ANNUAL REPORT
7/07 - 6/08

TABLE OF CONTENTS **Page**

Director's Statement

Dear IMBS Colleagues and appropriate administrators,

I readily confess that writing reports will never rank very high among my favorite pastimes. Among the rare exceptions is the IMBS annual activity report. The reason is that the strength of any research institute derives from the activities and efforts of its members. As such, and even though most of us have some sense of what others have been doing during the year, an enjoyable part of putting together this annual report is the opportunity to review "who has done what" during the last year.

Indeed, instead of following the ordering of this report, let me recommend that the reader start with Section II.D entitled **Summaries of Significant Findings**; this is where IMBS colleagues list some of their research achievements during the past year. As only partial illustrations, Duncan Luce describes his significant breakthrough in understanding the previously unresolved issue of interpersonal comparisons of utility, Michael Birnbaum comments on his empirical paradoxes that seriously question results that were the basis of recent Nobel Prizes, Kim Romney tells of his patent for the use of an Universal Color Index, Don Hoffman outlines his advances on the troubling and complex mind-body problem, Steve Frank reports on his advances in understanding how evolution adds layers of control over behavior to protect individuals, Igor Kopylov discusses his advances on the technical understanding of subjective probability, Carter Butts outlines his work of introducing stochastic models for interactions among agents, and on and on and on. It has been, indeed, a good year!

As for more formal IMBS activities, probably the highlight was the January 2008 conference honoring the fiftieth anniversary of the game theory book by Luce and Raiffa. The first speaker, Tom Schelling, set the tone with his introductory comment that he doubted he would have received his Nobel Prize if it hadn't been for this book. This spirit was supported by all speakers, including the 2007 Nobel winners Eric Maskin and Roger Myerson, along with the 2005 Kyoto Prize winner Simon Levin. But instead of just a celebratory gathering, the basic theme of the gathering was borrowed from this seminal book. The goal was to critically analyze and review the current status of game theory. Ehud Kalai, for instance, put forth an excellent agenda for the future of this area. (Videos of the main talks are on the conference link of institutes' web site at http://www.imbs.uci.edu.)

We had several other influential IMBS conferences; e.g., one on psychological categories highlighted, in part, the breakthrough research of Kimberley Jameson, an IMBS Project Scientist, and Natalia Komarova, an IMBS member from the mathematics department. (Again, videos of the talks are available on the conference link of our website. Agendas for all of our conferences, for our colloquia series, and for the activities of our group on social dynamics and complexity can be found on our web page.

We always are delighted to welcome new IMBS members. Two of them really cannot be considered as "new" because, in fact, they have been actively participating in IMBS activities for several years. So, during this academic year we just made the participation of Steve Frank (Evolutionary Biology) and Rein Taagepera (Political Science) more formal by making them

members. Another new member is Yen-Sheng Chiang, who was recruited to the UCI Sociology Department this year through the IMBS.

Another delight in putting together this annual report is the chance to review the awards and recognitions received by our IMBS colleagues over the last year. The highlight for this year most surely is with Rein Taagepera receiving the 2008 Skytte Prize, which is being awarded in Sweden in September 2008. This Skytte Prize is one of the most prestigious international awards in political science! Rewards and recognitions of other IMBS colleagues can be found in Appendix E of the report.

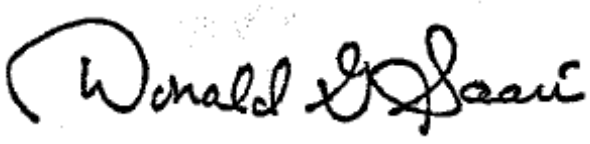
As for some new directions in our IMBS graduate program, Doug White, who is an external faculty member of the *Santa Fe Institute*, and Louis Narens, who is in charge of the IMBS graduate program, are creating ties with the *Santa Fe Institute.* While the initial goal is to explore ways to help our IMBS graduate students, we expect that other ways for both institutes to cooperate and help each other will emerge. This summer, for instance, one of our graduate students, Rory Smead, spent two weeks at the SFI. Doug and Louis are in discussions with the SFI about ways to create mutually advantageous programs.

A time consuming activity this year involved a "sunset review:" To explain what this means, after 15 years, all UC organized research units (ORUs), are reviewed to see whether they will continue. As last year was the IMBS's 15th anniversary, it was our turn to be under examination. I am happy to report that the IMBS received a strong, positive review. (If you wish to see the review report, or any of the documents that we submitted, please see Janet Phelps.) In my opinion, the reason we did so well is due to the IMBS members; you are the ones who make the institute successful!!

Speaking of success, there is one other person who always is key and important for the success of the IMBS*: Janet Phelps*. My warm and deep thanks to Janet for everything she continually does to make the IMBS run so smoothly!

In summary, 2007-08 was a successful year for the IMBS. Again, success must be measured by how the institute helps our members advance their research programs. This means we need your continual support, participation, and, of particular importance, ideas and suggestions!

Sincerely,



Donald G. Saari
Director, IMBS

I. ORGANIZATION AND ADMINISTRATION

A. Administration

The Director of the Institute for Mathematical Behavioral Sciences is Professor Donald G. Saari. He reports both to the Dean of the School of Social Sciences and to the Vice-Chancellor for Research. An Executive Committee for consultation and decision-making regarding the long-term direction of the Institute assists the Director, (section B below).

The staff of the Director's office consists of an Administrator and a part-time Administrative Assistant. Presently, some bookkeeping and personnel matters are being taken care of by the School of Social Sciences.

Director:	Donald G. Saari, 2003-present
Previous Directors:	R. Duncan Luce, Founding Director, 1989-1998
	William H. Batchelder, 1999-2003
Graduate Director:	Louis Narens
Graduate Advisors:	Marek Kaminski & Michael McBride
Administrator:	Janet Phelps
Part-time Administrative Assistant:	Grace Lee

B. Executive Committee

Katherine Faust, Professor of Sociology
Marek Kaminski, Associate Professor, Political Sc ience
L. Robin Keller, Professor, Operations and Decisions Technologies
Michael D. Lee, Associate Professor, Cognitive Sciences
Mark Machina, Professor of Economics, UC San Diego
Stergios Skaperdas, Professor of Economics
Brian Skyrms, Professor of Philosophy
George Sperling, Distinguished Professor of Cognitive Science

II. RESEARCH

A. Current Research Programs

The 61 members of the Institute for Mathematical Behavioral Sciences (IMBS) and their research interests are listed in Appendix A.

The IMBS is partitioned into five research clusters. These are listed below and should be considered as informal intellectual groupings, rather than formal structures.

1. ***Measurement Theory, Foundational Issues, and Scaling Models*:** Antonelli, Barrett, Batchelder, Burton, Falmagne, Lefebvre, Luce, Maddy, Narens, Romney, and Skyrms

2. ***Statistical Modeling****:*

   Cognitive*:* Baldi, Batchelder, Dosher, Eppstein, Falmagne, Lee, Iverson, Riefer, Romney, Smyth, Steyvers, and Yellott

   Economic: Brownstone, Poirier, Saari, and Small

   Sociological/Anthropological: Boyd, Butts, Faust, Freeman, and White

3. ***Individual Decision Making****:* Birnbaum, Keller, Luce, Machina, Narens, and Saari

4. ***Perception and Psychophysics***:

   Vision*:* Braunstein, Chubb, DeFigueiredo, D'Zmura, Hoffman, Iverson, Palais, Romney, Sperling, Srinivasan, Wright, Yellott, Xin, and Zhao

   Psychophysics and Response Times**:** Brown, Falmagne, Iverson, Luce, Narens, and Yellott

5. ***Social and Economic Phenomena***:

   Economics and Game Theory**:** Branch, Brownstone, Brueckner, Burton, Frank, Garfinkel, Komarova, Kopylov, McBride, Poirier, Skaperdas, Skyrms, Saari, and Small.

   Public Choice**:** Cohen, Glazer, Grofman, Kaminski, Keller, McGann, and Uhlaner

   Social Networks**:** Batchelder, Butts, Boyd, Chiang, Faust, Freeman, Noymer, Romney, and White

   Social Dynamics and Evolution: Butts, Narens, Romney, Saari, Skyrms, Smyth, Stern, and White

B. Publications

The members who have replied report a total 204 journal publications (published or in press) for the current academic year. These are listed in Appendix B.

The IMBS has a technical report series that is available to all members and qualified graduate students who are submitting a paper to a refereed journal or book. The series editor is Donald Saari. Appendix C lists the 6 technical reports issued during the academic year. Technical reports since 1993 can be found under "printed resources" on the Insitute's web site at www.imbs.uci.edu.

C. Public Talks and Colloquia

IMBS members actively participated in numerous off-campus research seminars and conferences. The members who replied gave a total of 112 talks listed in Appendix D. Their awards and achievements for this year can be found in Appendix E.

D. Summaries of Significant Findings

An important aspect of the Institute is the research conclusions developed by its members. What follows is a sample of what has happened this year.

Measurement Theory, Foundational Issues, and Scaling Models

Statistical Modeling

William Batchelder

Most of the work of our group has been devoted to developing properties of a class of parametric statistical models for categorical data that was invented by me and my students in the 1980s. These models are now in wide use and they enable one to estimate underlying, latent cognitive skills that are behind the ability to perform correctly in specially designed cognitive tasks. The major efforts this past year have been: (1) To augment the class to deal with individual differences, (2) To develop ways to handle various types of hypothesis tests in a Bayesian context; (3) To develop a context free language coding of the models to facilitate transport and modification in computer statistical packages.

David Eppstein

The biggest contribution during the review period was the publication of my book “Media Theory” (with UCI Cognitive Scientist Jean-Claude Falmagne and SFSU Mathematician Sergei Ovchinnikov). This book examines mathematical systems arising in many applications including preference modeling (e.g., understanding voter preferences among multiple presidential candidates) and modeling the possible states of knowledge of human learners. As the book shows, many systems of this type can be analyzed using a common mathematical framework. It also describes computer algorithms for efficiently computing with these systems and for automatically constructing readable visualizations of them. Two of my papers, “upright-quad drawing” and “recognizing partial cubes”, are closely connected to the material in this book. In addition, three of my papers, "drawings of planar graphs", “upright-quad drawing”, and “edges and switches,” concern graph drawing: automatic visualization of symbolic information represented as systems of edges connecting pairs of objects. Graph drawing was also the subject of my talks at the University of Arizona and in the IMBS Seminar.

Louis Narens

During this last academic year I co-taught (with Brian Skyrms and Don Saari) four Institute sponsored graduate courses, co-organized (with Kimberly Jameson and Natalia Komarova) an IMBS international workshop on *The Evolution of Psychological Categories,* and participated in a year-long IMBS color research discussion group (organized by Kimberly Jameson).

The year has been very productive for me in grant activity. I am Co-PI on two new grants, *Empirical and Theoretical Studies of Psychophyscal Phenomena* (NSF: 2007-2010; $350,000; R. D. Luce, PI; R. Steingrimsson Co-PI) and *Evolutionary Game Theoretic Investigations into Color Category Evolution,* (NSF: 2007-2010; $410,000; N. Komarova, PI; K. Jameson and R. Steingrimsson Co-PIs) and I am PI on the new grant, *Foundational Issues in the Measurement of Belief and Uncertainty* (AFOSR: 2008--2012; $376,000; B. Skyrms, Co-PI). The psychophysical NSF grant fits well within the objectives of the Department of Cognitive Sciences as well as IMBS and could have been achieved without the aid of the Institute. (Luce, Steingrimsson, and I

are members of the Department of Cognitive Sciences.) The other two grants, however, are the result of Institute activities that cut across departments and schools and would have not normally come about without the aid and support of IMBS.

Besides research directly related to the grants, I have been working on a new book, *Probabilistic Lattices and Logics.* The aim of the book to develop new kinds of probability theories for areas of behavioral science where traditional probability theory have encountered grave difficulties in modeling forms of vagueness, ambiguity, and incompleteness that naturally arise in various phenomena of economic, philosophic, and behavioral interest.

Decision-Making

Michael Birnbaum

This year I published what will perhaps be the most important article I have written to date. This is my article in the *Psychological Review* which summarizes eleven new paradoxes that refute cumulative prospect theory (including rank dependent utility and rank and sign dependent utility theories) and original prospect theory. These theories have been very influential in recent years and were the basis for the Nobel Prize in Economics shared by Daniel Kahneman in 2002. The "new paradoxes" are violations of behavioral properties that can be deduced as theorems from the representations. Combined with empirical data, they show that cumulative prospect theory and original prospect theory are forced into self-contradiction when either attempts to account for the results. These paradoxes can be described (and in several cases were predicted in advance of experiments) by rival models that are special cases of my configural weight models. These models assume that people evaluate gambles by an average of the utilities of the consequences in which the weights of consequences depend on probabilities of outcomes leading to those consequences and that depend on the relative values of the consequences. When consequences are all favorable, lowest consequences get greater weight (more attention is placed upon them) relative to more preferred consequences.

Robin Keller

Consider the two cases below:
"Packed" Case 1: I ask you "What is the probability that IBM's stock price will go up by $10 or less?"
"Unpacked" Case 2: I ask you "What is the probability that IBM's stock goes up by $5 or less?" and "What is the probability that IBM's stock goes up by from $5.01 through $10?"

If you are like many experimental subjects, if you are asked the latter two "unpacked" questions, your implicit answer for the original case 1 question will be higher when we sum your two answers to the unpacked questions than when we asked you the packed question in case 1. In our experimental study (Biswas et al. (2008), "Making Probability Judgments of Future Product Failures: Packing versus Unpacking the Problem") prior negative experiences with a product had a stronger impact on participant judgments for future product failures when the problem was packed (rather than unpacked). In contrast, prior positive experiences with a product had a stronger impact on participant judgments for future product failures when the problem was unpacked (rather than packed). Also, priming participants to generate the unpacking variables led

to higher probability judgments of future product failures only when participants were able to generate the variables with relative ease, with the probability judgments getting attenuated when generating the unpacking variables became difficult.

Vladimir Lefebvre

A human moral choice has two aspects. On the one hand, alternatives play the roles of the positive and negative poles. On the other, they have utility-measures. It may happen that the utility-measure of the negative pole is higher than that of the positive pole. During this year I studied the possibility that similar two aspects may exist in animals choice as well. Using a mathematical model I succeeded in explaining some specific patterns of animals behavior in Skinners box. The results of this study were published:

R. Duncan Luce

A simple idea (an article will be submitted shortly) concerning the long unresolved issue of interpersonal comparisons of utility has arisen naturally from my recent efforts with C.T. Ng and A.A.J. Marley on utility of gambling. The key observation is that ordinary axioms about ordered systems with a "concatenation" operation $\circ$ − interpreted in the context of certain and uncertain alternatives as receiving two of them, e.g., goods in a store, two stocks, etc. − have a richer variety numerical representations than is normally considered. In addition to additive ones, there also are some representations involving both + and ×. Important examples are the p-additive representations

$$U(x\circ y) = U(x) + U(y) + \delta U(x)U(y), \quad \delta = -1,0,1.$$

For $\delta = 0$ the representation is additive, and for $\delta \neq 0$, it is equivalent to

$$1 + \delta U(x\circ y) = [1 + \delta U(x)][1 + \delta U(y)].$$

Because δ is either -1 or 1, U must be dimensionless. Thus, for two people of these types it is meaningful to ask which pairs (u,v) of money amounts are such that person k's utility for u is equal to person l's utility for v. This definition has all the appropriate properties for interpersonal comparisons, thereby resolving the issue except for $\delta = 0$ types – i.e., those who are classically rational. Judging by a criterion for identifying members of each class, I strongly suspect that very few of us are of type $\delta = 0$ and many academics are of type $\delta = -1$. Important open problems are: (i) Are there other possible real representations? (ii) In practice, how to estimate U, where the difficulty is in pinning down its bounds? (iii) How empirically is the population distributed among the three types?

Perception and Psychophysics

Mike Braunstein

There has been considerable interest recently in the role of the ground plane in the perception of the layout of objects in 3-D scenes. Our current research has been concerned with changes in perception that occur at the horizon. We have found that perceptions of relative size, speed and

motion path are altered as objects move above the horizon. When the horizon is not explicitly present in a scene, a "perceptual horizon" is determined by a combination of the vanishing point of converging lines in the scene and the height at which the visible ground surface terminates.

Donald Hoffman

Despite substantial efforts by many researchers, we still have no scientific theory of how brain activity can create, or be, conscious experience. This is troubling, since we have a large body of correlations between brain activity and consciousness, correlations normally assumed to entail that brain activity creates conscious experience. In my recent paper "Conscious realism and the mind-body problem" (*Mind & Matter*, 2008), I explore a solution to the mind-body problem that starts with the converse assumption: these correlations arise because consciousness creates brain activity, and indeed creates all objects and properties of the physical world. To this end, I develop two theses. The multimodal user interface (MUI) theory of perception states that perceptual experiences do not match or approximate properties of the objective world, but instead provide a simplified, species-specific, user interface to that world. Conscious realism states that the objective world consists of conscious agents and their experiences; these can be mathematically modeled and empirically explored in the normal scientific manner.

A. Kimball Romney

The University of California filed (filed May 1, 2008) a patent in my behalf (UCI.PAU.114) entitled: A Method and Apparatus for use of an Universal Color Index (UCI): A Color Appearance System Calibrated to Reflectance Spectra. The present application is related to U.S. Provisional Patent Application, serial no. 60/915,533, filed on May 2, 2007, which is incorporated herein by reference and to which priority is claimed pursuant to 35 USC 119. Background of the Invention. *Field of the Invention.* The invention relates to the field of the measurement and analysis of color or reflected light and in particular to an apparatus and process for physical characterization of spectra in a color space and correlation of the same to a perceptual space of color appearance defined in terms of human perception of colors.

George Sperling

When looking for a person in a crowd, if we know they are wearing a particular color hat or jacket, that information greatly facilitates the search. With graduate student Stefanie Wong Drew and faculty colleague Charles Chubb, an experimental paradigm and method of analysis was developed that enabled the precise quantitative measurement of the attention filters that the visual system can impose on the visual scene to selectively enhance attended colors and to suppress unattended colors throughout an area with multiple objects. In the particular instances studied, the absolute efficiency of visual attention filtering (compared to ideal filtering) was about 75%, which is impressively high.

Jack Xin

Main Findings: (1) Frequency-domain based dynamic algorithms for blind source separation of convolutive sound mixtures. (2) Time domain algorithms based on L1-constrained Minimization of cross correlations of convolutive sound mixtures. (3) Time domain algorithms based on

infinite impulse response modeling of sound mixtures and L1-constrained Minimization of cross correlations of convolutive sound mixtures. (4) Established variational principle of reaction-diffusion front speeds in space time random incompressible flows under quadratic kinetics (Kolmogorov-Petrovsky-Piskunov). Further apply the variational principles to bound and compute front speed statistical properties without resolving the original stochastic partial differential equations over large spatial and temporal scales.

(4) solved the long-standing problem in turbulent combustion on the existence of the so called turbulent flame speed. It is a fundamental break-through, to appear in Ann Inst. H. Poincare, Analyse Non Lineaire.

(1)-(3) are research advances towards solving the "cocktail party problem" in hearing science via the so called Blind signal processing. "Blind" refers to no a priori knowledge of environments of sound mixing. The methods developed in fact apply to a broad range of problems related to the sensing, imaging, recognition and learning processes in the brain.

Jack Yellott

I have continued to study the problem of pre-correcting visual objects (e.g., text on a printed page or an electronic display screen) for viewing by out-of-focus eyes. Optical defocus causes two kinds of image defects: loss of light-dark contrast, and spatial phase reversals. Previous work on this project established that phase reversals can be a major reading problem at levels of defocus routinely produced by normal aging (i.e., presbyopia), and that such errors can readily be corrected in advance by altering the Fourier spectrum of text-objects (e.g., printed letters) in a computationally simple way. (The trick is to pre-reverse the phases of the object spatial frequencies that will subsequently be reversed by the out-of-focus eye. Defocused imaging of the resulting pre-corrected object then re-reverses these frequencies, producing a phase-perfect retinal image.) During the past year I have been studying the contrast-reduction half of this problem. Here it turns out that precorrection can produce only very limited improvement. For basic physical reasons, contrast precorrection can only work if object contrast is already low. The key theorem that has emerged shows that an object can be precorrected for defocus only if its normalized Fourier amplitude spectrum (basically, its frequency-by-frequency contrast) is everywhere less than or equal to the modulation transfer function of the eye (i.e., the absolute value of the Fourier transform of the eye's pointspread function). For normal presbyopia this is a severe limit; it means that precorrection cannot push post-defocus retinal contrast above around 10%. A corollary of this result is that the total contrast energy of a retinal image cannot exceed the contrast energy of the eye's pointspread function. This theorem establishes a useful link between a physical measure of the eye's optical quality (which is entirely captured by the quality of its pointspread function) and psychophysical pattern detectability (which is determined by image contrast energy).

Hongkai Zhao

(1) A novel expectation maximization (EM) algorithm with local adaptivity is developed for image segmentation. Local geometric and statistical information is incorporated with global statistics to minimize misclassification rule. (2) Direct imaging algorithms based on scattered wave field is developed. The algorithm which is based on physical factorization of the scattering

operator and subspace projection is much more efficient than optimization based methods. (3) Efficient computational method, grid based particle method, is developed for moving interface problems. State of the art fast sweeping method for Hamilton-Jacobi equations with applications to optimal control, geophysics, etc, are developed and analyzed.

