

ANNUAL REPORT
7/03 - 6/04

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Director's Statement

Dear Colleagues,

This has been an active and good year for IMBS. As a preview of some of what you will find in this report:

- IMBS organized and/or helped sponsor several well-received conferences and mini-conferences where the topics ranged from evolutionary behavior in the social, behavioral, and even biological sciences to individual decision making.
- We enjoyed a full and active colloquium series throughout the year with topics touching most interests of our members. Through Brian Skyrms, ties were re-established with the UCLA Marschak Lectures where we jointly sponsor certain speakers: they lecture at IMBS on Thursday and UCLA on Friday. As a new feature, each of our weekly colloquia now is followed by a social hour. This has proved successful in creating an informal atmosphere to talk with the speaker and where colleagues from different disciplines can discuss similarities and differences in research—or even the politics of the day.
- IMBS is expanding our membership: we welcome Professors Natalia Komarova and Hongkai Zhao from mathematics, and we are encouraging affiliate members from other universities to become more active.
- Janet Phelps revitalized our webpage (check it out at <http://www.imbs.uci.edu>), and we are exploring how to attract more attention to your IMBS research reports so they can reach an even wider audience. Be sure to send them in to Janet.
- In January, the IMBS created a new focus research group on “Social Dynamics and Evolution,” chaired by Douglas White: a brief description can be found in Section IV-E. The group has grown impressively: their first meeting in January was held in a conference room, but the attendance grew so quickly, with participation from different UCI schools and other UC campuses, that their weekly sessions needed to be moved to the IMBS conference room. The group has their own webpage and started an ejournal.
- With the guidance and efforts of Louis Narens, our director of graduate studies, we reviewed and made changes to our graduate program. By doing so we tightened up some requirements and, as you will see in Section III, we created a new degree program to reflect changes in research interests. On a competitive basis, IMBS continues to sponsor summer research for graduate students but with a new feature: in the fall we now hold a half-day conference so these students can report their findings to faculty and other students. The conference this year was well received, so last spring we held a general graduate student conference—and we now plan to do this on an annual basis. To facilitate communication with our students and to encourage their participating in IMBS activities, we established a Graduate Advisory Council. Our new program to recruit graduate students is having success.
- The IMBS Executive Committee has been reactivated to provide guidance and a review of our activities.
- As you will see from the report, IMBS members conducted and/or sponsored several weekly discussion groups: this ranges from a long-standing weekly session on

- evolutionary behavior, to one on probability in the social sciences, and even to one on decision theory and sports!

The heart and sole of any organization comes from its members: this report is constructed to emphasize and promote what our members have done—through a listing of their papers, talks, organized conferences, and other activities. Check the Appendices: it makes interesting reading to see the diversity of topics represented by IMBS members as described in their published papers and invited talks. A particularly interesting section, purposely placed near the front of this report, is Sect. II-D: it contains research summaries of what IMBS members have accomplished this last year. Let me encourage you to at least skim through these interesting descriptions. If I have any complaint, it is that in some of the cases what actually was accomplished was far more significant than suggested by the more modest commentaries.

The IMBS is delighted by the recognition received by our members! By glancing through Appendix F, among prestigious editorships, committee memberships, and other recognitions, you will learn some of the honors received by our members. For example, Carter Butts is on a mega-grant, Duncan Luce's received, among other recognitions, the Frank P. Ramsey Medal of Decision Analysis from INFORMS and an Award for Lifetime Contributions to Psychology, Mark Steyvers received the 2004 American Psychological Association New Investigator Award, Bernie Grofman was honored with the Duncan Black Award, Brian Skyrms is the President of the Philosophy of Science Association, etc.

During the year, a theme for IMBS emerged: IMBS can play a valued role serving as a catalyst for the research activity of IMBS members. We can do this by promoting what you do, by bringing in speakers and visitors, by helping on grant proposals, by forming focused research or discussion groups—on a temporary or more permanent basis—or running a weekend interdisciplinary conference. As an illustration, by joining the expertise of different IMBS members, this coming year we probably will organize an exploratory weekly discussion group tentatively entitled "Vision and Decision" to discover what is common between these two areas.

Let me extend an open invitation: if there is a research topic you wish to explore, or if you want to determine whether something can be with colleagues from other disciplines, or if several of you are interested in some research activity, or if ..., please drop by to discuss this. Something probably can be done.

The 2003-04 year was a good year for the IMBS; we are anticipating an even better year for 2004-05! Join in!

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 day-to-day operation of the Institute assists the Director. (Section B below).

The staff of the Director's office consists of one 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
Previous Directors:	R. Duncan Luce, Founding Director, 1989-1998 William H. Batchelder, 1999-2003
Graduate Advisor:	Louis Narens
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

II. RESEARCH

A. Current Research Programs

The 57 members of the Institute for Mathematical Behavioral Sciences (IMBS) and their research interests are listed in Appendix A.

As in previous reports the IMBS is partitioned into five research clusters. These are listed below and are informal intellectual groupings, not highly formal structures.

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

2. Statistical Modeling:

- **Cognitive:** Baldi, Batchelder, Doshier, Falmagne, Indow, Iverson, Riefer, Romney, Smyth, Steyvers, and Yellott
- **Economic:** Brownstone, DeVany, Poirier, Tobias, Saari, and Small
- **Sociological/Anthropological:** Butts, Faust, Freeman, White

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

4. Perception and Psychophysics:

- **Vision:** Braunstein, Cicerone, Chubb, DeFigueiredo, D’Zmura, Hoffman, Indow, Iverson, Romney, Sperling, Srinivasan, Yellott and Zhao
- **Psychophysics and Response Times:** Brown, Falmagne, Iverson, Luce, Narens, and Yellott

5. Social and Economic Phenomena:

- **Economics and Game Theory:** Brownstone, Burton, Garfinkel, Komarova, Kopylov, McBride, Poirier, Skaperdas, Skyrms, Saari, Small, and Tobias
- **Public Choice:** Cohen, Glazer, Grofman, Kaminski, Keller, McGann, and Uhlaner
- **Social Networks:** Batchelder, Butts, Boyd, Faust, Freeman, Romney, and White

B. Publications

The members who have replied report a total 138 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 has been Donald Saari. Appendix C lists the 22 technical reports issued during the academic year.

