JUDGMENT / DECISION MAKING

newsletter

April 1983 Vol. II, No. 4

FALL J/DM MEETING . . .

As agreed last fall, J/DM will meet this year on the Saturday and Sunday following the meeting of the Psychonomic Society. This would be November 19-20, 1983. The Psychonomic Society is meeting at the Sheraton Harbor Island Hotel in San Diego. If we run true to form, our meeting will also be there, but no definite plans have been made as yet with the hotel. Look to the July J/DM Newsletter for full information. We hope you plan to attend.

...Lola Lopes, for the Organizing Committee

COMPUTING APPLICATIONS IN J/DM . . .

For twelve years the National Conference on the Use of On-Line Computers in Psychology has had its annual meeting on the Wednesday before the Psychonomic Society meeting. The meeting has several parallel sessions which deal with the applications of computers in research and teaching in psychology and the behavioral sciences. The proceedings are published in Behavior Research Methods and Instrumentation. The Conference also includes equipment exhibits by major manufacturers. Many J/DM'ers have participated in that conference. Perhaps some of you might be interested in presenting a paper at the Conference dealing with the use of computers in judgment and decision making research. If there is sufficient interest, we might organize a symposium on the topic. If you are interested in participating in a paper session with other J/DM'ers call or write to John Castellan. For more information about the meeting, write to Dr. Cynthia H. Null, Department of Psychology, College of William and Mary, Williamsburg, VA 23185.

NEWS AND NOTES ABOUT NSF . . .

On pages 7-8 of this issue of the J/DM Newsletter is information concerning NSF's Decision and Management Science Program. Trudi Miller, Acting Program Director for Decision and Management Science, has provided some information for the newsletter. In absolute terms, DMS is still poor, but the budget is growing rapidly. Moreover, DMS has been getting a lot of attention. The New York Times does not know exactly what DMS is, but reports that it is "a winner." Also, it is reported that although DMS was initiated in partial repsonse to expressions of interest from ORSA, TIMS, and AIDS, psychologists submit a substantial portion of the proposals, and take away more than their proportional share of awards.

CONTENTS

Note: Deadline for submissions for next newsletter--June 30

Editor:

N. John Castellan, Jr.
Department of Psychology
Indiana University
Bloomington, Indiana 47405

(812) 335-4261

Addresses & Corrections:

Gary McClelland
Center for Research on Judgment
and Policy
IBS #3, CB 485
University of Colorado
Boulder, Colorado 80309

(303) 492-8122

FROM THE EDITOR. . .

The J/DM Newsletter welcomes submissions from individuals and groups. However, we do not publish substantive papers. Book reviews will be published. If you are interested in reviewing books and related materials, please write to the editor.

There are few ground rules for submissions. In order to make the cost of the J/DM Newsletter as low as possible, please submit camera-ready copy. This means that the copy should be typed single-spaced on white 8 1/2 by 11 paper. Please leave good margins--1 inch at the sides and bottom and 2 inches at the top. If possible, use a carbon or film ribbon. Please mail flat--do not fold.

Subscriptions: The current rate for the J/DM Newsletter is $2.00/year. This should cover the cost of about 4 issues. We are dedicated to keeping the cost at a minimum, but must emphasize that recent increases in postage rates will cause problems unless as many readers as possible pay. Please send your subscription to the editor. If you do not know whether or not your subscription has been paid or is current, check your mailing label. If it has an X or a 0, you have not paid; if it has an R, it is time to renew.

Checks should be made payable to the Indiana University Foundation.

Foreign Subscriptions: The cost of foreign subscriptions is necessarily higher than domestic subscriptions. Copies will be sent airmail to foreign addresses for $5.00 (U. S.) per year if drawn on a U. S. bank. (If payable in U. S. dollars, but not drawn on a U. S. bank, the cost is $25.00 per year. Note that many foreign banks have accounts with a U. S. bank and draw checks on that account.)

Address Correction: Please check your mailing label carefully. Because the J/DM Newsletter is sent by bulk mail, copies with incorrect addresses or otherwise undeliverable are neither forwared nor returned. Therefore we have no way of knowing if copies are delivered. Any changes or corrections in addresses should be reported to Gary McClelland. (Address changes may also be sent to the editor with subscription payments.)