Social and Economic Phenomena

(a) Economics and Game Theory

William Branch

The conventional view of financial markets holds that stock prices should reflect all publicly available information and that the efficient operation of markets will lead a stock's price to equal the present value of expected future dividends. Two noteworthy empirical facts cast doubt on this hypothesis: stock market returns are often predictable and stock prices exhibit recurrent bubbles and crashes. In two recent papers, I employ models of bounded rationality and learning to explain how bubbles and crashes might arise in a conventional model of stock prices and to generate predictable stock market returns.

Steve Frank

Organisms must protect themselves from perturbations in the environment. To do this, evolution adds over time layers of control over behavior and physiology to protect individuals. These additional protections have important consequences. For example, there is a tendency for regulation of key behaviors to migrate to higher levels of control that integrate lower level components. These new integrative systems at first help to protect against perturbations, but once in place, those higher levels of control become part of the system and influence how the various components evolve. Costly components, may, for example, deteriorate as the marginal benefits of allocation into those components decline when part of a larger integrated system

Natalia Komarova

With my colleagues L. Narens and K. Jameson, I have continued to work on problems of color categorization. I have developed a mathematical, agent-based, evolutionary model to study color categorization and communication. This new model is capable of capturing the "observer heterogeneity", that is, the presence of defective observers, such as dichromats and abnormal trichromats. We showed that even a small fraction of abnormal observers leads to a strong anchoring of color category boundaries to a subset of locations in the color space. I have also made some progress in my work concerning mathematical modeling of cancer. In particular, I focused on the influence of cellular quiescence (an inactive state) on cancer treatment in leukemia, in particular in application to resistance to drugs.

Igor Kopylov

Ideas: I have adapted the standard treatment of mathematical probability by Kolmogorov, Caratheodory, and Lebesgue to refine Savage's theory of subjective probability. First I derive a

countably additive subjective probability measure p on an algebra of events A from axioms imposed on preference over A-measurable acts. Then I use the same axioms to obtain a unique extension of the preference to all acts that are Lebesgue integrable with respect to p. Thus my representation results provide behavioral counterparts for Kolmogorov's definition of probability and Caratheodory's extension theorem.

Dale Poirier

Over this past year I have continued my work with Ivan Jeliazkov of UCI on modeling the daily fatality counts of Israelis and Palestinians. These efforts have involved bivariate count data time series models exhibiting over dispersion and excess zero counts.

Donald Saari

My research in voting and aggregation rules in the social and behavioral sciences took a new direction this year to include an examination of multiscale analysis. This topic, which tries to coordinate behavior at different scales from the nano to micro to macro, covers a surprisingly large number of disciplines from nanotechnology, engineering, biology, the social and behavioral sciences, etc. A surprise is how results from choice theory extend to these areas. Typical conclusions are that what many researchers have been trying to do is impossible, in general, to do.

(b) Public Choice

Bernard Grofman

When voters use most common voting methods for choosing one candidate among several, there often are incentives for them to lie about their true preferences in order to achieve outcomes closer to their most preferred consequences. Game theorists have modeled these incentives for strategic voting in games where voters have preferences over multidimensional objects of choice in terms of concepts such as the *uncovered set* and the *Banks set*. However, the geometry of these concepts has been little understood. In joint work with a mathematical sociologist and a computer programmer, I have been looking at the results of experimental voting games and trying to understand why voters made the decisions they did as to what alternatives to propose and which to reject, and looking for computer algorithms to specify the geometry of the Banks set and the uncovered set in order to better understand voter incentives.

Marek Kaminski

For more than a year, I have been working on a problem of extending the principle of backward induction to a larger class of games than finite games of perfect information. Preliminary results show that such an extension is in fact universally possible for various types of strategies and for games that admit incomplete information, a continuum of actions, and infinite play.

Rein Taagepera

I have been awarded the 2008 Skytte Prize, to be received in September 2008. This is one of the most prestigious and largest in political science, for work culminating in 2007 with a book on *Predicting Party Sizes* on the basis of electoral rules. My approach stresses logical models over purely statistical approaches, and I have a book on this method forthcoming: *Making Social Sciences More Scientific: The Need for Predictive Models.*

(c) Social Networks

Jan Brueckner

A coauthor and I have developed a model of urban squatting, a phenomenon occurring mostly in less-developed countries where households occupy land without paying compensation to the owner. Our model portrays squatters as "squeezing" the formal housing market by occupying land that would otherwise be available for formal development, with outcome being higher formal prices. The squatters are guided by an organizer who dictates a level of "defensive" expenditures for each household and controls the squatter population size, all with the goal of maximizing squatter utility without inviting eviction by landowners. The analysis shows that the squatter equilibrium is inefficient in the sense that, if squatters were formalized, paying for the land they occupy, their loses could be compensated by formal households, who would benefit from less squeezing and a lower housing price. The proper policy toward squatters is a big policy issue, and our paper provides insight by showing that a transition out of a squatter equilibrium could be achieved voluntarily through appropriate transfers.

John Boyd

In the paper with W.J. Fitzgerald, M. Mahutga, and D.A. Smith we developed a new measure for core versus periphery in a network. We applied this to the trade between 94 countries and found that from 1965 to 2000 the size of the core increased. Korea had the fastest relative growth in this period, while the US, the UK, and Germany has the largest declines. In addition, we developed two new permutation tests for the significance of the core/periphery model and also for the necessity of considering the asymmetries of the data.

Carter Butts

Modeling the detailed dynamics of social interaction has been a long-running challenge throughout the social sciences. In recent decades, the study of such social microdynamics has been revolutionized by the introduction of approaches such as agent-based modeling, which allow for the simulation of interaction among large numbers of behaviorally complex agents. A major difficulty with these approaches, however, has been the problem of tying simulations to data: given a body of data on observed interactions among multiple agents, it has rarely been possible to calibrate models to fit this data in a principled fashion, nor to systematically distinguish among competing models with superficially similar behavior. In a forthcoming paper in *Sociological Methodology*, I provide a family of stochastic models for interaction among agents which addresses this limitation. The models described in this paper allow for very general dependence

of current behavior upon past events, and for actions which change features of the local environment; thus, for instance, an agent facing a broken car cannot drive it until it has been repaired by that or another agent. Unlike most other models in the literature, those presented in the paper can be fit directly to empirical data, in the form of transcripts or event logs, allowing direct assessment and comparison of competing behavioral models. Within the paper, I demonstrate the use of the modeling framework to examine responder radio communication behavior in the World Trade Center Disaster. My analyses demonstrate that local conversational rules (e.g., turn-taking, conversational persistence, etc.) account for the bulk of the structure of radio communication within six Port Authority groups; in some groups, tendencies to seek out previous callers and to call those with more prior airtime were also important factors. These findings suggest that the factors affecting radio communication during emergencies are similar to those affecting conversation during everyday interaction, and that these factors operate in largely similar ways across settings. This has important implications not only for the modeling of human behavior, but also for the design of responder communication systems.

Katherine Faust

I have been continuing my investigation of triads in social networks. This year I mapped out a high-dimensional theoretical space of expectations for the triad census. I also determined where triad censuses from empirical social networks reside within this space and characterized the distinctive structural properties of these networks. I am increasingly interested in comparative studies of social structure, including both comparison of networks of the same relation measured in different settings and comparison of different kinds of social relations. I also continue my collaborative work on the interaction of population and demographic processes with social networks. We are currently studying extended kinship networks in 51 Thai villages and using simulations to explore the effects of missing data on these networks.

Andrew Noymer

I continue to do empirical work on population health, where I aim to fill the niche of doing quantitative work that is not exclusively based on regression analysis of survey data, which is the mainstream of the field. I primarily focus on historical epidemiology, though I am working on a number of projects with graduate students on contemporary epidemiology. I am also working on simulation models of inter-racial dating dynamics, in collaboration with my UCI Sociology colleagues Belinda Robnett and Cynthia Feliciano. Early results of this work were presented at the 4th Joint Japan-North America Mathematical Sociology Conference, which was organized by my departmental and IMBS colleague Carter Butts, and was co-sponsored by IMBS.

Douglas White

In the study of industrial production hierarchy in one of the largest industrial districts of the world, my coauthor Nakano and I developed network economic methods for identifying potential price-biasing mechanisms, and network-cohesion methods for identifying elite industrial manufacturing cohesive core organization. My studies of historical dynamics developed: 1) a coherent account of the evolutionary mechanisms of scalable cohesion with major predictive consequences for conflict and cooperativity (Encyclopedia of Complexity and Systems Science 24 pp article); 2) with two of my graduate students, empirically tested model for the historical

dynamics of the macroregional rise and fall of city systems and diffusion of innovation (Globalization as Evolutionary Process: Modeling Global Change), and 3) a series of network dynamical models affecting macroregional innovation (A New Perspective on Innovation and Social Change).

My study with coauthor Denham on continental scale survivability and social network organization among food collectors (indigenous Australian transcontinental social organization) discovered a more general modeling approach to the social network dynamics affecting institutional organization and fluctuation under stress.

Work with a physicist coauthor (Reichardt) developed a new scaling method for role structures, and applied this method to the multicommodity multinational trade volumes in the world economy (year 2000 test case). This will be applicable to time series and causal analysis.
In two as yet unpublished articles with SFI physicist coauthors (Shalizi, Clauset) and my student Laurent Tambayong, we discovered that the major series physical and social phenomena considered as power-law are actually governed distributionally by the q-exponential. My previous physicist coauthor, Tsallis, notes that at a theoretical level, "the q-exponential is the distribution which, under appropriate constraints, optimizes the nonadditive entropy Sq, in the same manner the exponential is the distribution which optimizes the additive Boltzmann-Gibbs entropy." This is the entropy of open systems, which we have previously found to govern large chunks of network dynamics.

E. Research Seminars and Activities

The research activities of the Institute members often result in graduate research seminars. Among those this year were:

Mathematical Models of Cognitive Processes A [Batchelder]
Network Theory [Butts]
Informant Accuracy [Butts]
Preattentive Mechanisms [Chubb]
Distances in graphs and graphs defined by distances [Eppstein]
Mind-body problem [Hoffman]
Face Perception [Hoffman]
Public Choice [Kaminski]
Decision Analysis [Keller]
Decision-making and problem-solving [Lee]
Naturalism, Skepticism and Therapeutic Philosophy [Maddy]
Applied Econometrics [Poirier]
Social Dynamics [Saari, Narens & Skyrms]
Economics Colloquium in Transportation Science [Small]
Special Topics in Human Performance [Sperling]
Vision [Sperling]
Quantitatively predictive logical models. European Univ. Institute's Max Weber Programme, Fiesole, Italy. [Taagepera].
Network Theory and Social Complexity [White]
Anthropological Models and Methods 2008 [White]

EVOLUTION OF SIGNALING SYSTEMS

Kimberly Jameson (Project Scientist, IMBS), Natalia Komarova (Mathematics), Louis Narens (Cognitive Sciences), and Ragnar Steingrimsson (Project Scientist, IMBS) formed a group doing research in the evolution of psychological categories, with special emphasis on the evolution of color naming (signaling) systems from the point of view of culture, cognition, and artificial intelligence. In Fall 2007 this subgroup received a $410,000 grant from NSF (Komarova, PI) to fund this research. The primary aims of this research are summarized as follows: A longstanding issue in the humanities and sciences is distinguishing aspects of human behavior that are primarily biological from those that are primarily social or cultural. One issue with a long history of scientific investigation involving the fields of physiology, linguistics, psychology, anthropology, and more recently genetics, is color categorization and naming. In this area the issue is whether universal tendencies exist in the ways different linguistic societies categorize and name perceptual color experiences.

The most popular view in the empirical literature on color categorization and naming is that the commonalities of color categorization across individuals and cultures are largely explained by two factors: (i) physiological features of human perceptual color processing, and (ii) universal features of individual psychological processing believed to underlie color experience. The established position in the area is a strong form of this universalist view that asserts that the pan-human uniformity in human visual processing gives rise to a regular, if not uniform, pan-human phenomenological color experience, and that this regularity is the basis for the empirically observed regularity in color categorization across cultures.

The extreme form of the alternative view to this established position in the literature is a relativist one that asserts that very little in the way of "universal tendencies" exist, and that most of the "universalist" findings in the literature are more attributable to constraints imposed by the empirical assessment of the phenomena than they are to actual features of color categorization phenomena. And of course there are other positions that blend the universalist and relativist ones. Various languages have different color naming systems. In a few of these, i.e., those with a long tradition of writing, the evolution of a color naming system can be traced through historical, linguistic, and anthropological analyses, for example the evolution of color terms from Homeric Greek (which had only color words only for black, white, a red-purple color, and a green-yellow color) to modern Greek. The data for such analyes is obviously weak compared to experimental data where a individuals from a populations is asked to name, as in the World Color Survey of 110 non-industrialized ethnolingusitic societies, about 400 carefully chosen color chips, and for each name to produce a chip that best exemplifies that name.

However, such experimental data only shows the current state of a long evolutionary process of a given language, and across languages, the states along the evolutionary trajectory may differ. Drs. Komarova, Jameson, Steingrimsson, and Narens saw that they could apply evolutionary game theory to explain the regularities observed in color naming across the societies in the World Color Survey, as well as provide an evolutionary theory -- supported by mathematical theory and computer simulations -- explaining why these regularities came about. Unlike the established position regarding color categorization and naming, Drs. Komarova, Jameson, Steingrimsson, and Narens approach emphasizes individual differences in color perception, pragmatic influences, and

efficiency of communication, instead of universal color perception determined by a pan--human biology, and their research involves a formal mathematical presentation of their ideas with theorems and simulations to validate their conclusions. The ultimate goal of their research is to explain experimental regularities found in over 100 years of experimental cross-cultural studies of color naming.

The described research has also been enriched by conferences and seminars on evolutionary game theory sponsored by the Institute, Drs. Komarova of Mathematics, Jameson and Steingrimsson of IMBS, and Narens of Cognitive Sciences. This NSF funded research project has also given rise to a new IMBS Cognition and Color Critical Science Reading Group that focuses on the presentation and discussion of cutting-edge research in the area of, and areas directly related to, the NSF funded research. The group consists of a regular contingent of attendees comprised of Institute for Mathematical Behavioral Sciences Faculty, Emeritus Social Sciences Faculty, Cognitive Sciences Faculty; Logic and Philosophy of Science Faculty; Faculty from the Philosophy Department at Cal State University Long Beach; and several UC Irvine graduate student attendees. This reading group has thus far been the source of numerous research presentations relevant to the research project, and has generally contributed to a broader understanding of modeling and empirical challenges relevant to the area. The group meetings have also fostered the general dissemination of research in the area, and have served as a regular educational resource for this research topic that is not otherwise locally available. The group's websites containing content used during the funding period are available at:
Summer 2008: http://aris.ss.uci.edu/~kjameson/ColorCog.html.
Spring 2008: http://aris.ss.uci.edu/~kjameson/ColorCogSPRING2008.html.
Winter 2008: http://aris.ss.uci.edu/~kjameson/ColorCogWINTER2008.html.
Fall 2007: http://aris.ss.uci.edu/~kjameson/ColorCogFALL2007.html.

SOCIAL NETWORKS RESEARCH GROUP

The objective of the UCI Social Network Research Group is to:

- provide an informal setting for discussion of current and ongoing network-related research at UCI (and elsewhere);
- facilitate the exchange of information regarding new techniques, tools, data sources, and research findings;
- support graduate student training in the network field; and
- encourage collaboration among faculty and students on network-related topics.

The Social Network Research Group is organized and run by IMBS member Carter Butts, with participation by a number of other IMBS faculty (John Boyd, Katie Faust, Lin Freeman, Doug White, and Andrew Noymer). During the 2007-2008 academic year the group met weekly to discuss ongoing research on wide range of topics related to modeling complex relational data structures and processes. In addition to open discussions, the following research presentations were given this year:

- Networks and Marketing (Samantha Cross)
- Diffusion of Perceptions within Organizations (Cathy McGrath, Jim Blythe, and Barbara Lawrence)
- Joint Models of Selection and Influence (Bob Hanneman and Kim Jae-Woo)
- Mathematical Sociology Conference Practice/Previews (Ryan Acton and Lorien Jasny)
- A First Survey of the Ethological Literature (Katie Faust)
- Global Networks of International Migration (Miruna Petrescu-Prahova)
- Rural-Urban Migrant Networks and Mutual Support in China (Haifeng Du)
- Testing Pareto and Pareto II Models for Degree Distributions (Doug White)
- Latent Two-mode Projection Models (Carter Butts)
- Selection/homophily or Influence: Dyad-level Analysis of Delinquency and Network Ties (John Hipp)
- Entailment and Political Belief Update (Lorien Jasny)
- Multi-Organizational Fields: Collaboration, Innovation and Consequence (Scott Byrd)
- Measuring Inter-group Crime (John Hipp)
- Message Diffusion on Large Spatial Networks (Ryan Acton and Carter Butts)
- "Open Mic Day" (bring your slides!), with a special visit from Filip Agneessens
- Conversation with Jerker Denrell
- Testing Preferential Attachment in the Katrina EMON (Lorien Jasny)
- Friendship Among Graduate Students: an Application of Network Inference with Missing Data (Miruna Petrescu-Prahova)

SOCIAL DYNAMICS AND COMPLEXITY RESEARCH GROUP

The focused research group in Social Dynamics and Complexity, headed by Professor Douglas White, has a web site, 16 core members and 13 affiliates. It has a 3.5 year-long track record in biweekly videoconferences across the four southern UC campuses, and on-demand streaming replays of speakers in complexity social sciences and student/faculty discussions. The "idea is to have interdisciplinary and intercampus graduate seminars" carried out without the need of any formal institutional funding or administration. Each subgroup in this loose teaching/research network has their own graduate students, and undergraduates participate as well. The peer-reviewed e-journal of anthropological and related sciences, Structure and Dynamics, continues, and has now published 29 open access articles, widely cited, with 13 forthcoming in the next two issues. With completion of a third year in 2008 the group hopes to be indexed in the Intercollegiate Studies Institute (ISI). The group is the subject of a featured article in preparation by UCOP and the President's Office of Berkeley Electronic Press, and is featured in the AA Newsletter. The newly created World Cultures: eJournal of Cross-Cultural Research has only begun to publish its first 4 articles in its first issue but already has 247 downloads, and will publish 15 legacy issues while it moves forward with new issues.

III. GRADUATE TRAINING

A. Ph.D. and M.A. Students

Louis Narens is the Director of the MBS graduate program. Others on the graduate committee who assist Professor Narens are Professors Marek Kaminski and Michael McBride. Working with the faculty of the Institute are 60 Ph.D. students, of whom 10 have advanced to candidacy during the year. They are listed in Appendix F. Of these, the following students were enrolled in the Ph.D. program in Mathematical Behavioral Sciences during the current academic year:

Steve Doubleday
Dan Jessie
Ray Mendoza
Brendan Purdy
Alex Strashny
Laurent Tambayong
Sam Thorpe

During the year, the Institute continued a program of recruiting graduate students via a mass e-mail describing our program to the Chairs and key faculty of the major colleges and universities in the country.

Insofar as the Institute's budget allows, students in MBS as well as other students whose research relates to MBS are awarded summer stipends. This past year IMBS received 21 proposals requesting summer funds, and of those, the following 15 students will be awarded funds this summer in varying amounts:

Student	*Program*	*Advisor*
Dan Jessie	MBS	Saari
Reuben Kline	Poli Sci	Grofman
Brian Marion	Cog. Sci	Hoffman
Ray Mendoza	IMBS	Komarova
Ofer Mintz	MerageSchool	Keller
Brendan Purdy	IMBS	Batchelder
Jay Simon	Management	Keller
Rory Smead	LPS	Skyrms
Laurent Tambayong	IMBS	White
Sam Thorpe	IMBS	Srinivasan
Elliott Wagner	LPS	Skyrms
Yitong Wang	Merage School	Keller
Daniel Wolf	Poli Sci	Grofman
Matthew Zeigenfuse	Cog Sci	Hoffman
Shunan Zhang	Cog Sci	Hoffman

A condition of the support is that the student gives a talk during the academic year on their research. This year it was decided to host a "poster session" rather than a one-day conference. The idea was that faculty and students could informally view the poster and talk with the student about their research. Below is the list of the 16 students who received support in summer of 2007 and the topics of their poster:

2007 Graduate Poster Session

James Bono – "Coral Games and the Core of Cores"
Siyi Deng – "A New Method of Congressional Apportionment"
Audrey Fang – "Policy Comparison and Model Selection Regarding Households Vehicle Choice and Usage"
Hao Jia – "An Empirical Study of Battlefield Success"
Reuben Kline – "A Categorical Bayesian Learning Model of Party Identification"
Vimal Kumar – "Rent Seeking, Growth and Governance"
Iris Lien – "Students' Nuisance and Grade Inflation: An Empirical test"
Kate Longo – "Mathematical Modeling of Color Categorization"
Ray Mendoza – "Complexity in Different Language Registers: A Sociolinguistic Study"
Brendan Purdy – "Formal Tree Grammars for Multinomial Processing Tree Models"
Jay Simon – "Decision Analysis Using Geographic Information Systems"
Rory Smead – "The Evolution of Learning rule in Strategic Settings"
Lurent Tambayong – "The Chronological Evolution of Historical City Networks"
Sam Thorpe – "Steady-state Visual Evoked Potentials"
Elliott Wagner – "Local Interaction and Three State Lewis Signaling Games"
Matt Zeigenfuse – "A Bayesian Method for Learning Combined Similarity-based representations"

B. Graduate Advisory Council

Council Members:
Brendan Purdy - IMBS
Sam Thorpe - IMBS

This is the fourth year since the formation of the IMBS Graduate Advisory Council. The Council's purpose is to foster interaction between graduate students in research areas similar to MBS.

