineers on cutting edge technology in world class Department of Defense facilities. A comprehensive list of facilities can be found on the SMART website: <http://smart.asee.org/>

This is a highly competitive, national program, open to U.S. citizens only. The SMART program will pay all educational costs and a stipend while you are in school from as little as one (1) term up to 5 years.

Specifically the program pays for:

- Full Tuition - to any accredited U.S. University
- A very generous stipend while in school ranging from \$25,000 - \$41,000 per year
- Book allowance - \$1,000
- Health insurance contribution
- Paid Summer internships
- Travel fees for internships
- All required student fees

For more information, see our webpage at <http://smart.asee.org/>

The application deadline is December 1, 2011. Thank you for your consideration.

The SMART Scholarship Team  
<mailto:smart@asee.org>  
 (202) 331-3544  
<http://smart.asee.org/>

## Call for Papers and Sessions

4th KES International Conference on Intelligent Decision Technologies  
 May 23 – 25, 2012, Gifu, Japan  
<http://idt-12.kesinternational.org>

We are pleased to invite participation in IDT-2012, an interdisciplinary conference consisting of keynote talks, oral and poster presentations, invited sessions and workshops, on the applications and theory of intelligent decision systems and related areas. It will provide excellent opportunities for the presentation of interesting new research results and discussion about them, leading to knowledge sharing and generation of new ideas.

KES-IDT-2012 will be colocated with the 5th KES International Conference on Intelligent Interactive Multimedia Systems and Services (KES-IIMSS-2012) in Gifu, offering the potential for interaction between the two events.

Gifu, located in the centre of Japan, is a city ideal for international conventions and sightseeing. Gifu City is known for its traditions and rich history, including its 1300-year-old tradition of cormorant fishing on the Nagara River and Gifu Castle.

Papers are invited from prospective authors with interests in the areas of: intelligent decision making, intelligent agents, fuzzy logic, multi-agent systems, artificial neural networks, genetic algorithms, expert systems, intelligent decision making support systems, information retrieval systems, geographic information systems, knowledge management systems, IDT applications and emergent Intelligent Decision Technologies.

All contributions should be of high quality, original and not published elsewhere or submitted for publication during the review period. Papers must be submitted following the instructions available on the web site. All papers will be blind reviewed by an International Committee and, if of a high enough standard, accepted for presentation orally. The conference proceedings will be published by Springer

as book chapters in the Springer-KES Smart Innovation, Systems and Technologies (SIST) book series.

### **Call for Invited Sessions and Workshops**

We invite senior scientists and researchers to organise invited sessions or parallel workshops on specific topics with the field. Please, contact the conference secretariat. We also welcome suggestions for other activities that will appeal to our delegates.

### **Call for Members of the International Program Committee**

An international program committee is currently being formed. The role of the IPC is:

- To promote the conference and bring it to the attention of colleagues and other researchers.
- To help with the paper review process.
- To assist in monitoring overall quality.
- To solicit at least one paper for the conference, authored by a colleague or alternatively, of course, by yourself.

If you wish to apply to be a member of the IPC, please contact us.

### **Dates and Deadlines**

- Proposals for Invited Sessions and Workshops: 31 October 2011
- Submission of Papers: 1 December 2011
- Notification of Acceptance: 1 January 2012
- Upload of Final Publication Files: 1 February 2012

### **Organization**

Toyohide Watanabe, Nagoya University, Japan  
 Junzo Watada, Waseda University, Japan  
 Gloria Phillips-Wren, Loyola University Maryland, USA,  
 Lakhmi Jain, University of South Australia, Australia  
 Bob Howlett, Bournemouth University, UK

Koichi Asakura, Daido University, Japan  
 Tomoko Kojiri, Kansai University, Japan  
 Yuichiro Tateiwa, Nagoya Institute of Technology,  
 Japan  
 Shigeki Matsubara, Nagoya University, Japan  
 Tomohiro Ohno, Nagoya University, Japan  
 Hideki

Sato, Daido University, Japan  
 Taketoshi Ushima, Kyushu University, Japan  
 Naoto Mukai, Sugiyama Gaku-en University, Japan

### **Contact**

Email: [contact@idt-12.kesinternational.org](mailto:contact@idt-12.kesinternational.org)

Website: <http://idt-12.kesinternational.org>

Sent on the request of:

Lakhmi C. Jain, PhD, ME, BE(Hons), Fellow (Engineers Aust), Professor of Knowledge-Based Engineering, Founding Director of the KES Centre, School of Electrical and Information Engineering, University of South Australia, Adelaide, Mawson Lakes Campus, South Australia SA 5095, Australia

[Lakhmi.jain@unisa.edu.au](mailto:Lakhmi.jain@unisa.edu.au)  
<http://www.kesinternational.org/>

GREGORY S. PARNELL, Ph.D.  
 Distinguished Visiting Professor  
 Department of Management  
 2354 Fairchild Drive, Suite 6H120  
 USAF Academy, CO 80840  
[gregory.parnell@usafa.edu](mailto:gregory.parnell@usafa.edu)  
 Office: [719-333-4189](tel:719-333-4189)  
 Cell: [914-720-3989](tel:914-720-3989)  
 Fax: [719-333-9715](tel:719-333-9715)

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Dear Colleagues,

By the way, those doing research in the relevant areas are encouraged to submit abstracts to present at the Maritime Risk Symposium on November 7-9, at Rutgers University. However, due to time constraints, only a limited number of abstracts will be selected for presentation.

Feel free to email proposed talk titles, author names, and abstracts (maximum of 200 words) to:

Tayfur Altioik  
[altioik@rci.rutgers.edu](mailto:altioik@rci.rutgers.edu)



## Professional News

Dear Colleagues,

The University of Colorado Boulder is proud to announce that it will host the 2012 conference on Behavioral Decision Research in Management in Boulder, CO.

BDRM 2012 will be held Wednesday June 27th to Friday June 29th. Information on conference submissions, invited speakers, events, accommodations, and travel will be forthcoming.

All the best,  
Peter McGraw

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Hot off the press: On Aug. 31, Springer published the new book *Portfolio Decision Analysis: Improved Methods for Resource Allocation*. Ahti Salo, Jeff Keisler and Alec Morton (eds.)

<http://www.springer.com/business+%26+management/operations+research/book/978-1-4419-9942-9>

More on this next issue.



## DAS Community Commentary

### **Review of a New Report from National Research Council Committee on Decision Making** **Malcolm Bertoni and Kara Morgan**

[http://www.nap.edu/openbook.php?record\\_id=13156&page=11](http://www.nap.edu/openbook.php?record_id=13156&page=11)

In May 2011, the National Research Council (NRC) released a report to the Food and Drug Administration (US FDA) providing recommendations for how to apply a risk characterization framework to inform decision making. FDA had asked for this report to assist with the challenge of applying a systematic risk framework across the wide range of products they regulate, from foods to prescription drugs, from knee replacements to vaccines, from cosmetics to software for bedside medical devices. FDA leadership was looking for a tool to assist in decision making based on public health impact that could be used across all areas that FDA regulates. The Committee proposed a risk characterization framework that emphasizes understanding the health risk consequences of alternative decisions, rather than a more traditional focus on risk quantification. The process for applying the framework in three steps: 1)

identify and define the decision context; 2) estimate or characterize the public-health consequences of each option by using the risk attributes defined in the report; and 3) use the completed characterization as a way to compare decision options and to communicate public-health consequences within the agency, to decision-makers, and to the public, and use the comparison with other decision-relevant information to make informed decisions. DAS members Karen Jenni, Paul Fischbeck, and Robin Keller played key roles on the committee. Decision Analysts at FDA, Malcolm Bertoni and Kara Morgan (DAS member), are working to engage internal stakeholders and to develop a pilot where this framework can be applied. The full report can be found at: <http://dels.nas.edu/Report/Risk-Characterization-Framework-Decision/13156>.

