ANNUAL REPORT
7/06 - 6/07

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Director's Statement

Simply stated, the main thrust of the Institute for Mathematical Behavioral Sciences (IMBS) is to do whatever we can to encourage the development and use of mathematical tools to advance interdisciplinary research in the social and behavioral sciences. This is true both for UCI and for the various academic disciplines that are represented within the IMBS. While this report describes several ways in which we have done so over the last academic year, I want to call attention to a couple of our activities.

Above all, I want to call your attention to the research activities and recognition of our IMBS members. I always find it a true delight to review, by reading through the descriptions, the highly varied accomplishments that have been made by our colleagues. I welcome you to join me by reading what is reported in Section II-A.

An important contribution for any interdisciplinary research institute is to create new ways in which researchers think about their areas. IMBS has experienced success in this area in different ways. As one example, in my letter of last year I described the success of our "Social Dynamics and Evolution" group, where ideas of mathematical complexity are used to analyze human societal issues. Manifesting an "evolutionary" change in their research interests, which resulted from a more careful examination of the different topics within human societal complexity, this fall they changed the name of their unit to a more appropriate "Social Dynamics and Complexity." A portion of their activities is described in Section II-E.

As reflected by the "mathematical" part of the IMBS name, one of the goals of our research institute is to find ways to incorporate the muscle power of mathematics as a way to better understand and resolve the complex problems of the social and behavioral sciences. As such, I am delighted to report that during this last year a new development emerged by bringing together parts of our evolutionary dynamics group (which meets weekly to describe the dynamics of evolutionary processes and some of the consequences) with psychologists who are interested in vision. A quick way to suggest what resulted is to (incorrectly) assert that Eskimos can detect 25 different versions of white. OK, so this statement has been shown to be wrong, but it accurately captures the sense that color categorization has a strong cultural dependency. The accompanying issue, then, is to understand the dynamics of how all of this comes about. In doing so, there are all sorts of related, complicating issues such as to understand the role played by "mutants" in society, such as those individuals who are color blind, in determining the final form of these categories. By combining techniques from mathematical dynamics with results and questions from psychology, this newly formed IMBS research group created an interesting explanatory model. This work, which is continuing under a grant the group recently received, is also described in Section II-E. An IMBS conference on this topic will be held in March 2008.

In my letter of last year, I described how the IMBS brought together mathematicians and psychologists interested in other, more technical aspects of vision to meet biweekly at the IMBS to compare and discuss issues and approaches. In November of this year, an IMBS conference will explore questions and issues developed from these discussions along with researchers

coming from outside of UCI. This gathering should be an informative conference; check the conference link of the IMBS webpage http://www.imbs.uci.edu for more information.

While the IMBS has had a visitor program starting from its founding days, we are trying to find ways to extend it. This venture is important both as a way to import new ideas to our researchers and as an approach to export to the general community contributions that are being made within the IMBS community. Comments about their visits from some of our visitors can be found in Appendix VI-G. But I want to call attention to Simon Levin, the 2005 Kyoto Prize winner, who spent winter term of the last year at the IMBS. While we may have overworked him, (with his several lectures, colloquia talks, co-organizing an IMBS workshop, etc.), Simon expressed interest in returning. We look forward to his return!

An important feature of the IMBS is the training of the next generation of future researchers. Under the guidance of Louis Narens, who is chair of our graduate program, the IMBS graduate activities purposely go beyond embracing the students who are formally enrolled in our program to warmly include graduate students on campus who have any interest in mathematical social and behavioral sciences. In doing so, we are creating a community of graduate students who can advance the IMBS goals. Indeed, our outreach efforts are reflected by all of those students who enroll or attend our IMBS research seminars (listed in Section II-E.), our active colloquia (listed in Section II-C.) (where we have a special session where students can meet privately with the speakers), participate in our graduate student conferences, join in with our student parties, and are supported by IMBS for summer research. Some of this is described in Section III-B.

Although the focus of the IMBS is toward faculty and graduate student development and research, we are undertaking some projects to advance undergraduate training. As an example, the IMBS has contracted with the firm of Sanli Pastore & Hill, located in Los Angeles, to have an eight-week undergraduate internship over the summer. Last summer our intern was economics student Xing Lian (Sherry) Zhu. This year our intern was Patrick Banks, a mathematics student who recently reported to us how the program broadened his outlook. Also through Sanli Pastore & Hill, the IMBS runs a contest for the best research paper.

As this brief introduction shows, the IMBS experienced another good year. But, this success would not be possible without the dedicated assistance and work of Janet Phelps. All of us thank her!

Sincerely,

Don Saari

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 and Graduate Studies. 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
Administrative Assistant:	Grace Lee

B. Executive Committee

Michael D'Zmura, Professor of Cognitive Sciences
Bernard Grofman, Professor of Political Science
Katherine Faust, Professor of Sociology
L. Robin Keller, Professor, Operations and Decisions Technologies
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 59 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, Indow, Iverson, Riefer, Romney, Smyth, Steyvers, and Yellott

Economic: Brownstone, Poirier, Saari, and Small

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

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

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

Vision: Braunstein, Chubb, DeFigueiredo, D'Zmura, Hoffman, Indow, 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, 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, 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 194 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 10 technical reports issued during the academic year. Most papers can be found 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 193 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

Our group has been examining the mathematical and statistical properties of a formal family of parametric graphical statistical models for categorical data that we call 'multinomial processing tree (MPT) models. This family of models has been used to model many cognitive phenomena in the past two decades, and many models in statistical genetics fall into the family. Brendan Purdy and I have formulated the family as a context free language, and we have used the language to enumerate various subclasses of the family and develop algorithms for generating probability distributions from strings in the language. Jared Smith and I have developed a general Bayesian hierarchical formulation for the entire class using approaches from psychometric test theory. Xiangen Hu and I have been studying the statistical closure properties of the family. Basically when the parameters of a MPT model are constrained the model is no longer in the family; however, in many cases of parametric dimension reducing or order constraints on an MPT model there is a statistically equivalent MPT model (without constraints on the parameters). It appears that the MPT family, unlike most traditional statistical model families, satisfies an enormous number of closure properties that can be used to develop a general approach to statistical inference for the entire family.

Rui deFigueiredo

My research on the mathematical foundations of nonlinear functional analysis and approximation theory has led to a number of application-specific results. In particular: (1) I developed a nonlinear functional analytic framework for modeling and processing fuzzy sets with applications to neural computing; (2) With L. Fang I used Nash game theory to provide an optimal power control solution for multi-carrier (MC) direct sequence (DS) CDMA wireless communications. This solution maximizes the utility function defined as the number of data bits transmitted correctly per unit of energy. That is, the network throughput is maximized at the cost of the minimal energy consumed. Furthermore, a pricing strategy is introduced to force the network to change from a selfish behavior to a social behavior.(3) With B. M. Lee, I introduced a nonlinear-signal-processing-based decision-oriented strategy to improve performance of emerging OFDM-based wireless communication systems; and finally, (4) With Katia Estabridis, I developed a technology for automatic detection and diagnosis of diabetic retinopathy, now under consideration for use as a tool in telemedicine. For details see Publications.

Louis Narens

During this year, I have published two books: *Introduction to the Theories of Measurement and Meaningfulness and the use of Symmetry in Science* (Lawrence Erlbaum Associates, 2007) and *Theories of Probabilities: An Examination of Logical and Qualitative Foundations* (World Scientific, 2007). I have recently received two research grants form NSF: *Empirical and Theoretical Studies of Psychophysical Phenomena* ($350,000; R. D. Luce PI, L. Narens and R. Steingrimsson Co-PIs) and *Evolutionary Game Theoretic Investigations into Color Category Evolution* ($410,000; N. Komorova, PI, K. Jameson, L. Narens, and R. Steingrimsson Co-PIs). In addition, I have been an active participant in an interdisciplinary

research group within IMBS organized K. Jameson investigating the evolution of color categories. During this year, this group has one research article accepted for the *Journal of Mathematical Psychology,* and has submitted and received a NSF grant (mentioned above). I have also actively participated in conferences and a workshop organized by IMBS and has been a participant in an interdisciplinary reading group on theories of color organized by K. Jameson.

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 during the ongoing Intifada. These efforts have involved bivariate count data time series models exhibiting over dispersion and excess zero counts.

Decision-Making

Robin Keller

Regional planning decisions, such as water resources planning, often involve alternatives with impacts that vary geographically. We apply multiattribute value and utility theory to develop functional forms for preference functions to address such decisions, and provide an illustrative example. This research was motivated by a specific decision situation involving planning for Central Arizona, which includes the Phoenix metropolitan area. As part of this research effort, model development was undertaken to project the impacts of different policy alternatives on the future development of the region. Many potential decision alternatives have differential impacts on stakeholders to the decision process, and an issue of importance is the best way to consider these differential impacts in summarizing model outputs to support policy setting and decision making. If a standard decision analysis approach is taken to this, then we need to develop a value function, or a utility function is uncertainty is important, that addresses these differential impacts in a defensible manner.

While the differential impacts might be addressed as a group decision making process, the modeling effort is projecting impacts as a function of geographic location, and hence it is natural to consider ways in which a value or utility function might be constructed to defensibly combine geographically-varying attributes into a single value or utility that can be used to model the outcomes of different alternatives from a decision making perspective.

As an illustrative example, consider policy alternatives that impact the temperature across Central Arizona. This region has temperatures that routinely exceed 100 degrees Fahrenheit (38 degrees Celsius) for four months of the year and often exceed 110 degrees Fahrenheit (43 degree Celsius) during much of that period. Thus it is not surprising to learn that policy alternatives that might impact the temperature in the region are of interest to some stakeholders. As the region has developed, the maximum daily temperatures have increased, and the minimum daily temperatures have increased even more. Climate models show that a significant portion of these increases are tied to the increased presence of manmade structures, which are accompanied by a decrease in natural vegetation.

Suppose that these models are used to investigate the implications of two zoning approaches, one that encourages concentrated development along a small number of corridors while leaving open space in other areas, and one that continues the current practice in the region of generally homogeneous development. Suppose the models are used to project the temperature distribution over the Phoenix area as a result of these two different approaches to zoning. The results will be maps of the temperature distribution under the two different zoning approaches. From a decision-focused perspective, how should policy makers decide which of the two temperature distribution patterns is more preferable, and more specific to the modeling effort, how should appropriate evaluation metrics be included within the models to assist with those decisions? These are the types of questions addressed in the paper. More specifically, we focus on how to combine in a decision-relevant manner evaluation attributes that vary spatially.

Natalia Komarova

With my colleagues L. Narens and K. Jameson I have been working on problems of color categorization. I have developed a mathematical model to study color categorization, and found categorization solutions for a homogeneous and inhomogeneous color stimulus. I have also made some progress in my work concerning mathematical modeling of cancer. In particular, I have been able to generalize the famous Luria-Delbruck distribution of the number of mutants in a colony of cells to the colonies of a fixed size (as opposed to the traditional problem with a fixed time lapse from the beginning of the growth). I also developed a model explaining why genetic instability in cancer may be advantageous at the beginning of the growth, and become an impediment later on. Finally, I worked on the influence of cellular quiescence (an inactive state) on cancer treatment in leukemia, in particular in application to resistance to drugs; the results explain existing experimental observations.

Vladimir Lefebvre

During this period, I have been working on the modeling of the reflexive agent included into a social group, whose members are capable of influencing the agent's decision-making process. The agent possesses a system of images of the self pre-determined by the number of group members and their relationships. The model allows us to predict the limitations the group imposes on the agent's choice

R. Duncan Luce

A substantial portion of my work over the past two years has been attempts to capture formally the elusive phenomenon of the utility of gambling, including the fact that certain chance and/or uncertain events have inherent value. Travel of any sort illustrates it. One can buy insurance over the several contingencies (a gamble), but the event of a severe accident has (negative) inherent value not captured by the insurance. The work in paper (c) arrives at a very general representation, too general to be directly applied. It has been specialized in two ways. In (d) we focus on the case of pure risk where each event has an assigned probability and show that the representation is of the form of expected utility plus a Shannon entropy form. In (e) we focus on an intermediate case with events and arrive at such a form as: subjective expected utility plus subjected expected value of the events plus an entropy form based on the subjective weights assigned to events. These representations are carefully compared with existing data, and although

they go a long way in accounting for them, there are discrepancies. This has led to our current research on trying to axiomatize the utility of gambling term being multiplicatively modified by the subjective expected utility term. Many experimental tests of specific axioms need to be conducted.

Perception and Psychophysics

Donald Hoffman

Automotive lighting serves one primary customer: the human visual system. To best serve a customer one must take the effort to thoroughly understand that customer, their needs, goals, and behavior. When the customer is vision, it is easy to suppose that, even without much effort, we understand the customer quite well already, since each of us has a visual system that we have successfully used for decades. But many of our pretheoretic conceptions of vision, and of how it functions, are in fact misconceptions that are misguided not merely on details, but on fundamentals. Designers of automotive lighting must be aware of these tempting misconceptions, and discard them in favor of a modern understanding of the needs, goals, and behavior of human vision. This book describes common misconceptions and recent computational and psychophysical research that corrects these misconceptions. It then integrates this research with state of the art technology, such as LED headlamps and mechatronics, to propose safer, more effective approaches to headlamps and other forms of automotive lighting.

Tarow Indow

My research has been focused on two problems for many years, the geometrical structure of visual space we perceive around us and the Munsell Color System. As to the former, since the publication of a book "The global structure of visual space, 2004, World Scientific Publication", no particular progress has been made except that frequent exchange of discussion based on that book started with researchers in the Institute of Automation and Electrometry in Russia. The Munsell Color System is a collection of standard color chips as a framework to identify a perceived color such as 5YR 6/12 meaning that the color is bright highly saturated orange. As to the Munsell Color System, I have tried since1956 to make explicit the metrical structure inherent in the System by the use of multidimensional scaling method. Then, a new approach has been started from 2003 in collaboration with Kim Romney, a member of IMBS, to analyze reflectance spectra of Munsell standard chips. Four articles were published and some more will be coming.

George Sperling

A method for psychophysical assay that enables the measurement of extremely weak stimuli was developed. In one example, a texture pattern that is itself to weak to itself produce a visual response is embedded in appropriate surrounding the stimuli. When present, the invisible texture produces the appearance of a slant in a particular direction in the combined stimulus; when absent there is no slant. Such methods can be used to remove even trace impurities from computer generated displays and to produce, for example, pure stimuli for stimulating the first-order or second-order human visual texture-detection systems. A mathematical theory to elucidate how and why these assay procedures work is presented.

