

# Decision Analysis Newsletter



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### From The President

**M. Elisabeth Pate-Cornell**



What a conference! I hope that you were able to attend the many exceptional events and interesting talks that took place in San Jose, and if you were not, that you will join us in Atlanta for the meeting to be held there next year.

The events started early this year with a dinner honoring Ron Howard, Professor at Stanford in the Department of Management Science and Engineering and a long-time contributor to Decision Analysis. Many past and current colleagues and students shared good memories. The event also raised \$5,000 in support of the Decision Education Foundation, which has the ambitious goal

to teach Decision Analysis techniques to pre-college students. DAS was happy to support that event.

We had some particularly enlightening sessions this year, and I would like to thank Robin Dillon-Merrill and James Felli for their excellent work as cluster chairs. I also want to thank the DAS members who reached out to long-absent researchers and convinced them to attend the meeting. Highlights included Duncan Luce who discussed a life-time of work modeling utility discontinuities, Mark Machina who summarized twelve years of work improving the robustness of the basic analytical concepts of decision analysis, Steve Lippman who showed how to recognize that a project was failing and should be abandoned, and Max Henrion who stated that he appreciated the opportunity to revisit his thoughts on uncertainty.

We also had several good sessions focused on current topics in the military and security environments. Some of the speakers addressed, for example, problems of utility functions in military decisions, vulnerability and risk assessment, network attacks, and protection of critical infrastructure.

Several people were recognized with awards. We were proud to award the Ramsey Medal to Professor James Dyer for a lifetime of contributions to the field of Decision Analysis. Jim touched everyone of his colleagues and co-authors in his Ramsey presentation titled, "You write the first draft." For the 2002

Publication Award, the DAS chose a paper in Medical Decision Making written by Sylvia Jansen, Anne Stiggelbout, Peter Wakker, Marianne Nooij, Evert Noordijk, and Job Kievit from the Netherlands. Peter Wakker accepted the award on the group's behalf, and presented an entertaining summary of three research papers in about 20 minutes. The best student paper was awarded to Veronika Kobberling for her paper on, "Strength of Preference and Cardinal Utility." Veronika, a Ph.D. student of Peter Wakker, unfortunately was not able to attend. The DA Practice Award was won by Jeff Stonebraker for his examination of blood clot-busting drugs.

Finally, the DAS Council decided to support two new grants. One will be used by the cluster chair to organize a plenary session for our track that will bring individuals from the field of DA who do not normally contribute to our conference. The other will be used to offset some students' expenses to travel to the annual INFORMS conference. We recognize that students are the future of the DA Society and that we need to find new ways to include them in our sessions.

In summary, I hope you had the opportunity to attend the San Jose conference and found it rewarding. I am also asking you to remember to submit your best papers to Bob Clemen and Don Kleinmütz for the coming *Decision Analysis Journal* and I look forward to seeing you in Atlanta.

## Professor James S. Dyer Receives Ramsey Medal

### Ralph L Keeney

Professor James S. Dyer of the University of Texas was selected to receive the Ramsey Medal this year. He was presented the award at the San Jose INFORMS meeting in November by Ralph Keeney, who chaired the Ramsey Award Committee. For the first time, the committee consisted of all living individuals—there are eleven such individuals—who had received the Ramsey Medal.



*Ralph Keeney presenting the medal to James Dyer*

The Ramsey Medal is awarded for distinguished contributions in decision analysis over a significant period of time. The August issue of Decision Analysis Newsletter cited Dyer's significant contributions to theory, procedures to implement decision analysis, the development of computer programs to model decisions, and applications. He has also served on the Decision Analysis Society as both a council member and chair and is currently the Area Editor for Decision Analysis with the journal Operations Research.

## E-Mail Delivery of DAS Newsletter

If any of your friends complain that they did not receive this issue of DAS Newsletter, it may be because the newsletter is now being delivered by e-mail and your friend's e-mail address on record at INFORMS is obsolete. Tell them to update their e-mail addresses by going to the website

<http://www.informs.org/Members/ProfileUpdate> and following the instructions.

## Call for Nominations

### Gregory S. Parnell

The Decision Analysis Council provides leadership for our society. The positions on the council are the President, the Past-President, the President-Elect, the Secretary-Treasurer, and six council members. The council members serve three-year terms and we elect two new council members each year.