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### **Fish & Wildlife Concerns in the midst of Electric Generation**

**By Reginald Wilson**

The goal of a viable electric utility integrated resource plan is to strategically incorporate supply-side and demand-side preferences to meet customer energy service requirements as well as environmental improvements in a least-cost approach. The integration of renewable energy in the power supply portfolio produce divergent objectives for the environment while simultaneously adding value for the electric utility. Substantial efforts have been made to lessen environmental tribulations related with hydropower operation, such as providing protected fish passage and improved water quality in the past at both Federal facilities and non-Federal facilities licensed by the Federal Energy Regulatory Commission. Nevertheless, numerous unrequited questions remain concerning how best to maintain the economic viability of hydropower with increased demands to protect fish and other environmental resources. The balancing act is exasperated with widespread curtailments of wind energy over-production during non-peak hours. Cost-effective demand side management agendas and portfolios can be selected to compete with supply-side options in the least-cost resource planning process. Screening mechanisms are mandatory to determine an optimal electrical generation mix over the planning horizon or a reference resource plan from which appropriate project configurations can be scheduled

(i.e., the number of units for each candidate generation type that may be designated each year or during a certain time interval). Electric generation flexibility is also essential for renewable energy optimization to incorporate increased short-term wind forecasting accuracy, dispatchable generators, and dynamic scheduling. The least-cost scenario priority methodology for new resources encompasses the cost-effective conservation initiatives as well as the regional load obligation.

The electrical system is operated in such a manner to protect fish, including salmon, steelhead, and trout listed as threatened or endangered species. The fish are protected by an abundance of initiatives to include flood control, the Endangered Species Act, and compliance with the Clean Water Act all of which takes precedence over power production. For example, certain amounts of water are required for spillage under these acts at specific projects on the Columbia River in the Pacific Northwest rather than passed through the turbines for fish passage each spring and summer. On the other hand, excessive spill can result in high levels of total dissolved gas in the water creating bubble trauma (bends) in fish. Voluntary spill for fish passage is practiced as part of the compliance to avoid these conditions. Another scenario experienced by the electric power industry occurs during high stream flows when the turbines at a dam are operating at capacity or when an insufficient market for the power to diminish the use of some turbines and there is scarce reservoir storage. In this condition, spill is added incrementally across the projects to avert exceptionally elevated total dissolved gas levels as part of the Gas Abatement Plan for federal dams. The reduction of the balancing reserves for wind power units in high water events supports the fish protection requirements as well.

The fish and wildlife conservation efforts ought to be combined with the run-off pattern of the hydroelectric facility in an effort to mitigate additional problems. Moreover, existing power plants can be uprated and new power plants added at current sites without a considerable effect on the environment. The new facilities must be constructed with concern of the environment. For instance, dams can be built at remote locations, power plants can be placed underground, and selective withdrawal systems can be used to control the water temperature released from the dam. Hydroelectric facilities can incorporate features that aid fish and wildlife, such as salmon runs or resting

places for migratory birds. In unification of our natural and built environments there will be tradeoffs and compromises. As we learn to live in harmony as part of the environment, we must search for the best alternatives amongst all ecologic, economic, technological, and social perspectives.

**Reginald Wilson** is an Industrial Operations Specialist with more than twenty years of electrical system assessments and methodical business process philosophy experience in Fortune 250 companies. He has held visiting lecturer positions teaching courses in managerial business processes, circuit analysis, and electronic instrumentation. Currently, he is the president/owner of *Redawil Engineering Company* and has consulted and collaborated with several electrical utility organizations throughout North America by assisting with their process improvement efforts. He is also the author of several articles and conference papers concerning quality measurement, equipment implementation processes, financial analysis, and strategic management. His unique research experience is in financial control systems and the engineering optimization field of electrical transmission and distribution development. A Certified Quality Process Analyst, Certified Six Sigma Green Belt, and Certified Technologist, Wilson holds a bachelor's degree in engineering and a master's degree in industrial operations from Lawrence Technological University in Southfield, Michigan (USA). He is an active member of the Institute for Operations Research and the Management Sciences, the Institute of Industrial Engineers, and the American Society for Quality.

If you have news or information you want to share with the DAS, contact the co-editors Drs. Heather Rosoff [rosoff@usc.edu](mailto:rosoff@usc.edu) and Jun Zhuang [jzhuang@buffalo.edu](mailto:jzhuang@buffalo.edu). This could include: promotions or new positions, awards, book announcements, other accomplishments, or whatever you felt might be of interest to our readers.

Decision Analysis Journal

## The *Decision Analysis* September 2011 issue...

(Available in Articles in Advance  
prior to print)

For more information about Articles in Advance please  
visit: <http://journals.informs.org/misc/ifora.dtl>

### From the Editor: Multiattribute and Intertemporal Preferences, Probability and Stochastic Processes: Models and Assessment

L. Robin Keller

<http://da.journal.informs.org/cgi/content/abstract/8/3/164> (link will activate upon printing)

### A Multiattribute Sealed-Bid Procurement Auction with Multiple Budgets for Government Vendor Selection

Jay Simon and François Melese

<http://da.journal.informs.org/cgi/content/abstract/deca.1110.0210v1>

*One of the typical problems that government purchasing agents face is selecting a vendor who will provide goods or services which can be described on a number of attributes. Simon and Melese (2011) present a novel idea of having vendors prepare a set of alternatives over different budget levels, with each alternative specifying which combination of performances on the attributes will be provided within its budget limit. A multiattribute first price, sealed bid procurement auction is proposed for the case of a decision under certainty, and then extended for the buyer's decision problem under budget uncertainty by using a utility function assessed over the value measure.*



### The Multiattribute Utility Tree

Ali E. Abbas

<http://da.journal.informs.org/cgi/content/abstract/deca.1110.0211v1> (link will activate when posted to Articles in Advance)

Abbas (2011b) creates a tree display that divides the von Neumann-Morgenstern utility of a multiattribute consequence into a sum of products of indifference probability assessments of binary gambles, thus portraying a sequence of gambles which can be used to elicit the utility value of a consequence. New independence concepts including “boundary independence” and “corner independence” are also developed.

### Quantile-Parameterized Distributions

Thomas W. Keelin and Bradford W. Powley

<http://da.journal.informs.org/cgi/content/abstract/deca.1110.0213v1> (link will activate when posted to Articles in Advance)

Keelin and Powley (2011) introduce a method for encoding uncertainty on a continuous variable using “Quantile-Parameterized Distributions.” First, the authors introduce a new class of continuous probability distributions that are parameterized by a set of quantiles—a typical output from a probability elicitation procedure or a probabilistic simulation. Then, the authors illustrate the flexibility and applicability of these distributions.

### A Discrete Time Approach for Modeling Two-Factor Mean-Reverting Stochastic Processes

Warren J. Hahn and James S. Dyer

<http://da.journal.informs.org/cgi/content/abstract/deca.1110.0209v1>

Intertemporal dynamics of commodity prices or other similar variables can be modeled by two-factor stochastic processes. Hahn and Dyer (2011) show how to model such processes in discrete time as two-dimensional binomial sequences, to enable numerical solution of dynamic optimization problems. They apply their approach, using a two-dimensional lattice format, to two valuation problems in Schwartz and Smith (2000).

### Consistency Among Elicitation Techniques for Intertemporal Choice: A Within-Subjects Investigation of the Anomalies

Jeffery L. Guyse and Jay Simon

<http://da.journal.informs.org/cgi/content/abstract/deca.1110.0212v1> (link will activate when posted to Articles in Advance)

Guyse and Simon (2011) report the results of an experiment in which participants made preference judgments about monetary outcomes occurring at different points in time, using both sequences of outcomes and paired comparison

matching judgments. With both sequences and matching judgments, preferences do not always obey the normative discounting model’s prescriptions. For example, with sequences, a person can express a preference for spreading out monetary outcomes over time, which cannot easily be observed when giving judgments involving only two points in time. Guyse and Simon’s (2011) participants displayed such a preference for spreading losses when they were presented with sequences. Finding significantly more consistency between the two methods when the outcome is a future gain than when it is a future loss, Guyse and Simon (2011) posited that this may be due to the participants’ inability to display a preference for spreading losses in the matching task.