Ramesh Srinivasan

We have developed a mathematical model of the covariance structure of EEG and MEG data. This model can be used to make quantitative estimates of the degree of connectivity of different parts of the brain during cognitive tasks, or in comparing clinical populations to controls. We applied this approach to compare ADHD diagnosed children to normal controls, and established that in response to visual stimuli, controls produce oscillations that are more coherent across brain hemispheres than the ADHD population; moreover the ADHD population produces oscillations that are excessively coherent within hemisphere in comparison to control. My former student, Dr. Michael Murias (U of Washington, Seattle) has taken our approach further into clinical research and has recently published articles on adult and children with autism spectrum disorders.

Jack Xin

Worked on (1) spreading speeds of flames in random advection field (winds), theory and computation; proved the existence of turbulent flame speeds in a reaction-diffusion model of Kolmogorov and Fisher; (2) separation of sound mixtures into independent sources without knowing mixing environment, based on statistical methods, ear properties and physical constraints.

Jack Yellott

My main research has focused on spatial phase correction in defocused vision. The human eye is often inconveniently out-of-focus—for example, when a person who needs reading glasses has to try to read without them. Optical defocus of this sort can distort the Fourier phase spectrum of a retinal image (which determines the spatial positions of its features) as well as its amplitude spectrum (which determines their contrast). I have been studying the visual effect of correcting the phase spectrum of defocused images—in particular, correcting the 180 deg phase shifts ("phase reversals", or "spurious resolution") created by severe axial defocus. Optical modeling shows that retinal defocus in presbyopic vision routinely produces phase reversals for spatial frequencies in the 2 cycles/letter range known to be critical for reading. Simulations show that such reversals can have a decisive impact on character legibility, and that correcting only this feature of defocused images can make unrecognizably blurred text completely legible. The deblurring impact of this phase correction is remarkably unaffected by the magnitude of defocus, as determined by blur-circle size. Both the deblurring itself and its robustness stem from the effect that correction has on the defocused pointspread function, which changes from a broad flat cake to a sharply pointed cone. This SR-corrected pointspread acts like a delta function, preserving image shape during convolution regardless of blur-disk size. Curiously, such pointspread functions always contain a narrow annulus of negative light-intensity values whose radius equals the diameter of the blur circle. The analysis reported in the SPIE paper cited below shows that these properties of SR-correction all stem from the mathematical nature of the Fourier transform of the sign of the optical transfer function, which also accounts for the inevitable low contrast of images pre-corrected for SR.

Hongkai Zhao

We developed segmentation and classification algorithms combining statistical methods and geometric methods for images or data analysis. We developed fast algorithm to find shortest paths and distance maps on manifolds and graphs. We developed direct imaging algorithms using different waveforms, e.g., near field or far field data.

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.

David Brownstone

Most current estimates of the value of new transportation or environmental improvements are based on survey respondents' choices between hypothetical alternatives. Using new data we collected from the I15 toll road facility in San Diego, Seiji Steimetz, Tom Golob, and I have been comparing results based on commuters' actual and hypothetical choices. We find that the hypothetical choices yield much lower estimates of the critical value-of-time saved from taking the toll facility. Most importantly, we show that neither sample selection (the tendency for commuters with high value of time to always choose the toll road), perceived or real differences in safety, or model specification bias can explain these differences. Recent work with Kenneth Small has replicated this finding from different studies of commuter behavior on the SR 91 toll road connecting Riverside and Orange Counties. This work will clearly have an impact in transportation economics and environmental economics where responses to hypothetical questions are treated as if they were responses to actual market choices.

Igor Kopylov

In joint work with L. Epstein, I developed a novel theoretic model of cognitive dissonance. This model portrays an agent who adjusts beliefs after taking an action so as to be more optimistic about its possible consequences. In particular, the ex-post choice of beliefs is a part of the representation of preference and not a primitive assumption. Behavioral characterizations can be given to comparisons like 'agent 1 exhibits more dissonance than agent 2'. This work builds on one of my earlier papers "Temptations in General Settings".

Michael McBride

According to existing theory, religion thrives when groups overcome the free-rider problem in the production of religious goods. In a new paper, I explain that allowing some free-riding is necessary in a dynamic setting. If an individual only contributes when she has high religious capital, and if capital only forms after exposure to the religious good, then a church must allow her to temporarily free-ride in order to turn her into a future contributor. Free-riders comprise a risky but necessary investment by the church. Strict churches screen out riskier investments yet still allow some free-riding. This explanation yields predictions consistent with the empirical evidence.

Donald Saari

During the year, I summarized my findings about why the key negative "impossibility" theorems in social choice (e.g., Arrow's Theorem, Sen's Theorem, etc.) do not mean what has commonly been believed and why the troubling voting paradoxes occur in a book that is tentatively entitled "Disposing Dictators; Demystifying Voting Paradoxes." (This book, which was finished in late spring of 2007, probably will be published by Cambridge University Press.) Using some of the notions developed in this study and as part of the sponsored research for one of my grants, I started an analysis of multiscale approaches. Multiscale analysis is becoming a topic in a surprising number of disciplines, ranging from engineering to biology. But, because the analysis is to understand how, say, micro effects are related to macro effects, this area can be viewed as being particular kinds of aggregation rules. Taking this approach and using approaches developed in choice theory, results about multiscale analysis are forthcoming. On other topics, Anna Bargagliotti and I examined the symmetry structures of data for nonparametric procedures to explain why they can lead to different conclusions. (A paper is available on the IMBS preprints.) Jason Kronewetter and I completed the first part of our analysis of a topological analysis of decision problems. Also, Ivy Li and I completed our analysis of Sen's theorem.

Brian Skyrms

My research focuses on the use of evolutionary game theory to understand evolution of the social contract and evolution of signals.

(b) Public Choice

Bernard Grofman

Often partisans draw lines or constituency boundaries for their own political advantage to fragment and waste the voting strength of the opposition party. The Supreme Court in a series of cases has looked at ways of measuring the extent and impact of partisan gerrymandering and determining when it rises to the level of a constitutional violation of equal protection (my recent joint work with Gary King at Harvard) looks at math models of gerrymandering bias based on the concept of "partisan symmetry."

Marek Kaminski

The Polish version of my book "Games Prisoners Play" (longer by about 100 pages) received a promising welcome with over 20 reviews and interviews in Polish professional journals, popular magazines, newspapers and radio programs.

(c) Social Networks

Jan Brueckner

In a paper entitled "Social Interaction and Urban Sprawl," coauthor Ann Largey and I present empirical evidence debunking the widely held view that suburban living reduces social interaction. The empirical results, which rely on a national "social capital" survey, show that interaction is higher, not lower, for households living in low-density census tracts. This finding bears on the current debate over urban sprawl since it shows that social interaction is not impaired by sprawling cities.

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.

Katherine Faust

I have been investigating how interactions among small subsets of individuals aggregate into larger social systems, a long-standing question of theoretical and methodological importance in the study of social networks. My research this year demonstrated that triadic configurations, that is, relations among triples of social actors, are overwhelmingly explained by lower order network features – the density of the network and the tendencies for mutual, asymmetric, and null dyads. This result has been replicated on two distinct, heterogeneous, collections of social networks representing a variety of species (humans, baboons, chimpanzees, macaques, red deer, cows, hens, hyenas, dolphins, kangaroos, horses, sparrows and more) and kinds of social relations (expressions of positive and negative affect, victories in agonistic encounters, observed co-presence, choice of work partners etc.). In related work I demonstrated that social network data collected using a limited choice sociometric protocol (where respondents are restricted to name only a small number of partners) is incapable of detecting a vast range of theoretically possible triadic outcomes, and thus is essentially useless for investigating many forms of social network structure.

Andrew Noymer

This was my first year at UCI and IMBS. I finished my PhD (Sociology) at UC Berkeley in December 2006. My dissertation made important contributions to studies of the 1918-19 influenza pandemic. Re-examining historical vital statistics, I demonstrated that the 1918

pandemic killed selectively, namely that those with tuberculosis died in great numbers in the pandemic. Since a large number of tuberculosis deaths that would have been spread out over a number of years occurred all-at-once (i.e., concurrent with the flu pandemic) tuberculosis death rates fell in the years after 1918. Although tuberculosis was in decline throughout the early 20th century, the steepest period of decline was immediately after the 1918 influenza pandemic. This finding shows that quantitative re-analysis of historical vital statistics may yield important new results.

Douglas White

My 2006 *Physical Review E* simulation model, done with Santa Fe Institute physicists, for investigating the occurrence of scale-free, navigable, and other types of feedback and feed-forward phenomena in networks, was cited this year in physics papers on "Maximum Likelihood Estimation for q-Exponential (Tsallis) Distributions" and "General Connectivity Distribution Functions for Growing Networks with Preferential Attachment of Fractional Power," received a Wikipedia entry devoted to the "Social Circles Network Model as a complex network model.. The model led to new understandings of network dynamics and demonstrated the existence of a universality class of networks that generates many of the known empirical network topologies from processes consistent with generalized ('Tsallis') entropy models for nonindependent interactions. Realizing the significance of this finding,

My work this year applied the same measurement and modeling techniques to data on city-size distributions from 23 historical periods in the last millennium, resulting in two new publications that led to new ways to describe and theorize urban hierarchies and their dynamics, described in terms of long periods of normal city hierarchies punctuated by rapid transitions to and eventually back from equally long periods of slumped 'city-quake' distributions. Urban system theorist Michael Batty reviewed this work in his fall 2006 article on rank clocks Nature (Letters) 444:592-596.

Hierarchy, and Cohesion," for *A New Perspective on Innovation and Social Change*, edited by Santa Fe Institute scientists David Lane, Geoffrey West., Sander van der Leeuw, and Denise Pumain, a book that gives the results of our European Union project on Information Society as a Complex System.

As a result of this work, in part, I was invited to be one of the 10 core faculty to teach the (first) French Complex Systems Summer School, Paris, organized by the Complex Systems Institute Paris - Ile de France (CSI PIF) and will take place in the heart of the Latin Quarter in Paris. This new series of international Summer schools is coordinated by the French National Network on Complex Systems (NNCS).

E. Research Seminars and Activities

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

Philosophy of Mathematics [Maddy]
Mathematical Models of Cognitive Processes [Batchelder]

Social Networks Research Group [Butts, Faust]
Collecting Social Network Data [Freeman]
Mind-body Problem [Hoffman]
Observer Theory [Hoffman]
Introduction to Game Theory [Kaminski]
Evolution of Signaling Systems [Narens, Jameson, Komarova]
Demography and Sociology of Health & Illness [Noymer]
Graduate Statistics III [Noymer]
Math of Finance [Saari]
Theory of Political Economics [Saari]
Methods and Models [Saari, Narens]
Social Dynamics [Saari, Narens, Skyrms]
Sensation and Perception [Sperling]
Global Networks [White]
Human Science and Complexity [White]

EVOLUTION OF SIGNALING SYSTEMS

Last year Louis Narens formed a working group on the Evolution of Signaling Systems. The group investigated various philosophical, psychological, and social issues using the methodology of evolutionary game theory. This year the group divided into two very active research subgroups: One formed by Brian Skyrms researching signaling systems from the perspective of philosophical issues. The activities of this group are coordinated by Skyrms and the group consists of Logic and Philosophy of Science (LPS) faculty Barrett, Huttegger, and Skyrms and several LPS graduate students. During the year this subgroup produced many high quality publications. Of particular note is that the subgroup's graduate students were also active in its research and published articles in top-tier philosophy journals.

The other subgroup, formed and coordinated by Kimberly Jameson (Project Scientist, IMBS), Natalia Komorova (Mathematics), Louis Narens (Cognitive Sciences), and Ragnar Steingrimsson (Project Scientist, IMBS). This group researches 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. This subgroup just received a $410,000 grant from NSF to fund this research. A more thorough description of this research is as follows:

To provide a sense of what was done, 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. An example comes from the empirical literature on color categorization and naming where the popular view is that the commonalities of color categorization across individuals and cultures are largely explained by: (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 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.

An alternative view is 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 to actual features of color categorization phenomena. And of course there are other positions that blend the universalist and relativist ones.

Through seminars on evolutionary game theory sponsored by the Institute, Drs. Komarova of Mathematics, Jameson and Steingrimsson of IMBS, and Narens of Cognitive Sciences formed a research group to investigate the evolution of psychological color categories and the cultural naming of colors through evolutionary game-theoretic modeling. The ultimate goal of their research is to explain experimental regularities found in over 100 years of experimental cross-cultural studies of color naming. In particular, they discovered 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, their 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.

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.

During 2006-2007 the Social Network Research Group met weekly to discuss ongoing research on wide range of topics. A number of presentations and discussions focused on modeling complex relational data structures and processes. IMBS faculty members John Boyd, Carter Butts, Katie Faust, Lin Freeman, and Doug White participated, along with faculty members from other units on campus (John Hipp, Cynthia Lakon, Joy Pixley and Natasa Przulj), visitors from other universities (James Holland Jones, Joel Levine, and Mark Mizruchi) and graduate students from various programs (Ryan Acton, Lorien Jasny, Helena Kovacic, Ben Lind, Matthew Mahutga, and Chris Marcum). Attendance at the Social Network Research Group meeting is open to all interested members of the university community, and drop-ins are welcome. Special topics may be designated for certain meetings -- all other meetings are considered to be available for open discussion. In the latter case, participants are encouraged to bring along their intractable problems, difficult questions, and mysterious software bugs, as well as topics for more general discussion or debate. Information is available at:

http://erzuli.ss.uci.edu/network/.

SOCIAL DYNAMICS AND COMPLEXITY RESEARCH GROUP

In Fall, 2006, the focus research group on "Social Dynamics and Evolution," chaired by Douglas White, changed its name to "Social Dynamics and Complexity" in recognition of a larger mission relating to Human Social Complexity. Their activities this year include the next three issues of their *Structure and Dynamics: eJournal of Anthropological and Related Sciences,* beyond the two inaugural issues of 2006. The journal is electronically peer reviewed (utilizing over 100 interdisciplinary reviewers this year) through UC eScholarship publications under IMBS auspices. It allows interactively sophisticated color graphics, and is indexed in the Directory of Open Access Journals as a subscription-free journal at no cost to authors to publish, and with high quality peer reviews and copy editing paid for by contributions to the research group. Last year it had 4,500 full-text article pdf downloads, with 7,000 this year. The Social Dynamics and Complexity editors received an additional large grant this year from a non-profit foundation benefactor to cover copy editing, fund MBS graduate students and faculty to collaborate with other scientists through visits to the Santa Fe Institute and across UC campuses. Last year they initiated the UC Four-Campus Group in Human Sciences and Complexity (UC-HSC), changing that to Human Social Complexity to bring it into line with an academic Minor program at UCSD. Led by the Social Dynamics and Complexity ran its second year-long HCS Seminars with quarterly MBS conferences with both graduate and undergraduate enrollments in cross-campus videoseminars. Twenty speakers in eighteen presentations averaged 19 faculty and student attendees, split roughly half and half, each session recorded for on-line on-demand streaming videos of the presentations and discussion following. This year there were several graduate student presentations, and the number of students taking HSC seminars for course credit has increased. A four-campus minor proposal was developed and explored in its initial states, complementing the current UCLA minor in Human Complex Systems with a new Minor at UC Irvine.