This year we are looking for outstanding council member candidates. We would like the council election slate to reflect our membership: academic and practitioners; people who work in private and public organizations; and national and international members. We typically nominate at least four candidates for the two positions. The members of the society select from the candidates on the ballot and can vote for write-in candidates.

As President-Elect, it is my task to come up this year's slate of council candidates. If you would like to serve, or would like to nominate someone to serve as a council member (of course I will confirm the individual's desire to serve prior to adding them to the slate) please contact me at [gregory.parnell@usma.edu](mailto:gregory.parnell@usma.edu) or 914-720-3989.

## 41st Annual Bayesian Research Conference

The 41st Annual Bayesian Research Conference will be held at the Sportsmen's Lodge Hotel (at the intersection of Ventura Boulevard and Coldwater Canyon Boulevard) in Studio City, California, February 13-14, 2003.

Ward Edwards, the organizer, writes, "My health hasn't been good for some years, is getting no better, and requires more and more nearly full-time attention... If I can avoid it, I do not want to have a Bayesian Conference in close proximity to a hospitalization. Better to quit. So I shall quit. I'll manage to run the 2003 Conference, one way or another. And that will be the last.

"... Like its predecessors, it will be concerned with decision processes and problems. We always strive for a blend of basic research and applications. A mixture of behavioral and normative interests has characterized us over the years. This means that decision analysts and behavioral decision theorists will be talking to one another. In recent years a number of members of the Normative AI Systems community have attended. So, in addition to more familiar topics like utility, probability, cognitive illusions, and the like, we will also hear about influence diagrams, formal representations of uncertainty, utility theory as a basis for control, data mining, and similar topics."

For registration form and additional information about the conference, travel arrangements, hotel information and directions, please write to Letty Baz, [baz@usc.edu](mailto:baz@usc.edu).

## DAS Practice Award

Congratulations to the four finalists in this year's Fourth Annual Decision Analysis Society Practice Award Competition, held at the San Jose INFORMS conference. The intent of this competition, given for the first time at the Philadelphia INFORMS Meeting in November 1999, is to recognize, promote, and publicize good decision analysis practice. The winner of this year's competition is: **Jeff Stonebraker**, Manager of Strategic Planning, Bayer Biological Products, [jeff.stonebraker.b@bayer.com](mailto:jeff.stonebraker.b@bayer.com) for his project on "Commercial Evaluation of a Blood Clot-Busting Drug." This award comes with \$750 from the DA Society.

### Abstract:

Even though Bayer Pharmaceutical's (Pharma) use of decision analysis began in the late-1980s, this commercial evaluation was the first decision analysis project by Bayer Biological Products (BP). Previously, BP had analyzed a few business cases for review by Pharma. Pharma senior managers considered our recommendations relevant to their decision making.

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### Other Finalists

**Concha Bielza**, with co-authors: Manuel Gómez, Sixto Ríos-Insua, Juan A. Fernández del Pozo, Decision Analysis Group, School of Computer Science, Technical University of Madrid, Campus de Montegancedo, [mcbielza@fi.upm.es](mailto:mcbielza@fi.upm.es), Web site: <http://www.dia.fi.upm.es/~concha>, project clients: Manuel Sánchez Luna and Silvia Caballero, General University Hospital Gregorio Marañón at Madrid, for their project on, "IctNeo: A Decision Support System for Neonatal Jaundice Management."

**Bill Poland**, Technical Leader, Pharsight Corporation, [poland@pharsight.com](mailto:poland@pharsight.com), for his project on, "Antidepressant Go-No-Go Decision."

**Gary J. Boyd**, Science Applications International Corporation, [gary.j.boyd@saic.com](mailto:gary.j.boyd@saic.com), project client: Gregory St. Pierre, Chief, Risk Management and Quality Assurance, U.S. Army Program Manager for Chemical Demilitarization, for their project on, "Risk Assessment and Management for Chemical Weapons Disposal."

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### Fifth Annual DAS Practice Award Competition

Abstract Submission Due date: June 30, 2003

Past-president L. Robin Keller ([LRKeller@uci.edu](mailto:LRKeller@uci.edu)) will chair the fifth annual DAS Practice competition. Those wishing to compete should submit 2-page abstracts by June 30, 2003. More details will be printed in the next newsletter and sent via email to the DAList.