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 215 talks listed in Appendix D. Their awards and achievements for this year can be found in Appendix E.

D. Summaries of Significant Findings

Measurement Theory, Foundational Issues, and Scaling Models

Jeff Barrett

This past year I have been working on two projects:

(a) To describe how one might construct a relativistic hidden-variable quantum field theory. The two puzzles to solve here are (i) how to handle quantum measurement in a way that is compatible with the constraints of relativity and (ii) how to make field quantities determinate. This project led to two papers:

(b) To formulate a logic for statements of the form “Algorithm A outputs a when input b.” Paradoxes are endemic to such a logic, so the main puzzle here is in finding a consistent set of inference rules for the logic. This project led to two papers this year:

Statistical Modeling

Dale Poirier

Over the past year I have been working with Gary Koop of the University of Glasgow and Justin Tobias of UCI on Bayesian variants of classical semiparametric regression techniques for simultaneous equations models. These techniques are both flexible and relatively easy to use. In our paper “Bayesian Semiparametric Inference in Multiple Equation Models” we apply these techniques to investigate the wage returns to schooling in a model where wages and the amount of schooling are both endogenous. Working with a sample of white males drawn from the National Longitudinal Survey of Youth, we find that marginal increments in intellectual ability do little to increase the wages of individuals of low to moderate ability, but do have a reasonable effect on the wages of those with above mean ability. In other words we find increasing returns to ability.

Recently in “What is in a Word or Two?” I measure the impact of Bayesian reasoning by investigating the occurrence of two words, “Bayes” and “Bayesian,” over 1970-2003 in journal articles in a variety of disciplines, with a focus on economics and statistics. The growth in statistics is documented, but the growth in economics is largely confined to economic theory or mathematical economics rather than econometrics.

Mark Steyvers

A first step in identifying the content of a document is determining which topics that document addresses. In collaboration with Tom Griffiths at Stanford University, we have applied the “topics model” to a large database of scientific papers. The topics model is a generative model for documents that reduces the generation of documents to a simple series

of probabilistic steps. We have shown that the extracted topics capture meaningful structure in the data, consistent with the class designations provided by the authors of the articles. An interesting application of the model is to identify “hot topics” by examining topics that become more prevalent over time. In collaboration with Padhraic Smyth and Michal Rosen-Zvi at ICS and Tom Griffiths at Stanford University, we have extended this model to the “author-topic model” where we learn the topics that authors write about. Based on the derived representations, statistical inference can be used to pose the following queries: what topics does a given author write about? Given a document, what author is most likely to have written about the topics expressed in the document? How broad is the research of an author as expressed by the topics distribution? How unusual is a paper for a given author? What author is similar to a given author? These queries are not only relevant when exploring a scientific domain or developing an author profile, but also in practical situations when finding targets for funding or assigning reviewers to a paper or grant proposal.

This research has led to three recent papers.

Decision Making

Michael Birnbaum

A classic problem in both economics and psychology is how people make decisions. In recent years, I have been conducting experiments via the WWW in order to test theories known as "prospect" theories, theories that were recognized in the 2002 Nobel Prize in Economics. These theories are intended to describe how people make decisions and are supposed to predict when people depart from normative theories of how a person should choose. They assume that people "edit" choices in order to make them simpler, and that they then make a mental calculation of the weighted sum of utilities of the consequences. I have developed ten "new paradoxes", empirical choices that contradict the predictions of these prospect theories. These empirical phenomena were predicted by my "configural weight" models of decision-making, models that assume that people treat gambles in terms of their "branches" rather than as prospects. A branch of a gamble is a probability-consequence or event-consequence pair. For example, consider an urn containing 50 white marbles, 25 red marbles and 25 blue marbles. Suppose a marble will be drawn randomly and blindly and if the marble is red or blue you win \$100, and if it is white, you win \$0. This is a two-branch gamble with a .50 branch to win \$100 and a .5 branch to win \$0. The same gamble can be described as a three branch gamble, as follows: if you draw red, you win \$100, if you draw blue, you win \$100, and if you draw white, you win \$0. According to prospect theories and normative theories, the two descriptions should be evaluated the same. However, research shows that people do not treat them equivalently. My models provide a new way to look at old paradoxes of choice that had been used by prospect theorists to argue against expected utility theory. My 2004 paper in Journal of Mathematical Psychology shows how the classic Allais paradox can be broken down into simpler pieces which can be separately tested. The results of these separate tests refutes the prospect theories, with or without the editing principles. Results of experiments are always viewed with some doubt, so my experiments have been checked and replicated with a number of different experimental techniques and

with thousands of participants. Some of this work is described in my 2003 chapter with Martin, and additional new data are presented in my "in press" paper to appear in *Organizational Behavior and Human Decision Processes*. Although results vary slightly as a function of procedures and participants, the basic conclusions regarding prospect theories of decision making have been quite stable: these theories do not provide as accurate description of how people make decisions as my branch weighted models.