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 45 Ph.D. students, of whom 19 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:

Dan Cavagnaro
Steve Doubleday
Ray Mendoza
Brendan Purdy
Rolf Johnson
Alex Strashny
Laurent Tambayong

Nathan Westbrook

During the year, the Institute continued a program of recruiting 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 22 proposals requesting summer funds, and of those, the following 16 students were awarded funds in varying amounts:

Student	***Program***	***Advisor***
Bono, James	**Economics**	**Saari**
Deng, Siyi	**Cog Sci**	**Srinivasan**
Jia, Hao	**Economics**	**Skaperdas**
Kline, Reueben	**Poli Sci**	**Grofman**
Kumar, Vimal	**Economics**	**Skaperdas**
Lien, Iris	**Economics**	**McBride**
Longo, Kate	**Mathematics**	**Komarova**
Mendoza, Ray	**IMBS**	**Komarova**
Purdy, Brendan	**IMBS**	**Batchelder**
Simon, Jay	**Management**	**Keller**
Smead, Rory	**LPS**	**Skyrms**
Tambayong, Laurent	**IMBS**	**White**
Thorpe, Sam	**IMBS**	**Srinivasan**
Wagner, Elliott	**LPS**	**Skyrms**
Zeigenfuse, Matt	**Cog Sci**	**Lee**
Zollman, Kevin	**LPS**	**Skyrms**

A condition of the support is that the student gives a talk during the academic year on their research. Below are the students who received support in the summer of 2006 and their topics, in order of presentation. This mini-conference was held on November 1.

2006 Summer Fellowship Talks

Kevin Zollman -- "The epistemic benefit of transient diversity"

Jay Simon -- "Decision Making with Prostate Cancer"

Dan Cavagnaro -- "Strong lumpability of random walks on a medium"

Rory Smead -- "Signaling and Indirect Reciprocity"

Laurent Tambayong -- "Discovering City-Curve Oscillations: Historical Dynamics as a Reactive System for China, 900 CE to the Present"

Vimal Kumar -- "Product Cycle and Wage Inequality in a Closed Economy"

Jared Smith -- "Analysis of Individual Differences to Aid in the Measurement of Cognitive Processes"

Brendan Purdy -- "A Context-Free Language for Binary Multinomial Processing Tree Models"

Ray Mendoza -- "Semantic Categorization based on Syntactic Distribution"

Anna Bargagliotti -- "Inconsistency in Aggregation"

Lingfang (Ivy) Li -- "What is the Cost of Speaking Out? Evidence from eBay"

Amy Escobar -- "Effects of dimension and task on eye movements during face processing"

Steven Kies -- "Autocorrelation Functions and Texture Discrimination"

Iris Franz -- "Grade Inflation under the Threat of Students' Nuisance"

Hisaaki Tabuchi -- "Measuring the spatial frequency spectrum of internal noise in letter identification"

B. Graduate Advisory Council

Council Members:
Dan Cavagnaro - IMBS
James Bono - Economics

This is the third 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. They also conducted surveys of four graduate classes. The hope 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 5th Annual Graduate Student Conference. Below is the conference agenda:

5th ANNUAL GRADUATE STUDENT CONFERENCE --JUNE 1, 2007

9:30 **Siyi Deng** -- "A Solution for Congressional Apportionment"

10:00 **Matthew Zeigenfuse** -- "A Bayesian Method for Learning Combined Similarity-Based Representations"

10:30 **Sam Thorpe** -- "Characterizing the Frequency Dependence of the Basic Visual Pathway"

Break

11:30 **Lingfang (Ivy) L**i -- "What is the Cost of Speaking Out? Evidence from Ebay"

12:00 **Iris Franz** -- "Grade Inflation Under the Threat of Students' Nuisance"

Lunch (12:30-1:30)

1:30 **James Bono** -- "Co-dependent Organizational Levels (Coral) Games and the Core of Cores"

2:00 **Rory Smead** -- "Signaling and Indirect Reciprocity"

Break

2:45 **Amer Aladhadh** -- "Dynamic Considerations in Financial Modeling"

3:15 **Jay Simon** -- "Decision Analysis Using Geographic Information Systems"

Break

4:00 **Brendan Purdy** -- "A Context-Free Language for Multinomial Processing Tree Models"

4:30 **Dan Cavagnaro** -- "Media Theory"

RESEARCH PRIZE

As described next, the firm of Sanli Pastore & Hill supports a prize for research papers. This year's first-place winner for the "Excellence in Economics Writing" award was Hao "Audrey" Fang and she received $500. The title of her paper was, "How Urban Sprawl Matters: A Joint Modeling of Households' Vehicle choice and Vehicle Usage". Second and third place winners were Lingfang (Ivy) Li, whose paper was titled "Reputation, Trust and Rebates: How Online Auction Markets Can Improve their Feedback Mechanisms", and Wan Ju (Iris) Franz, whose paper was titled "Grade Inflation Under the Threat of Students' Nuisance". Last year's first place winner was Hao Jia and the title of his paper was, "A Stochastic Derivation of Contest Success Functions".

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 was Patrick Banks, a mathematics undergraduate student who recently reported to us how the program broadened his outlook. Last year's intern was economics undergraduate student Xing Lian (Sherry) Zhu.

IV. COMMUNICATION

A. Conferences

This past year the IMBS held conferences on various topics. They are each listed here along with a brief synopsis and the agenda.

"THE EVOLUTION OF PUNISHMENT", February 9-11, 2007

Friday, February 9

1:00 Comments by Donald Saari, Director of IMBS

1:10 – 2:00 Jean Ensminger, Professor of Anthropology, CALTECH
"The Co-Evolution of Pro-Market Norms and Market Exchange"

2:00 – 2:15 Discussion

2:15 – 3:05 Simon Levin, Director, Center for BioComplexity, Princeton Univiversity
"Diffuse Coevolution and Multiple Scales"

3:05 – 3:20 Discussion

3:20 – 3:45 BREAK in SSPA 2142

3:45 – 4:35 Robert Boyd, Professor of Anthropology, UCLA
"Three Ways to Stabilize Punishment"

4:35 – 4:50 Discussion

Saturday, February 10

9:00 – 9:50 James Fowler, Associate Professor of Political Science, UCSD
"Egalitarian Motives in Humans"

9:50 – 10:05 Discussion

10:05 – 10:55 Karl Sigmund, Faculty of Mathematics, Univ. of Vienna
"Between Freedom and Enforcement – the Emergence of Altruistic Punishment"

10:55 – 11:10 Discussion

11:10 – 11:30 BREAK in SSPA 2142

11:30 – 12:20 Erte Xiao, Postdoctoral fellow, Dept. of Psychology, Univ. of Pennsylvania
"Do the right thing: But only if others do so"

12:20 – 12:35 Discussion

12:35 – 2:00 LUNCH

2:00 – 2:50 Eric Maskin, Institute for Advanced Study, Princeton University
"Evolution and Punishment in Repeated Games"

2:50 – 3:05 Discussion

3:05 – 3:30 BREAK in SSPA 2142

3:30 – 4:20 Natasha Komarova, Dept. of Mathematics, UC Irvine
"Modeling the Evolution of Human Language"

4:20 – 4:35 Discussion

Sunday, February 11

9:00 – 11:00 General Discussion

B. Conferences/Seminars organized by IMBS Members

David Brownstone
Energy Policy in Society, (with ConocoPhillips Co.), UCI Beckman Center, April 2007.

Bernard Grofman

Organized and participated in the First World Public Choice Meeting in Amsterdam, April 2007.

Michael Lee and Mark Steyvers
40th Annual Meeting of the Society for Mathematical Psychology, July 2007 (with M. Steyvers)

Andrew Noymer
Co-organizer, Workshop on Pandemic Influenza, IIASA, Laxenburg, Austria, August 2006.

George Sperling
Thirty-Second Annual Interdisciplinary Conference, Jackson Hole, Wyoming, February 4 – February 9, 2007. See http://www.socsci.uci.edu/HIPLab/AIC.

Douglas R. White
Satellite Workshop on Social and Historical Dynamics: Emergence, Robustness, Resilience, and Coevolution. European Complexity Conference, Oxford, September 2006.

Hongkai Zhao
Program committee for 1st International Conference on Scale Space Methods and Variational Methods in Computer Vision, Ischia, Italy, May 2007.

Organizer for Recent Developments in Numerical Methods and Algorithms for Geometric Evolution Equations, Mathematical Sciences Research Institute (MSRI), March 2007.

Minisymposium on Fast Sweeping Methods for Hamilton-Jacobi Equations, SIAM Conference on Analysis of Partial Differential Equations, Boston, July 2007.

The IMBS also contributed $2,000 to the 40th Annual Mathematical Psychology Conference which was sponsored by the Cognitive Sciences Department and organized by two IMBS members, Mark Steyvers and Michael Lee.

C. Future Conferences

The Institute is planning at least two conferences next year: *Mathematics and Vision*, to be held November 9-11, 2007, and *Evolution of Psychological Categories*, to be held March 14-16, 2008. Information, when available will be on the IMBS web page at: www.imbs.uci.edu.

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

Simon Levin
Moffett Professor of Biology and Director of the Center for BioComplexity
Princeton University

Anthony A. J. Marley
Department of Psychology
McGill University

Eric-Jan Wagenmakers
Department of Psychology
University of Amsterdam
The Netherlands

Next year the Institute will sponsor the visits of Professor Han Bleichrodt, Dept. of Applied economics, Erasmus University, the Netherlands, Gregory Hunter, Associate Professor of Economics, Cal poly Pomona University, and Michael Orrison, Associate Professor of Mathematics at Harvey Mudd College.

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 Social Dynamics and Evolution 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 Evolution.

FALL COLLOQUIA

October 5
DON HOFFMAN, Dept. of Cognitive Science, UC Irvine
"Physics from Consciousness"

October 12
KLAUS NEHRING, Dept. of Economics, UC Davis
"Self Control through Second-Order Preferences"

October 19
LAURENCE T. MALONEY
Dept. of Psychology, New York University
"Movement Planning under Risk, Decision making under Risk"

October 26
HARRISON WHITE, Dept. of Sociology, Columbia University
"How to probe Market Process"

November 2
RICHARD S. PALAIS, Dept. of Mathematics, UC Irvine
"Artistic Representations of Mathematical Concepts and Ideas"

November 9
SIMON HUTTEGGER, Dept. of Philosophy, Konrad Lorenz Institute for Evolution and Cognition Research
"Game Theoretic Models of Signaling and Information Transfer"

November 16
EARL HUNT, Dept. of Psychology, Washington University
"*Patterns of Thought"*

November 30
JEFFREY ROUDER, Dept. of Psychological Sciences, University of Missouri-Columbia
"Hierarchical Nonlinear Models in Cognition and Perception"

WINTER COLLOQUIA

January 8
OLEG SMIRNOV, Political Science, University of Miami
"'Heroism' in Warfare as a functionally Specific Form of Altruism"

January 11
MATT JONES, Psychology, Univ. of Texas at Austin
"*Regency Effects as a Window to Generalization Separating Decisional and Perceptual Sequential Effects in Category Learning"*

January 16
EMEL FILIZ
Dept. of Economics, Ph.D. Student, Columbia University
"Incorporating Unawareness into Contract Theory"

January 25
MICHAEL LEE
Asst. Prof. of Cognitive Science, UC Irvine
"Some New (Bayesian) Light Through Some Old (Cognitive Modeling) Windows"

January 30
JON EGUIA
Division of Humanities and Social Sciences, CALTECH
"Voting Blocs, Coalitions and Parties"

February 1
JAMES HOLLAND JONES
Department of Anthropological Sciences, Stanford
"Interval estimates for epidemic thresholds in two-sex network models"

February 8
ERNESTO DAL BO
Department of Political Science, UC Berkeley
"Political Dynasties"

February 15
SIMON LEVIN
Director, Center for BioComplexity, Princeton University
"Current Challenges in the Theory of Infectious Diseases"

February 22
DAVID SCHMEIDLER
Department of Economics, Ohio State University
"How to be Bayesian if you must "

March 1
JOEL LEVINE
Dept. of Mathematical Social Sciences, Dartmouth College
"The Misbehavior of Data: Basic Correlation and Regression Reconsidered by a Network Analyst"

March 8
PRASANTA PATTANAIK
Department of Economics, UC Riverside
"Revealed Preference and Stochastic Demand Correspondence"

March 15
DONALD BAMBER
Scientist, Space & Naval Warfare Systems Center, San Diego, Simulation and Human Systems Technology
"*Reasoning with Rules that Have Rare Exceptions: An Argumentation System with a Probabilistic Semantics"*

March 16
GEOFFROY de CLIPPEL
Department of Economics, Rice University
"Marginal Contributions and Externalities in the Value"

SPRING COLLOQUIA

April 5
JACK YELLOTT, Department of Cognitive Sciences, UCI
"*Correcting Spurious Resolution in Defocused Retinal Images"*

April 12
ERIC-JAN WAGENMAKERS, Department of Psychology, University of Amsterdam, The Netherlands
"Current Developments in the Modeling of Response Times and Accuracy Using The Ratcliff Diffusion Model"

April 26
ANDREW NOYMER, UCI Department of Sociology
"Mortality Selection: The 1918 Influenza Pandemic's Role in the Decline of Tuberculosis in the U.S."