Decision Analysis is included in the [Social Sciences Citation Index](#).

Decision Analysis is a part of [Articles in Advance \(AIA\)](#), where accepted manuscripts appear prior to printing:

<http://da.journal.informs.org/papbyrecent.dtl>

Decision Analysis archive available through Highwire Press:

<http://da.journal.informs.org>

For Decision Analysis subscription information and rates:

<http://www.informs.org/Journal/DA>

### INFORMS Decision Analysis Society Members!

By special arrangement with the Decision Analysis Society Council, dues-paying **regular** members of the DAS receive a subscription to the journal as part of their **2011** membership dues.

The DAS is a subdivision of INFORMS. For information on DAS, go to <http://decision-analysis.society.informs.org/>.

Decision Analysis is a quarterly journal dedicated to advancing the theory, application, and teaching of all aspects of decision analysis. The primary focus of the

journal is to develop and study operational decision-making methods, drawing on all aspects of decision theory and decision analysis, with the ultimate objective of providing practical guidance for decision makers. As such, the journal aims to bridge the theory and practice of decision analysis, facilitating communication and the exchange of knowledge among decision analysts in academia, business, industry, and government. *Decision Analysis* is published in March, June, September, and December by the Institute for Operations Research and the Management Sciences (INFORMS) at 7240 Parkway Drive, Suite 300, Hanover, Maryland 21076. Please visit our website at:

<http://www.informs.org/Journal/DA>.

## DA Around the World



### Alec Morton, Column Editor

The aim of this column is to present a view of what is going on in the Decision Analysis community and its various sister communities, broadly conceived, beyond the confines of DAS and INFORMS. In this issue, **Gilberto Montibeller, Kaisa Miettinen and Murat Köksalan** describe the background and activities of the **International Society on Multiple Criteria Decision Making**.

### The International Society on Multiple Criteria Decision Making

The International Society on Multiple Criteria Decision Making (MCDM) was created in the early 1970s. It hosts a major conference every two years and has about 1700 members in 97 countries. The purposes of the Society are to develop, test, evaluate and apply

methodologies for solving multiple criteria decision making problems, to foster interaction and research in the scientific field of multiple criteria decision making, and to cooperate with other organizations in the study of management from a quantitative perspective. In this article we present a brief history of the MCDM Society, its conferences and activities, the scientific awards it grants to distinguished researchers in the field, and the main multi-criteria schools it encompasses.

### The Multi-Criteria Decision Making field<sup>1</sup>

MCDM (Multiple Criteria Decision Making) or MCDA (Multiple Criteria Decision Analysis) are well-known acronyms that describe methodologies concerned with structuring and solving decision and planning problems involving multiple criteria. The purpose is to support decision makers facing such problems. Typically, there does not exist a unique optimal solution for such problems and it is necessary to use decision maker's preferences to differentiate between solutions.

“Solving” can be interpreted in different ways. It could correspond to choosing the “best” alternative from a set of available alternatives (where “best” can be interpreted as “the most preferred alternative” of a decision maker). Another interpretation of “solving” could be choosing a small set of good alternatives, or grouping alternatives into different preference sets. An

<sup>1</sup> This section is a condensed version of the content available at: [http://en.wikipedia.org/wiki/Multi-criteria\\_decision\\_analysis](http://en.wikipedia.org/wiki/Multi-criteria_decision_analysis)

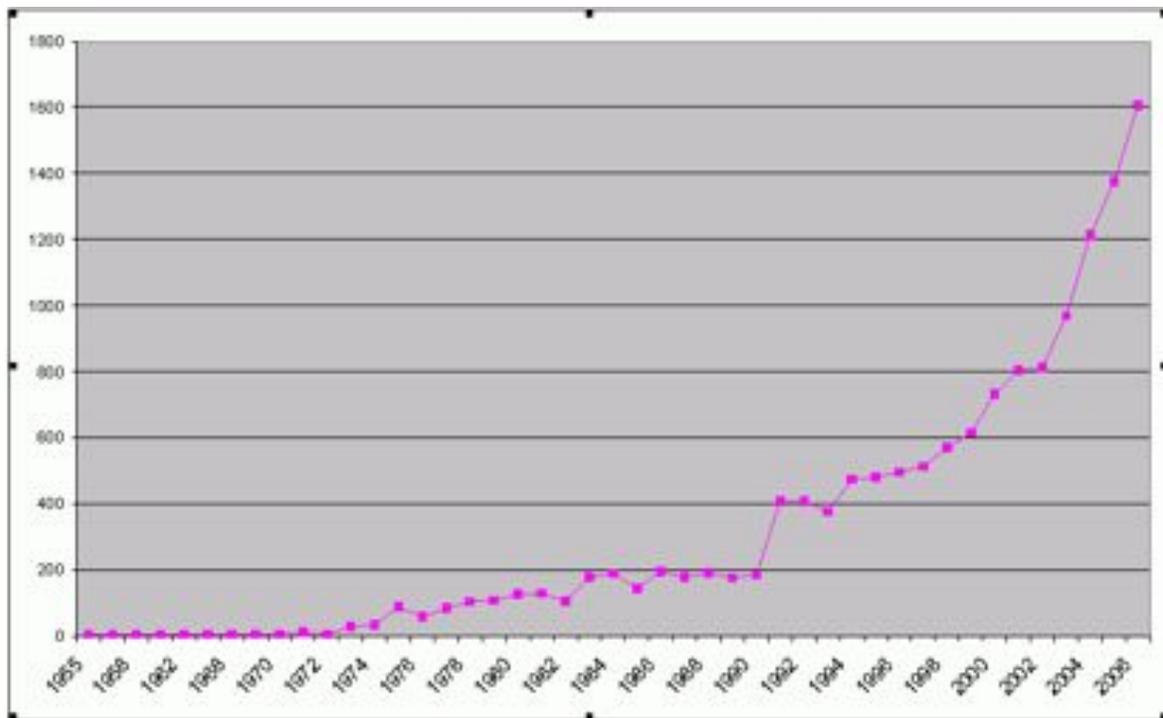
extreme interpretation could be to find all “efficient” or “non-dominated” alternatives among a set of options. The difficulty of the problem originates from the presence of more than one criterion. There is no longer a unique optimal solution to an MCDM problem that can be obtained without incorporating preference information. Different schools of thought have developed for solving MCDM problems, in particular:

- The Multiobjective Optimization School
- The Goal Programming School
- The Fuzzy-Set MCDA School
- The Multi-attribute Utility Theory School
- The Outranking School
- The Evolutionary Multiobjective Optimization School
- The Analytic Hierarchy Process School

The recent Wikipedia entry on Multi-Criteria Decision Analysis, organised by Murat Köksalan, Pekka Korhonen and Jyrki Wallenius, provides a more comprehensive introduction to the field and useful references:

[http://en.wikipedia.org/wiki/Multi-criteria\\_decision\\_analysis](http://en.wikipedia.org/wiki/Multi-criteria_decision_analysis).

Multiple Criteria Decision Making is a growing field of research, as shown in the recent review by Bragge et al. (2010). They have done an extensive bibliometric study of MCDM and MAUT using the ISI Web of Science database. Among the interesting findings is the yearly publication trend in our field, which shows a dramatic increase in the number of publications during the last decade, as shown in Table 1 and Figure 1.



**Figure 1**

Source: Bragge, J.; Korhonen, P., Wallenius, H. and Wallenius, J. (2010). "Bibliometric Analysis of Multiple Criteria Decision Making/Multiattribute Utility Theory". IX International MCDM Conference Proceedings, (Eds.) M. Ehrgott, B. Naujoks, T. Stewart, and J. Wallenius, Springer, Berlin 634: 259-268.