Scott Brown

My research in the previous year focused on critical tests of otherwise untested assumptions in behavioral models. A large class of decision models make the assumption that the speed of incorrect responses is governed in part by variability in the difficulty of decisions. With Fabio Leite, I have tested this assumption and found that the data do not support it. On another topic, I have been working with another student (Curtis Lehmann) on the properties of multitasking. When two tasks must be performed together, performance on each is worse. There are many theories for how this happens, so we have tried to eliminate some contenders. In particular, many theories assume a two-state mixture model: people are either "ready for a task" or not. These models make very strict predictions about the nature of reaction time distributions, and these predictions are contradicted by data.

Robin Keller

Appointed by the National Academy of Sciences as the expert decision analyst on a committee of scientists for the project "Multiple Objective Decision Analysis for Potassium Iodide Distribution in Nuclear Incidents." The committee was formed to establish guidelines for the stockpiling of potassium iodide and for its distribution and use in the event of a nuclear incident. The President (via the Office of Science Technology and Policy and the Centers for Disease Control) asked the National Academy of Sciences to conduct a study to recommend the most effective and safest way to distribute and administer potassium iodide.

Co-authored a book on "Distribution and Administration of Potassium Iodide in the Event of a Nuclear Incident," by the Committee to Assess the Distribution and Administration of Potassium Iodide in the Event of a Nuclear Incident, Board of Radiation Effects Research, Division of Earth and Life Studies, National Research Council of the National Academies, National Academies Press, Washington, DC, published in 2004, www.nap.edu.

Vladimir Lefebvre

During this period I have been working in two main directions:

- a) Development and elaboration of a model of terrorists' decision making processes based on the reflexive model of the subject. This work is being done in collaboration with specialists of various profiles from the New Mexico State University.
- b) Work on the third edition of "Algebra of Conscience."

R. Duncan Luce

Marley and Luce (2004) assembled 22 “independence properties” concerning uncertain alternatives (gambles), many of which were suggested and investigated empirically by M.H. Birnbaum, with an eye to evaluating rank-dependent utility (RDU) theories (including Tversky and Kahneman’s cumulative prospect theory). They are based on the following general principle: Suppose gambles g and h have a common branch – event/consequence pair -- and that g is preferred to h . Then, if the common branch is replaced by another common one, to form g' and h' , the decision maker will also prefer g' to h' . All of these are satisfied by subjective expected utility theory. Many different versions arise depending on properties of the uncertain events and when the ordering of the consequences matters. The result are scattered in the literature and analyzed in various ways. We systematized them and worked out the necessary and sufficient conditions for each property to hold for each of 4 model types. In the process we showed that Birnbaum’s TAX model is, in fact, equivalent to a rank weighted utility model that we axiomatized. The upshot of this is that after nearly 25 years of effort, the RDU model, including popular cumulative prospect theory, fails pretty badly. Two other models, TAX and what is called gains decomposition utility (closely related to RDU) are still in the running. We have shown 5 critical properties for which there are presently no data. Our work has been submitted for publication.

Perception and Psychophysics

Mike Braunstein

It has been proposed that our perception of where an object is located in a three-dimensional scene depends on where it contacts the ground in an image of the scene ("optical contact"), such as the projection on the retina. Using motion pictures of real scenes into which computer generated objects and shadows were inserted, we examined the integration of optical contact information with three other variables that affect scene perception--motion, occlusion and shadow. Scene position from optical contact was not easily overcome by contradictory information from motion. It was modified by information from occlusion and was dominated by information from shadow. This means that an object floating above the ground will not be seen in its correct position even if its position is indicated by motion, will be seen closer to its correct position if it occludes other objects consistent with its correct position, and will be seen in its correct position if a shadow is present on the ground under the object. These findings show how different sources of information are integrated in the perception of a three-dimensional scene.

Charles Chubb

We have isolated and measured the sensitivity of a previously unrecognized visual subsystem that takes, continuously in time, a snapshot of the visual field. This system, which we call the BLACKSHOT system is remarkably sharply tuned to the very blackest components in the scene, and is utterly insensitive to components with (Weber) contrasts any greater than around -0.875.

DeFigueiredo

Completed work on modeling nonlinear dynamical systems in an abstract neural space for applications in computational intelligence. Also developed new models and design procedures for adaptive order statistic filters; and new pre-distortion algorithms for mitigation of nonlinear distortion in OFDM-based wireless communications systems for inclusion in 3rd. and 4th Generation mobile wireless communication systems. Investigated the use of multilayer perceptrons for image compression.

Donald Hoffman

a) Human vision constructs the experiences of color and motion in coordination. In the paper "The interaction of color and Motion" I discuss recent experiments and computational theories which show, in the case of dynamic color spreading, how this coordination can occur. I conclude that color is not simply surface reflectance, or triples consisting of surface reflectances as filtered through cone sensitivity functions. Color is a complex construction of human vision. It is a construction not carried out in isolation, independent of other visual constructions. Instead it is a construction carefully coordinated with the construction of visual motion, surfaces, depths, transparency, and light sources. The nature and complexity of these coordinated constructions has barely been sampled by psychophysics to date. And no existing computational theories are yet adequate to what little of that complexity has been sampled. Displays of dynamic color spreading provide a fertile area for psychophysical study of our coordinated construction of color, surfaces, motion, and lights. They also provide a challenging arena for testing out computational theories of these constructions. The interaction and convergence of psychophysical and computational studies of color should lead to a more profound understanding of the sophistication and complexity of the processes by which we construct color, an understanding which should be a great aid to certain discussions in the philosophy of mind which turn on theories of color vision.