This past year the IMBS Graduate Council organized student meetings with colloquia speakers. This gave students an opportunity to interact and network with professors. One of the goals of the graduate council is to gain some insight into how students perceive IMBS and how to facilitate more involvement of the social science student body. The Council also held a student/faculty barbeque and cooperated with other graduate students in putting on the 6th Annual Graduate Student Conference. Below is the conference agenda:

6th ANNUAL GRADUATE STUDENT CONFERENCE

9:15 **Sam Thorpe** – "Local and long-range interactions between Wilson-Cowan oscillators generate the characteristic frequencies of human EEG"

9:45 **Kenny Vaden** – "A Computational Approach to Cognitive Neuroscience of Speech"

10:15 BREAK

10:30 Chris Fagan – "Discriminating Tonal Textures"

11:00 Matthew Zeigenfuse – "Finding Feature Representations of Stimuli: Combining Feature Generation and Similarity Judgment Tasks"

12:30 Brendan Purdy – "MPT Models: Their Formalization and Relation to Bayesian Networks

1:00 Jay Simon – "Life Decisions with Health Outcomes"

1:30 BREAK

2:00 Rory Smead – "Evolution of Cooperation in the Centipede Game with Finite Populations"

2:30 Eliot Wagner – "Signaling on Networks"

3:00 BREAK

3:15 Reuben Kline – "An Experimental Bribery Game with Third Party Punishment"

3:45 Dan Wolf – "Urbanization and Liberalization"

C. Undergraduate Training

The firm of Sanli Pastore & Hill, located in Los Angeles, has given a gift to the IMBS to support undergraduate students in Economics. The company is a business valuation, financial analysis and litigation consulting firm. The gift is for five years and is divided in two parts: one for a summer internship and one for a paper award in economics. The internship is for eight weeks and this year's intern will be Jonathan Hsieh, an undergraduate student in Economics. Last year's intern was economics undergraduate student Patrick Banks. This year's first-place winner for the "Excellence in Economics Writing" award was James Bono and he received $500. The title of his paper was, "Coral Games and the Core of Cores". Second and third place winners were Hao Jia, whose paper was titled. "An Empirical Study of Contest Success and functions: Evidence from the NBA", and Vivek Pai, "On the Factors that Affect Airline Flight Frequency and aircraft Size".

IV. COMMUNICATION

A. Conferences

The IMBS held conferences on various topics. Below are the conference agendas. The IMBS also helped with Nobel Laureate, Thomas Schelling's visit to the UCI Center for Ethics

and Morality, the Society of Mathematical Psychology Meeting and the 4th Joint Japan-North America Mathematical Sociology Conference.

CONFERENCE ON
MATHEMATICS AND VISION – November 9-11, 2007

Friday, November 9

1:00 Conference begins with comments by Donald Saari, Director of IMBS

1:10 – 2:00 STAN OSHER, Professor of Mathematics, UCLA -- The miracles performed by Bregman iteration for compressed sensingand image processing.

2:15 – 3:05 DAVID BRAINARD, Professor of Psychology, University of Pennsylvania -- Color, Cones, and Bayesian Modeling: Understanding the Appearance of Small Spot Colors

3:45 – 4:35 GEORGE SPERLING, Dist. Prof. of Cog. Sci. & Neurobiology & Behavior, UCI -- "A computation model for binocular combination: How the two eyes combine information and some supporting evidence"

Saturday, November 10

9:00 – 9:50 JACK GALLANT, Associate Professor of Psychology, UC Berkeley -- Visual encoding and decoding of natural scenes

10:05 – 10:55 LARRY MALONEY, Professor of Psychology, New York University -- Bayesian decision theory, visual perception and the planning of movement

11:30 – 12:20 JACK XIN, Professor of Mathematics, UCI -- Mathematical Challenges of Blind Source Separation

2:00 – 2:50 GEORGE PAPANICOLAOU, Robert Grimmett Prof. in Mathematics, Stanford -- Edge illumination and imaging with arrays

3:30 – 4:20 AL AHUMADA, Psychologist, NASA -- Consequences of Photoreceptor Sampling

Sunday, November 11

9:00 – 11:00 General Discussion

Mini-Workshop on Individual Decision Making Schedule
July 25-26, 2007

July 24, 2007

8:30-10:00 *STOCHASTIC MODELING I*
Moderators: Jerry Busemeyer, Psychology, Indiana U &
Tony Marley, Psychology. U Victoria

10:00-10:30 Coffee break SSP 2142

10:30-12:00 *STOCHASTIC MODELING II*
Moderators: Jerry Busemeyer & Tony Marley

12:00-1:30 Lunch – SSPA 2142

1:30-3:00 *TRANSITIVITY*
Moderators: Michael Birnbaum and Jeff Bahra, both Psychology, CS Fullerton

3:00-3:30 Break SSPA 2142

3:30-5:00 *UNCERTAINTY AND PROBABILITY FORMULATIONS*
Moderators: Jim Meginniss, Tucson &
Louis Narens, Cognitive Science, UCI

July 25, 2007

8:30-10:00 *UTILITY OF GAMBLING*
Moderators: Duncan Luce & Tony Marley

10:00-10:30 Coffee Break SSPA 2142

10:30-12:*00 PRE- AND POST-CHOICE UTILITIES*:
Moderator: Mike McBride, Economics, UCI

12:00-1:30 Lunch – SSPA 2142

1:30-3:00 *GENERAL DISCUSSION AND OTHER TOPICS*
Moderator: Duncan Luce

LUCE AND RAIFFA AFTER 50 YEARS: WHAT IS NEXT?
January 25 – 27, 2008

Friday, January 25

LOCATION: DOHENY BEACH A – STUDENT CENTER (LEVEL 1)

2:00 – 2:10	Opening Remarks by DONALD SAARI, Director of IMBS
2:10 – 2:50	Discussion by DUNCAN LUCE AND HOWARD RAIFFA
2:50 – 3:40	TOM SCHELLING, Professor, School of Public Policy, U. of Maryland "Games and Decisions"
3:40 – 4:00	Discussion
4:00 – 4:30	ROGER MYERSON, Professor, Dept. of Economic, U. of Chicago "Discussion on the evolution of non-cooperative game theory in the 1950s and the state of the art today".
4:30 – 4:40	General Discussion
4:40 – 5:20	LLOYD SHAPLEY, Prof. Emeritus of Mathematics and Economics, UCLA "RHO Stability: A New Solution Concept for Cooperative Games"

Saturday, January 26

LOCATION: LUCE CONFERENCE ROOM, SOCIAL SCIENCE PLAZA A 2112

9:00 – 9:50	ERIC MASKIN. Professor, Dept. of Economics, Princeton University "Mechanism Design: How to Implement Social Goals"
9:50 – 10:00	Discussion
10:00 – 10:50	EHUD KALAI, Professor, Department of Managerial Economics & Decision Sciences, Kellogg School of Management, Northwestern University "Perspectives on Game Science"
10:50 – 11:00	Discussion

11:00 – 11:20	BREAK in SSPA 2142
11:20 – 12:10	AVINASH DIXIT, Professor, Department of Economics, Princeton "The achievements and future of game theory: A user's perspective"
12:10 – 12:20	Discussion
12:20 – 2:00	LUNCH BREAK
2:00 – 2:50	SIMON LEVIN, Professor, Ecology & Evolutionary Biology, Princeton "Games, Groups, Norms and Societies"
2:50 – 3:00	Discussion
3:00 – 3:20	BREAK in SSPA 2142
3:20 – 4:10	ROBERT WILSON, Professor, Graduate School of Business, Stanford University "Evolution of Game Theory into Multi-Person Decision Theory"
4:10 – 4:20	Discussion

Sunday, January 27

LOCATION: LUCE CONFERENCE ROOM, SOCIAL SCIENCE PLAZA A 2112

9:00 – 9:50	KEN BINMORE, Professor, Dept. of Economics, U. College of London "Making Decisions in Large Worlds"
9:50 – 10:00	Discussion
10:00 – 10:50	CHARLES PLOTT, Professor, Economics & Political Sciences, Cal Tech "Information Aggregation Mechanisms: Design, Testing and Application"

CONFERENCE ON
"MATHEMATICS, POLITICAL ECONOMY, AND DEMOCRATIC INSTITUTIONS"
(co-sponsored by the Center for the Study of Democracy)
Saturday, February 9, 2008

9:30-10:20 a.m.	James Fowler, Department of Political Science, UCSD "Two Genes Predict Voter Turnout"
DISCUSSION	
10:30-11:20 a.m.	John G. Matsusaka, Marshall School of Bus., Gould School of Law and Dept. of Political Science, USC "Direct Democracy and Public Employees"
DISCUSSION	
11:30-11:50 a.m.	BREAK IN SSPA 2142
11:50-12:40 p.m.	Dennis C. Mueller, Department of Economics, University of Vienna "Democracy, Rationality and Morality"
DISCUSSION	
12:50 p.m.	LUNCH BREAK
2:30-3:20 p.m.	Barry O'Neill, Department of Political Science, UCLA "Sincere and Insincere Communication"
DISCUSSION	
3:30-4:20 p.m.	Thomas Schwartz, Department of Political Science, UCLA "One Dimensionality and Stability in Legislative Voting: Where is the Evidence?"
DISCUSSION	
4:30-4:45 p.m.	BREAK IN SSPA 2142
4:45 – 5:35 p.m.	Donald G. Saari, Director of IMBS and Distinguished Prof. of Mathematics and Economics, UCI " "What Causes All Of Those Voting Paradoxes?"

CONFERENCE ON
"ROBUSTNESS, RELIABILITY AND EVOLUTION "

Saturday, March 1, 2008

9:00-9:50 a.m. Steve Frank, Ecology and Evolutionary Biology, UCI
"Maladaptation and the paradox of robustness in evolution"

10 minutes of discussion

10:00-10:50 a.m. MICHAEL ROSE, Ecology and Evolutionary Biology, UCI
"The Forces of Natural Selection and the Evolution of Reliability "

10 minutes of discussion

11:00-11:15 a.m. Break in SSPA 2142

11:15-12:05 p.m. KIMBERLY JAMESON, Institute for Mathematical Behavioral Sciences, UCI, and Natalia Komarova, Dept. of Mathematics, UCI
"Evolutionary models of color categorization "

10 minutes of discussion

12:15 p.m. LUNCH BREAK

1:45-2:35 p.m. RORY SMEAD, Logic and Philosophy of Science, UCI
"The Reduction of Strategic Plasticity "

10 minutes of discussion

2:45-3:35 p.m. TAU-MU YI, Ecology and Evolutionary Biology, UCI
"Robustness and Complexity in Biological Systems "

10 minutes of discussion

3:45-4:00 p.m. BREAK IN SSPA 2142

4:00-4:50 p.m. DONALD G. SAARI, Director of IMBS and Distinguished Prof. of Mathematics and Economics, UCI
"A qualitative approach toward evolutionary game theory"

10 minutes of discussion

WORKSHOP ON
"THE EVOLUTION OF PSYCHOLOGICAL CATEGORIES"
MARCH 14-16, 2008

FRIDAY, MARCH 14

1:30 WELCOME

1:45 - 3:15 PAUL KAY, Linguistics, UCB and TERRY REGIER, Psychology, University of Chicago "Relativity vs. universals: an obsolete dichotomy"

10 minutes of questions

3:25 - 4:25 GREG ASHBY, Psychology, UCSB
"The neurobiology of perceptual categorization: From learning to automaticity"

10 minutes of questions

4:35 - 4:50 BREAK IN SSPA 2142

4:50 - 5:50 TOM GRIFFITHS, Psychology, UCB
"Analyzing cultural evolution by iterated learning"

10 minutes of questions

SATURDAY, MARCH 15

9:00 - 10:00 PARTHA NIYOGI, Computer Science, University of Chicago
"The Computational Nature of Language Learning and Evolution"

10 minutes of questions

10:10 - 11:10 LUC STEELS, SONY, Paris
"Multi-Agent Models of Category Formation"

10 minutes of questions

11:20 - 11:35 BREAK IN SSPA 2142

11:35 - 12:35 JAY McCLELLAND, Psychology, Stanford
"Representation, Development and Disintegration of Conceptual Knowledge: A Parallel-Distributed Processing Approach"

10 minutes of questions

12:45 - 2:15 LUNCH BREAK

2:15 - 3:45 KIMBERLY JAMESON, Mathematical Behavioral Sciences, UCI and NATALIA KOMAROVA, Mathematics, UCI

"Agent-based color categorization: the role of population and color-stimulus heterogeneities"

10 minutes of questions

3:55 - 4:10 BREAK IN SSPA 2142

4:10 - 5:10 ANDREA BARONCHELLI, Universitat Politècnica de Catalunya
"Cultural route to the emergence of linguistic categories"

10 minutes of questions

SUNDAY, MARCH 16

9:00 - 10:00 LISA PEARL, Cognitive Sciences, UCI
"Learning-driven linguistic evolution"

10 minutes of questions

10:10 - 11:10 RORY SMEAD, Logic and Philosophy of Science, UCI
"Indirect Reciprocity and the Evolution of 'Moral Signals"

10 minutes of questions

11:20 - 11:35 BREAK IN SSPA 2142

11:35 - 12:35 MICHAEL LEE, Cognitive Sciences, UCI (co-author Wolf Vanpaemel, University of Leuven)
"Using hierarchical Bayesian modeling to help understand the generation and representation of categories"

10 minutes of questions

12:45 - GROUP DISCUSSION LEAD BY DON SAARI AND OTHERS

B. Conferences/Seminars organized by IMBS Members

Michael Birnbaum

Bayesian Research Conference, (co-organized with Jie Weiss). 2008.

Carter Butts

Co-organizer, 4th Joint Japan-North America Mathematical Sociology Conference, Redondo Beach, CA, 2008.

Co-organizer, statnet Workshop, held at the 28th Sunbelt Network Conference (INSNA), St. Petersburg, FL, 2008.

Organizer, statnet Workshop (held at the Networks in Political Science Conference, Cambridge, MA, 2008.

Natalia Komarova

Evolution of Psychological Categories, an IMBS conference, Irvine. Co-organized with Kimberly Jameson and Louis Narens.

Duncan Luce

Organizing a Symposium on *Empirical Tests of Contemporary Utility Theories* at the International Congress for Psychology, Berlin, July 23, 2008, with A.A.J. Marley.

George Sperling

Thirty-Third Annual Interdisciplinary Conference, Jackson Hole, Wyoming, February 3 – February 8, 2008.

15th Joint Symposium on Neural Computation, University of California, Irvine, Irvine, California, May 31, 2008.

Mark Steyv ers

2007 Area Chair for NIPS 2007 (Neural Information Processing Systems).

2007 Conference Chair for Society of Mathematical Psychology (with Michael Lee).

Douglas White

Human Sciences and Complexity Videoconferences and quarter-end Conferences

Jack Xin

Opening Workshop on Random Media, at NSF Institute (SAMSI), North Carolina, Sept 2007.

Organizer and invited speaker at IMBS Conference on "Mathematics and Vision", Nov 2007.

Mini-symposium at ICIAM, July 2007, Zurich.

SIAM Invited mini-symposium at MAA-AMS joint meeting, San Diego, Jan 2008.

Hongkai Zhao

Recent Developments in Numerical Methods for Nonlinear Hyperbolic Partial Differential Equations and their Applications', Banff International Research Station, Banff Canada, September 2009.

Program Leader for 2007-08 Program on Random Media at Statistical and Applied Mathematical Sciences Institute (SAMSI), North Carolina.

C. Future Conferences

The Institute is planning several conferences next year; topics to be determined.

D. Visitors

The Institute hosted 4 visitors during the year. Some of their letters can be found in Appendix H.

Janós Aczél
Department of Pure Mathematics
University of Waterloo
Waterloo, Ontario, Canada

Han Bleichrodt
Professor of Health Economics
Department of Applied Economics
Erasmus University
The Netherlands

Gregrey Hunter
Associate Professor of Economics
Cal Poly Pomona

Anthony A. J. Marley
Department of Psychology
McGill University

Next year the Institute will sponsor the visits of Professor Simon Levin, Professor Emeritus Janos Aczel, Assoc. Prof. Manish Singh, and Professor E.J. Wagenmakers.

E. Colloquia Series

During the academic year the Institute conducts a colloquia series with speakers both from inside as well as outside the Institute. For speakers outside California, we attempt, insofar as possible, to coordinate their visit with other travel to California. Some speakers are brought here jointly with UCLA's Marschak Colloquium where the speaker first talks at UCI on a Thursday and at UCLA on the following day. We distribute a relevant paper, when available, prior to each colloquium. Most papers are also downloadable from the IMBS web site at www.imbs.uci.edu.

The focus group in Human Sciences and Comp. also held regular colloquia and these events are listed on their web site at http://eclectic.ss.uci.edu/ResFocusGrp.

Listed below are the IMBS colloquia as well as those in Social Dynamics and Complexity.

IMBS FALL COLLOQUIA 2007

August 28
GEORGE A. HAZELRIGG - Program Director for Manufacturing Machines and Equipment Division of Design, Manufacture and Industrial Innovation, NSF
"Bringing Engineering Mathematics into the 20th Century"

October 12
RECEPTION IN HONOR OF BRIAN SKYRMS' RESEARCH CAREER, Dept. of Logic & Philosophy of Science, UC Irvine

October 18
IGOR KOPYLOV, Department of Economics, UC Irvine
"A Model of Guilt and Temptation"

November 1
HAN BLEICHRODT, Department of Health Policy and Management, Erasmus University, Rotterdam
"*Reference-dependent utility with incomplete preferences*"

November 8
VINCE CRAWFORD, Department of Economics, UC San Diego
"*Modeling Behavior in Novel Strategic Situation via Level-K Thinking"*

November 15
NOAH A. ROSENBERG, Department of Human Genetics, Bioinformatics Program, and the Life Sciences Institute, University of Michigan
"A genomic analysis of population relationships and genetic diversity in Native Americans"

November 29
JERKER DENRELL, Graduate School of Business, Stanford University
"Learning from adaptive samples: Implications for risk taking"

December 13
ERIK SNOWBERG

Graduate School of Business, Stanford University
"Explaining the Favorite-Longshot Bias: Is it Risk-Love or Misperceptions?"