Rank	Top-20 Sources (includes both journals and PROCEEDINGS)	#	%
1.	European Journal of Operational Research	1166	28.47
2.	Journal of the Operational Research Society	332	8.11
3.	Fuzzy Sets and Systems	293	7.15
4.	Journal of Optimization Theory and Applications	285	6.96
5.	Computers & Operations Research	237	5.79
6.	International Journal of Production Research	196	4.79
7.	Journal of Mathematical Analysis and Applications	170	4.15
8.	Computers and Industrial Engineering	154	3.76
9.	Omega –International Journal of Management Science	127	3.10
10.	Management Science	124	3.03
11.	Applied Mathematics and Computation	120	2.93
12.	International Journal of Production Economics	110	2.69
13.	Lecture Notes in Economics and Mathematical Systems	108	2.64
14.	Operations Research	107	2.61
15.	Annals of Operations Research	105	2.56
16.	Evolutionary Multi-criterion Optimization, Proceedings	98	2.39
17.	IEEE Transactions on Power Systems	96	2.34
18.	Engineering Optimization	92	2.25
19.	Water Resources Research	89	2.17
20.	International Journal of Advanced Manufacturing Technology	87	2.12
	<b>TOP-20 IN TOTAL</b>	<b>4096</b>	<b>100%</b>

Table 1

Source: Bragge, J.; Korhonen, P., Wallenius, H. and Wallenius, J. (2010). "Bibliometric Analysis of Multiple Criteria Decision Making/Multiattribute Utility Theory". IXX International MCDM Conference Proceedings, (Eds.) M. Ehrgott, B. Naujoks, T. Stewart, and J. Wallenius., Springer, Berlin 634: 259-268.

### A Brief History of the MCDM Society – Conferences and Activities<sup>2</sup>

In November 1972, Milan Zeleny, and J. L. Cochrane, organized an international conference on MCDM in Columbia, South Carolina. Ralph Steuer and others including Jim Dyer, took part in the conference. The proceedings of this conference were the first major volume on MCDM and are still heavily cited.

After meetings organized by Zionts in Jouy-en-Josas (1975) and Buffalo (1977), Gunter Fandel, Tomas Gal, Jaap Spronk, Ralph Steuer, Andzej Wierzbicki and Stan Zionts, at a meeting in Konigswinter, Germany in 1979 founded the Special Interest Group (SIG) on MCDM. Stanley Zionts became the first leader of the group. That conference was considered the third conference of the group, with Jouy-en-Josas, France and Buffalo, New York the first and the second.

The MCDM conferences continued, with the fourth organized in Delaware in 1980 by J. Morse and the fifth in Mons, Belgium in 1982 by P. Hansen. The sixth meeting was organized by Yacov Haimes in

Cleveland, Ohio in 1984. H. Nakayama and Y. Sawaragi organized the seventh International conference in Kyoto, Japan in 1986. The organizers furnished the banner now used at every conference.

A. G. Lockett and G. Islei organized the eighth conference in Manchester, U. K. in 1988. In 1990 Ambrose Goicoechea organized the ninth International conference in Fairfax, Virginia. There were many international visitors, in particular many Soviets and other Eastern Europeans. Elliott Lieberman played a major role in attracting Soviet and eastern participants.

Gwo-Hshiung Tzeng and P. L. Yu organized the tenth conference, in 1992, in Taipei, Taiwan. It was at this conference that the Society began granting scientific awards.

<sup>2</sup> This section is a condensed version of the content available at: [www.mcdmsociety.org](http://www.mcdmsociety.org)

The succeeding international conferences were the Coimbra (Portugal) conference in 1994 organized by J. Climaco; the Hagen (Germany) conference in 1995 organized by G. Fandel and T. Gal; the Cape Town (South Africa) conference in 1997 organized by T. Stewart; and the Charlottesville, VA (U. S. A.) conference in 1998, organized by Y. Y. Haimes.

The Special Interest Group officially became the Society on Multiple Criteria Decision Making when bylaws were accepted at the conference in Charlottesville, Virginia, in 1998.

The next international meetings were the Ankara (Turkey) conference in 2000, organized by M. Köksalan; the Semmering (Austria) conference in 2002 organized by M. Luptacik and R. Vetschera; the Whistler, B. C. (Canada) conference in 2004, organized by W. Wedley; the Chania (Greece) conference in 2006 organized by C. Zopounidis; the Auckland (New Zealand) conference in 2008 organized by M. Ehrgott; and the Chengdu (China) conference organized by Y. Shi and S. Wang in 2009. The 21<sup>st</sup> conference happened this June in Jyväskylä, Finland, organised by Kaisa Miettinen (the variety of topics covered can be seen in the conference program available at <http://www.jyu.fi/mcdm2011>). The group photo from the conference is shown below.



A particular feature of recent conferences is the organisations of several calls for papers in scientific journals. For instance, the latest conference had such calls for the Journal of Multi-Criteria Decision Analysis, Journal of Global Optimization and the International Journal of Information Technology & Decision Making.

<http://mcdmsociety.org/MCDMNews/>. In addition, the Society has a discussion list <http://www.mcdmsociety.org/discussion.html>.

The present president of the Society is Kaisa Miettinen ([president@mcdmsociety.org](mailto:president@mcdmsociety.org)) and its president-elect is Murat Köksalan. The executive committee is composed of, Kalyanmoy Deb, Jim Dyer, Matthias

**The MCDM Summer Schools**

Since the 1980s the MCDM Society, jointly with the Euro Working Group on MCDA and the ESIGMA

The next conference will be in 2013 (June 17-21) in Málaga, Spain, and will be organized by Francisco Ruiz – its website is: <http://www.uma.es/mcdm2013/>

The society also has a newsletter, which Zionts started in the 1970s, and then Steuer took it over in the mid 1980s. It is now distributed on the internet with Martin Geiger as the editor till 2011 and available here: Ehrgott, Salvatore Greco,, , Birsen Karpak, Pekka Korhonen, , Carlos Romero, Roman Słowiński, Jaap Spronk and Jyrki Wallenius with Francisco Ruiz as the secretary ([secretary@mcdmsociety.org](mailto:secretary@mcdmsociety.org)).

In 2008, the society acquired the domain [www.mcdmsociety.org](http://www.mcdmsociety.org).

group organises a summer school, with the purpose of promoting the diffusion of the potentialities of multi-criteria models as valuable supporting instruments in decision-making. The school, which typically runs for

3-4 weeks, is an opportunity for young researchers and PhD students to learn about the several multi-criteria schools from key experts and researchers in the field.

The latest school was organized in Paris in 2010, by Vincent Mousseau, with 62 students, including North Americans, Europeans and Asians. Martin Geiger will organize the next summer school in 2013. Previous summer schools were organized at:

- 2006, Taipei, Taiwan, P. L. Yu, G. H. Tzeng and M. Tang.

- 2003, Montreal, Quebec, Canada, Jean-Philippe Waaub, GERAD.
- 2000, Catania, Sicily, Italy, B. Matarazzo.
- 1997, Turku, Finland, Christer Carlsson, Malin Brnnback.
- 1994, Chania, Crete, Greece, Jannis Siskos.
- 1991, Quebec City, Canada, J.M. Martel.
- 1988, Lisbon, Portugal, C. Bana e Costa.
- 1985, Namur, Belgium, J. Fichet, Ph. Vincke.
- 1983, Catania, Sicily, Italy, B. Matarazzo.