May 3
JAMES FOWLER, Department of Political Science, UC San Diego
"The Genetic Basic of Voter turnout"

May 17
LOUIS NARENS, Department of Cognitive Science, UCI
"Probabilistic Logics"

May 24
PIOTR SWISTAK, Department of Government and Politics, University of Maryland
"Economics and Sociology (A game-theoretic proof that robust equilibria require social institutions)"

SOCIAL DYNAMICS AND EVOLUTION COLLOQUIA

October 6
JEFF BRANTINGHAM, Archaeology, UCLA:
"Foraging Behavior of Contemporary Criminals". ABM and math models: Car Thievery in LA as an Optimal Foraging Problem

October 13
JESSICA FLACK, Santa Fe Institute:
"The Role of Robustness Mechanisms in the Evolution of Social Complexity"

October 27
JAMES FOWLER, Political Science, UCSD,
"Supreme Court Networks of Precedents"

November 3 -- Part of the Marschak Series at UCLA
COLIN F. CAMERER, Economics, California Institute of Technology
"Behavioral Economics and Neuroeconomics"

December 8 -- 4-Campus Conference at UCI
DOUG WALLACE - MAMMAG
"Molecular Anthropology: Application of Analysis of Mitochondrial Variation toward Understanding the Origins of Humans and Their Culture"
NATASA PRZULJ
"Discovering the protein interaction networks of living cells - the Interactome sequel to the Genome project"

January 5
PETER GOUREVITCH. Political Science, UCSD
"Explaining Corporate Governance Systems"

January 26
JARED DIAMOND, UCLA Geography and Physiology, UCLA
"Variation in Human Cultural Practices"

February 9
HALBERT WHITE and **KARIM CHALAK**, Economics, UCSD,
"A Unified Framework for Defining and Identifying Causal Effects"
JUDEA PEARL, Computer Science, UCLA
"A Unified Framework for Causal Effects: Commentary"

February 23
BRIAN ARTHUR, SFI,
"Technology and the Evolution of Complexity"

March 23 -- 4-Campus Conference at UCI
MARTIN DOYLE, UCR Political Science,
"The state of clan politics in State building"

April 6 Friday
ROBERT GARFIAS, UCI
"Complexity in Expressive Forms"

April 13 2007 Friday -- Marschak Colloquium
ALAN FISKE, Professor of Anthropology, UCLA (Cultural Anthropology/Social Psychological Anthropology)
"The Four Fundamental Forms of Sociality: Theory, Formal Models, and Evidence"

April 20
DOUGLAS R. WHITE, UCI (Math. Behavioral Sciences)
"Rethinking Social Complexity and Resilience: Australian hunters, Middle Eastern nomads, and Eurasian Urban Civilizations"

May 4
NATALIA L. KOMAROVA (UCI Mathematics), Kimberly A. Jameson (IMBS), Louis Narens (UCI Cognitive Sciences) and Ragnar Steingrimsson (IMBS). UCI Color Evolution Lab.
"Evolutionary Models of Color Categorization Based on Discrimination"

May 11 -- Marschak Colloquium Video Seminar
PHILLIP BONACICH, Professor of Sociology, UCLA.
"Power in Social Networks"

May 18
PADHRAIC SMYTH, UCI (Computer Science)
"Automated Analysis of Relations between Words, Entities, Topics, and Documents using Statistical Topic Models"

May 25
CARL SIMON, University of Michigan, Director, Center for the Study of Complex Systems
"Complexity Research and the Center for the Study of Complex Systems at Michigan"

June 1

MICHAEL MERRILL, Archaeology, Arizona State University.
"Archaeology and Galois lattices"

June 9
DAVID KRONENFELD (UCR Anthropology- Bio) and Jerome Kronenfeld (Research Physicist): "Agent-Based Modeling, social simulation, starlings and others"
DWIGHT READ (UCLA Anthropology) and Steen (UCLA Communication Studies).
"Agent-Based Model of warning cries among vervets"
SUZANNE LOHMANN: (UCLA Political Science)
"University as a human complex system"

V. BUDGET

A. Appropriations and Expenditures

Appropriations:

IMBS 2006-07 Budget allocation	$100,000
IMBS 2005-06 Carry Forward	$ 72,549
Total budget for 06-07	**$172,549**

Expenditures:

Salaries (Director, Staff)	$50,317
School Administrative Support	$ 7,500
Conference/Colloquia	$17,495
Equipment	$ 893
Supplies & Expenses	$ 7,102
Graduate Student Support	$15,000
Total Expenditures:	**$98,307**
Carry Forward to 2007-08	**$74,242**

2007-08 Encumbrances:

Graduate Student Support	$15,000
Administrative support	$ 7,500

B. Extramural Funding Activity

IMBS faculty research was supported by 36 research grants with one pending grant. 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 Xiangen Hu

Batchelder NSF $300,000 7/02-8/06
Research in the Foundations and practice of Social measurement, with A. K. Romney

Batchelder NSF $185,000 7/03-8/06
Developing Culturally Appropriate Screening Tools for Dementia, with E. Batchelder

Brownstone CA. Dept. of Trans. $161,150 6/06-9/07
Extension of Hybrid HOV Lane Microsimulation Model to Incorporate: 1) HOT Lanes and 2) Non Buffer-separated Part-time HOV Lanes", with W. Recker and T. Golob.

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. Mehrotra, Sharad (PI); Butts, Carter T. (Co-PI); Eguchi, Ronald (Co-PI); Venkatasubramanian, Nalini (Co-PI); and Winslett, Marianne (Co-PI).

Butts NSF CHE $69,372 2/06-1/07
SGER: Collaborative Research: Mapping and Analyzing Emergent Multiorganizational Networks in the Hurricane Katrina Response.

Chubb NINDS $688,560 9/03 – 5/08
Effects of Temporal Lobectomy on Sensory Deficits in TLE. PI A. Grant. Co-PIs C. Chubb, G. Hickok, F-G Zeng.

Keller NSF & U. of AZ $6,900,000 9/04-8/09
Decision Center for a Desert City. Serve on decision research team with Craig Kirkwood, Don Keefer, and Bill 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 Sloan Fellowship $45,000 7/05-6/06
Quantifying the methylation rate in cancer cells: Computational and experimental approaches.

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.

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.

McBride Ctr. for Study of Democracy $2,000 2/06-3/07
Conflict and the Shadow of the Future, with S. Skaperdas.

McBride Ctr. for Global Peace & Conflict $2,000 2/06-3/07
Conflict and the Shadow of the Future, with S. Skaperdas.

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

Smyth NSF-DARPA-NSA $ 300,000 7/05-6/07
"*Entity-Topic Modeling, Querying, and Analysis*". *Knowledge Discovery and Dissemination Program.*

Sperling AFO: Scientific. Res. $438,624 4/04-12/06
Deriving a Computational Theory of Visual Spatial Attention.

Sperling NIH $1,459,618 11/03-12/06
Dynamic Neuroimaging.

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 AFRL/AFOSR $380,000 7/03-6/06
Inference in Dynamic Environments: An empirical and theoretical investigation into dynamic decision making environments. (S. Brown Co-PI).

White EU Grant $10,000 1/02-12/05
*Society as a Complex System (*PIs on the main grant are Profs. Sander van der Leeuw, David *Lane and Geoffrey West (sub-contract component).*

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

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 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, 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 5/07-4/12
Dynamic Modeling of 3D Urban Terrain.

INDIVIDUAL PROPOSALS PENDING

Small U.S. Dept. of Trans. $63,233 5/07-4/12
Costs and Effectiveness of Lower-Speed, Environmentally-Friendly Urban Highway Designs.

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 on 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.

Scott Brown, (Ph.D. Mathematics, University of Newcastle). Assistant Professor of Cognitive Sciences. Research areas: Mathematical models of reaction time and practice.

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). Assistant Professor of Sociology. Research areas: Computational and Mathematical Organization Theory, Games and Economic Behavior.

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.

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.

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.

Tarow Indow, (Ph.D. Psychology, Keio University, Tokyo). Professor Emeritus of Cognitive Sciences, University of California, Irvine. Research areas: Quantitative analysis and mathematical models in space perception, color perception, and retrieval from long-term memory.

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.

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), Assistant Professor, Department of Mathematics and Ecology & Evolutionary Biology. Research areas: Mathematical modeling and biology, virus dynamics, cancer modeling.

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

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.

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

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 system 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). Assistant 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.

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; Mexico, Europe.

Charles (Ted) Wright, (Ph.D. Experimental psychology, University of Michigan). Associate 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). Associate Professor of Mathematics, University of California, Irvine. Research areas: Applied and computational mathematics with applications in physics, engineering, imaging science and computer vision.

PROJECT SCIENTIST

Kimberly Jameson, (Ph.D. Psychology, University of California, Irvine). Associate Project Scientist, University of California, Irvine. Research Areas: Evolutionary game theory investigations of color categorization, genetic basis of color perception, applied cognitive research, cognition and emotion, and culture, cognition and perception.

APPENDIX B
SCIENTIFIC PUBLICATIONS OF MEMBERS, ACADEMIC 2006-07[1]

Pierre Baldi

Wu and P. Baldi. (2007). Learning to Play Go By Mining Small-Board Amateur Games. *Journal of Artificial Intelligence Research*.Submitted.

R. Jurdak, P. Aguiar, P. Baldi, and C. Lopes. Software Acoustic Modems for Underwater Sensor Networks. *IEEE Journal on Oceanic Engineering*. Submitted, (2007).

J. Chen, E. Linstead, S. J. Swamidass, D. Wang, and P. Baldi. (2007). ChemDB Update—Full-Text Search and Virtual Chemical Space. *Bioinformatics*, in press.

M. Tress, J. Cheng, P. Baldi, K. Joo, J. Lee, J. Seo, J. Lee, D. Baker, D. Chivian, D. Kim, A. Valencia, I. Ezkurdia. (2007). Assessment of Predictions Submitted for the CASP7 Domain Prediction Category. *Proteins*, in press.

M. Sweredoski, K. Donovan, B. Nguyen, A. J. Shaka, and P. Baldi. (2007). Minimizing the Overlap Problem in Protein NMR: A Computational Framework for Precision Amino Acid Labeling. *Bioinformatics*, in press,

N. Komarova, L. Wu, and P. Baldi. (2007). On the Luria-Delbruck Model with a Nonzero Death Rate. *Mathematical Biosciences*, in press.

Cheng and P. Baldi. (2007). Improved Residue Contact Prediction Using Support Vector Machines and a Large Feature Set. *BMC Bioinformatics*, 8, 113-121.

J. E. Eyles, B. Unal, M. Gill Hartley, S. L. Newstead, H. Flick-Smith, J. L. Prior, P. C. F. Oyston, A. Randal, Y. Mu, S. Hirst, D. M. Molina, D. Huw Davies, T. Milne, K. F. Griffin, P. Baldi, R. W. Titball and P. L. Felgner. (2007). Immunodominant *Francisella tularensis* antigens identified using proteome microarray. *Proteomics*, in press.

W. Einhäuser, T. N. Mundhenk, P. Baldi, C. Koch, and L. Itti. (2007). A bottom-up model of spatial attention predicts human error patterns in rapid scene recognition. *Journal of Vision*, in press.

S. J. Swamidass and P. Baldi. (2007). A Mathematical Correction for Fingerprint Similarity Measures to Improve Chemical Retrieval. *Journal of Chemical Information and Modeling*, in press.

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

S. J. Swamidass and P. Baldi. (2007). Bounds and Algorithms for Exact Searches of Chemical Fingerprints in Linear and Sub-Linear Time. *Journal of Chemical Information and Modeling*, 47, 2, 302-317.

A. Sadovsky, P. Baldi, and F. Wan. (2007).A Theoretical Study of the In Vivo Mechanical Properties of Angiosperm Roots: Constitutive Theories and Methods of Parameter Estimation. *Journal of Engineering Materials and Technology*, in press.

R. Jurdak, C. Lopes, and P. Baldi. (2007). A Cross-Layer Optimization Framework for Sensor Networks. *IEEE Transactions on Mobile Computing*, in press.

William Batchelder

Batchelder, W.H., and Riefer, D.M. (2007). Using Multinomial Processing Tree Models to Measure Cognitive Deficits in Clinical Populations, In R. Neufeld (Ed.). *Advances in Clinical Cognitive Science*: *Formal Modeling of processes and Symptoms.* Washington, D.C. American Psychological Association Books pp. 19-50.

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, forthcoming.

Batchelder, W.H., and Batchelder, E. Meta-cognitive Guessing Strategies in Source Monitoring. In J. Dunlosky and R.A. Bjork (Eds.). Handbook of Memory and Metacognition. LEA Books, in press.

John Boyd

John P. Boyd, William J. Fitzgerald, Matthew C. Mahutga, David A. Smith. Computing Continuous Core/Periphery Structures For Social Relations Data. *Sociological Methodology*, submitted.

William Branch

Monetary-Fiscal Policy Interactions under Implementable Monetary Policy Rules (with Troy Davig and Bruce McGough). *Journal of Money, Credit, and Banking,* forthcoming.

Branch, W. 2007. Model Uncertainty and Endogenous Volatility. *Review of Economic Dynamics*, April, 10, 207-237.

David Brownstone

Review of Applied Choice Analysis, by D. A. Hensher, J. M. Rose, and W. H. Greene. *Journal of the American Statistical Association*, March, 2007.

Jan Brueckner

The Political Economy of Urban Transport-System Choice (with Harris Selod). 2006. *Journal of Public Economics*, 90, 983-1005.

Brueckner, J. (2006). Fiscal Federalism and Economic Growth. *Journal of Public Economics,* 90, 2107-2120.

Brueckner, J. (2006). Friendship Networks. *Journal of Regional Science,* 46, 847-865.

Workings of the Melting Pot: Social Networks and the Evolution of Population Attributes (with Oleg Smirnov*). Journal of Regional Science,* 47, 209-228, May 2007.

Urban Extremism (with Amihai Glazer). *Journal of Law, Economics and Organization,* forthcoming.

Airline Schedule Competition (with Ricardo Flores-Fillol). *Review of Industrial Organization*, forthcoming.

Institutions, Regulation, and the Evolution of European Air Transport (with Eric Pels), in Darin Lee, ed., *Advances in Airline Economics*, Vol. 2, Elsevier, forthcoming.

Mike Burton

J. A. Egan, M.L. Burton, and K. L. Nero. 2006. Building Lives with Food: Production, Circulation, and Consumption of Food in Yap. In Richard Wilk (Ed). Fast Food/Slow Food: The Economic Anthropology of the Global Food System, pp. 32-47, Altamira Press.

M. L. Burton, A. K. Romney, and C. C. Moore. 2007. The Use of Cross-Cultural Research Methodology in the Study of Deep History. In L. Grinin, V.C. de Munck, and A. Korotayev (Eds). History and Mathematics, pp. 149-163, Moscow: Volgograd Center for Social Research, Russian State University of the Humanities.