Mailing Labels: Some readers may wish to send reprint lists or other material to people listed in the directory. Gary McClelland has agreed to provide sets of mailing labels for $5.00 to individuals employed by non-profit institutions.

QUOTE OF THE MONTH. . .

The theory of probabilities is at bottom only common sense reduced to calculus; it makes us appreciate with exactitude that which exact minds feel by a sort of instinct without being able ofttimes to give a reason for it. It leaves no arbitrariness in the choice of opinions and sides to be taken; any by its use can always be determined the most advantageous choice. Thereby it supplements most happily the ignorance and the weakness of the human mind.

Pierre Simon, Marquis de Laplace
A Philosophical Essay on Probabilities, 1814

CALL FOR ABSTRACTS

Society for Medical Decision Making

Fifth Annual Meeting

Toronto, Ontario, Canada

October 3-5, 1983

THE SOCIETY FOR MEDICAL DECISION MAKING is devoted to the analysis of decision making as it applies to clinical practice, to the establishment of health care policies, and to the administration of health care programs. The society addresses a diversified audience of health care professionals, including physicians, students, hospital and health administrators and policy analysts, health economists, educators, computer analysts, and psychologists.

For the Fifth Annual Meeting, papers are invited in the following areas:

CLINICAL STRATEGIES - the application of analytical methods to medical decisions affecting the care of individual patients, and/or the health of the general population;

COGNITION, ATTITUDES AND DECISION MAKING - psychological studies of the thought processes and interactions of clinicians and their patients;

COMPUTER-AIDED DIAGNOSIS AND DECISION MAKING

ETHICAL ISSUES SURROUNDING MEDICAL DECISION MAKING

COST-EFFECTIVENESS ANALYSIS AND HEALTH POLICY - including methodological studies on measuring and evaluating the effectiveness, risk and cost of medical practices and health programs;

DATABASES: PREDICTION OF DISEASE OR HEALTH OUTCOMES

TECHNOLOGY ASSESSMENT

VALUING HEALTH OUTCOMES AND UTILITY THEORY

MEDICAL EDUCATION IN DECISION MAKING

METHODOLOGY FOR DECISION MAKING

OTHER papers in related areas are not excluded

SPECIAL SESSION; Assessment of Medical Technology, dealing with the assessment of the efficacy of medical technology and devices, sponsored by the National Center for Medical Devices and Radiation, USFDA. Presenters of this speical session will agree to provide completed manuscripts by December, 1983.

Abstract forms are available from:

Ruth McDevitt
Society for Medical Decision Making
Mail Location 577
University Hospital
Cincinnati, Ohio 45267
U.S.A.

Members are also invited to suggest topics for workshops, special sessions or invited lectures for this and/or future meetings. Further information may be obtained from Dennis Fryback, University of Wisconsin, Madison, 1-25 Observatory Dr., Madison, Wisconsin 53706 U.S.A. or Raisa Deber, Chairman, Scientific Program Committee, Dept. of Health Administration, 2nd Floor, McMurrich Building, University of Toronto, Toronto, Ontario M5S 1A8 Canada.

Nagel, Stuart S., Policy Evaluation: Making Optimum Decisions. New York: Praeger, 1982. ISBN: 0-03-059644-0 (pbk.), $10.95 (351 pp.)

From the Author's Preface and Epilogue:

This book is about policy evaluation or policy optimizing. Its purpose is to bring together for a student and professional audience a set of principles and applications to apply the optimizing methods of operations research, management science, and related disciplines to public policy problems. The book can be used in the newly developing courses on policy evaluation and policy analysis that are being offered in political science, other social sciences, and interdisciplinary programs. It can also stimulate relevant ideas on the part of government-practitioners whose training may not have included these new methodological developments. Sophisticated, concerned citizens are also becoming increasingly interested in the logic of decision sciences as applied to public and private sector problems.