### The MCDM Awards<sup>3</sup>

The MCDM Society has established three awards to be given to distinguished scholars in the field. They are:

- *The MCDM Gold Medal*: This is the highest honor that the International Society on Multiple Criteria Decision Making bestows upon a scholar who, over a distinguished career, has devoted much of his/her talent, time, and energy to advancing the field of MCDM, and who has markedly contributed to the theory, methodology, and practice of MCDM.
- *The MCDM Edgeworth-Pareto Award*: As the highest distinction that the International Society on Multiple Criteria Decision Making bestows upon a researcher who, over his/her career, has established a record of creativity to the extent that the field of MCDM would not exist in its current form without the far-reaching contributions from this distinguished scholar.
- *The Georg Cantor Award*: As the highest form of recognition that the International Society on Multiple Criteria Decision Making bestows upon a researcher who, over his/her distinguished career, has personified the spirit of independent inquiry and whose many innovative ideas and achievements are decidedly reflected in the theory, methodology, and current practices of MCDM.

<sup>3</sup> This section is a condensed version of the content available at: <http://www.mcdmsociety.org/intro.html#Awards>

Year	MCDM Gold Medal	Edgeworth-Pareto Award	Georg Cantor Award
1992	Stanley Zionts	Po-Lung Yu Milan Zeleny	Andrzej P. Wierzbicki
1994	Oleg I. Larichev	Jyrki Wallenius	Pekka Korhonen
1995	Bernard Roy	Hirotaaka Nakayama	Yacov Y. Haimes
1997	Ralph E. Steuer	Roman Slowinski	-
1998	Ralph L. Keeney Howard Raiffa	Jared L. Cohon	Tomas Gal
2000	Thomas Saaty	Alexander Lotov	Philippe Vincke
2002	Jaap Spronk	-	Masatoshi Sakawa
2004	William W. Cooper	Raimo P. Hämäläinen	Harold P. Benson
2006	Murat Köksalan	James S. Dyer	Carlos Romero
2008	Theodor J. Stewart	Kalyanmoy Deb	Valerie Belton
2009	Benedetto Matarazzo Detlof von Winterfeldt	Gwo-Hshung Tzeng	Yong Shi
2011	-	Matthias Ehrgott	Tetsuzo Tanino

The Society also awards, the MCDM Wiley Prize for the best paper describing a real-life application of multi-criteria decision analysis presented at the International Conference on MCDM. This award carries a prize of US\$1000, donated by Wiley. In 2011, the prize was given to Valentina Ferretti.

#### The Journal of Multi-Criteria Decision Analysis<sup>4</sup>

Wiley-Blackwell publishes a scientific journal, the *Journal of Multi-Criteria Decision Analysis: Optimization, Learning and Decision Support* and the Society supports it in helping to make the journal properly represent the importance of the field within the broader OR/MS context. It was launched in 1992,

<sup>4</sup> This section is a condensed version of the content available at:

<http://onlinelibrary.wiley.com/gate2.library.lse.ac.uk/journal/10.1002/%28ISSN%291099-1360>

and from the outset has aimed to be the repository of choice for papers covering all aspects of MCDM. The journal provides an international forum for the presentation and discussion of all aspects of research, application and evaluation of multi-criteria decision analysis, and publishes material from a variety of disciplines and all schools of thought. Papers addressing mathematical, theoretical, and behavioural aspects are welcome, as are case studies, applications and evaluation of techniques and methodologies.

The recent appointment of Theodor Stewart as Editor-in-Chief (following on from Simon French and Valerie Belton) is linked to a restructuring of the editorial processes. Nine topic areas have been defined, and Area Editors have been appointed for each area:

- Analytic hierarchy / network processes (Luis Vargas, University of Pittsburgh, USA)
- Evolutionary multiobjective optimization (Kalyanmoy Deb, IIT Kanpur, India)
- Fuzzy sets and models for MCDA (Masahiro Inuiguchi, Osaka University, Japan)
- Integrated methods and the philosophy of MCDA (Valerie Belton, University of Strathclyde, UK)
- Multiobjective optimization and goal programming (Carlos Romero, Technical University of Madrid, Spain)
- Outranking (José Rui Figueira, Technical University of Lisbon, Portugal)
- Risk and uncertainty in MCDA (Theodor J. Stewart, University of Cape Town, South Africa)
- Rule-based methods and artificial intelligence (Salvatore Greco, Università di Catania, Italy)
- Value and utility models (Gilberto Montibeller, London School of Economics, UK)

#### Informs Cluster on Multiple Criteria Decision Making

In collaboration with the International Society on MCDM, a new INFORMS Section on MCDM was established in 2010

(<http://www.informs.org/Community/MCDM>). The Section is sponsoring a Multiple Criteria Decision Making cluster at the INFORMS 2011 Annual Meeting that will be held in Charlotte, North Carolina (USA), from November 13 to November 16, 2011.

The cluster is organized by the President of the MCDM Section of INFORMS, Murat Köksalan.

There will be 16 sessions in the MCDM cluster, including a panel session discussing the past and future of MCDM, chaired by Stan Zionts and contributed by Ralph Keeney, Roman Slowinski, Ralph Steuer, and Jyrki Wallenius.

Concluding, the MCDM Society is a very active scientific community. Some of its members are also members of the Decision Analysis society – and many of its members conduct research which are connected, or related, to research developed by the Decision Analysis community. We hope this short article helps in highlighting potential commonalities and synergies between these two societies and, hopefully, enhance their cooperation.

## DA Practice

**By Bill Klimack, Kromite, Column Editor**

Since our last column the Decision Analysis Affinity Group (DAAG) held their conference in Houston. The presentations are available at [www.daag.net](http://www.daag.net). The Society of Decision Professionals (SDP) continues to offer a quarterly web-based talk, which are now featuring the best talks from the DAAG conference. These talks were free of charge during SDP's first year of operation, but recently switched to being fee-based. SDP members may continue to view them for free. Check the SDP web site for upcoming talks. Look for announcements in the sidebar on [www.decisionprofessionals.com](http://www.decisionprofessionals.com).

The INFORMS conference Healthcare 2011 was a great success. This was the first attempt by INFORMS to hold a conference on a single topic. How extensive the DA component was is not clear to me. Any DA Society members who attended who would like to share their observations please pass them on.

The INFORMS Annual Meeting will be held in Charlotte, November 13 – 16, 2011. If you have not attended one, there is always a very strong set of DA activities. There are continual DA track presentations and the DA Society holds its business meeting and has an awards presentation. And of course there is the opportunity to network with your fellow DA and OR

professionals. (For full disclosure, your column editor is also the INFORMS VP – Meetings.)

An item of news from the recent International Federation of Operational Research Societies (IFORS) conference in Melbourne Australia is that the Association of European Operational Research Societies (EURO) is launching three new journals. One is the *Journal on Decision Processes*. We have no details, but this provides an additional opportunity for contributing to the literature. It also suggests healthy growth in the DA field. While the title suggests topics broader than DA, the editor in chief will be Professor Ahti Salo, an associate editor of *Decision Analysis*, so DA topics should be well represented.

A correction and an update for the last issue's column. The caption on the photograph should have read "Terry Bresnick's daughter Michele and her husband Mike Walsh." I understand her two-year bone marrow biopsy results were great!

This issue's guest columnist is Dr. Paul Papayoanou, the founder of SGG. He developed and trademarked the practical application of game theory known as Strategic Gaming<sup>®</sup>, which he and his firm use to help large and small companies develop business and negotiation strategies. He also employs decision analysis, real options, and war gaming tools, teaches Strategic Gaming and game theory techniques to executives, and leads the firm's unique capabilities in political risk assessment.

Dr. Papayoanou has been using game theory approaches in academia and the business world for more than 20 years. He received a Ph.D. from UCLA in 1992, and was a professor at the University of California, San Diego and at Harvard University. As a consultant, he has lectured about Strategic Gaming at the Harvard Business School and given speeches and provided training to hundreds of business executives and political leaders. Dr. Papayoanou is a Fellow of the Society of Decision Professionals and has published extensively. His most recent book, *Game Theory for Business: A Primer in Strategic Gaming*, was published in December 2010.

Please send your comments, suggestions, and, especially, offers to be a guest columnist to me at [bklimack@kromite.com](mailto:bklimack@kromite.com). You can help improve the practice of decision analysis!