IMBS WINTER COLLOQUIA 2008

January 10
JONATHAN D. NELSON, Postdoc, Computer Science and Engineering Dept., UCSD
"Use of optimal experimental design principles to design experiments on the intuitive value of information"

January 14 Monday
FRIEDERIKE MENGEL, Department of Economics, Universided de Alicante
"Learning Across Games"

January 17
LAURENT MATHEVET, Department of Economics, Caltech
'Supermodular Bayesian Implementation: Learning and Incentive Design"

January 22 Tuesday
THAYER MORRILL, Department of Economics, University of Maryland
'The Roommates Problem Revisited"

January 31
DENNIS C. MUELLER, Department of Economics, Univ. of Vienna
"Constitutional and Cosmopolitan Rights"

February 7
MICHAEL DEEM, Department of Bioengineering, Rice University
"Antigenic Distance, Glassy Dynamics, and Localization in the Immune System"

February 21
GALINA VERESHCHAGINA, Department of Economics, WP. Carey School of Business, Arizona State University
"*References for Risk in a Dynamic Model with Consumption Commitments"*

February 28
WILLIAM BRANCH, Department of Economics, UCI
"Learning about Risk and Return: A Simple Model of Bubbles and Crashes"

March 6
PETER WAKKER, Econometric Institute, Erasmus University, Rotterdam, the Netherlands, Dept. of Quantitative Economics, Maastricht University, the Netherlands
"*Using Standard Sequences from Conjoint Measurement to Obtain Simple Measurements of Temporal Preference and Time Inconsistency"*

March 13
TERRY REGIER, Department of Psychology, University of Chicago

"Language Learning and the Poverty of the Stimulus"

IMBS SPRING COLLOQUIA 2008

April 3
JEAN-CLAUDE FALMAGNE, Department of Cognitive Sciences, UCI
"On the Feasible Forms of Permutable Scientific Laws"

April 10
BIRTE FORSTMANN and **ERIC-JAN WAGENMAKERS**
Dept. of Psychology, University of Amsterdam, The Netherlands
"Mathematical Modeling and Functional Neuroimaging Show that the Striatum Facilitates Decision-Making under Time Pressure"

April 17
MICHAEL Mc BRIDE, Department of Economics, UCI
"Game Theory and Religious Markets"

April 24
DAVID EPPSTEIN, Department of Computer Science, UCI
"Principles of graph drawing"

May 1
BRUCE SPENCER, Department of Statistics. Faculty Fellow, Institute for Policy Research, Northwestern University
"On Statistical Estimation of Accuracy of Verdicts in Criminal Cases"

May 8
DUNCAN LUCE, Distinguished Research Professor of Cognitive Sciences and Economics
"Interpersonal Comparisons of Utility for 2 of 3 Types of People"

May 15
DAVID LAIBSON, Department of Economics, Harvard University
"Instant Gratification"

May 22
DONALD HOFFMAN, Department of Cognitive Sciences, UCI
"Quantum Cognitive Science"

June 5
LELAND WILKINSON, Adjunct Professor of Statistics, Northwestern University
"Scagnostics"

SOCIAL DYNAMICS AND COMPLEXITY COLLOQUIA 2007-08

FALL COLLOQUIA 2007

Friday, October 12
DARIO NARDI, UCLA, Human Complex Systems
"Multi-Agent Communication – Methods for Group Social Exchange using Natural Language"

Frida,y October 26
LAURENT TAMBAYONG, MBS, UCI
"Simulating Micro Trade Networks: the Dynamics of Macro Trade Networks"

Friday November 9, 2007
BAI-LIAN LARRY LI. UCR, Editor, Ecological Complexity
"Ecological Complexity and Sustainability"

Friday, November 16
DEMETRI TERZOPOULOS, Chancellor's Professor of Computer Science, UCLA
"Simulating Pedestrians"

WINTER COLLOQUIA 2008

Friday, January 11
HELEN MAYER HARRISON and **NEWTON HARRISON**
"Complexity Works: Rain Forest/Meadow/Eco-Urban Edge/Glacial Melt and Sponge"

V. BUDGET

A. Appropriations and Expenditures

Appropriations:

IMBS 2007-08 Budget allocation	$100,000
IMBS 2006-07 Carry Forward	$ 74,243
Total budget for 07-08	**$174,243**

Expenditures:

Salaries (Director, Staff)	$ 56,177
School Administrative Support	$ 7,500
Conference/Colloquia	$ 36,367
Equipment	$ 3,230
Supplies & Expenses	$ 4,125
Graduate Student Support	$ 15,250
Total Expenditures:	**$122,649**
Carry Forward to 2008-09:	**$ 51,594**

2008-09 Encumbrances:

Graduate Student Support $15,000

B. **Extramural Funding Activity**

IMBS faculty research was supported by research 38 grants with 6 pending grants. Following is a detailed breakdown of the extramural funding.

GRANTS AWARDED AND ACTIVE:

PI	Source	Amount	Dates
Batchelder	NSF	$240,000	7/06-8/09
Multinomial processing Tree Models: New projects and Implementations, with X. Hu.			
Brownstone	NSF	$550,000	10/05-9/08
AOC: Globalization and Offshore Sourcing of Knowledge Work: Economic, Relational and ICT Dynamics, with K. Kraemer, et al.			
Brownstone	UC Trans. Ctr.	$73,209	5/07-7/08
Mode Choice and Destination Choice: Estimations and Simulations for Airport Access in the San Francisco Bay Area, with K. Van Dender.			
Butts	NSG ITR	$8, 957,651.00	10/03-9/08
Collaborative Research: Responding to the Unexpected. Co-PIs S. Mehrotra, R. Eguchi, N. Venkatasubramanian, and M. Winslett.			
Butts	NSF HD	$749,999	6/08-7/09
AOC: Improvisation in Emergency Response: Linking Cognition, Behavior and Social Interaction. Co-PIs D. Mendonca, and G. Webb.			
Chubb	NINDS	$688,560	9/03 – 5/08
Effects of Temporal Lobectomy on Sensory Deficits in TLE. PI A. Grant. Co-PIs C. Chubb, F. Hickok and F-G. Zeng			
Eppstein	NSF	$600,000	9/03 – 5/08
Algorithms for Graphs on Surfaces. M. Goodrich (UCI) and R. Tamassia (Brown)			
Eppstein	ONR	$5, 381,300	9/03 – 5/08
Scalable Methods for the Analysis of Network-Based Data. P. Smyth, M. Goodrich, C. Butts, M. Handcock (U. Wash.), D. Hunter (PSU), and D. Mount (UMD)			
Frank	NIGMS	$1,000,000	2/06-1/11
Computational Models of Pathogen Evolution and Vaccination Strategies. This project develops computational models of infectious disease. R. Bush, PI.			
Kaminski	UCI Ctr. for the Study of Democracy	$2,500	7/07-6/08
Electoral Engineering in New Democracies			

Keller NSF & U. of AZ $6,900,000 9/04-8/09
Decision Center for a Desert City. Serve on decision research team with C. Kirkwood, D. Keefer and W. Verdini of ASU.

Komarova NIH $299,564 7/05-6/10
Specificity and spatial dynamics of cell signaling: theory and experiment.

Komarova NIH $299,564 7/05-6/11
Mathematical modeling of programmed CT proliferation

Komarova NSF $498,000 7/07-6/10
Evolutionary Game Theoretic Investigations into Color Category. With K. Jameson, L. Narens and R. Steingrimsson as Co-PIs.

Komarova NIH $1,806,480 6/07-7/12
Quantifying the methylation rate in cancer cells: Computational and experimental approaches.

Lee AFRL/AFOSR $456,000 1/0711/09
Modeling Exploration and Exploitation in Structured Environments. Co-PI, M. Steyvers.

Luce NSF $215,000 4/05-3/08
Algebraic and Stochastic Models of Structures arising in Utility Theory and Psychophysics.

Luce NSF $350,000 4/05-3/08
Empirical and Theoretical Studies of Psychophysical Phenomena. Co-PIs L. Narens and R. Steingrimsson.

Saari NSF $100,000 8/06-7/08
SGER / Collaborative Reseach: Multiscale Modeling: Finding Strengths, Avoiding Weaknesses.

Saari NSF $300,000 9/06-9/09
A Mathematical Foundation for Voting and Decision

Small Energy & Environ Analysis $35,000 7/06-9/07
Effects of Policies to Reduce Light-Duty Vehicle Fuel Consumption

Srinivasan NIMH $1,473,000 1/04-12/07
Dynamic Neuroimaging with high-resolution SSVEPs.

Stern NIH - NCRR $25,000,000 10/05-9/09
Functional Imaging Research on schizophrenia Testbed. Chair of Statistics Working Group. S. G. Potkin (PI).

Steyvers NSF-DARPA-NSA $391,000 7/08-6/09
Statistical Topic Modeling of Documents, Entities, and Network Data. P. Smyth PI.

Steyvers Australian Research $657,000 7/08-6/12

Council

A new kind of dynamics for psychology. PI Scott Brown.

Steyvers AFRL/AFOSR $456,031 1/07-11/09
Modeling Exploration and Exploitation in Structured Environments. Michael Lee PI

Stern NSF $618,120 9/05-8/08
Collaboration in Mathematical Geosciences (CMG): Characterization of Inter-Tropical Convergence Zone Dynamics and Breakdown Using Statistical Learning Methods and Satellite Date. Co-PI with G. Magnusdottir, P. Smyth.

White Agency National de Recherche (France) 150,000 Euro 1/06-12/08
Informatic Treatment of Kinship Phenomena: An Integrated Approach in Anthropology and History. With Michael Houseman, Cyril Grance and others.

Xin NSF $300,000 7/07-6/10
Dynamic Algorithms for Blind Separation of Convolutive Sound Mixtures.

Xin NSF $105,000 7/05-6/08
Variational Principle Based Study of Random Front Speeds.

Xin UCI CORCL $17,593 7/26-8/08
Multi-Investigator Grant.

Xin CORCLR $18,000 7/06-6/07
Dynamic Signal Processing to Improve Hearing Aid Performance

Zhao ONR $560,000 2/06-11/09
Time Reversal and Imaging in a Multiscale Environment and Applications to Imaging and Communications.

Zhao DARPA $840,000 5/06-2/09
Time Reversal and Imaging in a Multiscale Environment and Applications to Imaging and Communications. Co-PI on Phase II.

Zhao NSF $180,000 7/05-7/08
Efficient numerical methods for material transport on moving interface and Hamilton-Jacobi equations.

Zhao MURI $600,000 5/07-9/12
Model Classes, Approximation, and Metrics for Dynamic Processing of Urban Terrain Data.

Zhao NSF $153,261 7/08-6/11

The Fast Sweeping Method and Its Applications

Zhao ONR $577,217 3/08-3/09
Model based image analysis.

PROPOSALS PENDING

Butts NSF CMMI. $331,473
Multiorganizational Collaboration Networks in a Regional Seismic Hazard Preparedness Initiative: Structure and Impact. With C. Lakon.

Butts ONR $3,358,579
Scalable Methods for the Analysis of Network-Based Data. With Padhraic Smyth; Butts, Carter *T.; Eppstein, David; Goodrich, Michael T.; Handcock, Mark S.; Hunter, David R.; and Mount, David.*

Butts NSF HSD $749,245
DHB: Large-scale Spatially Embedded Interpersonal Networks: Measurement, Modeling, and Dynamics. With Hipp, John and Nagle, Nicholas. .

Frank NSF $234,000
Evolution of Reliable and Robust Regulatory Control

Keller NSF $5,200
EDoctoral Research Dissertation in DMRS: Cross-Disciplinary Analyses Using Multi-Attribute Utility Theory.

Lee Alzheimer's Assoc. $749,245
Bayesian methods for the detection, diagnosis and treatment of Alzheimer's.

VI. APPENDICES

APPENDIX A
CURRENT FACULTY MEMBERS

MEMBERS

Aldo Antonelli, (Ph.D. Philosophy, University of Pittsburgh). Professor of Philosophy, University of California, Irvine. Research areas: knowledge representation an non-monotonic reasoning, non-standard set theories, especially Quine's "New Foundations", logical foundations of game theory and applications to distributed artificial intelligence.

Pierre F. Baldi, (Ph.D. Mathematics, California Institute of Technology). Professor, Information and Computer Science, Director of the Institute for Genomics and Bioinformatics. Research areas: Bioinformatics/Computational Biology, Probabilistic Modeling/Machine Learning.

Jeffrey Barrett, (Ph.D. Philosophy, Columbia University). Professor of Philosophy, University of California, Irvine. Research areas: philosophy of science and the theory of knowledge, philosophy of physics.

William H. Batchelder, (Ph.D. Psychology, Stanford University). Professor of Cognitive Sciences, University of California, Irvine. Research areas: Mathematical modeling and measurement methodology in the social and behavioral sciences.

Michael H. Birnbaum, (Ph.D. Psychology, University of California, Los Angeles). Professor of Psychology, California State University, Fullerton. Research areas: Human judgment, decision-making, and utility measurement.

John P. Boyd, (Ph.D. Communication Sciences, University of Michigan). Professor of Anthropology, University of California, Irvine. Research areas: Algebraic models of social relations, quantitative methods, and sociobiology.

Myron L. Braunstein, (Ph.D. Psychology, University of Michigan). Professor of Psychology, University of California, Irvine. Research areas: Visual perception, especially depth and motion perception.

William Branch, (Ph.D. Economics, University of Oregon). Assistant Professor of Economics, University of California, Irvine. Research areas: Macroeconomics, economic theory.

David Brownstone, (Ph.D. Econometrics and Applied Microeconomics, University of California, Berkeley). Professor of Economics, University of California, Irvine. Research areas: Computer-intensive analysis of statistical estimation strategies and applied econometrics.

Jan Brueckner, (Ph.D. Stanford University). Professor of Economics, University of California, Irvine. Research areas: Urban economics, public economics, industrial organization, and housing finance.

Michael L. Burton, (Ph.D. Anthropology, Stanford University). Professor of Anthropology, University of California, Irvine. Research areas: Economics anthropology, cognitive anthropology, and cross-cultural research methods.

Carter Butts, (Ph.D. Sociology, Carnegie Mellon University). Associate Professor of Sociology. Research areas: Computational and Mathematical Organization Theory, Games and Economic Behavior.

Yen-Sheng Chiang, (Ph.D. Sociology, University of Washington). Hired as Assistant Professor to begin term at UCI Department of Sociology in Fall 2009. Research areas: Social Networks, Rational Choice Theory (Trust, Norms and Collective Action).

Linda Cohen, (Ph.D. Social Sciences, California Institute of Technology). Professor of Economics, University of California, Irvine. Research areas: Political economy, public choice, and governmental regulation of business.

Charles Chubb, (Ph.D. Experimental Psychology, New York University). Professor of Psychology, University of California, Irvine. Research areas: neural networks, perceptual learning, visual coding, visual short-term memory, and human choice behavior.

Rui De Figueiredo, (Ph.D. Applied Mathematics, Harvard University). Professor of Electrical and Computer Engineering and Mathematics, University of California, Irvine. Research areas: Mathematical foundations of neural networks, contextual feedback models for automated image understanding.

Barbara Dosher, (Ph.D. Experimental Psychology, University of Oregon). Professor of Cognitive Sciences, University of California, Irvine. Research areas: Memory, visual perception, and depth from visual motion.

Michael D'Zmura, (Ph.D. Psychology, University of Rochester). Professor of Cognitive Sciences, University of California, Irvine. Research areas: Visual perception, color, image understanding, and attention.

David Eppstein, (Ph.D. Mathematics, Columbia University). Professor of Computer Science, University of California, Irvine. Research areas: Computational geometry and geometric optimization, Triangulation and mesh generation, Graph drawing and information visualization, Data depth and robust statistics, Analysis of exponential-time algorithms.

Jean-Claude Falmagne, (Ph.D. Psychological Sciences, University of Brussels). Professor of Cognitive Sciences, University of California, Irvine. Research areas: Assessment of knowledge, measurement theory, psychophysics, and mathematical psychology.

Katherine Faust, (Ph.D. Social Science, University of California, Irvine). Professor of Sociology, University of California, Irvine. Research areas: Social Networks, research methods.

Steve Frank, (Ph.D. Biology, University of Michigan). Professor of Ecology and Evolutionary Biology. Research areas: Complex phenotypes; quantitative dynamics of genetical, biochemical, and cellular mechanisms.

Linton C. Freeman, (Ph.D. Sociology, Northwestern University). Research Professor of Social Sciences, University of California, Irvine. Research areas: Cognition of social structure, social networks.

Michelle Garfinkel, (Ph.D. Economics, Brown University). Professor of Economics, University of California, Irvine. Research areas: Strategic aspects of Monetary and Fiscal Policies.

Amihai Glazer, (Ph.D. Economics, Yale University). Professor of Economics, University of California, Irvine. Research areas: Public Choice, especially concerning commitment problems.

Bernard Grofman, (Ph.D. Political Science, University of Chicago). Professor of Political Science and Social Psychology, University of California, Irvine. Research areas: Models of group decision making, models of individual choice, electoral competition.

Donald Hoffman, (Ph.D. Computational Psychology, Massachusetts Institute of Technology). Professor of Cognitive Sciences and Information and Computer Science, University of California, Irvine. Research areas: Formal theories of perception, human and machine vision, recovery of depth from images.

Geoffrey Iverson, (Ph.D. Theoretical Physics, University of Adelaide, Australia; Ph.D. Experimental Psychology, New York University). Professor of Cognitive Sciences, University of California, Irvine. Research areas: Psychophysics, statistical estimation/testing of ordinal models.

Marek Kaminski, (Ph.D. Government and Politics, University of Maryland). Associate Professor of Political Science, University of California, Irvine. Research areas: political consequences of electoral laws, voting models, democratization,

L. Robin Keller, (Ph.D. Management Sciences, University of California, Los Angeles) Professor of Administration and Social Sciences, Graduate School of Management, University of California, Irvine. Research areas: Individual decision-making, risk analysis, decision problem structuring.

Natalia Komarova, (Ph.D. Applied Mathematics, University of Arizona), Associate Professor, Department of Mathematics and Ecology & Evolutionary Biology. Research areas: Mathematical modeling and biology, virus dynamics, cancer modeling.

Igor Kopylov, (Ph.D. University of Rochester), Assistant Professor of Economics. Research areas: Microeconomic theory, decision theory, and game theory.

Michael Lee, (Ph.D. Psychology, University of Adelaide), Associate Professor of Cognitive Science, University of California, Irvine. Research areas: Mathematical and computational models of stimulus representation, categorization, memory, decision-making and problem-solving.

R. Duncan Luce, (Ph.D. Mathematics, Massachusetts Institute of Technology). Distinguished Research Professor of Cognitive Sciences, and Research Professor of Economics, University of California, Irvine. Research areas: Axiomatic theories of measurement, probabilistic choice and response time models, individual decision making.

Mark J. Machina, (Ph.D. Economics, Massachusetts Institute of Technology). Professor of Economics, University of California, San Diego. Research areas: Utility, decision making, risk behavior.

Penelope Maddy, (Ph.D. Philosophy, Princeton). Professor of Logic and Philosophy of Science, University of California, Irvine. Research areas: Philosophy of mathematics, especially the philosophy of set theory.

Michael McBride, (Ph.D. Economics, Yale University). Assistant Professor of Economics. Research areas: Microeconomics, game theory, and political economy.

Anthony McGann, (Ph.D. Political Science, Duke University). Assistant Professor of Political Science, University of California, Irvine. Research areas: party systems, democratic theory, formal models of political systems, European government.

Louis E. Narens, (Ph.D. Mathematics, University of California, Los Angeles). Professor of Cognitive Sciences, and Psychiatry and Human Behavior, University of California, Irvine. Research areas: Measurement theory, foundations of science, decision theory.

Andrew Noymer, (Ph.D. University of California, Berkeley). Assistant Professor of Sociology, University of California, Irvine. Research areas: Population, Social Networks, Mathematical Models, Demography of Health & Mortality, Historical Demography

Richard Palais, (Ph.D. Harvard University). Adjunct Professor of Mathematics, University of California, Irvine. Research areas: soliton mathematics, compact differentiable transformation groups, nonlinear global analysis, critical point theory, submanifold geometry, integrable systems.

Dale Poirier, (Ph.D. Economics, University of Wisconsin). Professor of Economics, University of California, Irvine. Research areas: econometrics, both theoretical and empirical, specializing in Bayesian econometrics.

David M. Riefer, (Ph.D. Psychology, University of California, Irvine). Professor of Psychology, California State University at San Bernardino. Research areas: Memory, cognitive science, and mathematical psychology.

A. Kimball Romney, (Ph.D. Social Anthropology, Harvard University). Research Professor of Anthropology, University of California, Irvine. Research areas: Cognitive anthropology, cultural consensus, quantitative methods.

Donald G. Saari, (Ph.D. Mathematics, Purdue University). Distinguished Professor of Mathematics and Economics, University of California, Irvine. Research areas: Mathematics and application of dynamical systems to social sciences; decision theory.

Stergios Skaperdas, (Ph.D. Economics, Johns Hopkins University). Professor of Economics, University of California, Irvine. Research areas: Bargaining models, applications of non-cooperative game theory, bilateral exchange.

Brian Skyrms, (Ph.D. Philosophy, University of Pittsburgh). Professor of Philosophy, University of California, Irvine. Research areas: Probability, induction, causation, rational choice.

Kenneth Small, (Ph.D. Economics, University of California, Berkeley). Professor of Economics, University of California, Irvine. Research areas: Urban economics, transportation economics, discrete-choice econometrics, and energy.

Padhraic Smyth, (Ph.D. Electrical Engineering, California Institute of Technology). Professor, Information and Computer Science, University of California, Irvine. Research areas: Statistical pattern recognition, probabilistic learning, information theory, artificial intelligence, image and time-series modeling.

George Sperling, (Ph.D. Psychology, Harvard University). Distinguished Professor of Cognitive Sciences, University of California, Irvine. Research areas: Human information processing, vision and visual perception, computer vision and image processing.

Ramesh Srinivasan, (Ph.D. Biomedical Engineering, Tulane University). Associate Professor of Cognitive Sciences, University of California. Research areas: Perception, development and cortical dynamics.

Hal Stern, (Ph.D. Statistics, Stanford University). Professor of Statistics, Department of Statistics, University of California, Irvine. Research areas: Bayesian methods, model diagnostics, statistical computing, applications to biological and social sciences, sports and statistics.

Mark Steyvers, (Ph.D. Psychology, Indiana University). Associate Professor of Cognitive Sciences, University of California, Irvine. Research areas: Computational models of memory, reasoning and perceptions.

Rein Taagepera, (Ph.D.Physics, University of Delaware). Professor of Political Science, Department of Political Science, University of California, Irvine. Research areas: Quantitatively predictive models, electoral and party systems, Finno-Ugric area studies.

Carole Uhlaner, (Ph.D. Political Science, Harvard University). Associate Professor of Political Science, University of California, Irvine. Research areas: Rational actor models and statistical

analyses of political behavior, especially participation and voting; decision theory; comparative politics.

Douglas White, (Ph.D. Anthropology/Social Theory, University of Minnesota). Professor of Anthropology, University of California, Irvine. Research areas: Social theory, complexity, evolutionary theory, organization, networks, long-term field studies and social dynamics, world-system impacts on local communities, ethnosociology, comparative studies, quantitative methods.

Charles (Ted) Wright, (Ph.D. Experimental psychology, University of Michigan). Professor of Cognitive Science, University of California, Irvine. Research areas: Acquisition and cognitive representation of human skills, speed-accuracy trade-offs, models for shape of trajectories.