*Jeff Stonebraker and Robin Keller*



*Concha Bielza and Robin Keller*



*Bill Poland and, who else, Robin Keller*

# Decision Analysis Journal

Update: First Papers Accepted

## Bob Clemen & Don Kleinmuntz

Since the initial announcement and call for papers in July 2001, the new INFORMS journal *Decision Analysis* has received over 50 paper submissions. So far, editors Bob Clemen and Don Kleinmuntz have accepted seven manuscripts for publication, expected to commence in March, 2004. A list of titles and abstracts for these seven accepted papers appears at the end of this article. The editors are delighted to have taken this initial step. Clemen explains that building a backlog before launching is crucial in order to ensure publication on a regular quarterly schedule: "We need to have approximately a one-year backlog – about 20 articles – when we send the first issue to press."

Beyond having an adequate backlog to launch, the journal also needs a consistent flow of high-quality submissions to sustain publication in the long run. What constitutes a sustainable flow? "Based on our experience so far, we believe we need 80-100 submissions per year in order to get 20 or so that are acceptable," Kleinmuntz opines.

The good news is that the number and quality of submissions appears to have significantly improved over the past six months. If the trends continue, the journal has a very good chance of being launched on time and becoming a successful INFORMS journal. "I'd say at this point that we have about a 95% chance of being able to launch on schedule," Clemen says. (He freely admits to both overconfidence in general and a motivational bias in this case.)

Both editors stress that DAS members can help ensure the success of *Decision Analysis*. As a whole, the DAS has a lot to offer, and *Decision Analysis* was designed to provide a way for us to communicate about the theory and practice of our field. Clemen and Kleinmuntz urge members to consider *Decision Analysis* as an outlet for their best work and to send in a paper as soon as possible. Of course, encouraging DAS members is only part of an ongoing effort to obtain submissions from potential authors working in all aspects of decision sciences.

Two of the accepted articles listed below are "perspective" articles that Clemen and Kleinmuntz hope to publish along with invited commentary. Three of the articles present new research contributions, and the remaining two describe interesting and noteworthy applications. The editors especially want to encourage practitioners (for example, those who have competed for the DAS Practice Award) to consider writing up their work. "Feel free to contact us," Clemen urges. "We will be delighted to help you think through the issues and to position your paper well for *Decision Analysis*. Short of doing the writing for you, we will try to make the process as easy as possible."

All articles submitted to *Decision Analysis* are peer reviewed. The editors emphasize, though, that they treat submissions differently depending on the nature of the contribution. Research articles, for example, are subjected to a thorough review

commensurate with other top research-oriented journals, such as *Management Science*. Other contributions, though, like applications or tutorials, are reviewed as such, with the objective of ensuring that published papers provide solid examples or techniques that are readily accessible to *Decision Analysis* readers. Perspective submissions (and commentary on them) are also reviewed and are held to high standards of content, argumentation, and presentation.

Another piece of good news is that the Decision Analysis community has done an outstanding job in providing the editors with high quality and timely reviews. The average cycle time (from submission to editorial report sent back to the author) has been 44 days. In fact, 84% of all submissions received definitive feedback within 90 days, and 96% within 120 days.

For more information about the journal, including the statement of editorial objectives and instructions for contributors, refer to the journal's web site, at

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

## Decision Analysis accepted articles as of 11/2002

### Perspective Papers Accepted:

"Speaking of Decisions: Precise Decision Language," by **Ronald A. Howard**.

"Perspective on Decision Analysis Applications, 1990-2001," by **Donald L. Keefer, Craig W. Kirkwood, and James L. Corner**.

### Research Papers Accepted:

"Elicitation of Probabilities using Competitive Scoring Rules," by **D. Marc Kilgour and Yigal Gerchak**.

"Approximating Risk Aversion in Decision Analysis Applications," by **Craig W. Kirkwood**.

"Multiple Experts vs. Multiple Methods: Combining Correlation Assessments," by **Robert L. Winkler and Robert T. Clemen**.

### Application Papers Accepted:

"A Decision Analysis Method for Evaluating Computer Intrusion Detection Systems," by **Jacob W. Ulvila**.

"An Analysis of a Strategic Decision in the Sport of Curling," by Keith A. Willoughby and **Kent J. Kostuk**.