Rui de Figueiredo

R. J. P. de Figueiredo. A Nonlinear Functional Analytic Framework for Modeling and Processing Fuzzy Sets, in *"Forging New Frontiers: Fuzzy Pioneers I - Studies in Fuzziness and Soft Computing*" edited by M. Nikravesh, J. Kacprzyk and L. A. Zadeh, Springer, 2007, in press.

R. J. P. de Figueiredo. Processing Fuzzy Set Membership Functionals as Vectors. *Intnl. J. on Soft Computing* (Special Issue in Celebration of the 40th Anniversary of the Invention of Fuzzy Sets edited by M. Nikravesh, J. Kacprzyk and L. A. Zadeh), in press.

Lin Fang and R. J. P. de Figueiredo. Performance of OFDM-CDMA System with PAPR Reduction in Nonlinear Rayleigh Fading Channel. *Proc. of IEEE Military Communication Conference (MILCOM'06), Washington D.C., Oct. 23-25, 2006.*

Lin Fang and R. J.P.de Figueiredo. Utility-Based Energy-Efficient Power Control for Multi-Carrier DS/CDMA. *Proc .of Intnal. Symposium on Wireless Pervasive Computing (ISWPC'07*), San Juan, Puerto Rico, Feb. 5-7, 2007.

Lin Fang and R. J.P. de Figueiredo. Energy-Efficient Scheduling with Time Delays in Wireless Sensor Networks. *Proc. of IEEE International Conf. on Communications (ICC'07)*, Glasgow, Scotland, June 24, 2007.

Byung Moo Lee and R. J.P. de Figueiredo. Nonlinear and Decision-Oriented Signal Processing for OFDM-Based Wireless Communications. *Proc. of the IEEE Asia-Pacific Conference on Circuits and Systems (APCCAS-2006), Singapore*, December 4-7, 2006.

Katia Estabridis and R. J.P. de Figueiredo. Automatic Detection and Diagnosis of Diabetic Retinopathy in *Proc. of 2007 IEEE International Conf on Image Processing, (ICIP 2007) (in press)*, San Antonio, Texas, September 16-19, 2007, in press.

Jean-Claude Falmagne

J.-Cl. Falmagne, E. Cosyn, J.-P. Doignon, and N. Thiéry. The assessment of knowledge, in theory and in practice. In B. Ganter and L. Kwuida, eds., Formal Concept Analysis, 4th International Conference, ICFCA 2006, Dresden, Germany, February 13--17, 2006. Lecture Notes in Artificial Intelligence, pages 61--79. Springer-Verlag, Berlin, Heidelberg, and New York.

J.-Cl. Falmagne. 2006. Mathematical Psychology--A Perspective. *Journal of Mathematical Psychology*, 49:436-439.

C. Doble, J.-Cl. Falmagne, and B. Berg. 2006. Systematic covariation of the parameters in the near-miss to Weber's Law, pointing to a new law. *Journal of Mathematical Psychology*, 50:242-250.

J.-Cl. Falmagne. 2007. A set--theoretical outlook on the philosophy of science. *Journal of Mathematical Psychology*, 50:45—52. .

Review of Patrick Suppes, Representation and Invariance of Scientific Structures, in CSLI Publications, Stanford, 2007, ISBN 1-57586-333-2.

J.-Cl. Falmagne. 2007. Theoretical Note---A relativistic curiosity: Meaningful derivation of another contraction formula, submitted.

D. Eppstein, J.-Cl. Falmagne and S. Ovchinnikov. 2007. Media Theory. A monograph to be publisher by Springer.

J.-Cl. Falmagne, E. Cosyn, C. Doble, N. Thiéry and H.B. Uzun. 2007. Assessing mathematical knowledge in a learning space: validity and/or reliability, submitted.

D. Eppstein, J.-Cl. Falmagne and H. Uzun. 2007. On verifying and engineering the well-gradedness of a 'cup'-closed family. *Journal of Mathematical Psychology*, submitted.

Katherine Faust

Faust, Katherine. 2007. Very local structure in social networks. *Sociological Methodology* 2007, forthcoming.

Faust, Katherine and Miruna Petrescu-Prahova. 2007. Discussion on the meeting on Model-based clustering for social networks by Mark S. Handcock, Adrian E. Raftery, and Jeremy M. Tantrum. *Journal of the Royal Statistical Society,* 170 part 2: 336.

Entwisle, Barbara, Katherine Faust, Ronald R. Rindfuss, and Toshiko Kaneda. 2007. Networks and Contexts: Variation in the Structure of Social Ties." *American Journal of Sociology*, 112:1495-533.

Faust, Katherine. 2006. Comparing social networks: Size, density and local structure. M*etodološki Zvezki, Advances in Methodology and Statistics* 3(2):185-216.

Lin Freeman

Freeman, Linton C**.** 2006. Editing a Normal Science Journal in Social Science. *Bulletin deMethodologie Sociologique*, 91, 8-19.

Michele Garfinkel

Reprinted article: Global Threats and the Domestic Struggle for Power, in *The Economic Analysis of Terrorism*, edited by Tilman Brueck, London: Routledge, 2006.

Economics of Conflict: An Overview, In T. Sandler and K. Hartley (eds.), *Handbook of Defense Economics*, Vol. 2 chapter 22, with Stergios Skaperdas, Amsterdam: North Holland, 2007.

Economics of Governance: Special Issue in Honor of Herschel I. Grossman, guest editor, forthcoming.

Amihai Glazer

Bowler, Shaun and Amihai Glazer, eds. *The Impact of Direct Democracy*, Palgrave, forthcoming.

Glazer, Amihai and Anthony McGann. Direct democracy and the stability of policy. In Bowler, Shaun and Amihai Glazer, Eds. *The Impact of Direct Democracy*, Palgrave, forthcoming.

Cowen, Tyler and Amihai Glazer. (2007). Esteem and ignorance. *Journal of Economic Behavior and Organization* (Volume 63, Issue 3, July), pp. 373-383. (Lead article).

Dur, Robert and Amihai Glazer. (2008). Optimal contracts when a worker envies his boss. *Journal of Law, Economics, & Organization*, (Volume 24, No. 1), forthcoming.

Glazer, Amihai and Priya Ranjan. Trade protection to reduce redistribution. *European Journal of Political Economy*, forthcoming.

Brueckner, Jan and Amihai Glazer. Urban extremism. *Journal of Law, Economics, & Organization,* Volume 24, No. 2, Fall, forthcoming.

Glazer, Amihai and Hiroki Kondo. Migration in search of good government. *Regional Science and Urban Economics,* forthcoming.

Glazer, Amihai and Vesa Kanniainen. (2007). Short-term leaders should make long-term appointments. *International Tax and Public Finance,* Volume 14, Number 1/February, pp. 55-69.

Glazer, Amihai, Vesa Kanniainen, and Mikko Mustonen. (2006). When a loser gains: Free riding in the innovation of network goods. *Journal of Economics* (Volume 87, Number 1), pp. 55-71.

Bernard Grofman

Grofman, Bernard. 2006. Operationalizing the Section 5 Retrogression Standard of the Voting Rights Act in the Light of Georgia v. Ashcroft: Social Science Perspectives on Minority Influence, Opportunity and Control. *Election Law Journal* 5(3): 250-282.

Grofman, Bernard & Brunell, Thomas. 2006. Extending Section 5: Law and Politics. In David L. Epstein Rodolfo O. de la Garza, Sharyn O'Halloran and Richard H. Pildes (Eds). The Future of the Voting Rights Act. New York: Russell Sage Foundation, pp. 311-339.

Grofman, Bernard. 2006. The Impacts of Electoral Laws on Political Parties. In Weingast, Barry R. and Donald Wittman (eds) The Oxford Handbook of Political Economy. New York and London: Oxford University Press, 102-118.

Grofman, Bernard & Gary King. 2007. Partisan Symmetry and the Test for Gerrymandering Claims after *LULAC v. Perry*. *Election Law Journal*, 7(1):2-35.

Brunell, Thomas & Bernard Grofman. Evaluating the Impact of Redistricting on District Homogeneity, Political Competition, and Political Extremism in the U.S. House of Representatives, 1962-2002. In Levi, Margaret and James Johnson (Eds.), Mobilizing Democracy. New York: Russell Sage Foundation, forthcoming.

Godfrey, Joseph & Bernard Grofman. Pivotal Voting Theory: The 1993 Clinton Health Care Reform Proposal in the U.S. Congress. In Braham, Matthew (Ed. Festschrift for Manfred Holler (title tentative). SpringerVerlag, forthcoming.

Owen, Guillermo, Ines Lindner, Scott L. Feld, Bernard Grofman & Leonard Ray. 2006. A Simple 'Marker Value' Bargaining Model for Weighted Voting Games: Characterization and Limit Theorems. *International Journal of Game Theory,* 35:111-126.

Grofman, Bernard & Jon Fraenkel. Electoral Engineering, Social Cleavages and Democracy. In Nardulli, Peter Democracy in The Twenty-First Century II: Domestic Perspectives. Urbana-Champaign, IL: University of Illinois Press, forthcoming.

Grofman, Bernard. Toward a Science of Politics? *European Political Science*, forthcoming.

Feld, Scott L. & Bernard Grofman. 2007. The Laakso-Taagepera Index in a Means and Variance Framework. *Journal of Theoretical Politics* 19 (1): 101-106.

Masuoka, Natalie, Bernard Grofman & Scott L. Feld. 2007. The Political Science 400: A Twenty Year Update. PS: *Political Science & Politics* 40(1):133-145.

Masuoka, Natalie, Bernard Grofman & Scott L. Feld. Production and Placement of Ph.D.s: 1902-2000. PS: *Political Science & Politics* forthcoming

Masuoka, Natalie, Bernard Grofman & Scott L. Feld. Ranking Departments: A Comparison of Alternative Approaches. PS: Political Science & Politics, forthcoming.

Fraenkel, Jon & Bernard Grofman. The Merits of Neo-Downsian Modeling of the Alternative Vote: A Reply to Horowitz. *Public Choice*, forthcoming.

Fowler, James H., Bernard Grofman & Natalie Masuoka. Social Networks in Political Science: Hiring and Placement of PhDs, 1960-2002. *PS: Political Science & Politics,* forthcoming.

Donald Hoffman

Automotive lighting and human vision. Publisher: Springer Verlag. B. Woerdenweber, J. Wallaschek, P. Boyce, D. Hoffman.

D. Hoffman. A spoon is like a headache. In What is your dangerous idea? Today's leading thinkers on the unthinkable, John Brockman (Ed.), Free Press, UK, 2006, Harper Collins, US, 2007.

P. Hoberman & D. Hoffman. Malperceptions. Vectors: Journal of Culture and Technology in a Dynamic Vernacular, Volume 3. Online Only: http://www.vectorsjournal.net/.

D. Hoffman. Sensory experiences as cryptic symbols of a multi-modal user interface. Kunst und Kognition, in press.

Marek Kaminski

Kaminski, M. Gry Więzienne (expanded version of book Games Prisoners Play), Oficyna Naukowa 2006.

Kaminski, M. & Nalepa, M. 2006. Judging Transitional Justice: A New Criterion for Evaluating Truth Revelation Procedures. *Journal of Conflict Resolution*, vol. 50(3): 383-408.

Kaminski, M, Nalepa, M. & O'Neill, B. 2006. Strategic and Normative Aspects of Transitional Justice. *Journal of Conflict Resolution,* vol. 50(3):295-302.

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

Robin Keller

Tianjun Feng & L. Robin Keller. 2006. A Multiple-Objective Decision Analysis for Terrorism Protection: Potassium Iodide Distribution in Nuclear Incidents, *Decision Analysis,* 3 (2).

S. David Brazer & L. Robin Keller. 2006. A Conceptual Framework for Multiple Stakeholder Educational Decision Making. *International Journal of Education Policy and Leadership*, Volume 1, number 3, pages 1-14. Retrieved from http:/www.ijepl.org. (This is a new peer-reviewed electronic journal. The co-editors are at Simon Fraser University and George Mason University, http://journals.sfu.ca/ijepl/index.php/ijepl/about.)

S. David Brazer & L. Robin Keller. A design research approach to investigating educational decision making. In A. Kelly (Ed.), Handbook of design research in mathematics, science and technology education (tentative title). Mahwah, NJ: Lawrence Erlbaum Associates, in press.

Revised version of "An Educational Decision Making Conceptual Framework: Combining a Multiobjective Multistakeholder Model with Design-Based Research, final version, Spring 2005. (Accepted to be published in a handbook volume on design research in education edited by Anthony (Eamonn) Kelly following GMU-NSF Knowledge Design Meeting, Santa Fe, Jan. 2003).

Natalia Komarova

Komarova, N.L. and Wodarz, D. (2007). Stochastic modeling of cellular colonies with quiescence: an application to drug resistance in cancer. To appear in Theor. Popul. Bio.

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. Jour. of the Royal Society Interface, DOI 10.1098/rsif.2007.1054

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Igor Kopylov

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Michael Lee

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Vladimir Lefebvre

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R. Duncan Luce

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Ng, C.T., Luce, R.D., & Marley (2007). Utility of gambling when events are valued: An application of inset entropy, *Theory and Decision*, in press.

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Penelope Maddy

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Michael McBride

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Dale Poirier

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Kim Romney

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Donald Saari

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Brian Skyrms

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Kenneth Small

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George Sperling

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Ramesh Srinivasan

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Hal Stern

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conference proceedings), eds. R. Larsen, M. Nielsen, J. Sporring, Springer-Verlag: Heidelberg, pp. 217-224.

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Mark Steyvers

Steyvers, M., Griffiths, T.L., & Dennis, S. (2006). Probabilistic inference in human semantic memory. *Trends in Cognitive Sciences, 10(7), 327-334.*

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Chemudugunta, C., Smyth, P., & Steyvers, M. (2007). Modeling General and Specific Aspects of Documents with a Probabilistic Topic Model. In: *Advances in Neural Information Processing Systems, 19.* in press.

Steyvers, M. & Griffiths, T.L. Rational Analysis as a Link between Human Memory and Information Retrieval. In N. Chater and M Oaksford (Eds.) *The Probabilistic Mind: Prospects from Rational Models of Cognition*. Oxford University Press, in press.

Douglas White

Paperback edition, *Network Analysis and Ethnographic Problems: Process Models of a Turkish Nomad Clan*. Douglas R. White and Ulla C. Johansen. Lexington Press, 2006.