## Decision Analysis and Game Theory: Competition or Complementarity?

Paul Papayoanou, Ph.D.  
President, SGG

The insights decision analysis (DA) can bring to situations with great uncertainty are profound. As a result, a plethora of companies and consulting firms use DA and it has been applied effectively in many industries to help decision-makers make a wide range of important business decisions. However, DA cannot deal effectively with interactive, multi-party decisions – those in which the decisions of different parties can or should influence one another. To analyze such situations, another tool from the decision science family, game theory, should be used. Game theory should be seen as another tool in an analyst's toolkit, and one that is complementary to DA. While game theory is different than DA in subtle but profound ways, it is also a tool that can build on and be seen as an extension of DA.

Some DA practitioners ask me, "Why can't I just use DA for such interactive problems?" This article will attempt to explain why DA should not be used for interactive influence issues. Indeed, I hope to show that such questions are akin to a handyman saying, "Why can't I just hammer in a screw rather than use a screwdriver?" If analysts expect to help decision-makers make good decisions in an interdependent environment, they must add game theory to their toolkit. Game theory is not in competition with DA. It is a tool that is both complementary to and compatible with DA principles and techniques and one that can help analysts address issues they would otherwise avoid or treat poorly. Indeed, game theory applied smartly can be an extension of DA. Bringing game theory into the toolkit is, in fact, an opportunity for intellectual and professional growth for DA practitioners that will also enable the decision-makers they serve to become more savvy strategists and negotiators.

### The Illogic of DA for Interdependent Decision-Making

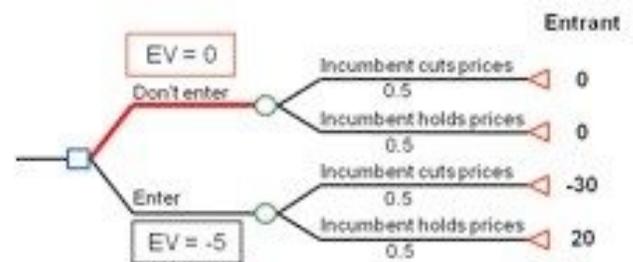
In DA we cannot model moves by other players in a tractable or sensible fashion. For one, decision trees require that we assign probabilities at every possible node for moves by other players. Obviously, this can

easily lead to a highly subjective and arduous process, especially as the decisions for other players in an action-reaction environment increase.

Second, even if we are inclined to assign probabilities at nodes for other players' moves, doing so encodes what we know or imagine today. As such, it blocks our ability to learn anything from analysis about others' motivations and incentives.

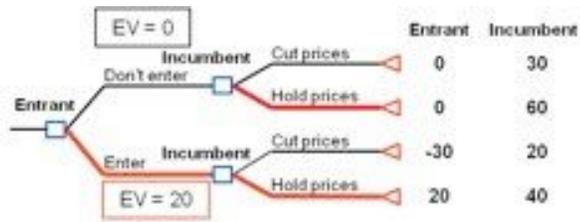
Third, assigning probabilities to others' moves is inconsistent with the action-reaction, chess-type of logic that businesses are actually engaged in (or should be in), when determining what the best course of action is. No one playing a game of chess asks themselves what probability their opponent will move a rook, a knight, or a bishop. Instead, chess players attempt to think about how their possible moves may best be countered by their opponents, and in so doing try to think ahead several moves and analyze how the game could unfold. Game trees, by treating all players' decisions as choices and incorporating each player's payoffs, can help us capture the logic of chess, for we are able in game theory to look forward and reason back, much as we would try to do in a game of chess.

In part for each of these reasons, using DA will provide a far less reliable answer than game theory would. To illustrate, consider this simple example about a common business question, market entry. Below we see that a potential market entrant has a decision to enter a market or not, and using DA we would assign probabilities to whether the incumbent should cut prices or hold them. Based on the 50-50 probability assigned here, we find the expected value (EV) of entering is negative, and so the entrant should not enter.



Using game theory to analyze the question, we treat the incumbent's decision as a decision, not an uncertainty, and consider what the payoffs would be for the incumbent as well as for the entrant. The tree thus looks like what is below, and we get a much different answer. By looking forward and reasoning

back, what is called backwards induction in game theory, we see that the incumbent would always prefer to hold prices. As a result, the entrant should prefer to enter the market, for it can get 20.



For the reasons elucidated above, no one in academic economics or social sciences circles would use decision theory for an interactive issue, and no one has for a very long time. 2005 Nobel Prize winner Thomas Schelling made the argument most cogently in his 1960 classic, *The Strategy of Conflict*, when he wrote that it was “retarded” to think about international political-military strategy (e.g., nuclear deterrence) without adopting an interactive approach. To Schelling, a game-theoretic approach was essential because of its focus on understanding how an individual’s best course of action depends on his or her expectations of what others will do. Using game theory (that is not zero-sum), Schelling argued, was essential and insightful for analyzing what he called “mixed-motive” or “bargaining” games, in which there is “a mix of mutual dependence and conflict, of partnership and competition.” Although he was not writing about business, many business situations involve competitive-cooperative dilemmas that are perfectly analogous to the political-military world with which he was concerned.<sup>5</sup>

In announcing the 2005 award, the Royal Swedish Academy of Sciences pointed to Schelling’s book in particular as helping to make game theory “the dominant approach” to understanding conflict and cooperation in international affairs, economics, and throughout the social sciences.<sup>6</sup> Indeed, game theory is now widely considered in academia to be “the science

<sup>5</sup> Thomas C. Schelling, *The Strategy of Conflict*, (Cambridge, MA and London: Harvard University Press), 1960/1980.

<sup>6</sup> The Royal Swedish Academy of Sciences, “Press Release: The Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel 2005,” October 10, 2005.

of strategic thinking.”<sup>7</sup> In fact, as a former academic who long studied international relations, I know of no significant piece of work in the past 30 years that used decision theory rather than game theory to address issues involving multiple parties in the international arena.

Yet when it comes to the science and practice of business strategy, game theory has had little traction. Business strategy is much like international strategy was fifty years ago, when Schelling’s path-breaking book was published. There are several reasons why, which I won’t go into here, but the point is, DA practitioners and decision-makers need to understand that game theory is an important tool for understanding issues around competition and cooperation that are commonplace in the business world. DA is not the only tool, and should not be a hammer used for all types of problems. If game theory can be practical to business problems, not simply an academic tool, it should be added to the toolkit.

### Applying Game Theory in Business

Two questions need to be addressed: When should game theory be used? How can game theory be applied effectively?

The diagnostic question is a critical first step. Just as it would be imprudent to use a hammer to nail in a screw, it would be inappropriate to apply game theory to some business problems.

In short, game theory is appropriate for business strategy when companies need to gain insight into interactive situations with influence potential—i.e., one’s actions can affect the choices others will make, and vice versa. Without such influence potential, DA (or a “real options” variant) is generally applicable to situations with great uncertainty. At times, DA is about evaluating big bet decisions. But DA can also, in what some would call real options, address how the choices we make today can affect the choices and information we have in the future. Such analysis incorporates the value that comes from anticipated learning and the flexibility to take advantage of it through downstream decisions. Whether the problem is of the big bet variety or has learning events, decision

<sup>7</sup> See Avinash K. Dixit and Barry J. Nalebuff, *Thinking Strategically: the competitive edge in business, politics, and everyday life* (New York: Norton), 1991.

trees are typically used to map out a company's choices over time and key "chance event" uncertainties, and analysts are able to quantify value and risk, compare strategic alternatives, and systematically focus on the factors that truly drive value.