## Decision Education Foundation

### Ron Howard

As many of you know, I am deeply involved with a new nonprofit organization called the Decision Education Foundation (DEF). Our goal is to equip youths with better decision-making skills that will allow them to better shape their futures in this uncertain world. The same methods we have successfully employed in the boardrooms of the world can be adapted to guide anyone. We all need this help in decision-making, but who needs these methods more than young people on the precipice of a lifetime of consequences from their decisions? In particular, our curriculum empowers youths with the decision-making tools for taking control of their fates and proactively mapping out their lives' paths. For more information, see [www.decisioneducation.org](http://www.decisioneducation.org).

We have outlined a grand and inspiring vision for ourselves and have embarked on three pilot programs. We are already working with kids at risk and with those who are gifted. Our greatest challenge in achieving our vision is pulling together the required volunteer and financial resources. I want to invite you to join me in supporting this important effort.

This is an opportunity to join a dedicated group of exceptional people inspired by a wonderful cause. We need many volunteers to help us with curriculum development, teacher training, fundraising, and public relations. If you would like to learn more about volunteer opportunities at the DEF, please contact Nicole Petty at

[npetty@decisioneducation.org](mailto:npetty@decisioneducation.org).

## EURO/INFORMS at Istanbul

### Manel Baucells

As the DA Cluster chair for the EURO/INFORMS Conference in Istanbul, Turkey, July 6-10, 2003, I would like to line up Session Chairs. Details of the conference are at [www.istanbul2003.org](http://www.istanbul2003.org).

The job of a session chair is to invite 4 speakers that have a common theme. The sessions are scheduled for 90 minutes. For your information, the deadline for abstract submissions is January 15, 2003.

If you are interested in putting together a session, or present a paper, please send an e-mail to me at [mbaucells@iese.edu](mailto:mbaucells@iese.edu).

## Cluster Chairs for INFORMS 2003

**George Wu** and **Dana Clyman** are the cluster chairs for the 2003 INFORMS conference in Atlanta. Please contact them if you wish to chair and/or present a paper at a DAS sponsored session.

Note that the conference comes up a little early in 2003. It is scheduled for October 19-22.

## DAS Publication Award

This year's Publication Award went to a paper in Medical Decision Making written by **Sylvia Jansen, Anne Stiggelbout, Peter Wakker, Marianne Nooij, Evert Noordijk, and Job Kievit** from the Netherlands. On behalf of the group, Peter Wakker accepted the award. Peter Wakker also made a presentation about their research to the audience.



*Jim Matheson presents DAS Publication Award to Peter Wakker*

## DAS Student Paper Award

This year's DAS Student Paper Award goes to **Veronika Kobberling** of the University of Maastricht for her paper, "Strength of Preference and Cardinal Utility." Veronika did not attend the INFORMS conference and therefore could not be pictured here.

The runner-up is **Iliia Tsetlin** of Duke University for his paper, "Modifying Variability and Correlation in Winner-Take-All Contests," co-authored with Anil Gaba and Bob Winkler.



*Iliia Tsetlin receiving the Runner-up Student Paper Award from John Butler*

## Reverend Bayes versus the Nickel Defense

**Gordon Hazen**

Football pools – what fun! Predict the winner each week without regard to point spread in 16 or so NFL games. If I get more picks right than anyone else, then I win \$10 for the week, and if I get the most picks right for the entire season, then I win \$250 and maybe more. All this for a \$30 entry fee. Well, at least it was fun for a while. But after finishing in the middle of the pack for two consecutive years, I found myself wondering whether the effort I had to spend keeping up with NFL stats and injury reports was worth my time and attention. Might there not be a more rewarding and less demanding way to participate in the pool?

Aha! Perhaps the Reverend Bayes might be enlisted to help. Statistical modeling to the rescue! But not too much data collection please – I've got other things to do. Ok, based *only* on prior weeks' scores and who played whom, might I develop a Bayesian model to predict next week's scores?

No time for extensive Bayesian updating calculations or Markov chain Monte Carlo, so obviously I need a closed-form conjugate update. Clearly, heroic assumptions are required. Never mind that football scores probably fail the central limit theorem. Let's see, if team  $i$  has offensive capability  $f_i$  and team  $j$  has defensive capability  $d_j$ , then team  $i$  should score  $f_i - d_j$  points when playing team  $j$ , plus or minus some normally distributed per-game error whose standard deviation  $\sigma$  I could subjectively estimate – let's say  $\sigma = 7$  points. Some messy matrix algebra and voila! – a normal conjugate update on all  $f_i$  and  $d_j$ . Of course,  $f_i$  and  $d_j$  could change from week to week, but let's say they remain on average the same but vary with standard deviation  $\sigma_0 = 1.5$  points. I gave  $\sigma$  and  $\sigma_0$  some thought, and it seemed these were good estimates based on my experience watching the NFL.