b) Inverting a face impairs perception of its features and recognition of its identity. Whether faces are special in this regard is a current topic of research and debate. Kanizsa studied the role of facial features and environmental context in perceiving the emotion and identity of upright and inverted faces. He found that observers are biased to interpret faces in a retinal coordinate frame, and that this bias is readily overruled by increased realism of facial features, but not easily overruled by environmental context. An additional factor contributing to a retinal coordinate- frame interpretation may be the ambiguous nature of the face stimuli. Since his facial expressions are interpretable both upright and inverted, they may in both orientations activate an endogenous attentional process for faces. In the paper "Facial attention and spacetime fragments" we present visual search and change-blindness experiments that explore how inversion, negation, and facial emotion affect visual attention to static faces. We find that attention to faces is impaired by inversion and negation. We also find that the parts of the face that receive greater attention can be influenced by the emotional expression of the face. We propose to extend these experiments to dynamic faces. To this end, we develop a theory of the visual representation of dynamic faces, in which faces are

represented by classes of 'spacetime fragments-moving regions of the face with high informational content. We then present ideas for future experiments which are motivated by the spacetime fragment theory, and which should serve to constrain its further development.

Tarow Indow

As written in the report of 2003, I have devoted myself for these two years to write a book. The manuscript was completed and it is published from World Scientific Publishing Co. by the fall under the title “ The Global Structure of Visual Space”. The contents of the book are summarized in its cover as follows.

Visual space, the space we see around us, is the end product of a long series of processes: physical (formation of retinal image of the physical space), physiological (propagation of excitation from retina to brain), and cognitive (perception of the visual space due to the brain excitation). Visual space is a highly structured perceptual entity, from which we obtain information on the physical space. Physical space which surrounds us is of Euclidean structure, but its perceived image is not necessarily structured in that way. Based upon a few experimental results, Luneburg proposed (1947) an idea that visual space under a limited condition is hyperbolic. In this book, a number of experimental studies are reviewed and it is discussed how to modify his idea to deal with visual space under various experimental conditions and visual space under more natural conditions. Hence, such problems are also discussed; why the sky appears as a vault and why the horizon is localized at the eye level.

Geoff Iverson

Nature exhibits “similarity” in a wide variety of contexts. Within the scope of the cognitive sciences we see similarity at work in early visual coding; neural sampling takes place at a variety of spatial scales, but the basic form of the sampling is the same at all scales. Biological cone sensitivities are similar---built from a common “opsin” template; that fact is important for the early coding of color. In psychophysics, similarity reveals itself almost trivially in the form of Weber's Law, but it turns out that the “near miss” to Weber's Law is also an expression of similarity. Forward masking in psychoacoustics provides another example of similarity, as does the growth of loudness of pure tones embedded in noise. The diffusion processes that form the basis of theories of reaction time show a natural tradeoff between the temporal scale and the growth of accumulated information relevant to choice. A natural question arises: how does one define “similarity” so that it ties together these and other examples with a common thread.

George Sperling

Using an ambiguous motion task as a sensitive indicator of attention, Tseng, Gobell & Sperling (Nature, 2004) showed that a brief period of attending to a particular color can produce a month-long sensitization to that color. This is a much longer lasting persistence of visual attention than had previously been observed.

Ramesh Srinivasan

We use binocular rivalry to investigate dynamical processes in the brain that underlie conscious experience. In rivalry, incongruent visual images presented one to each eye (e.g., a face and a house) and the observer experiences spontaneous alternations in percept between the two images. We have demonstrated that competition between percepts can be induced even when the stimuli are not presented simultaneously, and occurs even when the images are alternated between the eyes with a delay of 100 milliseconds. The time constants we observe are consistent with delays between brain areas involved in processing the stimuli including medial aspects of the frontal lobe, which is demonstrated by physiological data recorded with magnetoencephalography (MEG). The implication is that perceptual time is slow, possibly on the order of 100s of milliseconds and is constrained by cortical time constants including delays between brain areas.

Ted Wright

Response times (RTs) are generally found to increase linearly with the logarithm of the number of potential stimulus-response (S-R) alternatives (e.g., Hick's Law). Kveraga, Boucher, and Hughes (2002) demonstrated that saccade latencies were unaffected by S-R uncertainty. They suggested that visually guided saccades are unusual because they can be automatically selected using topographically organized pathways in superior colliculus that convert spatially coded visual activity into spatially coded motor commands. We have found that visually-guided, aimed hand movements also are largely unaffected by both S-R uncertainty and stimulus-response repetition.

Hongkai Zhao

During this academic year, one of my research areas has been related to and benefited from IMBS activities. The topic is on partial differential equation (PDE) and variational formulation based computer vision and image processing. My main interest is to design geometric PDEs and energy functions that are based on both physical motivation and human vision system. The theory and efficient numerical algorithms developed for PDEs can be a powerful tool in this study and computation.

Social and Economic Phenomena

(a) Economics and Game Theory

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, Arindam Ghosh, 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) 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.

Michelle Garfinkel

On endogenous group formation and conflict management: Over the past few years I have been studying issues related to the endogenous formation of groups and collective action together in the context of a relatively new economic paradigm, one that allows for the possibility of conflict and appropriation along side production and trade in the study of economic interactions. Within this new paradigm, economists have advanced our understanding of how conflict influences economic outcomes. Nevertheless, focusing primarily on the implications of self-interested behavior of individuals (or unitary actors), this research seems somewhat incomplete in its coverage. Not much attention has been paid to issues that arise when appropriative activities are carried out by individuals organized into groups.