Policy-optimizing models involve three separate concepts. By the word "policy" we mean governmental decisions designed to deal with social problems on which governmental action is considered desirable. By "optimizing" we mean an attempt to arrive at a governmental decisions that represents the best choice among discrete alternatives in light of various constraints and conditions, or the best level or mix along a continuum of alternative possibilities. By "models" we mean a system of normative and empirical premises that lead deductively to a conclusion. More specifically, the basic policy optimizing model involves saying (1) Y is good; (2) X causes Y; and, therefore, (3) adopt X.

One particularly meaningful way of classifying policy optimizing models or methods is in terms of the four-part classification that is used in this book. That classification involves (1) finding an optimum choice among policy alternatives; (2) finding an optimum level for a policy requiring moderation; (3) finding an optimum mix in allocating scarce resources; and (4) time-oriented optimizing models. The book is divided into five parts. The first part deals with general principles of policy optimization. The next four parts correspond to the above four-part classification for policy-optimizing or evaluation models, namely finding an optimum choice, level, mix, or timing. The parts that deal with choice, level, and mix each contain three chapters that provide concrete examples designed to illustrate those models, and then a synthesizing chapter that pulls together the general ideas. Part Five, dealing with time-oriented models, is divided into three chapters; the first emphasizes optimizing models, the second emphasizes predictive models, and the third relates time-oriented models back to finding an optimum choice, level, or mix.

Thus, the book constantly intersperses general principles and concrete examples. It operates on the principle that one learns new ideas best by (1) being told what is going to be presented; (2) then being given both examples and general principles; and (3) then receiving a summary of what has been presented. It is hoped that this book will help to summarize and stimulate many ideas with regard to finding optimum choices, levels, and mixes in public policy evaluation.

NATIONAL SCIENCE FOUNDATION
WASHINGTON. D.C. 20550
September 1, 1982

Statement of the Subpanel* for the
Decision and Management Science Program

Members of the Subpanel for Decision and Management Science agree that the Program should emphasize basic research to develop a theoretical and empirical science of managerial and operational processes. Proposals that explore such common managerial processes as planning, control, selection, monitoring, and evaluation; and such common operational processes as congestion, distribution, screening, and market responses, are encouraged. The panel is particularly interested in developing a body of knowledge that incorporates the social and behavioral aspects of these processes.

In the conduct of research, processes will typically be characterized by mathematical, logical, and statistical models. These models will be derived from empirical observation, or from theory that is subject to empirical verification. Empirical analyses should be pursued in some operational context, but the emphasis should be on theories, findings and methods that are generalizable to other contexts.

Thus, the body of research supported by the program should possess generality, be based on empirical observation or be subject to empirical validation, and incorporate social and behavioral aspects. Processes should be characterized by models that are tested in operational contexts. Even though an individual project may not have all these characteristics, its evolution toward this end must be clear.

(Target dates for proposals are September 1 and February 1. Proposals should follow the format in NSF 81-79, Grants for Scientific and Engineering Research, for the Division of Social and Economic Science.)

*Frank M. Bass (Business Administration), Alfred Blumstein (Operations Research), Hillel J. Einhorn (Industrial and Organizational Psychology), James G. March (Political Science), Sanjoy K. Mitter (Electrical Engineering) and Elliott W. Montroll (Physics).

NSF's DECISION AND MANAGEMENT SCIENCE PROGRAM . . .

NSF's Decision and Management Science Program (DMS) was approved by the National Science Board on February 19, 1982, and located in the Division of Social and Economic Science. The purpose of the Program is to gain fundamental knowledge about decision and managerial processes as these relate to the operations of sociotechnical systems. The research combines the modeling and optimizing approaches of the mathematical and engineering sciences with the empirical approaches and theoretical concerns of the social and behavioral sciences.

Less than two months after the Program was announced in 1982, 120 proposals were received. Most proposals came from scholars in interdisciplinary research programs: primary fields were 13% mathematics/physics, 20% engineering, 11% operations research, 22% administration/management, 15% social/economic, and 16% psychology. A panel comprised of Elliott W. Montroll (Physics, Maryland), Sanjoy K. Mitter (Electrical Engineering, MIT), Alfred Blumstein (Operations Research, Carnegie-Mellon), Frank M. Bass (Management, Texas), James G. March (Political Science, Stanford), and Hillel J. Einhorn (Organizational Psychology, Chicago) advised NSF on the selection of proposals, and issued a statement on research priorities. Ten awards, averaging $50,000, were made from an FY 1982 allocation of $500,000; the success rate (awards/proposals) was eight percent. Members of J/DM took more than their proportional share of these awards.