Standard Cross-Cultural Sample. *International Encyclopedia of the Social Sciences*, 2nd edition. Blackwell, 2007.

Douglas R. White, Laurent Tambayong, & Natasa Kejzar. Discovering City-Curve Oscillations: Historical Dynamics as a Reactive System for China, 900 CE to the Present. *Globalization as Evolutionary Process: Modeling, Simulating, and Forecasting Global Change.* George Modelski, Tessaleno Devezas, and William R. Thompson, eds. London: Routledge, in press.

Douglas R. White, Laurent Tambayong, & Natasa Kejzar, City-system dynamics in world history studied by change in city-size distributions. *Proceedings, ECCS 2007 European Conference on Complex Systems,* forthcoming.

Jörg Reichart & Douglas R. White. Role models for complex networks, *PNAS, 2007.*

Jack Xin

J. Nolen, J. Xin. (2007). Variational principle of KPP front speeds in temporally random shear flows with applications, Comm Math Phys, Vol. 269 (2007), pp 493-532.

J. Nolen, J. Xin. Variational principle and computation of front speeds in random flows, submitted.

J. Nolen, J. Xin. KPP front speeds in a one-dimensional random drift, submitted.

J. Liu, J. Xin, Y-Y Qi & F-G Zeng, A Time Domain Algorithm for Blind Separation of Convolutive Sound Mixtures and L1 Constrained Minimization, submitted.

Jack Yellott

J.I. Yellott & J.W. Yellott. (2007). Correcting spurious resolution in defocused images, in *Human Vision and Electronic Imaging XII,* B.E. Rogowitz, T. N. Pappas, S. J. Daly (Eds.), Proceedings of SPIE-IS&T Electronic Imaging, SPIE Vol. 6492, article number 6492O.

Hongkai Zhao

H. Zhao. (2007). Parallel Implementation of Fast Sweeping Method. *Journal of Computational Mathematics*, Vol. 25, No. 4, pp. 421-429.

J. Qian, Y. Zhang & H. Zhao. (2007). A Fast Sweeping Method for Static Convex Hamilton-Jacobi Equations. *Journal of Scientific Computing*, Vol. 31, No. 1/2, pp. 237-271.

E. Chung, J. Qian, G. Uhlmann & H. Zhao. (2007). A new phase space method for recovering index of refraction from travel time. *Inverse Problems*, Vol. 23, No. 1, pp. 309-329.

S. Hou, K. Solna & H. Zhao. A Direct Imaging Method Using Far Field Data. *Inverse Problem*, forthcoming.

Project Scientist

Kimberly Jameson

Jameson, K. A**.** (in press). Where in the World Color Survey is the support for the Hering Primaries as the basis for Color Categorization? Invited article In J. Cohen & M. Matthen (ed.s) *BookTitle*. The MIT Press.

Komarova, N. L., Jameson, K. A. & Narens, L. (2007). Evolutionary Models of Color Categorization based on Discrimination. *Journal of Mathematical Psychology.* In Press.

Jameson, K. A.**,** Bimler, D., Dedrick, D. & Roberson, D. (2006). Considering the Prevalence of the Stimulus Error in Color Naming Research. *Journal of Cognition & Culture, 7,* 119-142**.**

Jameson, K. A**.** (2006). Tetrachromatic Color Vision. Invited contribution to *The Oxford Companion to the Mind*, 2nd edition. Richard Gregory (Ed.). Oxford University Press. April 17, 2006. To appear in 2007.

APPENDIX C
IMBS TECHNICAL REPORTS, 2006-07

MBS 06-05
Carter T. Butts
Cycle Census Statistics for Exponential Random Graph Models

MBS 06-06
Carter T. Butts
A Relational Event Model for Social Action, with Application to the World Trade Center Disaster

MBS 06-07
Laurent Tambayong
Dynamics of Network Formation Processes in the Co-Author Model

MBS 06-08
Jean-Claude Falmagne, Sergei Ovchinnikov
Mediatic Graphs

MBS 06-09
Jeffrey A. Barrett
Numerical Simulations of the Lewis Signaling Game: Learning Strategies, Pooling Equilibria, and the Evolution of Grammar

MBS 06-10
Lingfang Ivy Li
Reputation, Trust, and Rebates: How Online Auction Markets Can Improve Their Feedback Mechanisms

MBS 07-01
Simon Huttegger, Brian Skyrms, Rory Smead, Kevin Zollman
Evolutionary Dynamics of Lewis Signaling Games: Signaling Systems vs. Partial Pooling

MBS 07-02
Simon Dennis, Michael D. Lee, Angela Kinnell
Bayesian Analysis of Recognition Memory: The Case of the List-Length Effect

MBS 07-03
Douglas. R. White, Laurent Tambayong, Natasa Kejzar
Oscillatory Dynamics of City-size Distributions in World Historical Systems

MBS 07-04
Douglas. R. White, Laurent Tambayong, Natasa Kejzar
City-system Dynamics in World History Studied by Change in City-size Distributions

APPENDIX D
COLLOQUIA AND CONFERENCES OF IMBS MEMBERS, 2006-07[2]

Pierre Baldi

Invited speaker:
University of Naples, Italy, October 06
University of Benevento, Italy, October 06
Iowa State University, March 2007.

Keynote speaker:
IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology, Hawaii, April 2007.
Italian Conference on Bioinformatics, Naples, Italy, April 2007.
Physical and Chemical Foundations of Bioinformatics Methods, Dresden, Germany, June 2007

William Batchelder

"Modeling Subject and Item Differences in Multinomial Processing Tree Models". Batchelder, W.H., and Smith, J.B. Paper read at International Meeting Of the Psychometrics Society. Montreal, Canada, June, 2006.

Discussion of Simon Jackman & Andrew Martin's Paper. Batchelder, W.H. Invited Paper read at the Conference on Bayesian Statistics and Social network Analysis, Old Dominion University, VG, October 2007.

"Cognitive Psychometrics: Combining Two Traditions". Batchelder, W.H. Invited Keynote Address at the Annual meeting of the Western Psychological Association, Vancouver, Canada, May 2007

John Boyd

"A Random Graph Approach in Structural Balance", with Akishige Kishida. Twenty-sixth Annual International Sunbelt Social Network Conference, Corfu. May 2007.

William Branch

Federal Reserve Bank of St. Louis, July 2007
Society for Computational Economics Annual Meeting, June 2007
Conference on Central Bank Communication and Optimal Monetary Policy, May 2007

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

Symposium on Non-linear Dynamics and Econometrics, March 2007.
Banque de France, March 2007.
Department of Economics, Oregon State University, November 2006.
Federal Reserve Bank of San Francisco, August 2006.
Federal Reserve Bank of Cleveland, September 2006.

Mike Braunstein

"Projected size and projected speed as indicators of change in motion path". Gillespie, S., Braunstein, M. L., & Andersen, G. J. Vision Sciences Society, Sarasota, FL, May, 2007.

"The position of objects relative to the horizon affects size-distance invariance". Ozkan, K., & Braunstein, M. L. (May, 2007. Vision Sciences Society, Sarasota, FL.

David Brownstone

"The Impacts of Allowing Hybrid Vehicles and Solo Toll-Paying Vehicles in Existing High-Occupancy Vehicle Lanes", (with W. Recker and C. Breiland). Presented at International Association of Travel Behavior Modelers, Kyoto, Japan, August 2006.

"Lessons from Southern California Congestion Pricing Experiments". Presented at the International Conference on Design and Public Policy: Markets for Congestion and Carbon Trading. University of Essex, UK, January 2007.

"What's Wrong with Traffic Congestion". Social Science Dinner Club, UCI, March 2007.

Panelist, "Energy Policy in Society." Beckman Center, UCI, April 2007.

Jan Brueckner

World Bank, May 2007.
Lincoln Institute of Land Policy, Cambridge, May 2007.
University of Pennsylvania, April 2007.
Carnegie-Mellon University, April 2007.
International Industrial Organization Conference, Savannah, April 2007.
MITRE Corporation, McLean Virginia, December 2006.
World Bank, December 2006.
Regional Science Association International Meetings, Toronto, November 2006.
Tulane University, November 2006.
IFIR-CESifo Conference on New Directions in Fiscal Federalism, Lexington, KY, September 2006.
University of Turin, July 2006.

Mike Burton

"Transfers of Food to Households in Kosrae". M. L. Burton and K. L. Nero. Presented at meetings of the American Anthropological Association, San Jose, November 2006. Also presented at meetings of the Association for the Social Anthropology of Oceania, Charlottesville, February 2007.

"The Use of Cross-Cultural Research Methodology in the Study of Deep History". M. L. Burton, A. K. Romney, and C. C. Moore. Presented at Conference on Mathematics and History, Russian State University for the Humanities, Moscow, December 2006.

Rui de Figueiredo

"A Game-Theoretic Approach to Utility-Based Power Control in Multi-Carrier Systems", IEEE Consumer Communications & Networking Conference, Las Vegas, January 2007.

Jean-Claude Falmagne

"Mediatic Graphs". Invited talk, Dimacs Workshop in the honor of Peter Fishburn Polyhedral Combinatorics of Random Utility, May 22006.

"Assessing Mathematical Knowledge in a learning space: reliability and/or validity". Invited talk,
37th European Mathematical Psychology Group meeting, held in Brest, France, September 2006.

"Assessing Mathematical Knowledge in a Learning Space: Reliability and/or Validity". Invited talk, Symposium on: On-demand learning-embedded benchmark assessment using classroom-accessible technology. National Council of Measurement in Education, Chicago, April 2007.

"Assessing Mathematical Knowledge in a Learning Space: Reliability and/or Validity". Invited talk, University of Illinois-Champain, Dept. of Psychology, April 2007.

"Media Theory and Learning Spaces". Invited talk, University of Illinois-Champain, Dept. of Mathematics, April 2007.

"On meaningful scientific laws on bounded domains, with an application to the Size-Weight Illusion data of Norman Anderson". Invited talk, University of Padua, Dept. of General Psychology, Research Conference: Application of Functional Measurement in Psychology, May 2007.

Michelle Garfinkel

"Globalization and domestic conflict". Economics Department at the University of Quebec at Montreal.

Bernard Grofman

"Voting Rights: Haven't they Already Overcome?" Invited panellist, Voting Rights Conference, Duke University, Durham NC, April 2006.

"Workshop on Danish Local Elections". Invited panellist, Voting Rights Conference Department of Government, University of Aarhus, Sandberg, Denmark, August 2006.

"Modeling Law Locally". Invited discussant, New York University School of Law, Center for Law Economics and Organization, October 2006.

"Predicting French Presidential Elections". Invited scholar-in-residence at the Institute for Globalization and Economic Research (IRGEI) at the University of Paris, II. Delivered a series of talks on electoral systems and models of party competition to economics Ph.D. students associated with IRGEI, and served as a discussant at an IRGEI Conference. May-June 2007.

Invited discussant, Conference on French presidential elections. Delivered a conference paper (on French legislative elections), organized by the Election Analysis Group of the French Political Science Association (in conjunction with CEVIPOF at Sciences-Po), May 2007.

Political Science Department, Rice University, Houston, TX, 2006.

Joint colloquium, Center for the Study of Democratic Politics/Laboratory for Experimental Social Science. Princeton University, Princeton, NJ, 2006.

Donald Hoffman

"Human Vision and the Physical World". Paderborn University--Hella LLAB Summerschool, Germany, 2006.

"Physics From Consciousness". IMBS, UC Irvine, 2006.

"Niche, User Interface, and Interstellar Communication". American Anthropological Association, San Jose, 2006.

"Would ETI Understand Our Pictures?" SETI Institute, Mountain View, CA, 2006.

"Vision and the World". Perception of Perception Conference, Exposition Park, USC, 2007.

"Visual Intelligence". Perception of Perception Conference, Velaslavasay Panorama, USC, 2007.

"The User-Interface Theory of Perception". Humanitech Conference on Text & Image, UCI, 2007.

"Conscious Realism. Philosophy & Science Quarterly Lecture Series, UCI, 2007.

"Conscious Realism". News 21, Annenberg School for Communication, USC, 2007.

"Interstellar Communication". Society for Psychological Anthropology, Manhattan Beach, CA, 2007.

"Perception as a User Interface". Visualization in Scientific Practice Conf., University of Toronto, 2007.

"Enhanced EBF Networks for ARPDD". Office of Naval Research, Arlington, VA, 2007.

"Vision and Perception". UCI Eye Institute 2nd Annual Collaboration Colloquium, 2007

"Perception and Consciousness". Psychology Students Association, UCI, 2007.

Tarow Indow

Presented my research of over a half century, at a special meeting of the Japanese Psychological Association for receiving International Award for Distinguished Research, October 2006.

Marek Kaminski

"Games Prisoners Play". Harenda Club, Poland, (press conference), December 2006.

APS University, Warsaw, October 4, 2006.

Institute of Sociology, Lódź University, Poland, October 2006.

Robin Keller

"Preference Functions for Decisions with Geographically-Varying Attributes". L. Robin Keller (presenter) and Craig Kirkwood, Arizona State Univ. 1) Merage School at UCI Brown Bag presentation, April 19, 2007, 2) INFORMS International Conference, Puerto Rico, July 2007, Invited presentation in session organized by Keller.

"Geographically-Oriented Preference Functions". Craig Kirkwood, Arizona State University (presenter) and L. Robin Keller. INFORMS conference, Pittsburgh, November 2006. Invited presentation in session organized by Keller.

Natalia Komarova

Plenary talk, the 2007 SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, Spring 2007.

University of Arizona, Applied Math Colloquium, spring 2007.

Conference on evolution of punishment, IMBS, Irvine, winter 2007.

Working Group Meeting on Computational Tumor Modeling, Center for the Development of a Virtual Tumor and DIMACS, Rutgers, NJ, Summer 2006.

Igor Kopylov

"A Parametric Model of Ambiguity Hedging". Invited talk at the Theory seminar, UC San Diego, Nov, 2005. Also presented at Uncertainty and Decisions Conference, Paris, June 2006.

Michael Lee

"Decision-making on an optimal stopping problem". Colloquium Department of Cognitive Sciences, UCI, September 2006.

"A Bayesian approach to diffusion models". Spot-light presentation, Neural Information Processing Systems Conference, Vancouver, Canada, December 2006.

"A hierarchical Bayesian model of category representation". Invited talk, Australian Defence Science and Technology Organisation, Adelaide, Australia, December 2006.

"Some new light through old Bayesian windows". Colloquium, Institute for Mathematical and Behavioral Sciences, UCI, January 2007.