The central objective of my research under this heading is to learn more about when groups form and in particular the conditions under which they are (far-sighted) stable. The analysis builds on a simple economic model that features a “winner-take-all” contest for control of some resource. Without the formation of groups, each individual participates in the contest independently. The winner, in turn, applies the resource in the production of a homogeneous consumption good. By contrast, when a group forms, members pool their efforts to secure the contestable resource. If successful in this effort, they then apply the resource to a joint production process. To make the problem interesting, the analysis assumes that neither the production nor appropriation/defense technologies exhibit increasing returns to scale. Furthermore, I do not simply presume that group members can agree to divide their winnings. The formation of groups adds another layer of conflict---that is, one between the members of the winning group over the distribution of their joint product. Despite that second layer of conflict, I have found that group formation tends reduce the overall severity of conflict over the contestable resource. However, the scope for group formation can be limited in the sense that only small groups tend to be stable. While institutions promoting conflict management within the group can support the stable formation of larger groups (even a single group--the so-called grand coalition), structures with larger groups are often not the most efficient ones. Bigger is not always better!

Globalization and conflict: Stergios Skaperdas (of UCI), Constantinos Syropoulos (of Florida International University) and I are looking at how globalization affects trade patterns and welfare in the presence of conflict within a country and between countries. Our analysis on domestic conflict, which is nearly complete, is conducted within a simple model of trade where a natural resource like oil is contested by competing groups using real resources (“guns”). In comparing free trade with autarky, we look not only at the familiar gains from

trade, but also at the induced effects of free trade on the groups' incentive to fight over the contested resource. We find that free trade induces less conflict among groups when, under free trade, the country imports the contested resource. Importing countries, then, gain unambiguously from free trade. By contrast, countries exporting the contested resource will lose under free trade. For such countries, since the international price of the resource exceeds the price that would obtain domestically under autarky, free trade induces more wasteful competition and conflict by making the contestable resource more valuable. The familiar gains from trade are not sufficiently high to compensate for the higher burden of conflict. We also find that conflict affects trade. Regardless of what price obtains in international markets, the country tends to over-export the contested resource relative to the benchmark case where there is no conflict within the country; and, when the international price of the contest resource lies within a certain range, the comparative advantage is reversed relative to that ideal case. Finally, we find that an increase in the international price of the contested resource over an even wider range reduces welfare, an instance of the “natural resource curse.”

We are also looking into how the relative appeal of free trade is influenced by the presence of conflict between nations, and dynamic considerations--namely the shadow of the future.

Igor Kopylov

In recent work, I axiomatize a special case of the multiple priors model where the set of “possible probabilistic scenarios” has an intuitive structure. The structure is that of epsilon contamination, that is, possible probabilistic scenarios are epsilon mixtures of a single “main” probability measure and all those measures that agree with the precise information about probabilities that the decision maker may have, which may be little or none at all. All the components of this representation are unique. In particular, the weight epsilon can be interpreted as an index of pessimism in the presence of the Knightian ambiguity as illustrated by the Ellsberg Paradox.

Mark Machina

During the year I completed a 12-year research project, summarized in the final version of a paper titled “Expected Utility/Subjective Probability Analysis without the Sure-Thing Principle or Probabilistic Sophistication.” This work shows how the analytics of the classical theory of attitudes toward risk (namely expected utility theory) and the analytics of the classical theory of uncertain beliefs (namely subjective probability theory) can both be extended to individuals whose behavior does not necessarily conform to either of the key foundational assumptions of these theories. This is accomplished by observing that individuals who do satisfy the classical assumptions have betting preferences that exhibit “constant sensitivity in the events” (that is, constant sensitivity to changes in the events attached to each possible outcome in a gamble), and that the analytics of such constant sensitivity models can be extended to more general betting preferences that are merely “smooth in the events” in the same manner in which standard calculus allows us to extend the analytics of linear (i.e. “constant sensitivity”) functions to nonlinear smooth functions. Among other things, this work extends the classical expected utility characterizations of

comparative risk aversion and the classical subjective probability characterization of comparative and relative event likelihood.

Michael McBride

My work continues along three fronts: collective action under threshold uncertainty, network formation under imperfect monitoring, and the political economy of economic development. One finding from this last year relates to the relationship between clientelism and coups d'etat in less-developed countries. Political clientelism is a form of exchange in which politician-patrons distribute state resources to citizen-clients in return for political support. In a formal model of political competition, I show that when clientelism is too successful in generating large material benefits for politicians and in securing their power from electoral challenges, then rival groups will attempt coups to gain access to those material benefits. I show the conditions under which politicians will not be able to coopt challengers. Thus, although clientelism has its roots in the consolidation of power, it can actually create political instability. One implication of my research is that democratic consolidation is tenuous in less-developed countries where politicians' clientelist practices generate large benefits for themselves.

Donald Saari

An evolving theme that is proving of importance to a large number of social, behavioral, and even biological sciences, is evolutionary game theory. Because it is such a powerful tool, it is unfortunate that this approach is technically beyond the abilities of many to use, and, as currently used, it is far too specific for use in many of the intended areas. This year, both independently and with some graduate students, a qualitative approach toward this area, which removes many of the earlier obstacles, has been advanced.

Ken Small

Road pricing policies can be made more efficient and can have more evenly distributed burdens if they take into account the great differences in how much people are willing to pay for time savings and improved reliability of travel. These differences have recently been measured more accurately, using better data and computationally intensive statistical estimation routines. Thus various kinds of differential or optional pricing, pioneered in recent experiments, offer policymakers a long-awaited opportunity to address the stalemates that impede transportation policy in congested cities.

(b) Public Choice

Bernard Grofman

The U.S. Supreme Court, in a case called Georgia v. Ashcroft decided in 2003, reopened the legal question of defining minority influence in the context of avoiding retrogression of minority electoral strength under Section 5 of the Voting Rights Act of 1965. In a series of papers (some co-authored with Lisa Handley), I have tried to provide a precise statistical

standard for evaluating levels of minority influence, developing a 3-pronged test that looks at overall minority electoral success, overall partisan control of the legislature, and the existence of minority political influence in individual districts.