In FY 1983, the budget for DMS went up, but the proposal load (for a full year) did not. As the figures below for the Division of Social and Economic Scientc indicate, the request for FY 1984 is up again.

Activity	*Actual FY 1982*	*Request FY 1983*	*Current Plan FY 1983*	*Estimate FY 1984*	*Difference FY 1984/83*
IV. Social and Economic					
Economics and Geography					
Economics	$6,333,265	$6,380,000	$7,100,000	$9,100,000	$2,000,000
Geography	706,896	700,000	800,000	1,000,000	200,000
Subtotal	7,040,161	7,080,000	7,900,000	10,100,000	2,200,000
Social Measurement and Analysis					
Sociology	2,200,000	2,200,000	2,400,000	2,800,000	400,000
Measurement Methods and Data Resources	2,884,000	2,988,000	3,300,000	3,500,000	200,000
History and Philosophy of Science	900,000	900,000	1,050,000	1,200,000	150,000
Subtotal	5,984,000	6,088,000	6,750,000	7,500,000	750,000
Political and Policy Sciences					
Political Science	2,100,000	2,100,000	2,330,000	2,600,000	270,000
Law and Social Sciences ...	1,100,000	1,100,000	1,200,000	1,250,000	50,000
Regulation and Policy Analysis	900,000	800,000	850,000	900,000	50,000
Decision and Management Science	436,432	652,000	758,900	950,000	191,100
Subtotal	$4,536,432	$4,652,000	$5,138,900	$5,700,000	$561,100
Subtotal	$17,560,613	$17,800,000	$19,788,900	$23,300,000	$3,511,100

While DMS remains a small program, it is getting quite a bit of attention. The Foundation's new Director, Dr. Edward A. Knapp, noted the increase for DMS as a highlight of the NSF budget in his opening testimony to Congress on February 15, 1983:

> Support for the Social and Economic Sciences is substantially increased above FY 1983, especially in these areas — Economics and Decision and Management Science — with significant potential for contributing to our long-term national economic goals.

On Sunday, February 13, 1983, the New York Times commented on the NSF budget. Under a headline, "Social Sciences Escape Washington Hit List," Philip M. Boffey observed:

> The National Science Foundation enjoys across-the-board increases this time around, with social and behavioral programs going up by 12 percent. The biggest winners are economics at 28 percent and something called "decision and management science" at 25 percent.

Target dates for proposals are September 1 and February 1. Proposals are prepared according to NSF 81-79, Grants for Scientific and Engineering Research. For additional information contact Trudi C. Miller (202/357-7569).

This Week's Citation Classic

CC/NUMBER 7
FEBRUARY 14, 1983

Dawes R M & Corrigan B. Linear models in decision making.
Psychol. Bull. 81:95-106, 1974.
[University of Oregon and Oregon Research Institute, Eugene, OR]

Optimal linear prediction outperforms intuitive prediction of skilled clinicians—e.g., in psychology, medicine, and business. Nonoptimal linear models based on such judges' own predictions also outdo them. We demonstrated that linear models with *random* weights—correctly oriented—do as well as clinicians and unit weighted models outperform them. [The *Science Citation Index*® (*SCI*®) and the *Social Sciences Citation Index*® (*SSCI*®) indicate that this paper has been cited in over 245 publications since 1974.]

Robyn M. Dawes
Department of Psychology
University of Oregon
Eugene, OR 97403

November 29, 1982

"As a first-year graduate student in the (neoanalytic) clinical psychology program at Michigan, I read Paul Meehl's book on statistical versus clinical prediction.[1] I was impressed that—in numerous studies involving the prediction of human outcomes—optimal linear (multiple regression) models of relevant input variables outperform clinicians.