Jack Xin, (Ph.D. Courant Institute, New York University). Professor of Mathematics. Research areas: Partial Differential Equations (PDE), Asymptotic Analysis, Scientific Computation, and their Applications in Fluid Dynamics, Voice Signal Processing, Biology, Nonlinear Optics and Geoscience.

John I. Yellott, Jr. (Ph.D. Psychology, Stanford University). Professor Emeritus of Cognitive Sciences, University of California, Irvine. Research areas: Vision, probabilistic choice models.

Hongkai Zhao, (Ph.D. Mathematics, University of California, Los Angeles). Professor of Mathematics, University of California, Irvine. Research areas: Applied and computational mathematics with applications in physics, engineering, imaging science and computer vision.

Kimberly Jameson, (Ph.D. Psychology, University of California, Irvine). Associate Project Scientist, University of California, Irvine. Research areas: categorization behaviors; modeling concept formation for perceptual stimuli (e.g., the cognitive organization of color sensations and its relationship to linguistic classifiers); the development and breakdown of these cognitive functions; and optimum performance in tasks involving color codings.

Vladimir A. Lefebvre, (Ph.D. Psychology, Lomonosov Moscow State University). Researcher for Cognitive Sciences, University of California, Irvine. Research areas: Human reflexion, mathematical modeling of human inner world, military psychology.

APPENDIX B
SCIENTIFIC PUBLICATIONS OF MEMBERS, ACADEMIC 2007-08[1]

William Batchelder

Batchelder, W.H. Cognitive Psychometrics: Using Multinomial Processing Tree Models as Measurement Tools. S. Embretson and J. Roberts (Eds.) *New Directions in Psychological Measurement with Model Based Approaches*. American Psychological Association Books

Batchelder, W.H., and Batchelder, E. Meta-cognitive Guessing Strategies in Source Monitoring. In J. Dunlosky and R.A. Bjork (Eds.). Handbook of Metamemory and Memory. New York, Psychology press, pp. 211-244, 2008.

Smith, J.B., & Batchelder, W.H. (2008). Assessing individual differences in categorical data, *Psychonomic Bulletin & Review*, 15, 713-731.

Michael Birnbaum

Birnbaum, M. H. (2007). Tests of branch splitting and branch-splitting independence in Allais paradoxes with positive and mixed consequences. *Organizational Behavior and Human Decision Processes, 102,* 154-173.

Birnbaum, M. H. (2007). Designing online experiments. In A. Joinson, K. McKenna, T. Postmes, & U.-D. Reips (Eds.), *Oxford Handbook of Internet Psychology* (pp. 391-403). Oxford, UK: Oxford University Press.

Birnbaum, M. H., & Bahra, J. P. (2007). Gain-loss separability and coalescing in risky decision making. *Management Science, 53,* 1016-1028.

Birnbaum, M. H., & Gutierrez, R. J. (2007). Testing for intransitivity of preference predicted by a lexicographic semiorder. *Organizational Behavior and Human Decision Processes, 104,* 97-112.

Birnbaum, M. H., & LaCroix, A. R. (2008). Dimension integration: Testing models without trade-offs. *Organizational Behavior and Human Decision Processes, 105,* 122-133.

Birnbaum, M. H. (2008). Evaluation of the priority heuristic as a descriptive model of risky decision making: Comment on Brandstätter, Gigerenzer, and Hertwig (2006). *Psychological Review, 115,* 253-260.

Birnbaum, M. H. (2008). Postscript: Rejoinder to Brandstätter et al. (2008). *Psychological Review, 115,* 260-262.

[1] Those members not listed failed to respond to our request for information.

Birnbaum, M. H. (2008). New paradoxes of risky decision making. *Psychological Review, 115,* 463-501.

Birnbaum, M. H. (2008). New tests of cumulative prospect theory and the priority heuristic: Probability-outcome tradeoff with branch splitting. *Judgment and Decision Making, 3,* 304-316.

Birnbaum, M. H., & Schmidt, U. An experimental investigation of violations of transitivity in choice under uncertainty. *Journal of Risk and Uncertainty, in press.*

John Boyd

Boyd, J. P., Fitzgerald, W. J., Mahutga, M. & Smith, D. (2008). Computing Continuous Core/Periphery Structures For Social Relations Data, to appear.

William Branch

Monetary Policy, Endogenous Inattention, and the Volatility Trade-off, (with John Carlson, George Evans, and Bruce McGough). *Economic Journal,* forthcoming.

Jan Brueckner

Brueckner, J. (2007). Urban Growth Boundaries: An Effective Second-Best Remedy for Unpriced Traffic Congestion?. *Journal of Housing Economics* 16, 263-273.

Brueckner, J. & Girvin, R. (2008). Airport Noise Regulation, Airline Service Quality, and Social Welfare. *Transportation Research Part B* 42, 19-37.

Brueckner, J. & Smirnov, O. (2008). Social Networks and the Convergence of Population Attributes: A Generalization, *Journal of Regional Science* 48, 359-365.

Brueckner, J. & Largev, A. G. Social Interaction and Urban Sprawl. *Journal of Urban Economics,* forthcoming.

Brueckner, J. & Rosenthal, S. Gentrification and Neighborhood Housing Cycles: Will America's Future Downtowns Be Rich? *Review of Economics and Statistics,* forthcoming.

Brueckner, J. & Van Dender, K. Atomistic Congestion Tolls at Concentrated Airports? Seeking a Unified View in the Internalization Debate. *Journal of Urban Economics,* forthcoming.

Brueckner, J. & Pai, V. Technological Innovation in the Airline Industry: The Impact of Regional Jets. *International Journal of Industrial Organization,* forthcoming.

Carter Butts

Butts, Carter T.; Acton, Ryan M.; and Marcum, Chris. Interorganizational Collaboration in the Hurricane Katrina Response. *Journal of Social Structure*, forthcoming.

Butts, Carter T. A Relational Event Framework for Social Action. *Sociological Methodology*, forthcoming.

Butts, Carter T. (2008). Network: a Package for Managing Relational Data in R. *Journal of Statistical Software*, 24(2).

Butts, Carter T. (2008). Social Network Analysis with sna. *Journal of Statistical Software*, 24(6).

Butts, Carter T. (2008). Social Networks: A Methodological Introduction. *Asian Journal of Social Psychology*, 11(1), 13-41.

Goodreau, Steven M.; Handcock, Mark S.; Hunter, David R.; Butts, Carter T.; and Morris, Martina. (2008). A statnet Tutorial. *Journal of Statistical Software*, 24(9).

Handcock, Mark S.; Hunter, David R.; Butts, Carter T.; Goodreau, Steven M.; and Morris, Martina. (2008). statnet: Software Tools for the Representation, Visualization, Analysis and Simulation of Network Data. *Journal of Statistical Software*, 24(1).

Hunter, David R.; Handcock, Mark S.;, Butts, Carter T.; Goodreau, Steven M.; and Morris, Martina. (2008). ergm: A Package to Fit, Simulate and Diagnose Exponential-Family Models for Networks." *Journal of Statistical Software*, 24(3).

Lind, Benjamin E.; Tirado, Miguel; Butts, Carter T.; and Petrescu-Prahova, Miruna. (2008). Brokerage Roles in Disaster Response: Organizational Mediation in the Wake of Hurricane Katrina. *International Journal of Emergency Management*, forthcoming.

Petrescu-Prahova, Miruna and Butts, Carter T. (2008). Emergent Coordinators in the World Trade Center Disaster. *International Journal of Mass Emergencies and Disasters*, forthcoming.

Butts, Carter T. (2007). Comment on Mark S. Handcock, Adrian E. Raftery, and Jeremy M. Tantrum, Model-based Clustering for Social Networks. *Journal of the Royal Statistical Society, Series A,* 170(2), 333.

Butts, Carter T. (2007). Models for Generalized Location Systems. *Sociological Methodology*, 37(1), 283-348.

Butts, Carter T. (2007). Review of Carrington, Peter J.; Scott, John; and Wasserman, Stanley (eds.), *Models and Methods in Social Network Analysis*, Cambridge, Cambridge University Press. *Social Networks*, 29(4), 603-608.

Butts, Carter T. (2007). Statistical Mechanical Models for Social Systems. In Adrian Bejan and Gilbert W. Merkx (eds.), *Constructal Theory of Social Dynamics*, 197-224. New York: Springer.

Charles Chubb

Wright, C.E., V. Marino, S. Belovsky, C. Chubb. (2007). Visually-Guided, Aimed Movements can be Unaffected by Stimulus-Response Uncertainty. *Experimental Brain Research*. 179 (3), 475-496.

Barbosa, A., L.M. Mathger, C. Chubb, C, Florio, C-C. Chiao, R.T. Hanlon. (2007). Disruptive coloration in cuttlefish: a visual perception mechanism that regulates ontogenetic adjustment of skin patterning. *Journal of Experimental Biology*, 210, 1139-1147.

Chubb, C., Nam, J-H, Bindman, D.R., Sperling, G. (2007). The Three Dimensions of Human Visual Sensitivity to First-order Contrast Statistics, *Vision Research*, 47, 2237-2248.

Chiao, C-C., Chubb, C., Hanlon, R.T. (2007). Interactive effects of size, contrast, intensity and configuration of background objects in evoking disruptive camouflage in cuttlefish, *Vision Research*, 47, 2223-2235.

Morgan, M.J., Chubb, C., & Solomon, J. A 'dipper' function for texture discrimination based on orientation variance. *Journal of Vision*, in press.

Grant, A., Donnelly, K., Chubb, C., Barr, B., Kuzniecky, R., Devinsky, O. Temporal Lobe Epilepsy Does Not Impair Visual Perception. *Epilepsia*, in press.

Barbosa, A., Mäthger, L. M., Buresch, K.C., Kelly, J., Chubb, C., Chiao, C.C., and Hanlon, R. T. Cuttlefish camouflage: the effects of substrate contrast and size in evoking uniform, mottle or disruptive body patterns, *Vision Research*, in press.

David Eppstein

Media Theory. D. Eppstein, J.-C. Falmagne, and S. Ovchinnikov. Springer-Verlag, 2007, ISBN 978-3-540-71696-9.

V. Dujmović, D. Eppstein, M. Suderman, and D. R. Wood. (2007). Drawings of Planar Graphs with Few Slopes and Segments. *Comp. Geom. Theory & Applications* 38:194-212.

L. Singhal, E. Bozorgzadeh, and D. Eppstein. Interconnect criticality driven delay relaxation. *IEEE Transactions on Computer-Aided Design,* 26(10):1803-1817, 2007.

D. Eppstein. Upright-quad drawing of st-planar learning spaces. (2008). *Journal of Graph Algorithms and Applications* 12(1):51-72.

D. Eppstein, M. van Kreveld, E. Mumford, and B. Speckmann. (2007). Edges and Switches, Tunnels and Bridges. *Algorithms and Data Structures*. Lecture Notes in Computer Sci., 77-88, Springer-Verlag.

D. Eppstein, and M. T. Goodrich. (2007). Space-Efficient Straggler Identification in Round-Trip Data Streams via Newton's Identities and Invertible Bloom Filters. 10th Workshop Algorithms

and Data Structures, Halifax, Nova Scotia. *Lecture Notes in Computer Science*, 4619, 2007, pp. 637-648, Springer-Verlag.

D. Eppstein. (2008). Recognizing partial cubes in quadratic time. 19th ACM-SIAM Symposium Discrete Algorithms, San Francisco, 2008, pp. 1258-1266.

D. Eppstein, M. T. Goodrich, E. Kim, and R. Tamstorf. Approximate Topological Matching of Quadrilateral Meshes. *Proc. Shape Modeling International 2008*, to appear.

D. Eppstein, M. T. Goodrich, E. Kim, and R. Tamstorf. Motorcycle Graphs: Canonical Quad Mesh Partitioning. *Proc. 6th Symp. Geometry Processing*, Copenhagen, Denmark, 2008, to appear.

Jean-Claude Falmagne

D. Eppstein, J.-Cl. Falmagne and S. Ovchinnikov. (2007). *Media Theory*. Interdisciplinary Applied Mathematics. Springer-Verlag.

J.-Cl. Falmagne and S. Ovchinnikov. (2007). Mediatic graphs. Accepted for publication as a chapter in a volume honoring Peter Fishburn.

J.-Cl. Falmagne. A set-theoretical outlook on the philosophy of science. Journal of Mathematical Psychology, 50:45--52, 2007. Review of Patrick Suppes, "Representation and Invariance of Scientific Structures", in CSLI Publications, Stanford, ISBN 1-57586-333-2.

J.-Cl. Falmagne, Y.-.F. Hsu, F. Leite, and M. Regenwetter. Stochastic applications of media theory: Random walks on weak orders or partial orders. *Discrete Applied Mathematics*, 156(8):1184--1196, 2008a.

D. Eppstein, J.-Cl. Falmagne and H. Uzun. (2008). On verifying and engineering the wellgradeness of an union-closed family. *Journal of Mathematical Psychology,* forthcoming.

Katherine Faust

Faust, K. Triadic configurations in limited choice sociometric networks: Empirical and theoretical results. *Social Networks,* forthcoming

Faust, K. (2007). Very local structure in social networks. Pages 209-256 in *Sociological Methodology 2007,* volume 32 edited by Yu Xie. Cambridge, MA: Basil Blackwell.

Steve A. Frank

Frank, S. A. (2007). Dynamics of Cancer: Incidence, Inheritance, and Evolution. Princeton University Press.

Frank, S. (2007). A. Maladaptation and the paradox of robustness in evolution. *PLoS ONE*, 2(10):e1021.

Frank, S. A. (2007). All of life is social. *Current Biology*, 17:R648-R650.

Frank, S. (2007). A. Evolution of antigenic variation. Pages 225-242 in *Encyclopedia of Infectious Diseases: Modern Methodologies*. M. Tibayrenc, ed. Wiley.

Frank, S. (2007). A. and Bush, R. M. Barriers to antigenic escape by pathogens: trade-off between reproductive rate and antigenic mutability. *BMC Evolutionary Biology* 7:229.

Schmid-Hempel, P. and Frank, S. (2007). A. Pathogenesis, virulence, and infective dose. PLoS Pathogens, 3(10):e147.

Freeman

Freeman, Linton C. The Development of Social Network Analysis, Japanese translation by Ryuhei Tsuji. Tokyo: NTT, 2007.

Freeman, Linton C. The Development of Social Network Analysis, Italian translation by Rosanna Memolii. Milan: Franco Angeli, 2007.

Freeman, Linton C. Editor, Social Network Analysis. Four Volumes. Los Angeles: Sage publications, 2008.

Michele Garfinkel

Globalization and Insecurity: Reviewing Some Basic Issues, in G.D. Hess (ed.), *Guns and Butter: The Economic Causes and Consequences of Conflict* (forthcoming) Cambridge, MA: MIT Press, with Stergios Skaperdas and Constantinos Syropoulos.

Bernard Grofman

Handley, L., & Grofman, B. (Eds). Redistricting in Comparative Perspective. Oxford: Oxford University Press, 2008.

Fowler, J. H., Grofman, B., & Masuoka, N. (2007). Social Networks in Political Science: Hiring and Placement of Ph.D.s, 1960-2002. *PS: Political Science & Politics*, 40:(4) 729-739.

Frankel, J., & Grofman, B. (2007). The Merits of New-Downsian Modeling of the Alternative Vote: A Reply to Horowitz. *Public Choice,* 133:1-11.

Grofman, B. (2007). Toward a science of politics? *European Political Science,* 6: 143-155.

Masuoka, N., Grofman, B., & Feld, S. L. (2007). The Political Science 400: A 20-Year Update. *PS: Political Science & Politics,* 40(1):133-145.

Masuoka, N., Grofman, B., & Feld, S. L. (2007). Production and Placement of Ph.D's: 1902-2000. *PS: Political Science & Politics,* 40: (4) 361-366.

Masuoka, N., Grofman, B., & Feld, S. L. (2007). Ranking Departments: A Comparison of Alternative Approaches. *PS: Political Science & Politics,* 40: 531-537

Brunell, T., & Grofman, B. (2008). The Partisan Consequences of *Baker v. Carr and* the 'One Person, One Vote' Revolution. In Handley, L., Grofman, B. (Eds), Redistricting in Comparative Perspective. Oxford: Oxford University Press, 225-236.

Godfrey, J., & Grofman, B. (2008). Pivotal Voting Theory: The 1993 Clinton Health Care Reform Proposal in the U.S. Congress. In Braham, M., Frank, S. (Ed.) Power, Freedom, and Voting. Springer Verlag, 139-158.

Grofman, B., & Fraenkel, J. (2008). Electoral Engineering, Social Cleavages and Democracy. In Nardulli, P. Democracy in The Twenty-First Century II: Domestic Perspectives. Urbana-Champaign, IL: University of Illinois Press, 71-101.

Grofman, B. (2008). A Taxonomy of Runoff Methods. *Electoral Studies,* 27: 395-399.

Merrill, S. III, Grofman, B., & Brunell, T. L. (2008). Cycles in American National Electoral Politics, 1854-2004. *American Political Science Review,* 102(1) 1-17

Owen, G., Lindner, L., & Grofman, B. (2008). Modified Power Indices for Indirect Voting. In Braham, M., Frank, S. (Ed.) Power, Freedom, and Voting. SpringerVerlag, 110-138.

Winer, S., Tofias, M., Grofman, B., & Aldrich, J. (2008). Trending Economic Factors and the Structure of Congress in the Growth of Government, 1930-2002. *Public Choice,* 135 (3-4) 415-449.

Brunell, T., & Grofman, B. Testing Sincere versus Strategic Split Ticket Voting: Evidence from Split House-President Outcomes, 1900-1996. *Electoral Studies,* forthcoming.

Donald Hoffman

Pyles, J., Garcia, J., Hoffman, D., & Grossman, E. (2007). Visual perception and neural correlates of novel `biological motion'. *Vision Research*, 47, 2786-2797.

Hoffman, D. Spectrum inversion. Artwork exhibited at the Serpentine Gallery, London. Exhibited online at:
http://www.edge.org/3rd_culture/serpentine07/serpentine07_index.html#hoffman

Hoffman, D. Solving the mind-body problem. (2007). In *What are you optimistic about? Today's leading thinkers on why things are good and getting better*, John Brockman (Ed.), HarperCollins,

New York, 279-282.

Hoffman, D. (2008). Conscious realism and the mind-body problem. *Mind & Matter*, 6, 87-121.

Geoff Iverson

Iverson, G., Lee, M., Zhang, S. & Wagenmakers, E.J. An Agony in Five Fits. *Journal of Mathematical Psychology*, to appear.

Iverson, G., Lee, M., & Wagenmakers, E.J. Why overestimates the probability of replication. *Psychological Bulletin and Review,* to appear.

Iverson, G., Wagenmakers, E.J. and Lee, M. A Model Averaging Approach to replication: the Case. *Psychological Methods,* under review.

Rouder, J., Speckman, P., Sun, D., Morey, R. & Iverson, G. Bayes Factor Calculations for One- and two-Sample Designs. *Psychological Bulletin & Review*, to appear.

Iverson, G. & Chubb, C. The Analytic Form of the Daylight Locus. To appear in the festschrift volume dedicated to George Sperling.

Myung, I. J., Karabatsos, G. & Iverson, G. A Statisticians View on Bayesian Evaluation of Informative Hypotheses. Chapter 15 of Practical Bayesian Approaches to Testing Behavioral and Social Science Hypotheses (Eds: Herbert Hoijtink, Irene Klugkist & Paul Boeler). Springer, 2008.

Wagenmakers, E.J., Lee, M., Lodewyckx, T., & Iverson, G. Frequentist versus Bayesian Inference. Chapter 9 of Practical Bayesian Approaches to Testing Behavioral and Social Science Hypotheses (Eds: Herbert Hoijtink, Irene Klugkist & Paul Boeler). Springer, 2008.

Marek Kaminski

Kaminski, M. (2007). Parametric Rationing Methods. *Decyzje* (in Polish).

Kaminski, M. Why Post-Communists Punish Themselves? A Model of Transitional Justice Legislation (with Monika Nalepa): Center for the Study of Democracy Working Paper.

Robin Keller

Brazer, S.D., & Keller, L.R. (2008) A design research approach to investigating educational decision making. In A.E. Kelly, R.A. Lesh, & J.Y. Baek (Eds.), Handbook of design research methods in science, technology, engineering, and mathematics learning and teaching, (pp. 284 – 296). New York: Routledge, Taylor, and Francis.

L. Robin Keller, Rakesh K. Sarin, Jayavel Sounderpandian. (2007). An Examination of Ambiguity Aversion: Are Two Heads Better Than One? *Judgment and Decision Making*, 2(5), 390-397.

Tianjun Feng, L. Robin Keller, Xiaona Zheng. (2008). Modeling Multi-Objective Multi-Stakeholder Decisions: A Case-Exercise Approach. *INFORMS Transactions on Education.*

"From the Editor" columns, as Editor-in-Chief of *Decision Analysis*:
L. Robin Keller, September 2007, "From the Editor…," *Decision analysis*, 4(3), 111-113.
L. Robin Keller, M. Baucells, K. F. McCardle, G. S. Parnell, A. Salo, December 2007, "From the Editors…," *Decision analysis,* 4(4), 173-175.
L. Robin Keller, March 2008, "From the Editor…," *Decision analysis*, 5(1), 1-4.
L. Robin Keller, Kelly M. Kophazi, June 2008, "From the Editors…," *Decision analysis*, 5(2), 57-59.