Marek Kaminski

In my book "Games Prisoners Play," I argue that simple models of game theory and decision theory are appropriate tools for analyzing what that have been considered so far a field outside of the domain of rational choice mode of analysis: the behavior of inmates in prisons and jails. Prison first appears an irrational world of unpredictable violence and arbitrary codes of conduct. But as I show in ethnographic detail, prisoners, to survive and prosper, have to master strategic decision-making. A clever move can shorten a sentence; a bad decision can lead to rape, beating, or social isolation. Much of the confusion in interpreting prison behavior, I argue, arises from a failure to understand that inmates are driven not by pathological emotion but by predictable and rational calculations.

Anthony McGann

My research has focused on democratic theory, particularly on electoral systems. I have written an working paper with Eliora van der Hout from Tilburg University (who I first met at an IMBS sponsored conference here) that shows that the most basic principles of political equality imply that legislative elections must be by proportional representation. I am currently working on a paper to extend this result from single-vote to multiple-vote elections. I have also written two papers on the effects of proportional representation. One (with Michael Latner) shows that national list proportional representation in the Netherlands and Israel is actually surprisingly representative of geographical differences, contrary to conventional wisdom. The other uses power score analysis to show that the perception that proportional representation in Israel leads to small parties having disproportionate influence is a myth, again contrary to conventional wisdom. In addition to work on electoral systems, I have published papers on the logic of supermajoritarian decision-making (such as systems with checks and balances) and on far-right parties in the Alpine republics (with Herbert Kitschelt). I have also co-authored a conference paper (under review at Journal of Conflict Resolution) that models the effects of economic sanctions.

I have worked with Professors Grofman and Uhlaner toward designing a quantitative methods sequence for political science graduate students. I have taught some students maximum likelihood and R language programming as independent studies. However, over the next two years we intend to implement a three-course sequence.

(c) Social Networks

Mike Burton

Kim Romney, Carmella Moore, and I presented findings at this year's meetings of the Society for Cross-Cultural Research on the relationships between language families and social structure. We find that language families have characteristic social structure signatures, falling mainly into five types - unilineal, patrilineal, patricentric, matricentric, and bilateral. We also show that several hypothesized super phyla, such as Greenberg's Eurasiatic language phylum, show statistically significant relationships with social structure patterns.

Carter Butts

In recent work with Christine Hilgeman, I have investigated the underlying relationships among Americans' religious behaviors and beliefs. Rather than a simple continuum from low to high levels of religiosity, we find that American religious beliefs are better described by a system of interlocking dependencies. Among those who might be characterized as highly religious, there appear to be distinct "tracks" leading to evangelism and self-reported "born again" experiences, on the one hand, and embeddedness in collective religious activities, on the other. Interestingly, reporting of "born again" experiences depends not only on endorsement of other Protestant beliefs, but also on a latent element which seems to correspond to the acceptance of personal revelatory experiences. This latent element is itself strongly associated with nontraditional religious beliefs; thus, we find evidence of a hidden cognitive connection between certain groups of highly committed Protestants and others whose manifest beliefs are quite different. By identifying these sorts of "building blocks" underlying religious belief, we hope to learn more about the manner in which religions propagate and change over time.

Douglas White

In *Networks and Organizational Studies*, White et al. (in press) found new linkages between how people behave in organizational or interpersonal networks and the overall topology of cohesive integration in large-scale networks created by this behavior. In Powell et al. (in press) we made new discoveries as to how cohesive network integration forms part the social processes responsible for the production of innovation and new solutions to problems of developing new products within the inter-corporate networks of the global biotechnical industry.

Shifting to the Anthropology of Australian Aborigines, methods of network cohesion analysis revealed equivalence structures in which interviews on all possible mental calculations of "who is the X of my relative Y" for an entire population showed a new resolution of the problem of how variant Australian kinship systems evolved: namely, an 'open field' kinship algebra that is almost perfectly consistent with observed marriage and

genealogical connections but which allows alternative interpretations (and subsequent evolutions) to be made with perfect inner consistence. These allow anthropologists as well as

members of the population to form (and select among) alternative logics that are embedded in one another, and allowing flexible paths of evolution that change emphasis according to demographic changes resulting from changes in preferences and frequencies of different types of marriage. Previously, such kinship logics (algebras) were thought to be closed and prescriptive, giving rise to disputes among anthropologists as to the best 'single models' of social structure. Our finding (White and Denham in press) is that multiple models previously thought to be consistent are in simultaneous and internally consistent operation.

III. GRADUATE TRAINING

A. Ph.D. and MA Students

Working with the faculty of the Institute are 48 Ph.D. students, of whom 15 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:

Rolf Johnson
Gabriel Lawson
Fabio Leite
Joel Schwarzbart
Amjad Toukan

In addition, 4 students will join the program in the Fall.

During the year, the Institute initiated a program of recruiting students via a mass e-mail describing our program to the Chairs and Graduate Advisors 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 20 proposals requesting summer funds, and of those, the following 12 students were awarded funds in varying amounts: Garrett Asay, Eric Ayzenshtat, Ashish Chaturvedi, Joshua Chan, Tianjeng Feng, Sam Hillier, Hao Jia, Gabriel Lawson, Fabio Leite, Lingfang Li, Alex Strashny, Kevin Zollman.