"Three case studies in the Bayesian analysis of cognitive models". Colloquium, Department of Psychology, KU Leuven (Belgium), March 2007.

Vladimir Lefebvre

"Gangs, Graphs, and Polynomials". Descartes Conference on Mathematical Models in Counterterrorism, Center for Advanced Defense Studies, Washington, D.C., September 2006.

"The Processes of Self-Organization and Ethical Systems". International Forum: Projects of the Future. Interdisciplinary Approach, the Institute of Philosophy, Russian Academy of Sciences, Moscow, October 2006.

"Reflexive Analysis in Groups". Operation Research and the Management Sciences Conference, Pittsburgh, PA, November 2006.

R. Duncan Luce

"What we know and don't know about psychophysical and weighting functions in a global psychophysical theory of intensity". European Mathematical Psychology Meeting, Brest, France, September 2006

"Mathematical approaches to behavioral measurement". Department of Mathematics, University of Waterloo, Canada, June 2007.

Penelope Maddy

"Defending the axioms". Irvine/Florence Conference, Irvine, March 2007; Harvard University, April 2007.

"What does science tell us about how to do mathematics"? Ambrose/Tymoczko Lecture, Smith College, February 2007.

"A package tour of the philosophy of mathematics". Gauss Lecture, University of Dresden, October 2006.

Michael McBride

Speaker, University of California, Riverside 2007.

Speaker, California State University, Fullerton 2006.

Presenter, Association for the Study of Religion, Economics, and Culture, at SSSR Meetings 2006.

Presenter, Association for the Study of Religion, Economics, and Culture, at WEAI Meetings 2006.

Participant, DARPA-STO Conference on Massively Multi-player Online Games 2007.

"Can Money Buy You Happiness?" Invited speaker Academic & Professional Women of UC Irvine. April 2007.

Andrew Noymer

"Causal relations and age, period, cohort analysis: testability and the case for parsimony". Conference on Causal Analysis in Population Studies: Concepts, Methods, Applications, Vienna Institute of Demography, Session 2, December 2006.

"Who dies in flu pandemics? Lessons from the 1918 Spanish influenza". Invited speaker, Computational & Theoretical Biology Symposium, Rice University. Houston, December 2006.

"Tuberculosis in the Union Army during the Civil War". California Center for Population Research, UCLA, January 2007.

"Down under, up over: Comparative trends of infectious disease in Australia and the United States in the twentieth century". Invited speaker, Stanford University/Applied Biosystems Symposium on Demography and Infectious Disease: Integrating Multiple Levels of Biological and Social Organization. Palo Alto CA, February 2007.

"Mortality selection: The 1918 influenza pandemic's role in the decline of tuberculosis in the US". Department of Mathematical Sciences/Center for Applied Mathematics and Statistics, New Jersey Institute of Technology. 28 March 2007. Institute for Mathematical Behavioral Sciences, UC Irvine, April 2007.

Dale Poirier

Discussion of 'Smoothly Mixing Regressions' by John Geweke and Michael Keene, Sveriges Riksbank, Stockholm, Sweden, September 2006.

"A Lakatosian Perspective on Development of Theories of Decision Making Under Risk". Department of Economics, University of California, Irvine, October 2006.

International Workshop on Applied Bayesian Statistics and Econometrics, Tohoku University, Sendai, Japan, October 2006.

Department of Economics, Louisiana State University, Baton Rouge, Louisiana, November 2006.

Department of Economics, University of Southern California, November 2006.

Federal Reserve Bank of Atlanta, Atlanta, Georgia, November 2006.

Department of Economics, University of Central Florida, Orlando, Florida, February 2007.

Donald Saari

"So many voting paradoxes! Why do they occur?" Plenary talk, Condorcet Lecture, Social Choice & Welfare, Istanbul, Turkey/July 2006,

"Using mathematics to explain surprises in voting theory".
DIMACS/LAMSADE Workshop on Voting Theory, Université de Paris, Oct. 2006, 1.5 hr main talk.

"The source of problems in voting and social choice". Centre d'Analyse et Mathematique Sociales, Ecole des hautes etudes en sciences socials, (EHESS), Mathematics of Voting, Paris, April 2007.

"Finessing the core". Economics, Université de Caen, France, October 2006.

"Qualitative approach toward the dynamics of the social sciences". Centre d'Analyse et Mathematique Sociales, EHESS, Paris, April 2007,

"Ellipses and Circles? To understand voting problems?" Plenary talk; Pi Mu Epsilon Sutherland Frame Lecture. Panel presentation, "The excitement of mathematical social and behavioral sciences". Mathfest, MAA annual meeting, Knoxville, TN, August 2006,

"Mathematics of Voting". Regional meeting, American Math Society, Fayetteville, AK, Nov. 2006, Plenary talk,

"Mathematics and Geometry of Voting", (four hours). Minicourse, MAA National meeting, New Orleans, LA, Jan. 2007,

"Mathematics of Voting". Keynote talk, California Mathematics Council; Community Colleges, Lake Tahoe, April 2007.

"Why are there so many problems with voting rules?", and "A qualitative approach toward evolutionary game theory". Social Software: Formal Methods in the Social and Political Sciences. CUNY Graduate Center NYC, May 2007.

"Explaining all those voting paradoxes", Mathematics, Claremont College, September 2006.

"Why election outcomes can be so chaotic". Osher Lifelong Learning Institute, Irvine, CA, October 2006.

"Why economics and political science are so difficult".
Political Science and Economics, SUNY at Binghamton, October 2006.

Economics, USC, February 2007, "Qualitative evolutionary game theory and economics".

"We vote, but do we elect whom we really want?". University of North Carolina, Ashville, March 2007. Parson Lecture (university lecture).

"The evolution of Newton's universe", and "Qualitative approach toward evolutionary game theory?", and "Symmetry structure of voting". Mathematics, University of North Carolina, Ashville, March 2007.

"Mathematics of voting rules". Mathematics, CSU Fresno, April 2007.

"Mathematics is everywhere!" Mathematics, Northwestern University, May 2007.

Stergios Skaperdas

"Economics and Conflict: The Dark Side of Self-Interest and its Governance as Economic Activities". Catholic University of Bolivia, La Paz, Bolivia, July 2006.

"Socio-political Conflict and Economic Performance in Bolivia". Workshop on Bolivia's economic growth, Institute for Economic Development at Harvard University, Kennedy School of Government, November 2006.

"Persuasion as a Contest". Session on "Transparency, American Economic Association meetings, Chicago, IL, January 2007.

"Economics and Conflict: The Dark Side of Self-Interest and its Governance as Economic Activities". Development Economics Workshop, UC Berkeley, February 2007.

"Socio-political Conflict and Economic Performance in Bolivia". Conference on Conflict, co-organized by CSCW, PRIO, and Department of Economics at NYU, New York City, February 2007.

"Socio-political Conflict and Economic Performance in Bolivia". CGPACS faculty expert series, UCI, May 2007.

Brian Skyrms

Presidential Address, Philosophy of Science Association, Nov. 2006.

American Philosophical Association Meetings, April 2007.

Kenneth Small

"Reducing Congestion through Variable (or Differentiated) Pricing". Workshop on Using Payment Innovations to Improve Transportation Networks, Federal Reserve Bank of Chicago, June 2007.

"Urban Transportation Policy: A Guide and Road Map". Wharton Impact Conference on Unraveling the Urban Enigma: City Prospects, City Policies, Wharton School, University of Pennsylvania, May 2007.

Public Transport Forum, Institute of Transport Economics, Oslo, Norway, March 2007.

"The Future of Congestion Pricing". First International Conference on Funding Transportation Infrastructure, Banff, Alberta, August 2-3, 2006.

"Transport Economics: Impacts on Research and Policy". Keynote speaker, Workshop on Transportation and Sustainable Cities, University of Chile, August, 2006.

Roundtable on Privatization and Regulation of Urban Transit Systems (panelist). European Conference of Ministers of Transport, Paris, Nov. 2006.

Regional Science Association International, North American annual meeting, Toronto, November 2006.

Oslo Workshop on Valuation Methods in Transport Planning, Institute of Transport Economics, Oslo, March 2007.

George Sperling

"A Neurally-Plausible Mathematical Theory of How the Two Eyes Combine Information and some Supporting Evidence". Talk presented by George Sperling, Annual Summer Interdisciplinary Conference, Andalsnes, Norway, July 2006.

"Two distinct attentional mechanisms revealed by the third-order motion paradigm". Tseng, C-H, and Sperling, G. Talk presented by Chia-huei Tseng. XXIX European Conference on Visual Perception, Saint Petersburg, Russia, August 2006.

"How the two eyes combine information: A Neurally-Plausible Mathematical Theory and some Supporting Evidence". Sperling, G. and Ding, J. Talk presented by G. Sperling Twelfth Annual Meeting of the Cognitive Science Association for Interdisciplinary Learning, Hood River Hotel, Hood River, Oregon, August 2006.

"A Functional Architecture for Visual Attention: Application to Spatial Attention". Conference on Sino-Western Exchanges in Cognitive Neuroscience, Beijing Normal University, Beijing, China, October 2006.

"A Functional Architecture for Visual Attention". Thirty-Second Annual Interdisciplinary Conference, Jackson, Wyoming, February 2007.

"A Functional Architecture for Visual Attention". Second International Workshop on Visual Attention Buenos Aires, Argentina, March 2007.

"How the Brain Computes Visual Motion". Institute of Cognitive Science, National Cheng-kung University, Tainan City, R.O.C. Colloquium, October 2006.

"The functional architecture of visual attention". Department of Psychology, National Taiwan University, Taipei, R.O.C. Colloquium. October 2006.

Ramesh Srinivasan

"Spatial filters and head models for co-registration of EEG/MEG with MRI". Biomag 2006, Vancouver, Canada, December 2006.

"From brain networks to brain resonances: spatial scales of functional networks in EEG and MEG". Satellite Symposium of the Society for Neuroscience Atlanta, on Multivariate Analysis Methods in Neuroscience, November 2006.

Hal Stern

"On Model Selection in Variance Components Models". Invited Talk at Joint Statistical Meetings, Seattle, WA, August 2006.

"Assessment of Ancestry Probabilities in the Presence of Genotyping Errors". Department of Biostatistics, University of California, San Diego, CA, May 2007.

Mark Steyvers

University of Rochester. Department of Brain and Cognitive Sciences. Colloquium, 2006.

Beijing Normal University, China. State Key Laboratory of Cognitive Neuroscience and Learning. Seminar, 2006.

"The probabilistic mind: Prospects for rational models of cognition". Gatsby Computational Neuroscience Unit, London, UK. Symposium, 2006.
Workshop on dynamics of information processing. Birckbeck College, London, UK, 2006.

Douglas White

"Urban and ecosystem dynamics: past, present, future". Workshop on aspects of Social and Socio-Environmental Dynamics. School of Human Evolution and Social Change. January 2007.

Workshop Tutorial in public domain instructional and research materials for Cross-Cultural Research and data distribution for the Standard Cross-Cultural Sample. Society for Anthropological Sciences Meeting, San Antonio, TX, February 2007.

"The Social Circles (Feedback) Generative Network Model and Its MLE". The UCI Network Research Group Meeting. UC Irvine. March 2007.

Agenda-setting Workshop to explore Anthropological Applications and Development of e-Science/CyberInfrastructure. University of Kent at Canterbury. NSF/ESRC Sponsored Special Activity. Centre for Social Anthropology and Computing at the University of Kent at Canterbury (UK). Participating through videolink. June 2007.

"Rethinking Social Complexity and Resilience: Human Survival and Complex Network Dynamics at Continental Scales". 4 Campus UC Videoconference on Human Social Complexity, April 2007.

"Depth Partitions and Hierarchical Network Structure in a Tokyo Industrial District". Tom Nakano and Doug White. Joint Statistical Meetings. Invited Lecture, Seattle, Washington, August 2007.

"Eurasian city system dynamics in the last millennium". Society for Cross-Cultural Research Symposium: Historical Dynamics in Cross-Cultural Perspective. Volgograd Center for Social Research, Volgograd. San Antonio, TX, February 2007.

"Dynamics of City System Rise and Fall: Mid-Asia, China, and Europe over 25 periods in the last millennium of globalization". Conference on Economic Networks, Columbia University, Sociology Department and the Institute for Social and Economic Research and Policy. March 2007.

"The Large-Scale Strategic Network of a Tokyo Industrial District: Small-World, Scale-Free, or Depth Hierarchy?". Tsutomu (Tom) Nakano and Douglas R. White. Complex Systems Session

organized by John Padgett. American Sociological Association's 101st Annual Meeting, Montreal, August 2006.

"Power-Law and 'Elite Club' in a Complex Supplier-Buyer Network: Flexible Specialization or Dual Economy?". Tsutomu (Tom) Nakano and Douglas R. White. Social Networks Session, American Sociological Association's 101st Annual Meeting, Montreal, August 2006.

"The Indigenous Australian Marriage Paradox: Small-World Dynamics on a Continental Scale". Douglas R. White and Woodrow W. Denham. Session on Formalization as a Tool for Empirical Research: What it Buys us and What it Doesn't. Society for Anthropological Sciences Meeting, San Antonio, TX, February 2007.

Jack Yellott

"Correcting spurious resolution in defocused images". J.I. Yellott & J.W. Yellott. IS&T/SPIE Annual Symposium on Electronic Imaging, San Jose CA, January 2007 and at IMBS April 2007.

Jack Xin

Applied Math Seminar, Institute of Computation, Acad. Sinica, Beijing, July 2006.

International Conference on Differential Equations and Modeling, Ji Lin Univ, Changchun, China, July 2006.

International Workshop on Scientific Computation, Tsinghua University, Beijing, China, July 2006.

Applied Math Colloquium, University of Arizona, December 2006.

Mathematics Colloquium, University of Utah, March 2007.

Mathematics Colloquium, Cal State Fullerton, April 2007.

Workshop on Auditory Systems, Math Biology Institute, Ohio State University, June 2007.

Hongkai Zhao

"Applied Inverse Problems", Vancouver, Canada, June 2007 and Banff, Canada, July 2006.

"Evolution of Interfaces and Applications", France, May 2007.

Clifford Lecture, Tulane University, March 2007.

"Numerical Methods for Degenerate Elliptic Equations and Applications", Banff, Canada, December 2006.

Applied Mathematics Seminar, University of Southern California, March 2007.

Applied Mathematics Seminar, Courant Institute, March 2007.

Applied Mathematics Seminar, State University of New York, Stony Brook, March 2007.