"Moving to the University of Oregon and the (old) Oregon Research Institute in 1967, I became involved with the work of Lew Goldberg, Paul Hoffman, Sarah Lichtenstein, Len Rorer, and Paul Slovic on linear modeling of clinical experts. They had discovered an apparent paradox—that linear models not only outperform clinicians at predicting actual outcomes, but that they predict these clinicians' own predictions as well; see, for example, Goldberg's *Citation Classic*.[2] That made sense when clinicians were viewed as imperfect mediators between input and output, introducing unreliability by their inconsistency, and invalidity by the degree to which the linear model predicting their judgments was not optimal for predicting the output. Unreliability could be removed by replacing the clinician's actual judgments with a (necessarily consistent) linear model of those judgments, a replacement termed 'bootstrapping.' It worked. Prediction improved. See Goldberg[3] or Dawes.[4]

"But were clinicians necessary at all? The efficacy of bootstrapping was demonstrated by comparing the model of the clinician to the clinician, but what would happen if we compared that model to some other model with appropriately oriented weights? (If such a model did as well, then the clinicians were good for *nothing but* choosing the variables, and their orientation.)

"I occasionally had a crazy idea—that some cynic might take one of our data sets, standardize the variables, add them together in some arbitrary way, and outperform our 'bootstrap judges.' One day my programmer, Corrigan, had slack time and asked for something to do. 'Well, for the last couple of years I've had a crazy idea that....' In four data sets (involving such outcomes as final psychiatric diagnosis and graduate success), we (Corrigan) chose tens of thousands of random weights in the right direction (determined *a priori*); linear composites based on these weights performed as well as did those with weights based on clinicians' judgments. Unit weights did better.

"Talking about our results before they were published was fun. (There was time to talk because *Psychological Review* rejected our paper before *Psychological Bulletin* made it a lead article.) Many people didn't believe random weights would work until they tested them out on their own data sets (phone calls and letters, 'My god, you were right!'). The reason random and unit weights work is that they can be expected to yield results highly correlated with those based on optimal weights—whatever those happened to be. (Weight optimization involves a 'flat maximum.') That can be demonstrated mathematically—as was later done by John Castellan, Ward Edwards, Hillel Einhorn, Robin Hogarth, Dettof von Winterfeldt, and Howard Wainer—and as early as 1938 by S.S. Wilkes.[5] Had we not been dumb enough to use data sets, however, the results would probably have gotten little publicity. Our naiveté made this work a 'classic.'"

1. **Meehl P E.** *Clinical versus statistical prediction: a theoretical analysis and a review of the evidence.* Minneapolis, MN: University of Minnesota Press, 1954. 149 p.
2. **Goldberg L R.** Simple models or simple processes? Some research on clinical judgments. *Amer. Psychol.* 23:483-96, 1968.
[Citation Classic. *Current Contents/Social & Behavioral Sciences* 13(10):18, 9 March 1981.]
3. ———. Man versus model of man: a rationale, plus some evidence for a method of improving on clinical inferences. *Psychol. Bull.* 73:422-32, 1970.
4. **Dawes R M.** A case study of graduate admissions: application of three principles of human decision making. *Amer. Psychol.* 26:180-8, 1971.
5. **Wilks S S.** Weighted systems for linear functions of correlated variables when there is no dependent variable. *Psychometrika* 8:23-40, 1938.

Reprinted from: Current Contents/Social & Behavioral Sciences (7):20, 14 February 1983.

The following is an abstract of a paper that was presented at the 21st Bayesian Research Conference and which will appear as a letter in American Psychologist. Inquiries may be sent to Jay Christensen-Szalanski, Dept. Family & Community Medicine, University of Arizona, Tucson, AZ 85724

The Citation Bias: Fad and Fashion In the Judgment and Decision Literature

Jay J.J. Christensen-Szalanski and
Lee Roy Beach

There is a widely held belief that human judgmental and decision performance is rather hopeless. We suggest that this results in part from the fact that articles reporting poor performance in humans receive a disproportionate amount of attention in the literature. Comparison of the citation frequency between 1972 and 1981 of articles that reported either good or poor reasoning performance revealed that the poor performance articles were cited six times more often than the good performance articles ($p<.05$). There was no correlation between the type of article (good vs poor performance) and the popularity of the journal in which the article appeared, or between the type of article and year of publication, suggesting that these factors cannot account for the difference in the popularity of the articles. Subsequent analysis revealed that the preferential attention to the poor performance articles has increased dramatically in recent years ($p<.05$). The data also show that the citation frequency of the good performance articles remains small and is relatively unaffected by the time the articles have been in print. In contrast, the citation frequency of the poor performance articles increased greatly with the passage of time.