Great – let's see how it works. Would ignoring injury reports and home versus away overly hamper the Reverend Bayes? Or would formal Bayesian predictions outclass 24 competing humans, with their well-known judgmental biases? The only way to find out is to try. Eight weeks of data from last season and here I am sitting on my Bayesian posterior ready to face the 2002 season.

How has it worked out? After 10 weeks, the Reverend Bayes finds himself in tenth place in the pool of 25, at 84-59, one pick behind eight-year-old Dave the Wave. But hey, he is doing exactly as well as he would have done if he had followed the Las Vegas line. What makes it hard is that everyone else in the pool is well aware of the line, and perhaps by chance, lots of them can beat it.

What else could be the problem? Well, ignoring home versus away is probably not a great idea, but fixing that is more matrix algebra than I have time for now. I do notice that Reverend Bayes' team ratings tend to bounce teams up and down too much – a winner last week will jump in the ratings, get a win prediction from the Reverend this week, but lose.

This would occur if the weekly score standard deviation  $\sigma$  (equal to 7 points) were too small. Reverend Bayes might judge a score of, say, 21 points above prediction to be too large a deviation to be chance, and thereby infer that a team had improved from the prior week when it had not. If  $\sigma$  were larger, then the same 21 excess points would be chalked up to random variation. Perhaps then I should change  $\sigma$ .

Because I have all scores stored in a worksheet, I can change  $\sigma$  from its current level of seven points and see how Reverend Bayes would have done had we used some other level instead. Much to my surprise, I find that had I taken the per-game standard deviation  $\sigma = 48$  points (yes, forty-eight points), the Reverend would be six picks better at 90-53, at the top of the pool! Of course, *post hoc* choice of  $\sigma$  is cheating. But with my new parameter choice, Reverend Bayes is doing pretty well, with a record of 54-25 since then through December 15, slightly better than the Las Vegas line's 53-26. Overall the Reverend now stands in fifth place in the pool at 138-84. Had he been smart enough to use the new value for  $\sigma$  from the beginning, he would stand in first place in the pool by two games, at 146-76.

Two lessons learned: First, matching the Las Vegas line was remarkably easy given that Reverend Bayes remained blind to everything (including injury reports and home versus away) except points scored and schedule. And second – ah the irony – I had hoped that Reverend Bayes might outperform humans handicapped by judgmental biases, but by choosing too small a weekly variation in scores, I myself succumbed to the overconfidence bias!

The Super Bowl? As of December 15, Reverend Bayes thinks the four best teams in the NFL are Philadelphia, Tampa Bay, Oakland and Kansas City ....

## Scott Cantor Elected as SMDM President

In October, INFORMS and Decision Analysis Society member Scott B. Cantor, Ph.D. was elected to serve as President of the Society for Medical Decision Making (SMDM). He will immediately assume the role of President-Elect and then become President for a one-year term beginning in October 2003. SMDM is a 1000-member organization which seeks to improve health outcomes through the advancement of proactive systematic approaches to clinical decision making and policy-formation in health care by providing a scholarly forum that connects and educates researchers, providers, policy-makers, and the public. Decision analysis is the foundation for a substantial portion of the research presented at the SMDM annual meetings.

Scott is an Associate Professor in the Section of Health Services Research in the Department of Biostatistics at The University of Texas M. D. Anderson Cancer Center. He invites all INFORMS members interested in clinical decision analysis to check out the Society for Medical Decision Making website ([www.smdm.org](http://www.smdm.org)) or contact him by e-mail ([sbcantor@mdanderson.org](mailto:sbcantor@mdanderson.org)) for more information.

## RON HOWARD is an anagram of DRAW HONOR



*On Saturday, November 16<sup>th</sup>, the Decision Analysis Society, the Decision Education Foundation, and the Department of Management Science and Engineering at Stanford University held an evening in honor of Ronald Howard.*

Ronald Howard is known for his contributions to the field of Markov decision processes, Policy Iteration, and Decision Analysis. What is not known as much is his history and background:

Ron's Parents were born in Belfast Northern Ireland. He was born in Brooklyn, New York, 1934. He received A++ in many subjects at school except for Gymnastics.