Applied Mathematics Seminar, Columbia University, March 2007.

Applied Mathematics Colloquium, Caltech, February 2007.

Applied Mathematics Seminar, UC Merced, February 2007.

Project Scientist

Kimberly Jameson

"Evolutionary Models of Color Categorization based on Discrimination". Invited Presentation. Komarova, N. L., Jameson, K. A., Narens, L., & R. Steingrimsson. UCLA Marschak Colloquium & UCI Human Sciences and Social Complexity Colloquium. Video Stream interaction with UCI, UCSD, UCR, UCSB and UCLA. (Jointly presented by Jameson & Komarova), May 2007.

"What is the role of computer modeling and evolutionary game theory in cross-cultural color categorization research?". Presented at Invited Panel: "A Discussion of New Interdisciplinary Research on Color Naming and Categorization Within and Across Ethnolinguistic Groups." At The biennial meeting of the Society for Psychological Anthropology, Manhattan Beach, CA, May 2007.

"Color Processing Universals and the Construction of Deep Time Messages". Jameson, K. A. & Lomberg, J. Invited Presentation at The biennial meeting of the Society for Psychological Anthropology. Manhattan Beach, CA, May 2007.

"Simulating Color Category Evolution". Jameson, K. A., Komarova, N. L. & Narens, L. Presentation at the annual meeting of the Society for Mathematical Psychology. Vancouver, B.C., July 2006.

APPENDIX E
FACULTY AWARDS/ACHIEVEMENTS, 2006-07

Pierre Baldi

2007 Fellow Association Advancement Artificial Intelligence (AAAI)

William Batchelder

I was invited 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.

I was an invited keynote speaker at the Western Psychological Association Annual Meeting in May 2007.

Rui de Figueiredo

Chair, Advisory Board, IEEE Circuits and systems Magazine.

Member, Editorial Boards, *Circuits, Systems, and Signal Processing* and *Neurocomputing.*

Member, IEEE-USA Technology Policy Council (Washington, DC- based IEEE Think-Tank on issues under consideration by the executive and congressional branches of Federal Govt.).

Chair, by special invitation, of the Panel on *Electrical Engineering: Electronics and Computers* of the "Fundacao para a Ciencia e a Tecnologia", Portugal (a Portuguese foundation equivalent to the US National Science Foundation).

By special invitation, giving a Plenary Lecture at the 2007 WSEAS ECC (European Conference on Computers See: http://www.iaras.org/ecc2007.

Jean-Claude Falmagne

Member of the advisory board of the Journal of Mathematical Psychology.

Lin Freeman

Recipient, the James S. Coleman Distinguished Career Award in Mathematical Sociology, Mathematical Sociology Section, American Sociological Association.

Michelle Garfinkel

Asked to serve on the editorial board of the *Journal of Conflict Resolution.*

Also serve on editorial boards of:
Journal of Money, Credit, and Banking
Journal of Macroeconomics
Journal of Economics and Business
Defence and Economics
European Journal of Political Economy

Amihai Glazer

The Politics of Earmarking, presented at conference on Pricing, Financing, and Investment in Transport, Tuusula, Finland, July 2006.

Urban Extremism, presented at the Japan-Berkeley Symposium on Local Public Economics, UC Berkeley, February 2007.

Bernard Grofman

Scholar-in-Residence, New York University School of Law, Sept.-Dec. 2006.

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

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

Scholar-in-Residence, Laboratory for Political Economy, University Paris II (Pantheon), France April-June 2007.

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

Donald Hoffman

Who's Who Among America's Teachers.

Tarow Indow

International Award for Distinguished Research from the Japanese Psychological Association.

Marek Kaminski

Media coverage 2006/7 (book "Games Prisoners Play"; in Polish, except noted otherwise):
Radio interviews: Radio S-ka Wroclaw 06/21/2007
Radio Lodz 06/27/2007

Newspaper and magazine interviews: Forum Penitencjarne, Gazeta Wyborcza Lodz 06/27/2007; Dziennik Lodzki 06/27/2007; Focus (by Joanna Nikodemska, forthcoming); Dziennik (by Radek Gruca, forthcoming); 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, Punishment and Society, (English).

Robin Keller

Kimball Medal Recipient for 2006, presented at Pittsburgh INFORMS conference, for distinguished service contributions to Operations Research and the Management Sciences.

Associate Dean, Full-Time MBA Program, Merage School of Business at UCI.

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

National Academy of Sciences, U. S. National Committee for the International Institute for Applied Systems Analysis (IIASA), appointed as member by President of NAS, January 2007-December 2009.

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

Natalia Komarova

Distinguished Assistant Professor Award for Research, awarded by the Academic Senate, UCI.

Plenary talk, the 2007 SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah.

An interview for the radio station "Voice of America", summer 2007.

An interview for the local radio station KUCI, summer 2007.

Biomedical Computation Review 16, Spring 2007, ``Modeling Cancer Biology'' by Kristin Kobb, Spring 2007.

Vladimir Lefebvre

Honoring Conference: Descartes Conference on Mathematical Models in Counterterrorism, Washington, D.C., 2006.

Decartes Medal in Cognitive Studies - Award for lifetime achievement in Mathematical Psychology, Center for the Advanced Defense Studies, Washington, D.C., 2006.

Duncan Luce

UCI Alumni Association, Extraordinarius Award, May 11, 2007

Honorary Doctorate of Mathematics, University of Waterloo, June 15, 2007.

Penelope Maddy

Elected president of the Association for Symbolic Logic.

Michael McBride

Mentioned in article, Los Angeles Times, Column One Article, Stuart Silverstein, Happy? Let's Sum It Up, 3 July 2006. Article also appears in the Houston Chronicle, 10 July 2006.

Andrew Noymer

UCI Social Sciences Assistant Professor Research Award.

Donald Saari

Laureate, Theta Tau (Professional Engineering Fraternity), National Hall of Fame.

Center of Excellence site evaluator for Academy of Finland; Center on Public Choice at University of Turku, Turku Finland, Sept. 2006.

Chair, evaluation committee of IIASA's program on "Population and Society" Laxenburg, Austria, Jan. 2007.

US representative: ICSU committee on dues and voting rights, Paris, October, 2006.

Ken Small

Faculty Achievement Award, Lauds & Laurels, UC Irvine, May 2007.
Fellow, Regional Science Association International, Nov. 2006.
Edward Elgar *Who's Who in Economics* (continuing)
Marquis *Who's Who in Finance and Industry* (continuing)
Marquis *Who's Who in Science and Engineering* (continuing)
Marquis *Who's Who in America* (continuing)
Marquis *Who's Who in the World* (continuing)

Advisory Boards
GRACE project (Generalisation of Research on Accounts and Cost Estimation), funded by European Union through Univ. of Leeds, 2005-

Mobility Project, Reason Foundation, 2005-
Program Committee, 11th World Conference on Transport Research (Berkeley, Calif., June 2007)

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. July 28 – July 29, 2007, University of California, Irvine.

Hal Stern

Teaching Excellence Award (Bren School of ICS), Teaching, Learning and Technology Center, UCI, 2007.

Chair, National Academy of Sciences Panel on ACS Use for NSF Survey of College Graduates.

Associate Editor, Bayesian Analysis.

Douglas White

Invitational funding to meet with the German Young Academy in convening leading world research contributors to "Comparative Methods and Interdependence," the problems that the interdependence of cases poses for the comparative method. Meetings set for June 30th, 2007 in Gottingen.

Visiting Professor 2-week invitational funding, Columbia University, Sociology Department and the Institute for Social and Economic Research and Policy. April, 2007.

Project Scientist

Kimberly Jameson

Symposium Organizer and Chair and Discussion Panel Organizer and Convener. International Symposium on the multidisciplinary study of color categorization and cognition. Manhattan Beach, CA., U.S.A.

Ad Hoc Reviewer for: *Cross-Cultural Research, Journal of Cognition and Culture, COLOR Research and Application.*

Organized and administer a new IMBS critical science reading group (weekly meetings): *Cognition and Color Reading Group*. (See http://aris.ss.uci.edu/~kjameson/ColorCog.html).

Organized and participate in an IMBS research group: UCI Color Evolution Laboratory (including participating faculty and researchers from IMBS, Mathematics, and Cognitive Sciences departments) conducting on-going scientific research on color category learning and

development using evolutionary game theoretic modeling in simulated agent populations. Spring 2006-present.

Public Service. The Environmental Quality Affairs Committee, Newport Beach City Council, Appointed Member (Fall 2006 - present).

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
*	Amer Aladhad	Saari
	Christopher Balding	Grofman
**	Anna Bargagliotti *(now Asst. Prof. at Memphis State)*	Saari
*	Jerry Benzl	Kaminski
*	James Bono	Saari
*	Dan Cavagnaro *(now a Post Doc at U. of Illinois)*	Falmagne
	Steve Doubleday	White
	Stephanie Drew	Sperling
	Amy Escobar	Hoffman
*	Hao "Audrey" Fang	Brownstone
*	Iris Franz	McBride
**	Raquel Girvin *(now Director of the Noise Div., FAA)*	Brueckner
	Shaw Gillespie	Braunstein
	Assal Habibia	Hoffman
	Arvin Hsu	Sperling
	Jason Hsu	Kaminski
*	Hao Jia	Skaperdas
*	Rolf Johansson	Narens
*	Steven Kies	Chubb
	Rueben Kline	Grofman
*	Vimal Kumar	Garfinkel/Skaperdas
*	Julie Kwak	Hoffman
	Frederico Llarena	de Figueiredo
**	Lingfang Li *(now Asst. Prof. at U. of Louisville)*	Saari
**	Byung-Moo Lee	de Figueiredo
	Ling Lin	Sperling
*	Shiau Hua Lin	Dosher
	Kate Longo	Komarova
	Son-Hee Lyu	Sperling
*	Matthew Mahutga	Boyd
	Ray Mendoza	Komarova
	Yan Mu	Small
*	Chen Ng	Small
	Kerem Ozkan	Braunstein
	Brendan Purdy	Batchelder
	John Pyles	Hoffman
	Ian Schofield	Sperling
	Jay Simon	Keller
	Rory Smead	Skyrms
*	Kejun Song	Small
	Carolina Soto	de Figueiredo
*	Alex Strashny	Batchelder
*	Jared Smith	Batchelder

*	Laurent Tambayong	White
	Hisaaki Tabuchi	Sperling
	Samuel Thorpe	Srinivasan
	Bao Truong	Hoffman
	Yogesh Uppal	Grofman
	Elliott Wagner	Skyrms
	Mike Yi	Steyvers
*	Kevin Zollman	Skyrms
	Matthew Zeigenfuse	Lee

(ii) MA Degrees in Mathematical Behavioral Science during academic 2006-07

Jerry Benzl
Jared Smith

APPENDIX G
VISITORS' LETTERS

X-From_: slevin@eno.Princeton.EDU Thu Feb 22 23:26:18 2007
Date: Thu, 22 Feb 2007 18:31:13 -0800
To: "Donald G. Saari" <dsaari@uci.edu>
From: Simon Levin <slevin@eno.Princeton.EDU>
Subject: Thanks
X-Greylist: Sender DNS name whitelisted, not delayed by milter-greylist-2.0.2 (mx2.service.uci.edu [128.200.59.180]); Thu, 22 Feb 2007 23:25:41 -0800 (PST)
X-UCIRVINE-MailScanner: No viruses found
X-NACS_ES-MailScanner: No viruses found

Don:

Thanks again to you and Lillian, to Janet and to the Provost, and to all for your wonderful hospitality. IMBS is a great institution.

I am glad to say that I kept busy, across the campus, lecturing twice to Math, once in the IMBS colloquium and once in the IMBS workshop, and once (for 3 hours!) to the Skyrms-Narens-Saari course (which I attended fairly regularly). Had a chance to spend some quality time with various students; with Francisco Ayala, Mike Clegg, Walter Fitch and Dominic Wodarz in EEB; Fred Wan and Qing Nie in Math, as well as Natalia Komarova (with whom I began a collaboration); Brian, Lou, Kimberly Jameson, Duncan Luce, Doug White, Kimball Romney and Andrew Noymer in IMBS; Dan Joseph in Engineering; plus various others like Art Lander, Carter Butts, Karina Cramer, Jennifer Martiny, Will Schoenfeld, Sue Bryant, Jack Xin and John Lowengrub much more briefly. Oh yes, lots of quality interactions with Jacob Levin, one of your young stars.

Thanks again. I look forward to returning.

Simon

August 14, 2007

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

Dear Dr. Saari,

I wanted to thank you again for the Institute's hospitality during my visit in February, March, and April 2007. I greatly appreciated the opportunity to attend the many interesting seminars, and to interact with the faculty, all of whom are both knowledgeable and friendly.

During my time at the institute, I worked with Mark Steyvers and Michael Lee on the project "Modeling Exploration and Exploitation in Structured Environments" (funded by the Air Force Office of Scientific Research). Together with Geoff Iverson and Michael Lee I worked on order-restricted Bayesian inference -- the product of our work will appear as a book chapter. Michael Lee and I also started a project about the role of confidence in models of response time and accuracy.

In addition, I've enjoyed the many discussions with Bill Batchelder and Don Hoffman. I also appreciate the opportunity to give an IMBS seminar on my work concerning the Ratcliff diffusion model.

In sum, I am grateful for the friendly atmosphere at the Institute, and I am happy that my visit has resulted in several fruitful collaborations. I hope and expect that these collaborations will continue in the future.

Kind regards,

Eric-Jan Wagenmakers
University of Amsterdam
Department of Psychology
Methodology Unit
Roetersstraat 15
1018 WB Amsterdam
The Netherlands
Email: EJ.Wagenmakers@gmail.com
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Tel (250) 472-4490 Fax (250) 721-8929
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University of Victoria

Sep. 7, 07

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). My most recent visit, in July, included participation in a two-day "Mini-workshop on Individual Decision Making," organized by Duncan, with participation by numerous members of the Institute, plus visiting experts.

The work with Duncan has resulted in four major papers on utility theory (see below) 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, 2007) have also been able to solve an important problem in the study of rank-dependent utility theories. Finally, the research monograph *Behavioral Social Choice* with Bernie Grofman (and M. Regenwetter and I. Tsetlin) that was released by Cambridge University Press last year is garnering considerable positive attention - for instance, a review in *Choice* says, in part, “This multidisciplinary research team has produced one of the most original books on social choice theory in the past 10 years."

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 with research interests in the mathematical social sciences.

A. A. J. Marley

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