A survey of U.S. members of the J/DM Society showed a similarity between this citation bias and how the readers of the literature view human judgment and decision making abilities. Members recalled more examples of poor performance than good performance ($p<.001$), even though the variety of poor performance examples was extremely limited. Table 1 lists all responses that were given by at least 10% of the J/DM members. Eight of these responses accounted for 88% of the poor performance examples given. All of the examples of poor performance were laboratory studies, usually with college students as subjects. In contrast, only 42% of the examples of good performance were laboratory studies, while 58% were done in applied settings and/or used experts as subjects.

Additionally, less experienced researchers (people who published fewer articles) assessed the overall quality of judgment and decision making abilities to be less ($p<.05$) than did the more experienced researchers. The results highlight the need for a greater balance in psychologists' approach to understanding human reasoning abilties, and illustrate once again that scientific research is not immune to the effects of fad and fashion.

(See Table on Page 9)

Citation Bias (continued from Page 8)

Table 1

Frequency (%) of Response Among Participants (n=80)

RESPONSE	LISTED AS EXAMPLE OF POOR REASONING	LISTED AS EXAMPLE OF GOOD REASONING
Availability	45	5
Representativeness	44	10
Overconfidence	33	0
Anchoring	28	2
(Mis)use of Base Rate	28	6
Conservatism	26	0
Weather Forecasters	0	24
Hindsight	20	0
Livestock Judges	0	15
Misuse of Sample Size	14	0
Total Laboratory Examples	100	42
Total Applied/Expert Examples	0	58

J/DM NEWSLETTER SUBSCRIPTION FORM. . .

If the address label on the cover is marked "X" or "0", you have not paid. If the address label is marked "R", it is time to renew. The subscription cost of the J/DM Newsletter is based on the following schedule:

$2.00 per year U. S.
$5.00 per year Foreign (drawn on U. S. banks)
$25.00 per year Foreign (not drawn on U. S. banks)

Please make checks payable to Indiana University Foundation. See Page 2 for details.

Please return this form and note any corrections to your address. (This form may be used for address change or correction.)

Name_____

Address_____

_____

_____ Be sure to include ZIP CODE.

Telephone_____

Send completed form and check to

N. John Castellan, Jr., Editor
Department of Psychology
Indiana University
Bloomington, Indiana 47405

Copies of this page may be given to interested colleagues for their use.

IN THE CLINICS AND HOSPITALS OF THE NEAR FUTURE we may quite reasonably expect that the doctors will delegate all the preliminary work of diagnosis to machine operators as they now leave the taking of a temperature to a nurse. Such machine work may be only a registration of symptoms; but I can conceive machines which would sort out combinations of symptoms and deliver a card stating the diagnosis and treatment according to rule. It would not do the work done by the clinical instinct of the born healer; but the proportion of practising doctors possessing this instinct can hardly be more than ten per cent. With the rest the diagnosis follows from the symptoms; and the treatment is prescribed by the text-book. And the observation of the symptoms is extremely fallible, depending not only on the personal condition of the doctor (who has possibly been dragged to the case by his nightbell after an exhausting day), but upon the replies of the patient to questions which are not always properly understood, and for lack of the necessary verbal skill could not be properly answered if they were understood. From such sources of error machinery is free. [The doctor] knows that he can call in a specialist when a case is too difficult for him; but he does not know that he may be wearing himself out by trying to do in a very difficult and uncertain way things that he could get done with ease and certainty by a machine which his typist-secretary could operate.

BERNARD SHAW
English Review, 1918

J/DM Newsletter
Department of Psychology
Indiana University
Bloomington, IN 47405

Nonprofit Organization
U.S. Postage
PAID
Bloomington, Indiana
Permit No. 2

Rob Hamm
Ctr Res Judgment and Policy
Univ of Colorado, CB 485
Boulder, Colorado 80309

R

--time dated material--