A condition of the support is that the student gives a talk during the academic year on his/her research. Here are the talks given by students who received support in the summer of 2003:

Ma Ge – “Studies on visual perception of 4D structure”
Fabio Leite – “An investigation on input variability in two-alternative forced choice tasks”
Jason Kronewetter and Sandeshika Sharma – “Inter-group conflict and local conventions”
Alex Strashny – “Dynamic paired comparison”
Amjad Toukan – “Risk of expropriation and the Heckscher-Ohlin theorem?”
Kevin Zollman – “Cooperation and the evolution of regional meaning”

B. Graduate Advisory Council

During this past year a Graduate Advisory Council was formed. The Council is composed of 5 graduate students with Garret Asay and Amjad Toukan as the Co-Chairs.

The purpose of the Council is to foster interaction between graduate students in research areas similar to MBS.

Council Members:

Garret Asay (Co-Chair) - Economics
Yvonne Brown - Social Relations
Fabio Leite - IMBS
Amjad Toukan (Co-Chair) - Economics
Yogesh Uppal - Economics

C. Research Seminars

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

A Historical and Experimental Review of Behavioral Decision Making [Birnbbaum]
Professional and Laboratory Skills [Braunstein]
Cognitive Modeling [Brown]
Network Theory [Butts]
Issues in Crisis Response [Butts]
Mind-Body Problem [Hoffman]
Face Perception [Hoffman]
Decision Theory Doctoral Seminar [Keller]
Choice Under Uncertainty – Classical and Current Approaches [Machina]
Naturalism [Maddy]
Macropolitics [McGann]
Rationality and Democracy [McGann]
Conceptual Foundations of Probability [Narens/Skyrms]
Evolutionary and Quasi-Evolutionary Dynamical Models [Narens/Saari/Skyrms]
Econometrics Colloquium [Poirier]
Special Topics in Economic Theory [Skaperdas]
Topics on Political Economy of Development [Skaperdas]
Transportation Economics I [Small]
Colloquium in Transportation Science [Small]
Special Topics in Human Performance [Sperling]

The Institute held a weekly seminar on “Decisions: Theory and Applied”, organized by Donald Saari. Each session looked at an actual class of decision problems and the approaches currently being used were discussed. Then, an attempt was made to identify the strengths and weaknesses of the approaches while finding improvements. The long-term goal was to develop an understanding that will help address emerging decision issues.

D. Graduate Emphasis

A new Emphasis was created in the IMBS graduate program. We believe this new Emphasis in “Games, Decisions, and Dynamical Systems”, will help in the recruitment,

training, and placement of graduate students in the program, and help the Institute obtain extramural funding for research and training grants for graduate and post-doctoral students.

We expect to be able to begin recruitment for the Emphasis for the 2004-2005 academic year, and by the second year (2005-2006), we expect to recruit about 4 new students each year. The Emphasis is not designed to replace or compete with portions of graduate programs within Departments in the School of Social Sciences or more generally on the Irvine Campus. Rather, it is designed to strengthen portions of graduate programs with which it shares a content interest.

IV. COMMUNICATION

A. Conferences

The Institute helped sponsor a three-day conference on “Ordinal and Symbolic Data Analysis” held at UCI, August 20-23, 2003. The members of the organization committee were: William H. Batchelder, Edwin Diday, Jean-Paul Doignon, Jean-Claude Falmagne, Melvin F. Janowitz, R. Duncan Luce, Fred S. Roberts, and Donald Saari. The theme of the conference was motivated by the fact that ordinal and symbolic data occur quite frequently, but theoretical tools for handling ordinal and symbolic data are not sufficiently developed. The conference viewed both ordinal and symbolic data in a very broad sense. The agenda can be found in Appendix G.

The Institute was a joint sponsor with the Department of Economics of the Annual Southwest Economic Theory Conference held, February 27 and 28. The agenda can be found in Appendix G.

The Institute held a conference on “Evolutionary Game Theory” at the Beckman Center, March 19 and 20. The speakers represented different disciplines and perspectives. The agenda can be found in Appendix G. In conjunction with this conference, a mini-conference was held on April 2 with speakers Martin Nowak, Director of the Program for Evolutionary Dynamics at Harvard University, and Sanjeev Goyal, Department of Economics and the University of Essex. Professor Nowak’s topic was “Evolutionary Game Theory”, and Professor Goyal’s topic was “Economics: An emerging small world?”.

The Institute organized the Second Annual Graduate Student conference on April 28. Graduate students were invited to apply to give a talk on their research. The agenda can be found in Appendix G.

On May 7 and 8, the Institute held a conference on “Individual Decisions”. This two-day conference presented interdisciplinary topics on how people make decisions. A copy of the agenda can be found in Appendix G.

B. Conferences/Seminars organized by IMBS Members

Michael Birnbaum

Organized the 42nd Annual Bayesian Research Conference, held in Fullerton, CA in January, 2004. In addition, I hosted the fourth Advanced Training Institute in Fullerton, held after the Bayesian Research Conference on Web-Based Research.

Carter Butts

Introduction to Social Network Analysis Workshop (w/Katherine Faust), May 04

Symposium on Current Research in Network Comparison, July 04

Organizer, UCI Social Network Research Group meetings, 2003-2004.

DeFigueiredo

General Co-Chair, 2nd IEEE International Conference on Circuits and Systems for Communications, Moscow, Russia, June 30-July 2, 2004.

Katherine Faust

ICPSR week-long workshop on Social Network Analysis, Chapel Hill, NC, July 2004

Invited Workshop on Social Network Analysis, The Odom Institute, UNC Chapel Hill, November 2004.

ICPSR week-long workshop on Social Network Analysis, Chapel Hill, NC, June-July 2004.

Workshop on Social Network Analysis, with Carter Butts, UCI, May 2004

Penelope Maddy

Laguna Workshop on the Methodology of Pure and Applied Mathematics, March 6-8, 2004.

Michael McBride

Southwest Economic Theory Conference, March 2004.