Natalia Komarova

Komarova, N.L. and Jameson, K.A. (2008). Population heterogeneity and color stimulus heterogeneity in agent-based color categorization. To appear in *Journal of Theoretical Biology.*

Komarova NL. (2007). Viral reproductive strategies: How can lytic viruses be evolutionarily competitive? *Journal of Theoretical. Biology.* 249(4):766-84.

Komarova, N.L. and Wodarz, D. (2007) Effect of cellular quiescence on the success of targeted CML therapy. *PloS ONE*, 2(10):e990.

Komarova, N.L. and Wodarz, D. (2007) Stochastic modeling of cellular colonies with quiescence: an application to drug resistance in cancer. *Theor Popul Bio.* 72(4):523-38.

Komarova, N.L., Sadovsky, A.V. and Wan, F.M.Y. (2007). Selective pressures for and against genetic instability in cancer: a time-dependent problem. *Journal of the Royal Society Interface,* 5(18): 105-21.

Igor Kopylov

Kopylov, I. Finite Additive Utility Representations for Preferences over Menus. *Journal of Economic Theory,* forthcoming.

Kopylov, I. (2008). Subjective Probability, published in *Handbook of Probability Theory with Applications*, edited by T. Rudas, Sage Publishers.

Michael Lee

Lee, M.D., & Paradowski, M.J. (2007). Group performance on an optimal stopping problem. *Journal of Problem Solving*, 1(2), 53-73.

Lee, M.D. (2008). Three case studies in the Bayesian analysis of cognitive models. *Psychonomic Bulletin & Review*, 15(1), 1-15.

Fletcher, K.I., Butavicius, M.A., & Lee, M.D. Attention to internal features in unfamiliar face matching. British Journal of Psychology. Accepted 16-July-2007, in press.

Lee, M.D. BayesSDT: Software for Bayesian inference with signal detection theory. *Behavior Research Methods,* in press.

Lee, M.D., & Vanpaemel, W. Exemplars, prototypes, similarities and rules in category representation: An example of hierarchical Bayesian analysis. *Cognitive Science,* in press.

Chronicle, E.P., MacGregor, J.N., Lee, M.D., Ormerod, T.C., & Hughes, P. Individual differences in optimization problem solving: Reconciling conflicting results. *Journal of Problem Solving,* in press.

Vanpaemel, W., & Lee, M.D. (2007). A model of building representations for category learning. In D. McNamara and G. Trafton (Eds.), *Proceedings of the 29th Annual Conference of the Cognitive Science Society*, pp. 1605-1610. Austin, TX: Cognitive Science Society.

Newell, B.R., Collins, P., & Lee, M.D. (2007). Adjusting the spanner: Testing an evidence accumulation model of decision making. In D. McNamara and G. Trafton (Eds.), *Proceedings of the 29th Annual Conference of the Cognitive Science Society*, pp. 535-538. Austin, TX: Cognitive Science Society.

Navarro, D.J, Lee, M.D., Dry, M.J, & Schultz, B. Extending and testing the Bayesian theory of generalization. In V. Sloutsky, B. Love, & K. McRae (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society, in press.

Zeigenfuse, M.D., & Lee, M.D. Finding feature representations of stimuli: Combining feature generation and similarity judgment tasks. In V. Sloutsky, B. Love, & K. McRae (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society, in press.

Vandekerckhove, J., Tuerlinckx, F., & Lee, M.D. (in press). A Bayesian approach to diffusion process models of decision-making. In V. Sloutsky, B. Love, & K. McRae (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

Welsh, M.B., Lee, M.D., & Begg, S.H. More-Or-Less Elicitation (MOLE): Testing a heuristic elicitation model. In V. Sloutsky, B. Love, & K. McRae (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society, in press.

Rubin, T.N., Lee, M.D., & Chubb, C.F. Hierarchical Bayesian modeling of individual differences in texture discrimination. In V. Sloutsky, B. Love, & K. McRae (Eds.), Proceedings of the 30th Annual Conference of the Cognitive Science Society. Austin, TX: Cognitive Science Society, in press.

Vladimir Lefebvre

Lefebvre, V.A. & Sanabria, F. (2008). Matching by fixing and sampling: A local model based on internality, *Behavioral Processes*, 78, pp.204-209.

R. Duncan Luce

Luce, R. D., Ng, C. T., Marley, A. A. J., & Aczél, J. (2008). Utility of gambling I: Entropy-modified linear weighted utility. *Economic Theory*, 36, 1-33.

Marley, A.A.J., Luce, R. D., & Kocsis, I. (2008). Note: A Solution to a Problem Raised in Luce & Marley (2005), *Journal of Mathematical Psychology*, 52, 64-68.

Ng, C. T., Luce, R. D., & Marley, A. A. J. On the utility of gambling: Extending the Approach of Meginniss. *Aequationes Mathematiae*, in press.

Luce, R. D., Ng, C. T., & Marley, A. A. J., & Aczél, J. Utility of gambling II: Risk, Paradoxes, and Data, *Economic Theory*, in press.

Luce, R. D., & Narens, L. Measurement, theory of. In the revised edition of *The New Palgrave: A Dictionary of Economic Theory and Doctrine*, in press.

Narens, L., & Luce, R. D. Meaningfulness and invariance. In the revised edition of *The New Palgrave: A Dictionary of Economic Theory and Doctrine*, in press.

Luce, R. D., Marley, A.A. J., & Ng, C. T. Entropy-related measures of the utility of gambling, Brams, S., Gehrlein, W., & Roberts, F. (Eds) *The Mathematics of Preference, Choice, and Order: Essays in Honor of Peter C. Fishburn,* Springer. In press.

Ng, C.T., Luce, R. D., & Marley, A.A. J. Utility of gambling when events are valued: An application of inset entropy, *Theory and Decision*, in press.

Luce, R. D. Correction to Luce (2004). *Psychological Review*, in press.

Luce, R. D., & Steingrimsson, R. Note on a changed empirical inference in several Steingrimsson and Luce articles due to C. T. Ng's correction of an error in Luce (2004). *Journal of Mathematical Psychology*, in press.

Penelope Maddy

Interview in *Philosophy of Mathematics: 5 Questions*, V. Hendricks and H. Leitgeb, eds., (Automatic Press, 2007), pp. 191-2.

Maddy, P. (2008). How applied mathematics became pure. *Review of Symbolic Logic* 1, pp. 16-41.

Michael McBride

McBride, M. Religious Market Competition in a Richer World. *Economica*, forthcoming

McBride, M. Position-specific Information in Social Networks: Are You Connected? *Mathematical Social Sciences*, forthcoming,

McBride, M. Religious Pluralism and Religious Participation: A Game Theoretic Analysis, *American Journal of Sociology*, forthcoming

Andrew Noymer

Noymer, A. (2007). Contesting the cause and severity of the black death: A review essay. *Population and Development Review*, 33(3):616-627.

Causes of death in nineteenth-century New England: The dominance of infectious disease (with Beth Jarosz). (2008). *Social History of Medicine,* forthcoming.

Noymer, A. (2008). Influenza analysis should include pneumonia, [comment]. *American Journal of Public Health,* 98(11):forthcoming.

Dale Poirier

Jeliazkov, I & Poirier, D. (2008). Dynamic and Structural Features of Intifada Violence: A Markov Process Approach. *Bayesian Analysis* Vol. 3 (No. 1, 2008), 63-78.

A. Kimball Romney

Indow, T. & Romney, A. Kimball. (2008). Reflectance Spectra of Munsell Standard Chips and Their Appearance. *Color Appearance and Application*. 33:229–237.

Romney, A. Kimball. (2008). Relating Reflectance Spectra Space to Munsell Color Appearance Space. *Journal of the Optical Society of America A*. 25:658–666.

Donald Saari

Disposing Dictators; Demystifying Voting Paradoxes. Cambridge University Press, 2008.

From Decision Problems to Dethroned Dictators, (with J. Kronewetter). (2008). Journal of Mathematical Economics, 44, 745-761.

Sen's Theorem: Geometric Proof and New Interpretations, (with L. Li). IMBS Discussion papers, 2005. Social Choice & Welfare, (online December 2007).

Saari, D. Complexity and the Geometry of Voting. *Mathematical and Computer Modeling*, online June 2008.

Saari, D. Virial Theorem, Dark Matter, and N-Body Problems. *Journal, American Institute of Physics,* to appear.

Saari, D. Source of complexity in the social and managerial sciences: An extended Sen's Theorem. *Social Choice& Welfare*, to appear.

Stergios Skaperdas

Garfinkel, M. R. & Skaperdas, S. (2007). Economics of Conflict: An Overview, in T. Sandler and K. Hartley (eds.), *Handbook of Defense Economics, Vol. II*, 649-709, North Holland – Elsevier.

McBride, M. & Skaperdas, S. (2007). Explaining Conflict in Low-Income Countries: Incomplete Contracting in the Shadow of the Future, in M. Gradstein and K.A. Konrad, (eds.), *Institutions and Norms in Economic Development,* 141-161, Cambridge, MA: MIT Press.

Konrad, K. A. and Skaperdas, S. (2007). Succession Rules and Leadership Rents. *Journal of Conflict Resolution***,** August 2007, 51(4), 622-645.

Skaperdas, S. (2008). An Economic Approach to Analyzing Civil Wars. *Economics of Governance*, 9(1), 25-44.

Robson, A. & Skaperdas, S. (2008). Costly Enforcement of Property Rights and the Coase Theorem. *Economic Theory*, July, 36(1), 109-128.

Garfinkel, M. R., Skaperdas, S. & Syropoulos, C. Globalization and Insecurity: Reviewing Some Basic Issues, in G.D. Hess (ed.), *Guns and Butter: The Economic Causes and Consequences of Conflict,* forthcoming, Cambridge, MA: MIT Press.

Brian Skyrms

Skyrms, B. (2008). Trust, Risk, and the Social Contract. *Synthese,* 169:21-25.

Harms, W. & Skyrms, B. (2008). Evolution of Moral Norms. In *Oxford Handbook on the Philosophy of Biology* ed. M. Ruse. Oxford: Oxford University Press, 434-450.

Huttager, S., Skyrms, B., Smead, R. & Zollman, K. Evolutionary Dynamics of Lewis Signaling Games. *Synthese,* forthcoming.

Emergence of Information Transfer by Inductive Learning (with Simon Huttegger). *Studia Logica*, forthcoming.

Argiento. R., Pemantle, R., Skyrms, B. & Volkov, S. Learning to Signal: Analysis of a Micro-Level Reinforcement Model Stochastic Processes and their Applications. In Press.

Skyrms, B. (2007-08). Evolution and the Social Contract Forthcoming in Tanner Lectures. Salt Lake City: University of Utah Press.

Skyrms, B. Groups and Networks: Their Role in the Evolution of Cooperation. *Games, Groups and the Global Good* Ed. Simon Levin. Berlin: Springer Verlag, forthcoming.

George Sperling

Blaser, E., & Sperling, G. (2008). When is motion 'motion'? *Perception, 37*, 624-627.

Liu, D., and Sperling, G. (2008). The perceived motion direction of fast-moving Type-II plaids [Abstract]. *Journal of Vision, 8*(6), 19a.

Lin, L., and Sperling, G. (2008). No iconic memory decay nor visual short-term memory decay for grating contrast [Abstract]. *Journal of Vision, 8*(6), 206a.

Rubin, T. N., Chubb, C. F., Wright, C. E., Wong, S. A., and Sperling, G. (2008). Spatiotemporal dynamics of the perception of dot displays [Abstract]. *Journal of Vision, 8*(6), 282a.

Scofield, I., Chubb, C., and Sperling, G. (2008). Analyzing band-selective preattentive texture mechanisms [Abstract]. *Journal of Vision, 8*(6), 352a.

Sperling, G., Scofield, I., and Hsu, A. (2008). Computational model of the spatial resolution of visual attention [Abstract]. *Journal of Vision, 8*(6), 396a.

Drew, S. A., Chubb, C. F., Ehrlich, T., Rubin, T., and Sperling, G. (2008). Binary versus graded filters for selectively attending to dots of different contrasts [Abstract]. *Journal of Vision, 8*(6), 881a.

Hal Stern

Friedman, L., Stern, H., Brown, G. G., Mathalon, D., Turner, J., Glover, G. H., Gollub, R. L., Lauriello, J., Lim, K.O., Cannon, T., Greve, D. N., Bockholt, H. J., Belger, A., Mueller, B., Doty, M. H., He, J., Wells, W., Smyth, P., Pieper, S., Kim, S., Kubicki, M., Vangel, M., and Potkin, S. G. (2007). Test-Retest and Between-Site Reliability in a Multicenter fMRI Study, Published online in advance of print, *Human Brain Mapping.*

Madsen, E. R. & Stern, H. S. (2007). Time Trends of Methylmercury in Walleye in Northern Wisconsin: A Hierarchical Bayesian Analysis. *Environmental Science and Technology,* Vol. 41, No. 13, pp. 4568-4573.

Stern, H. S. & Sugano, A. (2007). Inference About Batter-Pitcher Matchups in Baseball from Small Samples," in *Statistical Thinking in Sports,* eds. J. Albert and R.H. Koning. Chapman and Hall/CRC: Boca Raton, Chapter 9, 153-165.

Stern, H. S. & Sugano, A. (2007). Baseball Decisions and Small Samples. *CHANCE,* Vol.20, No. 4, 40-47.

Patterson, J. V., Hetrick, W. P., Boutros, N. N., Jin, Y., Sandman, C., Stern, H., Potkin, S., Bunney, W. E. (2008). P50 Sensory Gating Ratios in Schizophrenics and Controls: A Review and Data Analysis. *Psychiatry Research,* Vol. 158, No. 2, 226-247.

Friedman, L., Turner, J. A., Stern, H., Mathalon, D. H., Trondsen, L. C., Potkin, S. G. (2008). Chronic Smoking and the BOLD Response to a Visual Activation Task and a Breath Hold Task in Patients with Schizophrenia and Healthy Controls. *NeuroImage,* Vol. 40, No. 3, 1081-1094.

Mark Steyvers

Griffiths, T.L., Steyvers, M., & Tenenbaum, J.B.T. (2007). Topics in Semantic Representation. *Psychological Review*, 114(2), 211-244.

Griffiths, T.L., Steyvers, M., & Firl, A. (2007). Google and the mind: Predicting fluency with PageRank. *Psychological Science*, 18(12), pp. 1069-1076.

Hemmer, P. & Steyvers, M. (2008). A Bayesian Account of Reconstructive Memory. In V. Sloutsky, B. Love, and K. McRae (Eds.) *Proceedings of the 30th Annual Conference of the Cognitive Science Society*. Lawrence Erlbaum, Mahwah, NJ.

Rein Taagepera

Taagepera, R. (2007). *Predicting Party Sizes: The Logic of Simple Electoral Systems.* Oxford University Press.

Taagepera, R. (2008). *Making Social Sciences More Scientific: The Need for Predictive Models.* Oxford University Press, forthcoming.

Taagepera, R. (2007). Electoral systems. Ch. 34 (678-702) in *Oxford Handbook of Comparative Politics.* Oxford: Oxford University Press.

Taagepera, R. (2007). Western awareness of Soviet deportations in Estonia. Pp. 105-125 in Kristi Kukk, Toivo Raun (eds.), *Soviet Deportations in Estonia: Impact and Legacy,* Tartu: Tartu University Press, for Filiae Patriae Sorority.

Taagepera, R. & Sikk, A. Parsimonious model for predicting mean cabinet duration on the basis

of electoral system. *Party Politics,* forthcoming.

Douglas White

White, D. R. and Denham, W. W. (2008). The Indigenous Australian Marriage Paradox: Small-World Dynamics on a Continental Scale. *Structure and Dynamics, in press.*

White, D. R (2008). Dynamics of Human Behavior, 15-20pp. Encyclopedia of Complexity and Systems Science, Heidelberg: *Springer DE, in press.* .

White, D. R (2008). Standard Cross-Cultural Sample, International Encyclopedia of the Social Sciences, 2nd edition. *New York: Macmillan Reference USA,* in press.

White, D. R (2008). Chapter 5: Innovation in the Context of Networks, Hierarchies, and Cohesion. Lane, David, West, Geoff, van der Leeuw, Sander, and Pumain, Denise eds. A New Perspective on Innovation and Social Change. Dordrecht: *Springer Methods Series, in press.* Press.

White, D. R., Tambayong, L. and Kejzar, N. (2008). Oscillatory dynamics of city-size distributions in world historical systems. Globalization as Evolutionary Process: Modeling Global Change. Eds. Modelski, G., Devezas, T. and Thompson, London, W. R. *Routledge*. pp. 190-225. Earlier version: Discovering City-Curve Oscillations: Historical Dynamics as a Reactive System for China, 900 CE to the Present.

Nakano, T. and White, D. R., (2007). Network Structures in Industrial Pricing: The Effect of Emergent Roles in Tokyo. Supplier-Chain Hierarchies. *Structure and Dynamics 2*(3): 904-926.

Reichart, J. and White, Douglas R, (2007). Role Models for Complex Networks, *European Physical Journal* B 60: 217-224.

Jack Xin

Liu, J. Zin, J. & Qi, Y-Y. (2008). A Dynamic Algorithm for Blind Separation of Convolutive Sound Mixtures. *Neurocomputing,* 10.1016, to appear.

Xin, J. & Qi, Y-Y. A Many to One Discrete Auditory Transform. *Proceedings of ICCM 2007*, Hangzhou, China, to appear.

Ear Modeling and Sound Signal Processing, *Proceedings of ICCM 2004*, Hong Kong; New Studies in Advanced Mathematics, ed. S-T Yau, Vol. 42, pp 819-830, AMS and International Press, 2008.

Computing Reactive Front Speeds in Random Flows by Variational Principle (with J. Nolen), *Physica D*, to appear.

KPP Fronts in a One Dimensional Random Drift (with J. Nolen), *Discrete and Continuous Dynamical Systems-B*, to appear.

Asymptotic Spreading of KPP Reactive Fronts in Incompressible Space-Time Random Flows (with J. Nolen), Ann Inst. H. Poincare, *Analyse Non Lineaire*, to appear.

A Variational Principle of KPP Front Speeds in Temporally Random Shear Flows (with J. Nolen), Communications in Mathematical Physics, Vol. 269, pp 493-532, 2007.

Breakdown of homogenization for the random Hamilton-Jacobi equations (with Weinan E, and J. Wehr), *Communications in Mathematical Science*, Vol 6, No. 1, pp 189-197, 2008.

Variational Principle and Large Scale Effective Quantities, pp 74-81, *Proceedings of the 4th International Workshop on Scientific Computing and Applications*, eds Ben-yu Guo and Zhong-ci Shi, Scientific Press, Beijing, 2007.

Jack Yellott

J.Yellott, R.D. Luce, & A.K. Romney. Tarow Indow—In Memorium. *Journal of Mathematical Psychology*, in press.

Hongkai Zhao

F. Li, C.-W. Shu, Y.-T. Zhang & H. Zhao. (2008). Second Order discontinuous Galerkin Fast Sweeping Method For Eikonal Equations. *Journal of Computational Phys*ics, Vol. 227(17), pp. 8191-8208, 2008.

E. Chung, J. Qian, G. Uhlmann & H. Zhao. A phase space formulation elastic-wave traveltime tomography. *Journal of Computational Physics,* to appear.

S. Leung & H. Zhao. A novel grid based particle method for moving interface problem. *Journal of Computational Physics*, to appear.

APPENDIX C
IMBS TECHNICAL REPORTS, 2007-08

MBS 07-05
Symmetry of Nonparametric Statistical Tests on Three Samples
Anna E. Bargagliotti and Donald G. Saari

MBS 07-06
Condorcet Domains; A Geometric Perspective
Donald G. Saari

MBS 07-07
Population Heterogeneity and Color Stimulus Heterogeneity in Agent-based Color Categorization.
Natalia L. Komarova and Kimberly A. Jameson

MBS 08-01
Persuasion as a Contest
Stergios Skaperdas and Samarth Vaidya

MBS 08-02
Expertise and Complexity in the Social and Engineering Sciences: An Extended Sen's Theorem
Donald G. Saari

MBS 08-03
Dynamics of Human Behavior
Douglas R. White

APPENDIX D
COLLOQUIA AND CONFERENCES OF IMBS MEMBERS, 2007-08[2]

William Batchelder

Statistical Closure of Multinomial Processing Tree Models Under Parameter Constraints. Hu, X.(presenter) and Batchelder, W.H. Annual Meeting of the Society for Mathematical Psychology, Irvine, CA, August 2007.

A Context-free Language for Binary Multinomial Processing Tree Models. Purdy, B (presenter) and Batchelder, W.H. Annual Meeting of the Society for Mathematical Psychology, Irvine, CA, August 2007.

Modeling Free Recall Order. Batchelder, W.H. (presenter), Shankle, W., & Smith, J.B Data. Annual Meeting of the Society for Mathematical Psychology, Irvine, CA, August, 2007.