He had a very influential teacher in High School who gave him a "Must Read" list of books. Ron would often skip school and go to the public library to read. Even today, Ron remembers the influence of his high school teachers and the guidance they provided. After high school, he received a full scholarship to go to MIT and married Polly Avery Hatheway in 1955 in the MIT Chapel. His work on a consulting project at Arthur D. Little led to his famous work on Markov Decision Processes and soon after was on public TV in Massachusetts for an example from his class on how Markov processes can be applied to buying used cars. (The Used Car Buyer). He also taught himself shorthand.

Later, in 1964, he moved to California and has been professor at Stanford in the school of Engineering up to our present day. He also consulted at SRI with Jim Matheson. Soon after, he left SRI, went to RPA, and then was a founder of Strategic Decisions Group (SDG) in the 1980s. In the early 1990's Ron lost his beloved wife, Polly, of almost 42 years, and an 11-year cancer survivor. Ron picked himself up and carried on, realizing that he has an important mission to deliver in Decision Analysis. A few years later, Joyce Mattea entered into his life and they were married in November, 2001. Ron was elected to the National Academy of Engineering, in 2000 and founded the Decision Education Foundation in 2001 with a vision to help youth learn the decision-making skills and make better decisions about their lives.

### Quotes from friends and peers:

"I remember giving a series of lectures on the use of decision trees in the early '60s at Arthur D. Little where you, as a consultant to them, already had your foot firmly planted in the world of practice. You almost single-handedly kept the theory grounded and did not let the theory veer off into lands of esoterica, as was the case with special branches of operations research. I admired how you balanced academia with consulting practice and one of my regrets is that I did not follow your example."

*Howard Raiffa*

"Ron's engineering approach to the application of decision theory has created a new profession. I have had a most satisfying career in applying the principles to strategic corporate decisions and, together with the many supporters of the Decision Education Foundation and Ron, I hope to embed these skills into mainstream education."

*Carl Spetzler*

"Shortly after my arrival at UCLA in the early 1970's, I discovered your work on decision analysis that provided a way of thinking about my research problem, and led into a research path that has defined my career. Your work at Stanford and leadership for the field of decision analysis has provided a strong base for our profession, and for a way of thinking that has created benefits for the broader community"

*Jim Dyer*

"I met Ron 6 years ago. Soon after he became my advisor and friend. In academics, I have learnt from Ron to avoid arbitrariness, and have seen that a student – advisor relationship can actually be friendship. In Ron's Ethics class, I have learnt to create clear distinctions that have helped me achieve clarity on many ethical dilemmas. In life, I have learnt to focus on what really matters in the bigger picture. Of the many things I admire about Ron, he lives to practice what he teaches."

*Ali Abbas*

"My dad has influenced me in so many ways, as every parent does, but what I appreciate the most is his unconditional love and his modeling of a life-long love of learning."

*Kim Howard*

"The dinner in honor of my father was a rare opportunity for my family to meet and learn about the many people whose lives my father has touched in the several decades of his career. It was a moving experience to watch the room fill with love, respect, and humor in support of this otherwise humble, quiet contributor to the wisdom of our world. Just as my father spoke of his father's stories about their ancestors, the anecdotes told in the course of the evening will be told and retold within our family when we speak of my father's professional life."

*Robert Howard*

## A Poem on DA

To Ronald Howard, by Ali Abbas

There's a great branch of science  
By rules of thought it's powered  
That helps us make decisions,  
And was coined by Ronald Howard.

So if you have a decision to make,  
That you can barely understand  
With uncertainty present  
And facts not at hand

Just maximize the e-value  
Of the u-values you have placed  
And so, we have before us  
The best alternative you faced.

And even in a complex  
Decision situation  
You can calculate the value  
Of sources of information

And many other tools  
That we use to help you through  
Like Policy Iteration,  
And Decision Diagrams too

So you see it's not just theory,  
Or math to fill a book.  
That makes us appreciate  
The thought and time it took.

## Tidbits

The George E. Kimball medal was awarded to **Craig W. Kirkwood** for distinguished service to INFORMS and the profession.