As another branch in the decision sciences, game theory has many similarities, but also some powerful differences. As discussed above, other players' moves are treated as uncertainties in decision trees, though in practice they are often ignored altogether, while game trees explicitly model other players' choices as decisions. Game theory requires consideration of the payoffs (value) to each of the players in the game tree, not just to one company, as is done in decision analysis and real options. Meanwhile, all the chance event uncertainties prominent in decision analysis and real options work can be incorporated in game trees and associated economic models. Thus, game theory is most appropriate whenever there are influence issues, whatever the nature of the uncertainties. Hence, game theory can extend DA, incorporating all the types of uncertainties we would find in DA models, but treating other players as decision-makers and enabling a rigorous examination of chess-like action-reaction dynamics.

The key to applying game theory effectively is to address five basic questions drawn from game theory:

1. Who are the key players?
2. What choices do they have?
3. In what sequence do they make these choices?
4. What are the key uncertainties?
5. What are the payoffs to each player for each possible outcome?

I have not seen these five questions in any game theory text, or anywhere else. Nonetheless, they are the core of game theory models and the key to making game theory practical in the business world. These five questions underpin the Strategic Gaming process I developed and that my firm applies regularly in business to use game theory.<sup>8</sup>

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<sup>8</sup> For an extensive discussion of Strategic Gaming, see my book, *Game Theory for Business: A Primer in Strategic Gaming* (Probabilistic Publishing, 2010).

In incorporating uncertainties and developing economic models that provide the payoffs for each player, Strategic Gaming models draw extensively from DA principles and techniques—tornado diagrams, s-curves and the like all can figure prominently in such work. DA is taken to another level though, enabling us to think carefully about others' perspectives as well as our own, gaining valuable strategic and tactical insights. By drawing on basic game theory principles and methods, as well as DA, Strategic Gaming helps executives, managers, and negotiators gain clarity about what the "game" that they are playing looks like, and how to best move and influence others at both the strategic and tactical level over time and across potential contingencies.

By forcing a focus on the interdependence of choices between players in a practical way, Strategic Gaming helps make the science and practice of business strategy smarter. In dozens of applications for small and large companies in various industries, it has enabled analysts, strategists and negotiators to efficiently and effectively tackle a wide range of business strategy questions in which competitive-cooperative dilemmas are a central concern, from deal-making to competitive risk and partnering strategy. These applications have enabled strategists and negotiators to capture or save billions of dollars of value by gaining clarity about complex interactions and puzzling competitor behaviors, and by finding opportunities and commercial risks they had not seen previously. Executives have come away with a great capacity for shaping and playing "the game" to gain strategic advantages and avoid being blindsided by competitors, partners, suppliers, governments, and other players.

### **Time to Move Forward**

Game theory and decision theory are in the same decision science family, and Strategic Gaming and DA are valuable, practical applications of game theory and decision theory respectively. They should not be seen in competition. Analysts have a choice about which tool should be used for a given situation, and decision professionals should use the appropriate tools for the situation at hand. Where there are significant uncertainties, but influence issues are not present, DA or its real options variant are useful. If there are influence issues, game theory is generally applicable and Strategic Gaming is a practical application of game theory that extends DA.

DA practitioners and advocates should see this as an opportunity to add another tool to their toolkit, to grow intellectually and professionally, and to serve decision-makers more ably on a wider range of difficult and interesting business strategy issues. While game theory and Strategic Gaming are fairly straightforward, the learning involved to add to the toolkit is not trivial, but seldom is anything of value.

For DA practitioners who choose to enter the learning curve, I have found two words of advice —“immerse yourself”—to be particularly useful. Those who have tried to learn a foreign language know that if they try to translate everything into their native language rather than immerse themselves, learning is much slower and more painful. Similarly, even though game theory looks very similar to DA and is in the same family, one should not try to translate what they are learning about game theory into a DA language or mindset. To a large degree, DA is designed with an engineering mindset. Game theory requires a somewhat different way of thinking, what I would call an economist’s mindset, to model and draw out useful insights. Given the different thinking required, I typically advise long-time DA practitioners who are learning game theory to immerse themselves, as if they are learning a foreign language. Those who have immersed themselves have learned it well and been able to use game theory to great effect.

Though learning is involved, and the mindset of game theory is somewhat different than DA, game theory should be seen as another tool in an analyst’s toolkit and one that is complementary to DA. Though different than DA in subtle but profound ways, game theory is also a tool that can build on DA principles and techniques. It is a tool that will also enable its users and consumers to rigorously evaluate a wider range of strategy issues and enable savvier strategizing and negotiating.

## Society of Decision Professionals

**By Hilda Cherekdjian, Column Editor**

The SDP was launched a year ago by the community of decision professionals and has reached a membership of about 200. Members are from around the world, the public and private sector including

students as well as seasoned professionals. A newly elected board of directors took office on July 1<sup>st</sup> 2011. The SDP board is comprised of global decision professionals from both the public and private sectors. This diversity ensures that SDP will continue to benefit from a set of diverse experience, knowledge, and skills.

Elected officers are Carl Spetzler, President; Frank Koch, Vice President; William Leaf-Hermann, Secretary; and Tony Manzella, Treasurer. Elected as board members are Jay Andersen, Eric Bickel, Ellen Coopersmith, Jim Felli, Eric Johnson, Jack Kloeber, Larry Neal, Greg Parnell, and Katherine “Trina” Weller.

To view the complete biographies of each newly elected board member, please go to: [www.decisionprofessionals.com](http://www.decisionprofessionals.com).

### SDP Sponsors 2012 DAAG

In continued collaboration with professional societies and organizations, SDP is happy to announce their sponsorship for the 2012 DAAG conference. Details for dates and locations will be announced in the coming months.

### SDP Learning Exchange

The SDP has sponsored successful Learning Exchanges that are archived at: [http://www.decisionprofessionals.com/news\\_events.html](http://www.decisionprofessionals.com/news_events.html). You can access the PDF slides and audio files of these events from this web-link. Two of SDP’s most recent learning exchanges were selected as “Best of DAAG 2010” presentations and they are listed below:

1. **“Ordered or Unordered? – A different angle from which to look at the complex issue of resource sustainability”** presented by *Patrick Leach, SDP Fellow*
2. **“Rethinking VOI: How the Game Changes Things”** presented by *Paul Papayouanou, PhD*

Please note SDP is proudly sponsoring an upcoming learning exchange webinar - a “Best Technical DAAG 2011” presentation:

**The "Discretization, Simulation and Swanson’s (Inaccurate) Mean"** Featured speaker *Eric Bickel*  
Wednesday, September 14, 2011 at 8:30 a.m. PDT

Learning Exchange Webinars are free to SDP members and \$30 for prospective members. To register, please visit the society's website at [www.decisionprofessionals.com](http://www.decisionprofessionals.com). If you are new to SDP and would like to attend this webinar, please e-mail [Hilda@decisionprofessionals.com](mailto:Hilda@decisionprofessionals.com) for a one-time free entry pass.

The vision of SDP is to support and champion decision professionals as the trusted advisors for decision-makers facing important and complex decisions. Founded on the belief that applied decision science creates the most value in decision situations is defining the body of knowledge that constitutes the core of the profession, creating standards, expectations of quality, and adhering to well-defined ethical and professional standards.

For more information on SDP, including the professional career ladder, news, governance, and SDP's professional code, and how to join, please go to the Society's website below:  
[www.decisionprofessionals.com](http://www.decisionprofessionals.com).



## Research: Ralph Keeney

### Selecting a Dissertation Topic

By **Ralph L. Keeney, Fuqua School of Business,  
Duke University**

Perhaps the most important decision of any doctoral student is the selection of a dissertation topic/advisor. The topic and advisor decisions are often tied together, so I will treat them as such in this brief note.

My judgment is that one is more likely to produce a quality dissertation and have a productive and enjoyable experience producing it if the topic/advisor decision results from a decision process rather than a search process. Let me describe what sometimes happens and you will understand the point I am making.

A new doctoral student, for good reasons, may not have much of an idea about what would be a good dissertation topic or what would even be a dissertation topic. One likely would speak to possible advisors about possible topics that they find interesting. The student rejects some on various grounds such as not being of interest, not thinking that they could do it, believing the topic to be too hard or too time-consuming, and so forth. Essentially an implicit threshold is used to reject potential topics. And eventually, a topic is suggested that is above one's threshold. "Eureka! I've got a topic. Pressure is off. Whew!" You have just chosen a topic that was the first one that you found that met your minimum standard as a result of a search process.