Flexibility and Generalizability of Learning Models Embodying Both All-or-none and Incremental Learning Assumptions. Schmittman, V., Visser, I., Raijmakers, M. & Batchelder, W. Poster Presentation at the Annual Meeting of the Society for Mathematical Psychology, Irvine, CA, August 2007.

Statistical Closure Properties of Multi-link Multinomial Processing Tree Models. Hu, X. (presenter) and Batchelder, W.H. Annual Meeting of the European Mathematical Group, Luxemburg, Sept. 2007.

Cultural Consensus Theory: Item Response Theory Without an Answer Key. Twente, Netherlands, October, 2007.

Cognitive Psychometrics: Combining Two Psychological Traditions. Invited CSCA Lecture. University of Amsterdam, Netherlands, October, 2007.

Cognitive Psychometrics: Combining Two Psychological Traditions. Invited Colloquium, University of Marburg, Germany, October 2007.

Cognitive Psychometrics: Combining Two Psychological Traditions Invited Colloquium, Department of Psychology, Düsseldorf, Germany, November 2007.

Cognitive Psychometrics: Combining Two Psychological Traditions, Invited Colloquium Department of Psychology Mannheim, Germany, November 2007.

[2] Those members not listed failed to respond to our request for information.

Metacognitive Guessing Strategies in Source Monitoring. Honorary Revez Professor Lecture, University of Amsterdam, Netherlands, December, 2007.

Cognitive Psychometrics: Combining Two Psychological Traditions. University of Freiberg, Germany, November 2007.

New Results for Binary Multinomial Processing Tree Models. Purdy, B. (presenter) and Batchelder, W.H. Annual Hawaii International Conference on Statistics, Mathematics, and Related Fields. Honolulu, Hawaii, January 2008.

Evolving Dominance Hierarchies from Pairwise Contests Among Equally Endowed Players. Batchelder, W.H. (presenter) and Strashny, A. Fourth Japan-America Mathematical Sociology Conference, Redondo Beach, CA. May 2008.

John Boyd

A Random Graph Approach in Structural Balance, with Akishige Kishida. The Joint Japan-United States Mathematical Sociological Meeting in Redondo Beach, California, May 2008.

William Branch

Federal Reserve Bank of Kansas City, July 2007

Conference on the Great Stability, Bank of England, September 2007

Conference on Expectations and Monetary Policy, Swiss National Bank, September 2007

Department of Economics, University of Leuven, September 2007.

Lorentz Center Workshop on Complexity in Economics and Finance, Leiden, October 2007.

American Economic Association Annual Meeting, January 2008
.
Conference on Asset Markets and Monetary Policy, Federal Reserve Bank of San Francisco, February 2008.

Department of Economics, U.C., Riverside, April 2008.

Symposium, Society for Non-linear Dynamics and Econometrics, Federal Reserve Bank of San Francisco, April 2008.

Federal Reserve Bank of Kansas City, May 2008.

Annual Symposium, Society for Computational Economics, Paris, June 2008.

Mike Braunstein

Gillespie, S., Braunstein, M. L., & Andersen, G. J. (2008). The perception of path curvature: Effects of projected velocity and projected size. Vision Sciences Society, Sarasota, FL.

Ozkan, K., & Braunstein, M. L. (2008). The perceived trajectory of objects crossing the perceptual horizon in a 3-D scene. Vision Sciences Society, Sarasota, FL.

Jan Brueckner

Conference on the Economics of Geography: Cities, Growth, and Economic Development, Federal Reserve Bank of Cleveland, April 2008.

Bogazici University, Istanbul, March 2008.

Transportation and Public Utilities Group Meetings (ASSA), New Orleans, January 2008.

Workshop on the Regulation of Airport Noise, Free University of Brussels, December 2007.

Workshop on Residential Segregation and Sprawl, INRA-ENSEAD, Dijon, France, November 2007.

Conference on New Perspectives on Fiscal Federalism, WZA, Berlin, November 2007. Claremont-McKenna College, October 2007.

Uppsala University, Sweden, September 2007.

Second International Conference on Funding Transportation Infrastructure, Leuven, Belgium, September 2007.

Kuhmo-Nectar Conference on Pricing, Financing, Regulating Transport Infrastructure and Services, Urbino, Italy, July 2007.

Carter Butts

Is There a Viable Social Physics? Yes, No, and In Part. Invited presentation, SFI Workshop ``Is There A Physics of Society?" Santa Fe Institute, Santa Fe, NM. January 2008.

Network Structure In Spatial Contexts. Department of Anthropology Colloquium, Stanford University. Stanford, CA. October 2007.

Social Networks In the Physical World. Keynote Address, 2007 Workshop on Spatial and Geographical Structure (in conjunction with COSIT 2007). Mt. Edna, Victoria, Australia. September 2007.

Latent Structure in Religious Belief. Department of Psychology Colloquium, (with Hilgeman, Christin), University of Melbourne. Melbourne, Victoria, Australia. September 2007.

Advancing Mathematical Sociology: Opportunities and Open Problems." ASA Section on Mathematical Sociology Invited Panel Session, The Future of Mathematical Sociology. ASA Meeting, New York, NY. August 2008.

Improvisation in Disaster Response." Invited Panelist, 32nd Annual Hazards Research and Applications Workshop, Boulder, CO. July 2007.

On Having Something In Common: Latent Two-Mode Models for Social Networks. Networks in Political Science Conference, Cambridge, MA. June 2008.

Latent Focus Models for Network Structure. Fourth Joint Japan-North America Mathematical Sociology Conference, Redondo Beach, CA. May 2008.

Graph Theoretic Convexity. 28th Sunbelt Network Conference (INSNA), St. Petersburg, FL. January 2008.

Comparing Patterns of Life Course Events, (with Joy Pixley). Annual Meeting of the Geronotological Society of America, San Francisco, CA. November 2007.

A Relational Event Model for Social Action. ASA Meeting, New York, NY. August 2007.

Patterns of Possession and Change: Material Culture in the American Home, 1972-2003, (with Acton, Ryan). ASA Meeting, New York, NY. August 2008.

Brokerage Roles in Disaster Response: Organizational Mediation in the Wake of Hurricane Katrina, Lind, Ben E.; Tirado, Miguel; Butts, Carter T.; and Petrescu-Prahova, Miruna G. ASA Meeting, New York, NY. August 2007.

Likelihood-based Inference for Cycle Structure Bias in Cognitive Models of Social Interaction. 40th Annual Meeting of the Society for Mathematical Psychology, Irvine, CA. July 2007.

Charles Chubb

Perturbation Analysis of Perceptual Templates. Kies, S. & C. Chubb. Poster presented by S. Kies at the Annual meeting of the Vision Sciences Society, Naples, FL. May 2008.

Analyzing Band-Selective Preattentive Texture Mechanisms. Scofield, I. Chubb, C & Sperling, G. Poster presented by C. Chubb (in place of I. Scofield, who couldn't make it) at the Annual meeting of the Vision Sciences Society, Naples, FL., May 2008.

Morgan, M.J., Chubb, C. & Solomon, J. The visual system removes sensory noise from the representation of a texture. Talk presented by M. Morgan at the Annual meeting of the Vision Sciences Society, Naples, FL., May 2008.

Chubb, C. & Wright, C.E. Diverse Long Range Configural Judgments Use a Single Map of Object Locations. Poster presented by C. Chubb at the Annual meeting of the Vision Sciences Society, Naples, FL, May 2008.

Rubin, T., Chubb, C., Wright, C.E., Drew, S.A. & Sperling, G. Spatiotemporal dynamics of the perception of dot displays. Poster presented by T. Rubin at the Annual meeting of the Vision Sciences Society, Naples, FL, May 2008..

Drew, S.A., Chubb, C., Ehrlich, T., Rubin, T., Sperling, G. Binary versus Graded Filters for Selectively Attending to Dots of Different Contrasts. . Poster presented by S. Drew at the Annual meeting of the Vision Sciences Society, Naples, FL, May 2008.

David Eppstein

Space-Efficient Straggler Identification in Round-Trip Data Streams via Newton's Identitities and Invertible Bloom Filters. 10th Worksh. Algorithms and Data Structures, Halifax, Nova Scotia, 2007.

Recognizing partial cubes in quadratic time. 19th ACM-SIAM Symp. Discrete Algorithms, San Francisco, January 2008.

The Topology of Bendless Three-Dimensional Orthogonal Graph Drawing. University of Arizona, February, 2008.

Principles of Graph Drawing. IMBS Seminar, May 2008.

Jean-Claude Falmagne

On meaningful scientific laws on bounded domains, with an application to the Size-Weight Illusion. Invited address at the meeting for the Festschrift honoring George Sperling. July 2007.

On Verifying and Engineering the Wellgradedness of a Union-Closed Family. Invited address at the meeting of the European Mathematical Psychology Group at the University of Luxembourg. September 2007.

On the possible forms of scientific laws. Example: the permutable laws. Talk at the IMBS Colloquium Series. April 2008.

Katie Faust

Triadic structure in social networks. Social Network Analysis Seminars, Seminar Two: Developments. University of Sheffield, UK. (Invited Lecture), 2007.

A Theoretical Space for the Triad Census. International Sunbelt Social Network Conference XXVIII, St. Pete Beach, 2008.

Freeman

Plenary speaker, International Workshop on Complex Systems and Networks, 15-20 July, 2007, Transylvania, Romania.

Michelle Garfinkel

Globalization and domestic conflict. Economics Department at the University of Calgary.

Bernard Grofman

The 'One Person, One Vote' Principle and the Re-Districting Problem. Caen Conference on the Voting Power and Procedures (VPP) Project Workshop University of Caen, July 2007.

Electoral Systems and the Promotion of Effective Power-Sharing. Colloquium, Sawyer Seminar Series: Power-Sharing in Deeply Divided Places, University of Pennsylvania, February 2008.

Formal and Empirical Models of Voting and Elections, panel Chair. Public Choice Society meeting, San Antonio, TX March 2008.

A Fully General Index of Political Competition. The Annual Meeting of the European Public Choice Society, Jena, Germany, March 2008.

Donald Hoffman

Neural Nets for Detection and Classication. Lockheed Martin, Long Island, NY. 2007.

Consciousness Is Fundamental. Five day workshop. Esalen Institute, Big Sur, CA. 2007.

Visual Intelligence. Arroyo Vista Student Housing, UC Irvine. 2007.

Visual Intelligence. Campus Village Student Housing, UC Irvine. 2008.

Automated Periscope Detection Using Radar. Naval Research Labs, Washington, DC. 2008.

Visual Intelligence. Regents Scholars Association, UCI. 2008.

Visual Intelligence. VF Corporation. The Presidio, San Francisco. 2008.

Visual Perception of Objects and Events. HumaniTech Events Web Conference, UCI.2008.

Geoff Iverson

Frequentist and Bayesian Analyses of Intransitive Preferences. Academia Sinica, Taipei, Taiwan, April 2007.

Hypothesis testing: p-value and Bayes Factors. Department of Psychology, National Taiwan University, Taipei, Taiwan, April 2007 and Department of Cognitive Science, Cheng-Kung University, Taipei, Taiwan, April 2007

Order restricted Hypotheses: Why they are important in psychology generally and for decision making in particular. Keynote address for the special session on Decision and Choice, European Mathematical Psychology Group, Luxembourg, September 2007.

Test Statistics, p-values and Bayes factors. Annual meetings of the Society for Mathematical Psychology. Irvine, July-August 2007.

Why some of us believe in the significance fallacy. Annual meetings of the Society for Mathematical Psychology. Washington DC, July 2008.

Marek Kaminski

Generalized Backward Induction. International Conference in Game Theory SING 4, Wroclaw, Poland, June 2008.

Robin Keller

Career night panel member at the UCI Alpha Phi (Sorority) about MBA admissions and MBA careers, UC Irvine, May 2008.

Profits with Principles- Closing the Responsibility Gap. Panel member for event sponsored by Social Enterprise Institute (www.SE-Institute.org), co-sponsored with Net Impact and Pepperdine alumni, Newport Beach, April 2008.

How to Make Smart Choices: Operations and Decision Technologies. Merage School, UC Irvine, Brown Bag Seminar, February 14, 2008.

Preference Functions for Decisions with Geographically-Varying Attributes. L. R. Keller (presenter) and C. Kirkwood. INFORMS International Conference, Puerto Rico, July 2007, Invited presentation in session organized by Keller.

Meet the Editors. L. Robin Keller, Invited Member of Panel Discussion on at the INFORMS conference in Seattle, as the Editor-in-Chief of *Decision Analysis*, November 2007.

Modeling Decision Situations with Spatially-Varying Attributes. L. R. Keller (presenter), C. Kirkwood and J. Simon. Poster presented at the Society for Judgment/Decision Making conference, Long Beach, November 2007.

A Multiple-objective, Multiple-stakeholder Decision Analysis Approach for Water Resources Planning. Poster presenter: Tianjun Feng, collaborating with L. Robin Keller, Craig Kirkwood, Nancy S. Jones, Jay Simon, and Lowell Kessel. Focus the Nation at UC Irvine: Sustainability and Climate Change Solutions, January 2008.

Preference Functions for Environmental Decisions with Spatially-Varying Attributes. Poster presenter: Jay Simon, collaborating with L. Robin Keller, Craig Kirkwood, and Tianjun Feng. Poster presented at Behavioral Decision Research in Management conference. UC San Diego, La Jolla, CA April 2008.

Analyzing Decisions Involving Product Quality Risks in China and the United States: An Example of Pet Food and Lead-tainted Toys. Tianjun Feng (presenter), L. Robin Keller, and Liangyan Wang. Posters presented at Behavioral Decision Research in Management conference, UC San Diego, La Jolla, CA, April 2008.

Multiple Attribute Utility in Medical Decision Making. Jay Simon and L. Robin Keller (presenter). Posters presented at Behavioral Decision Research in Management conference, UC San Diego, La Jolla, CA, April 2008.

Making Probability Judgments of Future Product Failures: The Role of Mental Unpacking. Dipayan Biswas (presenter), L. Robin Keller, Bidisha Burman. Academy of Marketing Science Annual Conference, Vancouver, May 2008.

Decisions Using Geographic Information Systems. Jay Simon (presenter), with L. Robin Keller, Craig Kirkwood. UCLA/USC/UCI Annual OR/OM Conference, USC, May 2008.

Natalia Komarova

Fall 2007 - Northwestern University, the Applied Math colloquium.
Fall 2007 - University of Pennsylvania, the Math Department Colloquium.
Spring 2008 - Robustness, Reliability, AND Evolution", an IMBS conference, Irvine.
Spring 2008 - "Evolution of Psychological Categories", an IMBS conference, Irvine.
Summer 2008 - Ernst Struengmann Forum, Frankfurt Institute for Advanced Studies, Frankfurt, Germany.
Summer 2008 - Society of Mathematical Biology conference, plenary speaker, Toronto, Canada.
Summer 2008 - Vanderbilt Ingram Cancer Biology Center workshop on Integrative Cancer Biology, Toronto, Canada.

Igor Kopylov

A model of guilt and temptation. IMBS Seminar, Oct 2007; Boston University, Sep 2007; Princeton University, Sep 2007; New Economic School, Moscow, June 2008.

Michael Lee

Using hierarchical Bayesian modeling to help understand the generation and representation of categories, IMBS Conference on Evolution of Psychological Categories, UCI, March 2008.

Modeling Exploration and Exploitation in Structured Environments. Air Force Office of

Scientific Research Joint Program Review, Cognition and Decision Program. Arlington, VA, January 2008.

Multiple Personality Disorder, Childrens Development of Number Concepts, and Bayesian Inference". Cognitive Science Colloquium, UCI, October 2007.

A Hierarchical Bayesian Account of Human Decision-Making Using Wiener Diffusion, Society for Mathematical Psychology Annual Meeting, Irvine CA. July 2007.

Bayesian Analysis of Cognitive Models, Institute for Pure and Applied Mathematics, Summer School on Probabilistic Models of Cognition, July 2007.

R. Duncan Luce

Some issues concerning the utility of gambling. Mini-workshop, IMBS, UCI. July 2007.

Some issues concerning the utility of gambling. Festschrift for George Sperling, UCI. July 2008.

Mathematical psychology: Similar to 16-17th century physics of to 20-21st century reverse engineering. Winer Lecture, Purdue University. November 2007.

Utility of gambling with multiplicative joint receipts. (with C.T. Ng and A.A.J. Marley) Bayesian Conference, CSU Fullerton. January 2008.

Duncan's recollections of the origins of Games and Decision. Conference on Luce and Raiffa after Fifty years: What is next? IMBS, UCI. January 2008.

Interpersonal comparisons of utility for 2 or 3 types of people. IMBS colloquium, UCI. May 2008.

Penelope Maddy

Naturalism, transcendentalism and therapy. Nature of Naturalism Workshop, London, May 2008.

Reply to critics. American Philosophical Association Author Meets Critics session, April 2008.

How applied math became pure. Guest Lecture, Philosophy of Mathematics Special Interest Group of the Mathematical Association of America, January 2008.

Math/Philosophy Colloquium, Dartmouth, February 2008.

Michael McBride

Presentations at SSSR Conference, Public Choice Society Conference, IMBS at UC Irvine, Economic Department at UC Irvine, Claremont School of Religion.

Andrew Noymer

A simulation study of interracial dating dynamics. Andrew Noymer, Cynthia Feliciano, and Belinda Robnett. Fourth Joint Japan–North America Mathematical Sociology Conference, Redondo Beach, CA, May-June 2008.

Selective mortality in Norway during the 1918 flu pandemic. Population Association of America, Annual Meeting, New Orleans, LA, April 2008

Early-life Influences and the Seasonality of Mortality: Re-Examining the Doblhammer Effect. Andrew Noymer and Bert Kestenbaum. Population Association of America, Annual Meeting, New Orleans, LA, April 2008.

Sibship size and mortality in Africa: Evidence from the DHS. Andrew Noymer and Ndola Prata. UAPS Fifth African Population Conference, Arusha, Tanzania, December 2007
Plagues past and present: The relevance of historical research to current policy questions. Joint IIASA/Peking University workshop on Pandemic Influenza in China: Challenges, Responses, Needs, Beijing, 2007.

Influenza and tuberculosis in 1918: Lessons from an historical plague. Wenner-Gren Foundation Conference on "Plagues: Models and Metaphors in the Human 'Struggle' with Disease", Tucson, AZ, September 2007.

The twentieth century evolution of American mortality**.** Economic History Seminar, University of Michigan, Ann Arbor, November 2007. & Population, Society, Inequality Seminar, UCI, January 2008.

Donald Saari

Reflections on my conjecture and several new ones. Invited keynote lecture. Exploring the Solar System and the Universe. Centennial celebration of Bucharest Observatory, Romania, April 2008.

Mathematical complexity of decisions and multi-scale analysis. Mathematics, UBC, Vancouver, British Columbia, November 2007.

Plenary talk, Evolution of Newton's Universe. NSF Workshop Math Association of America, Regional meeting, Marquette, MI, October 2007.

Invited talk, Problems with multiscale analysis. Predictive Modeling of Materials at the Nanoscale. Arlington VA, October 2007.

Featured talk, Mathematical complexity in decision and multiscale analysis. Dynamics and complexity in people and societies, Northwestern, October 2007.

Invited talk, Structures responsible for the mysteries of social choice. Non-Welfaristic Welfare: Capability, Choice and Rights. UC Riverside, November 2007.

AMS Plenary talk, A new mathematical frontier: The social and behavioral sciences. Joint Mathematics Meetings, San Diego, January 2008.

Invited MAA minicourse, Mathematics of Voting, 4 hrs. Joint Mathematics Meeting, San Diego, January 2008.

What causes all of those voting paradoxes? Conference on Mathematics, Political Economy and Democratic Institutions, IMBS, February 2008.

A qualitative approach toward evolutionary game theory, Conference on Robustness, Reliability, and Evolution, IMBS, March 2008

Plenary talk, Mathematics of Voting. SUMS, Brown University, March 2008.

A qualitative approach toward the dynamics of the social and behavioral sciences. Workshop on microeconomics dynamics, Cal Tech, May 2008

Relaxing barriers for understanding behavioral change. NIAAA conference Mechanisms of Behavior Change in Behavioral Treatment: Today and Tomorrow. Washington, DC, June 2008.

Graz Schumpeter Lectures 2008, Schumpeter Society, Graz, Austria, May,-June 2008.
Four lectures under general title of: The incredible complexity of the social sciences.
1. "We vote, but do we elect whom we really want?"
2. "Why is it that no matter how hard we try, somebody can propose an 'improvement'"?
3. "The surprising complexity of economics"
4. "The responsibility of the social sciences to assist the engineering and physical sciences".

Distinguished Lecture, Complexities ranging from voting rules to multiscale design. Arizona State University, January 2008.

It is election year, but will we elect whom the voters really want? Frontiers in Science, Distinguished Lecture, Florida Atlanta University, February 2008

A new mathematical frontier: The social and behavioral sciences. Distinguished Lecturer, AFOSR, March 2008.

Chaotic Elections, Distinctive Voices. NAS lecture series on Science, Technology, and Medicine, April 2008.

Qualitative dynamics in economics and the social sciences. Dept. of Economics Colloquium, University of Graz, Austria, May 2008.