The INFORMS Expository Writing Prize was awarded to **Ralph Keeney** and **Howard Raiffa**.

During the DAS Awards session of the INFORMS conference, **Mazen Skaf** of Strategic Decisions Group announced in a ceremony with President Elisabeth Pate'-Cornell that \$750 will be awarded to the Decision Education Foundation (DEF), to advance decision analysis education in young students. Mazen and Don Spillman were the winners of the first annual DAS practice award (for their project with Shell Offshore, Inc. and SDG/Navigant), and chose to donate that money back to the DA Society, to promote students to apply decision analysis in practice. That set-aside money will now be sent from DA Society to the DEF. For more details about DEF, see

[www.decisioneducation.org](http://www.decisioneducation.org).

## DAS Officers

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*Two views of the audience that gathered for the DAS Awards session*





# The DA Society Office Bearers as they appeared at the Council Meeting in San Jose



*Bob Nau has his back to the camera.  
Others from L to R: Don Kleinmuntz, Bob Clemen, Elisabeth Pate-Cornell and Greg Parnell*



*Robin Dillon-Merrill has her back to the camera. Others from L to R: John Butler, Kara Morgan, Robin Keller*



*George Wu and Bob Bordley*



*Jeff Keisler and Jay Sounderpandian*

## Answers to Items from Previous Issue

Jayavel Sounderpandian

### 1. A Cryptoquestion

Correct solution was sent in by: **Eric Johnson, Itzhak Ravid, Scott Cantor** and **Stanley Zionts**.

a. A TEXT IS CODED AND THEN THE CODED TEXT IS CODED USING THE SAME CODE, AND SO ON. COULD IT HAPPEN THAT THE ORIGINAL TEXT IS REACHED AT SOME STAGE?

b. The answer is yes. Because the coding is a one-to-one mapping, a letter has to reappear as itself after at most 26 iterations. Let  $n_1, n_2, \dots$  be the number of iterations it takes for each letter in the text to reappear as itself. Then the whole text must reappear as itself after  $\text{LCM}(n_1, n_2, \dots)$  iterations.

### 2. Tripod Decisions

Correct solution was sent in by: **Itzhak Ravid**

a. The area of the triangles  $PAB$ ,  $PBC$  and  $PCA$  must add to the area of equilateral triangle  $ABC$ . This produces an equation with one unknown, namely, the side of triangle  $ABC$ . Solving it yields a unique real value for the side, which is 112 cm. [This curious result of integer values for all the lengths is reported in *Mathematical Circus* by Martin Gardner.]

b. In order to maximize the area of triangle  $ABC$ ,  $PA$  should be perpendicular to  $BC$ ; or else  $PA$  could be swung to increase the altitude with the same base  $BC$ , thus increasing the area. Similarly,  $PB$  must be perpendicular to  $CA$  and  $PC$  to  $AB$ . This makes  $P$  the orthocenter of triangle  $ABC$ . Trigonometric calculations yield an area of  $5469.95 \text{ cm}^2$ . [This question is, hopefully, original.]

c. Taking angle  $PAC$  as  $x$  degrees and  $PAB$  as  $(60 - x)$  degrees, the area of triangle  $ABC$  can be expressed in terms of  $x$ . Differentiating the area with respect to  $x$  and equating that to zero yields the interesting result that angle  $PBA$  must equal angle  $PCA$ . Using that condition the triangle is easily resolved. Its area works out to  $5446.26 \text{ cm}^2$ . [A version of this question appeared in *The Mathematical Monthly*.]

### 3. Eugene's Fate

**Wynship Hillier** wrote to say, correctly, that Eugene is logically inconsistent, and went on to explain it.

My answer: EU theory is based on the axiom that preferences depend only on the probability distribution of the final wealth and nothing else. Eugene is switching between final wealth and final wealth-rank and thus runs into contradictions. [A version of this situation that my friend Tapen Sinha and I wrote was published in the April 1992 issue of *The Actuary*, the newsletter of the Society of Actuaries.]

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# The Provocative Page

## Jayavel Sounderpandian

On this page are: a puzzle, a problem and a crossword. Please e-mail me ([sounderp@uwp.edu](mailto:sounderp@uwp.edu)) your answers, before March 1, 2003. For the crossword, just send the list of words. Names of all those who submit correct answers will be mentioned in the next issue.