But wait, making a major decision when you have only one feasible alternative (i.e. above your threshold) is not really a decision, nor is it a good way to proceed. Rather, you should continue searching for other feasible alternatives. This is usually easier than searching for the first alternative, as you now have some experience and you already have a contender which can be your backup. Create four or five additional alternatives, maybe some with the same advisor. Once you get say six alternatives, then identify your objectives of the dissertation, evaluate the alternatives, and select the best. This sounds like decision analysis, doesn't it? Roughly, if you earnestly looked for additional alternatives, the chance that your originally identified alternative is best should probably be around 1/6.

The bottom line is that a decision process will often be better than a search process to find a topic/advisor for a dissertation. The search process should just be the first step to identify alternatives. Then make a reasoned choice. Such a decision can have a significant effect on your life, both during the dissertation and afterwards. It seems to me that such a decision is worthy of some hard thought.



## Ask DAS

**Ask DAS: Unsolicited Words of Wisdom**  
(Edited by Karen Jenni)

The “Ask DAS” column is intended to target the interests, needs, and questions of student members of the Decision Analysis Society. If you have a question about the field that you think might be interesting to other DA students, please send it to the DAS Today editors (Drs. Heather Rosoff [rosoff@usc.edu](mailto:rosoff@usc.edu) and Jun Zhuang [jzhuang@buffalo.edu](mailto:jzhuang@buffalo.edu)).

For this issue, I planned a little end-of-summer diversion. I asked a group of well-known decision and risk analysts if they had any words of wisdom, “tidbits of advice,” or just general likes and dislikes of the field we all work in that they would like to share with DAS student members. I have mixed the direct responses to that question in with other tidbits gleaned from papers and lectures and have turned the advice of (some of our) sages into a game for your amusement: match the wise words to the wise person who said them, below.

### Wise Person

- |                           |                   |                    |
|---------------------------|-------------------|--------------------|
| a) Gregory Parnell        | d) Larry Neal     | g) Robert Clemen   |
| b) Elisabeth Pate-Cornell | e) Craig Kirkwood | h) Daniel Kahneman |
| c) Rex Brown              | f) Ron Howard     | i) Ralph Keeney    |

### Wise Words

- 1) Never do a risk or decision analysis for someone who does not want to know the results!
- 2) One of the best parts of decision analysis is the opportunity to work for senior decision makers and to meet world class subject matter experts.
- 3) The purpose of decision analysis is to achieve clarity of action. If you already know what to do beyond any doubt, do it. If you do not know what to do, then apply the philosophy of decision analysis at an appropriate level.
- 4) ... our field just isn't sexy... [but] we really do have something to offer the decision makers of the world
- 5) The large formal DA studies get the spotlight, but it's the day-to-day influence on employees' thinking that generates the real value.
- 6) Not many dull moments when you hang around with DA people.
- 7) We decision analysts can directly help on a few problems, but we must effectively educate and train people to be better decision makers to make a substantial difference.
- 8) The decision science community is motivated to do research that is scientifically attractive, rather than useful. Advances in the state of the art of decision aiding have therefore to rely on the accumulated experience of practitioners.
- 9) In a world of radical uncertainty - and I believe that is the world we live in - there is a real threat of paralysis, of doing nothing

With thanks to those who responded, and apologies to anyone who feels I took their quote out of context!

The additional comments I received highlighted the “good” more than the “bad.” It appears that decision analysts really enjoy each other's company – they like

hanging out with other people who think like we do. And they believe in what we do: several mentioned that the principles of DA have made them better decision-makers in their own lives, and that one of the big rewards of being a in the DA field is that they really get to help other people and organizations make better decisions. One challenge of a career in decision analysis is that many people do not appreciate or understand the value of the tools that we bring to the table – people in general appear to be very interested in *why* people are the way they are (why do people make such silly decisions?) than they are in understanding how to make changes (how to improve those decisions). Although we know we make a difference, it is not recognized as broadly as we think it should be!

**Answer key****1-b, 2-a, 3-f, 4-g, 5-d, 6-e, 7-i, 8-c, 9-h**

# Editorial Team for Decision Analysis Today

DA Practice: Dr. Bill Klimack  
Kromite Consulting  
[BKlimack@kromite.com](mailto:BKlimack@kromite.com)



DA Around the World: Dr. Alec Morton,  
London School of Economics  
[A.Morton@lse.ac.uk](mailto:A.Morton@lse.ac.uk)



Ask DAS: Dr. Karen Jenni  
Decision Insight  
[kjenni@insightdecisions.com](mailto:kjenni@insightdecisions.com)



Co-Editor: Dr. Heather Rosoff  
CREATE/University of Southern California  
[rosoff@usc.edu](mailto:rosoff@usc.edu)



Co- Editor: Dr. Jun Zhuang  
SUNY University at Buffalo  
[jzhuang@buffalo.edu](mailto:jzhuang@buffalo.edu)



Editor Assistant: Ms. Elizabeth Newell  
SUNY University at Buffalo  
[eanewell@buffalo.edu](mailto:eanewell@buffalo.edu)



## DAS Officers

President:

**Vicki M. Bier**

Industrial and Systems Engineering  
University of Wisconsin  
Madison, WI 53706  
Tel: 608.262.2064 Fax: 608.262.8454  
[bier@engr.wisc.edu](mailto:bier@engr.wisc.edu)

VP/President-Elect and Newsletter Editor:

**Jeffrey Keisler**

College of Management  
University of Massachusetts Boston  
Boston, MA 02125  
617.287.7738  
[jeff.keisler@umb.edu](mailto:jeff.keisler@umb.edu)

Past President:

**James E. Smith**

Fuqua School of Business  
Duke University  
Durham, NC 27708-0120  
Tel: 919-660-7770  
[jes9@duke.edu](mailto:jes9@duke.edu)

Secretary-Treasurer:

**John Butler**

McCombs School of Business  
University of Texas at Austin  
Austin, TX 78712  
512.232.6821  
[John.Butler2@mcombs.utexas.edu](mailto:John.Butler2@mcombs.utexas.edu)

Web Editor:

**Jason Merrick**

Statistical Sciences & Ops. Research  
Virginia Commonwealth University  
Richmond, VA 23284-3083  
Tel: 804.828.5865 Fax: 804.828.8785  
[jmerric@vcu.edu](mailto:jmerric@vcu.edu)

## DAS Council

**James C. Felli**

Eli Lilly & Company  
Decision Sciences Department  
Indianapolis, IN  
317.651.9438  
[jcfelli@lilly.com](mailto:jcfelli@lilly.com)

**Seth Guikema**

Whiting School of Engineering  
Johns Hopkins University  
Baltimore, MD 21218  
410.516.6042  
[sguikema@jhu.edu](mailto:sguikema@jhu.edu)

**Casey Lichtendahl**

Darden School of Business  
University of Virginia  
Charlottesville, VA 22906  
434.924.7708  
[LichtendahlC@darden.virginia.edu](mailto:LichtendahlC@darden.virginia.edu)

**Patrick Noonan**

Goizueta Business School  
Emory University  
Atlanta, GA 30322  
404.727.0549  
[Patrick\\_Noonan@bus.emory.edu](mailto:Patrick_Noonan@bus.emory.edu)

**Martin Schilling**

Decision Institute and  
London School of Economics  
+49 (0)30 700 140 360  
[m.schilling@decisioninstitute.eu](mailto:m.schilling@decisioninstitute.eu)

**Canan Ulu**

McCombs School of Business  
University of Texas at Austin  
Austin, TX 78712  
512.232.3734  
[canan.ul@mccombs.utexas.edu](mailto:canan.ul@mccombs.utexas.edu)