The evolution of Newton's universe. ASU Mathematics and Statistics, January 2008.

The chaotic evolution of Newton's universe; 2. Dynamics and mathematical economics. Mathematics, FAU, February 2008.

Chaos and the evolution of Newton's Universe. Mathematics, Brown University, March 2008.

Evolution of Newton's Universe. Baruch College, Dept. of Mathematics, April 2008.

Critical thinking---in the classroom. Provost's Master Teacher Series, Baruch College, NY, April 2008.

Critical thinking---in the classroom. Provost's Series on University Learning, Montclair State College, NJ, April 2008.

Complexity; as viewed from voting rules and multiscale analysis. Colloquium, Santa Fe Institute, May 2008

Stergios Skaperdas

Persuasion as a Contest. Conference on "Contests: Theory and Applications," Stockholm School of Economics, Stockholm, Sweden, June 2008.

Economics and Conflict: The Dark Side of Self-interest and its Governance as Economic Activities. Development Seminar, UCSD.

Persuasion as a Contes. Conference on "Contests and Tournaments," School of Business, North Carolina State University, Raleigh, NC, March 2008.

Socio-political Conflict and Economic Performance in Bolivia: American Economic Association meetings, session on The Micro-Level Consequences of Political Violence and Civil War, New Orleans, LA, January 2008.

Economics and Conflict: The Dark Side of Self-interest and its Governance as Economic Activities; Conference on Defense and Peace Economics, Royal Military Institute of Canada, Kingston, Ontario, Canada, November 2007.

Brian Skyrms

November 2007, Conference on Pragmatics of Language, University of Berlin
November 2007, Foundations of Statistics Collouium, Stanford University
November 2007, Tanner Lecture on Human Values, University of Michigan
October 2007, Philosophy Colloquium University, of Western Ontario
October 2007, Templeton Workshop Princeton, University
March 2008, Artificial Intelligence (AAAI) Spring Workshop, Stanford
Spring 2008, Seminar on Evolution of Signaling, Stanford

George Sperling

A General Computational Theory of the Distribution of Visual Spatial Attention. Sperling, G., Scofield, I. J., and Hsu, A. T. Talk presented by George Sperling, Annual Summer Interdisciplinary Conference, Kalymnos, Greece, June 2007.

A Computational Theory of the Brain Mechanisms of Visual Attention (As a Model for Some Mechanisms of Motivation & Emotion). Sperling, G., Scofield, I. J., and Hsu, A. T. Talk presented by George Sperling, Second International Congress on Cognition, Emotion, and Motivation, Hammamet, Tunisia, October 2007.

A Computational Model for Binocular Combination: How the Two Eyes Combine Information And Some Supporting Evidence. Sperling, G., and Ding, J. Talk presented by George Sperling, Institute for Mathematical Behavioral Sciences, Conference on Mathematics and Vision, University of California, Irvine, November 2007.

Deriving the Parameters of Attention Filters that Select and Reject Visual Inputs. Thirty-Third Annual Interdisciplinary Conference, Jackson, Wyoming, February 2008.

Computational Model of the Spatial Resolution of Visual Attention. Sperling, G., Scofield, I., and Hsu, A. Talk presented by George Sperling, Vision Sciences Society 8th Annual Meeting Naples, Florida, May 2008.

Hal Stern

Baseball Statistics Meets Mathematical Statistics. Symposium on Statistics and Operations Research in Baseball, CSU - East Bay, Hayward, CA, July 2007.

How to Win Friends, Influence People and Get Resources, intra-University Collaborations, Department Chair's Workshop, Joint Statistical Meetings, Salt Lake City, UT, August 2007.

Use and Abuse of Information in Sports, Elements of Information Theory, Palo Alto, CA, May 2008.

Mark Steyvers

Festschrift for Doug Nelson, University of South Florida, Tampa. 2008.

Probabilistic Models of Cognition: The Mathematics of Mind. Graduate Summer School, held at IPAM (Institute for Pure and Applied Mathematics). University of California, Los Angeles. Seminar, 2007.

Artificial Intelligence and Machine Learning Group (AIML). University of California, Irvine. Seminar

Rein Taagepera

Institutional determinants of mean cabinet duration. R. Taagepera and Allan Sikk. Paper prepared for the 4th ECPR General Conference, University of Pisa, September 2007.

The mean distribution of vote and seat shares of secondary parties: FPTP vs. List PR. Rein Taagepera and Mart Laatsit. Paper prepared for the 4th ECPR General Conference, University of Pisa, September 2007.

Making Social Sciences More Scientific: The Need for Predictive Models. Paper prepared for the Methodological Pluralism? workshop, ECPR, Rennes, April 2008.

Douglas White

White 'Power-Law and "Elite Club' in a Complex Supplier-Buyer Network: Flexible Specialization or Dual Economy?. Academy of International Business annual meetings in Milan, Italy, (with Tom Nakano), June 2008.

Organizational, social, and complex generative networks. International Workshop and Conference on Network Science. Norwich BioSciences Conference Centre, Norwich Research Park, Norwich, June 2008.

Beyond modularity: density generalized block modeling. J. Reichardt, D. R. White.. Norwich BioSciences Conference Centre, located on the Norwich Research Park, Norwich, UK, June 2008.

Autocorrelation Models in Cross-Cultural Research. Invitation of Joerg Roessel. Invited colloquium speaker, Biweekly Sociology Colloquium, U. Cologne, June 2008.

Complex Social-Circles and Feedback Networks. Selected Challenges in the Social Sciences: Modeling and Simulation Approaches. Department of Sociology, U. Zurich. Invited colloquium speaker, invitation of Dirk Helbing, May 2008.

The World as it Was: State and Prestate Comparative studies in Ethnography. Invited discussant, Harvard University. Organized by James Robinson and Jared Diamond, April-May 2008.

Identity and Difference: What Good are Ethnographic Models? 106th AAA Annual Meeting, Washington, DC, November 2007.

The 'Visible Hand' in Production-Chain Markets: Empirical Study of Harrison White's Network Model. Academy of Management Annual Meeting, Philadelphia, PA, August 2007.

Jack Yellott

Precorrecting spatial phase reversals in visual stimuli destined for defocus. Society for Mathematical Psychology, Annual Meeting, Irvine CA, July 2007.

Precorrecting visual objects destined for defocus. Vision Sciences Society, Annual Meeting, Naples FL, May 2008.

Jack Xin

ICIAM, mini-symposium organizer and speaker, Zurich, July 2007.

Organizer and invited speaker at Opening Workshop on Random Media, at NSF Institute (SAMSI), North Carolina, September 2007.

Organizer and invited speaker at IMBS Conference on "Mathematics and Vision", November 2007.

Invited speaker of Southern CA probability conference, December 2007.

USC probability seminar, December 7, 2007.

Invited speaker at International Congress of Chinese Mathematicians, Hangzhou, China, December 2007.

Organizer and speaker of invited SIAM mini-symposium on "Analysis and computation of stochastic equations" at AMS-MAA Joint Meeting, San Diego, January 2008 .

Applied math seminar speaker, UC Davis, February 2008.

Applied math seminar speaker, Stanford University, February 2008.

Hongkai Zhao

International Workshop on Scientific Computing, Beijing, China, June 2008.

Workshop on Multiscale Modeling, Analysis, and Simulations, Michigan, March 2008.

Fourth International Congresses of Chinese Mathematicians, China, December 2007.

Workshop on Interface Problems, Statistical and Applied Mathematical Sciences Institute, North Carolina, November 2007.

Interdisciplinary Workshop on Mathematical Methods in Biomedical Imaging and Intensity-Modulated Radiation Therapy (IMRT), The Centro di Ricerca Matematica (CRM) Ennio De Giorgi, Pisa, Italy, October 2007.

Applied Mathematics Colloquium, Illinois Institute of Technology, March 2008.

APPENDIX E
FACULTY AWARDS/ACHIEVEMENTS, 2007-08

William Batchelder

I served as the first Guest Professor on the Révész Chair in Psychology at the University of Amsterdam for the period September 1, 2007 to December 31, 2007.

Carter Butt

Linton C. Freeman Award for Distinguished Scholarship, International Network for Social Network Analysis, 2008.

Area Editor for Networks and Computation, *Computational and Mathematical Organization Theory.*

Editorial Board, *Journal of Mathematical Sociology*.

Division Council Member, California Institute for Telecommunications and Information Technology.

Charles Chubb

Appointed Associate Editor, Perception & Psychophysics.

David Eppstein

I am co-program-chair for the International Workshop on Graph Drawing to be held in the summer of 2009 in Chicago.

Michelle Garfinkel

On the editorial boards of several journals: Journal of Conflict Resolution, Journal of Money, Credit and Banking, Journal of Macroeconomics, Journal of economics and Business, Defence and Economics, European Journal of Political Economy.

Edited a special journal issue of Economics of Governance in Honor of Herschel I. Grossman (January 2008).

Bernard Grofman

Director of the Center for the Study of Democracy, Irvine, California. December 2007-

Jack W. Peltason Endowed Chair, University Of California, Irvine. January 2008-

Editorial Board, *Canadian Journal of Political Science*, 2006-09.

Member, Program Committee, First World Congress of Public Choice, Amsterdam, March 29-April 1, 2007.

Member, 2007, APSA Section on Representation and Electoral Systems, Weaver Award Committee for best paper in Representation and Electoral Systems section.

Member, 2007, APSA Heinz Eulau Award Committee for best paper in *Perspectives on Politics.*

External Reviewer, Ph.D. Thesis of Annelise de Ridder, School of Business, University of Nijmegen, Netherland, May 2007.

Editorial Board, *Political Analysis, 2008-10*.

Scholar-in-Residence, Laboratory for Political Economy, University Paris II, (Pantheon), France April-May 2008.

Scholar-in Residence, Nuffield College, Oxford University, June 2008.

Editorial Board, 2006-09: *Canadian Journal of Political Science.*

Member, 2008-2010, Editorial Board of Political Analysis.

Donald Hoffman

Who's Who in America.

Marek Kaminski

Media coverage of the book "Games Prisoners Play" (in Polish, only long reviews or interviews): Radio interviews: Radio S-ka Wroclaw 06/21/2007, Radio Lodz 06/27/2007 + about 10 short radio interviews or reviews; Newspaper and magazine interviews: Forum Penitencjarne, Focus (by Joanna Nikodemska, leading piece, reprinted by most popular Polish weekly Angora, the total number of copies about 1 million); reviews in Biuletyn Akademii Pedagogiki Specjalnej, Decyzje, Dziennik Polski, Forum Akademickie, Gnosis, Kultura i Spoleczenstwo, Niezalezna Gazeta Polska, Przeglad Socjologii Jakosciowej, RPW, Studia Socjologiczne, Tygodnik Siedlecki, Warsztaty Analiz Socjologicznych.

Robin Keller

The Paul Merage School of Business at UCI: Associate Dean for Full-Time MBA Program, from 8-06 through 7-08.

UCI Merage School of Business Faculty Service Award, June 2008.

UC Santa Cruz: Academic Advisory Group planning a proposed School of Management. January 2008. .

Editor-in-Chief of Decision Analysis, January 2007-December 2009.

Appointed as Scientific Advisory Committee member, June 2005-.Homeland Security Center for Risk and Economic Analysis of Terrorist Events (CREATE).

National Academy of Sciences National Committee for the International Institute for Applied Systems Analysis (IIASA):

Member, 2007-08, INFORMS Special Ad Hoc Committee on Publication Strategy.

National Academy of Sciences. Nominated for a committee on Ranking FDA Product Categories Based on Health Consequences.

Jay Simon and Robin Keller are thanked in the introduction of Paul Garvey's new book: *Analytical Methods for Risk Management: A Systems Engineering Perspective*.

Natalia Komarova

Summer 2008 - Society of Mathematical Biology conference, plenary speaker, Toronto, Canada. About 800 registered participants.

An interview for a PBS/KOCE TV program ("Real Orange") on leukemia modeling, Fall 08.

Articles in:
Orange County Register ("UCI claims advance against rare leukemia" by G. Robbins and), Fall 08; Daily Pilot ("Possible cancer cure" by J. Serna), Fall 08; Medscape Today ("Imatinib Can Eradicate CML Under Certain Circumstances", by R. Nelson), Fall 08; New University ("Closer to a Cure: UCI Researchers Show Cancer Breakthrough", by P. Oginni), Fall 08.

Penelope Maddy

Appointed UCI Distinguished Professor.

Dale Poirier

Served as Director of Graduate Studies in Economics.

Visiting Scholar at the Federal Reserve Bank of San Francisco.

Andrew Noymer

Appointed as an adjunct assistant professor of Public Health, in the College of Health Sciences at UCI.

Donald Saari

Appointed to:
Scientific Board of the Santa Fe Institute, 2008 -
Advisory Board, Economic Theory, 2008 –
Advisory Board, Social Choice and Welfare, 2007 –

NRC Board of Mathematical Sciences and their Applications 2007-10.

Board of Editors, Book Series on Philosophy, Politics, and Economics, Oldenbourg-Verlag, Munich, Germany, 2007.

Ken Small

Professor Smalls work on energy prices and travel behavior has led to numerous quotations in news articles, including United Press International, Asian News International, and New Scientist.

George Sperling

Frontiers in Human Information Processing: Vision, Attention, Memory, Applications --
--A Festschrift Conference in Honor of George Sperling, Recognizing his Transformational Contributions to Cognitive Science. University of California, Irvine, July 28 – July 29, 2007.

Hal Stern

Chair, National Academy of Sciences Panel on ACS Use for NSF Survey of College Graduates
Associate Editor, Bayesian Analysis

Associate Editor, Annals of Applied Statistics

Member, Fisher Lecture Committee, Council of Presidents of Statistical Societies (COPSS)

Mark Steyvers

Best paper award at 2008 Cognitive Science Conference. Category: computational modeling of high-level cognition.

Rein Taagepera

Awarded the 2008 **Johan Skytte Prize in Political Science.** The Skytte Prize with its 500,000 Swedish Crowns (approximately USD 75,000), established in 1994, is one of the biggest and most prestigious prizes in political science.

Douglas White

Selected in April 2008 as Science Chair of the French Réseau national des systèmes complexes (RNSC), the scientific interest group formed in 2004 to coordinate the major French national institutes that run the dozens of Complex Systems research institutions in France.

Role Models for Complex Networks. (2007), Jörg Reichart and Douglas R. White. *European Physical Journal B* 60: 217-224. Selected as a 'Highlights' paper of *Europhysics News* 8(1) 2008.

Renewal of my three-year appointments at the Santa Fe Institute of Complexity Research.

INTERdisciplinarySCIences Complexity wiki. Founder, installer and Sysop of the Mediawiki (with identical software to that of Wikipedia) science site, now indexed by World Science. It has circa 200 login users, has hosted three courses, and has thousands of pages edited by 30-40 contributors.

Chair of the Social Dynamics and Complexity group. Continued receipt of $15,000 per annum to fund activities of the group.

Jack Xin

SIAM Applied PDE Nominating Committee, May, 2008.

DOE Invited Panelist (declined), May 2008.

Invited NSF Panelist, Arlington, March, 2008.

Editorial Board of SIAM Interdisciplinary Journal: Multi-scale Modeling and Simulations, since Nov, 2005.

Editorial Board of Communications in Math Sciences, since 2003.

Editorial Board of Dynamics of PDE, since 2004.

Editorial Board of Methods and Applications of Analysis, June 30, 2008.

Member of the International Program Committee (IPC) of the IASTED International Conference on Applied Simulation and Modeling, 2007 & 2008.

Member of the Scientific Committee, Fifth International Conference of Applied Mathematics and Computing, Bulgaria, August, 2008.

Hongkai Zhao

Feng Kang prize, 2007

APPENDIX F
GRADUATE STUDENTS AFFILIATED WITH IMBS

(i) Current Student Participants and their IMBS Advisors
(* advanced to Ph.D. candidacy; ** received Ph.D. during year)

	Student	Advisor
	Ryan Acton	Butts
**	Amer Aladhad	Saari
	Christopher Balding	Grofman
*	Jerry Benzl	Kaminski
**	James Bono	Saari
	Steve Doubleday	White
	Stephanie Drew	Sperling
	John Ensch	Taagepera/Grofman
	Amy Escobar	Hoffman
**	Hao "Audrey" Fang	Brownstone
*	Iris Franz	McBride
	Shaw Gillespie	Braunstein
	Assal Habibia	Hoffman
	Arvin Hsu	Sperling
	Jason Hsu	Kaminski
*	Lorien Jasny	Butts
	Dan Jessie	Saari
**	Hao Jia	Skaperdas
*	Steven Kies	Chubb
	Rueben Kline	Grofman/Kaminski
*	Vimal Kumar	Garfinkel/Skaperdas
*	Julie Kwak	Hoffman
	Frederico Llarena	de Figueiredo
**	Byung-Moo Lee	de Figueiredo
	Ling Lin	Sperling
*	Shiau Hua Lin	Dosher
	Kate Longo	Komarova
	Son-Hee Lyu	Sperling
**	Matthew Mahutga	Boyd
	Brian Marion	Hoffman
	Justin Mark	Hoffman
	Ray Mendoza	Komarova
	Hyeok Ki Min	Skaperdas
*	Chen Ng	Small
	Kerem Ozkan	Braunstein
	A. J. Packman	Maddy
	Darren Peshek	Hoffman
	Miruna Petrescu-Prahova	Butts
**	Brendan Purdy	Batchelder
	John Pyles	Hoffman

	John Rapalino	Maddy
	Brian Rogers	Maddy
	Ian Schofield	Sperling
	Negar Sammak-Nejad	Hoffman
	Jay Simon	Keller
	Rory Smead	Skyrms
*	Kejun Song	Small
**	Alex Strashny	Batchelder
**	Jared Smith	Batchelder
*	Laurent Tambayong	White
	Hisaaki Tabuchi	Sperling
	Samuel Thorpe	Srinivasan
	Bao Truong	Hoffman
	Yogesh Uppal	Grofman
	Elliott Wagner	Skyrms
	Dan Wolf	Kaminski
	Julian Yarkony	Hoffman
	Mike Yi	Steyvers
	Matthew Zeigenfuse	Lee
	Shunan Zhang	Lee

(ii) MA Degrees in Mathematical Behavioral Science during academic 2007-08

Lorien Jasny
Reuben Kline
Rory Smead

APPENDIX G
VISITORS' LETTERS

PO Box PO Box 3050 STN CSC
Victoria British Columbia V8W 3P5 Canada
Tel (250) 250-472-2067 Fax 250-721-8829
E-mail ajmarley@uvic.ca

Psychology

University of Victoria

May 19, 2008

Professor D. Saari, Director
Institute for Mathematical Behavioral Sciences
Social Science Plaza
University of California, Irvine
Irvine CA 92697-5100 USA

Dear Don

I want to thank you personally and the Institute generally for its ongoing encouragement and support. I visited a number of times during the past academic year in the context of my research with Duncan Luce (supported by NSF and the Natural Sciences and Engineering Research Council of Canada).

The work with Duncan has resulted in five major papers on utility theory that develop a theory of the utility of gambling. The latter concept has been around since the beginnings of decision theory, though it has received limited prior theoretical development. Our work requires a sophisticated extension of results on the general theory of entropy, which has been developed with the mathematicians C. T. Ng and J. Aczel. We (Marley, Luce, Koscis, 2008) have also been able to solve an important problem in the study of rank-dependent utility theories.

Three particularly important feature of my visits to the Institute are: Janet Phelps' attention to my every professional need; the availability of office space, with a networked computer, so that I can continue my work uninterrupted; and stimulating interactions with the many prestigious members of the Institute, and international visitors, with research interests in the mathematical social sciences.

A. A. J. Marley
Adjunct Professor, University of Victoria, Professor Emeritus, McGill University

Gregrey W. Hunter
Assistant Professor
Cal Poly Pomona University
Department of Economics, 1 - 331
3801 W. Temple
Pomona, CA 91678
email: gwhunter@csupomona.edu
phone (909) 869-4888

Dear Don:

Many thanks for your support, the support of the Institute, and the services of UCI. My visit during Fall Quarter 2007 was a boon to my professional development and greatly facilitated progress with my research agenda.

Visiting the Institute allowed me the time to audit a graduate functional analysis class at UCI, which helped shore up gaps in my knowledge of stochastic integration. Stochastic integration is often used in to explain the choices of utility maximizing individuals over time, an on-going interest of mine. Additionally, as a result of the time at the Institute I was able to complete substantive revisions to an article extending prior work on the rational acquisition of information, subsequently accepted for publication (Noah's Non-concavity, forthcoming in Natural Resource Modeling) and develop a new paper, which examines utility rankings over stochastic choice sets.

During Fall Quarter, I also met with Robin Keller, at the UCI Business School due to your introduction. Robin's feedback on my theory linking information and the observed responses of experimental subjects in valuation experiments was highly valuable. Moreover, the discussions I had with Robin have inspired my pursuit of an NSF grant to further extend the work in this area that developed fully while I was visiting the Institute. The record of this work has been submitted for publication (WTP-WTA gaps and unintentional information in experimental protocols 2008 under review at JEEM).

The facilities at the Institute, the staff, and research atmosphere were all excellent. Thank you once again for giving me the opportunity to visit. I hope to visit again in the not too distant future.

With kind regards,

Greg Hunter