### 1. Four Letter Words

You have to find a common four-letter word with four distinct letters, and a fifth letter, such that you can replace each of the four letters in the word with the fifth letter to get four new common four-letter words. (That is, if ABCD is your original word, and E is your fifth letter, then ABCD, EBCD, AECD, ABED and ABCE should all be common English words.)

- a) Find a solution where the fifth letter (E) is a consonant.
- b) Find a solution where the fifth letter (E) is a vowel.

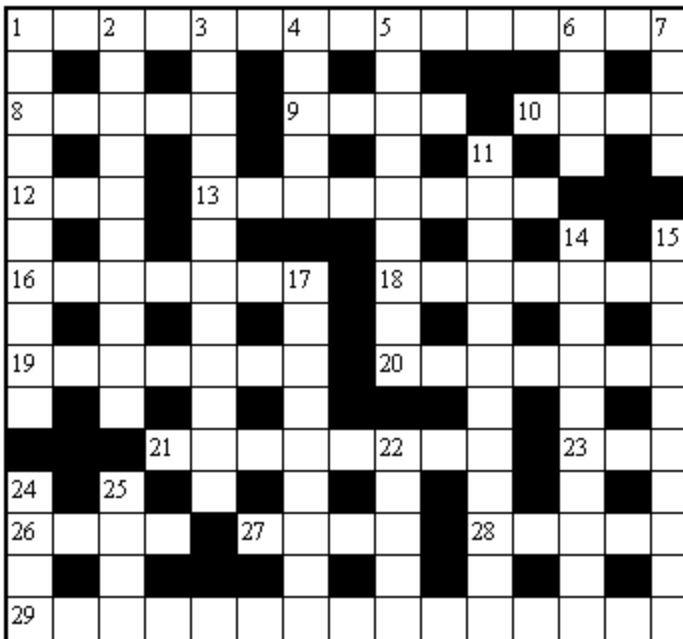
### 2. Mary, Mary, Quite Contrary

Mary planted 16 rose bushes in her garden along the perimeter of a circle. Each bush grows exactly one flower each day, and the flower falls off at the end of the day. A rose may be white or red. The color of a new day's rose depends on the color of the two neighboring roses the previous day. If on the previous day the two neighbors were of the same color, the next day's rose will be white, else red.

Mary, who is fond of red roses, started with a random order of colors on the first day. To her disappointment, all of them turned white after some days. So she removed a few bushes at random and replaced them with red ones. To her dismay, once again they all turned white after some days.

- a) Prove that no matter what order of colors Mary starts with, all 16 will turn white after some days.
- b) In the above version, the number of bushes ( $n$ ) is 16. Find all  $n$  for which this phenomenon holds good.

### 3. A Cryptic Crossword for Decision Analysts



#### Across

- 1. What Fermat demonstrated when he scribbled about his last theorem? (8, 7)
- 8. Amplified light leads astray. (5)
- 9. Finishes objectives. (4)
- 10. The feeling of risk aversion. (4)
- 12. A resort to start spamming. (3)
- 13. He won't let anyone else decide for him. (8)
- 16. What a neighborhood usually is. (4, 3)
- 18. A different citadel for a different language. (7)
- 19. Trap it cleverly near Sen. (7)
- 20. Downsizing? (7)
- 21. The proof is in the \_\_\_\_\_. (8)
- 23. Are they changed for the period? (3)
- 26. This type of communication is sound. (4)
- 27. A standard for vectors? (4)
- 28. I am no deranged middle easterner. (5)
- 29. Where any two points have distinct neighborhoods. (2, 8, 5)

#### Down

- 1. Strangely, some listen to produce landmarks. (10)
- 2. Hard to find such people in a casino. (4-6)
- 3. A letter from Delhi may bear these. (6, 6)
- 4. A substitute decision maker. (5)
- 5. You can't decide unless you are this. (9)
- 6. A crazy aide gets a thought. (4)
- 7. Two feet are not enough to get there. (4)
- 11. Cruel postulates? (6, 6)
- 14. They could be decision criteria. (10)
- 15. Mitts I gaze curiously at defame people. (10)
- 17. Break this, and you instantly make a new one. (3, 6)
- 22. A roadside murder contains delay. (5)
- 24. Places where rays meet. (4)
- 25. Sounds like reserve money. (4)