UCI Economics Jr. Faculty Lunch Seminar.

Amihai Glazer

Public Policy Lunch, Fall 2003 and Spring 2004.

Donald Saari

Celestial Mechanics, BIRS, Banff Canada, March, 2004

George Sperling

Twenty-Eighth Annual Interdisciplinary Conference, Jackson Hole, Wyoming, February 2-7, 2003.

Mark Steyvers

Co-organizer of NIPS (Neural Information Processing Systems) workshop on “Syntax, Semantics, and Statistics” with Rich Shiffrin, David Blei and Tom Griffiths. 2003

Hongkai Zhao

Annual Southern California Applied Mathematics Symposium (SoCAMS), 4/24, LA.

Organizer for IPAM program on geometric flow, UCLA, CA, 2/2004.

Organizer for ONR workshop on time reversal, Irvine, CA, 8/2003.

C. Future Conferences

The Institute is planning several conferences next year. Planned topics are: 4-Dimensional; Decisions and Sports; Cognitive Psychometrics: cognitive models as measurement tools; Third Annual Graduate Student Conference; Conference on Decisions and Justice, and possibly, a conference on Assessment.

D. Visitors

The Institute hosted 4 visitors during the 2003-04 year. Their letters can be found in Appendix H.

Andrew Heathcote
Department of Behavioral Sciences
University of Newcastle
NSW, 2308, Australia

Kimberly Jameson
Center for Research in Language
University of California, San Diego
9500 Gilman Drive, 0526
La Jolla, CA 92093-0526

Anthony A. J. Marley
Department of Psychology
McGill University
1205 Dr. Penfield Avenue
Montreal, Quebec, H3A 1B1
Canada

Sandeshika Sharma
IMBS Post Doc

Next year the Institute will sponsor the visits of Brian Lawson, Assistant Professor in the Department of Political Science at the University of Cincinnati, Michael Jones, Associate Professor of Mathematical Sciences at Montclair State University, and Andrea Knecht, a graduate student in Sociology from the University of Utrecht in the Netherlands.

E. Colloquium Series

During the academic year the Institute had a colloquium series with speakers both from the Institute and from the outside. A committee consisting of Donald Hoffman and Brian Skyrms facilitated our series. 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 next day. We distributed a relevant paper, when available, prior to each colloquium.

In January 2004, a new focus group in "Social Dynamics and Evolution", was created within the IMBS. The group is actively recruiting graduate students and has one first year student and one admitted for fall 2004. The group established a web site at <http://eclectic.ss.uci.edu/ResFocusGrp> with a listing of its new weekly research and colloquium meetings, which began on January 26 and ran through June, 2004. In June, 2004, the group founded an MBS-based refereed eJournal, *Structure and Dynamics* with a distinguished international editorial board, three senior editors from the focused research group, and with all members of the group listed as associated editors. Two volumes on research issues undertaken by the group for 2004 are in preparation. A new web site is under development at <http://www.socsci.uci.edu/socdyn>. The group has organized a new graduate curriculum with core seminars and has proposed to the faculty senate a new undergraduate interdisciplinary minor in Social Dynamics and Evolution.

Along with the Center for the Study of Democracy, the Institute sponsored the Public Policy series of topics, organized by Professor of Economics, Amihai Glazer. The format was not of a lecture, but of a lively interchange of ideas led by a different faculty member each time.

Listed below are the IMBS colloquia as well as those in Social Dynamics and Evolution, and the topics in Public Policy.

IMBS
FALL 2003

October 9

- **GEORGE SPERLING**, Department of Cognitive Sciences, UC Irvine, "*How the brain computes visual motion*".

October 16

- **LINTON FREEMAN**, Department Of Sociology, UC Irvine, "*The role of mathematics in the development of social network analysis*".

October 23

- **PAUL ZAK**, Claremont Graduate University, Department of Economics and Loma Linda University, Neurology Department. "*The neurobiology of trust*".

October 30

- **BRIAN SKYRMS**, Department of Logic and Philosophy of Science, UC Irvine, "*Learning to network: dynamic models of social network formation*".

November 6

- **LOUIS NARENS**, Department of Cognitive Sciences, UC Irvine, "*A new foundation for support theory*".

November 13

- **ANDREW HEATHCOTE**, University of Newcastle, Department of Behavioral Sciences, "*Estimation of RT distributions with a parameter dependent lower bound*".

November 20

- **PHILIP BONACICH**, Department of Anthropology, UCLA, "*Power in Reciprocal Exchange Networks: Models, Simulations, and Experiments*".

December 4

- **HERB GINTIS**, Department of Economics, University of Massachusetts Irvine, "*How the brain computes visual motion*".

IMBS WINTER 2004

January 15

- **JEROME BUSEMEYER**, University of Indiana, Department of Psychological Sciences, "*Comparison of learning and choice models for decisions based on experience*"

January 29

- **R. DUNCAN LUCE**, University of California, Irvine and University of Victoria "*To Honor L.J. Savage, But Do Avoid His Formulation of the Decision Situation*"

February 5

- **CHARLES PLOTT**, California Institute of Technology, Department of Humanities and Social Science, "*Principles of Market Disequilibrium Dynamics in Experimental General Equilibrium Environments*"

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- February 12**
 - **JOHN ANDERSON**, UC Riverside, Department of Psychology, “*Use of Control Theory in the Study of Closed loop performance: Driving Skill*”

- February 19**
 - **SANDY ZABELL**, Northwestern U., Department of Statistics & Mathematics, “*DNA Identification and Bayesian Statistics*”

- March 4**
 - **HONG-KAI ZHAO**, UC Irvine, Department of Mathematics, “*Applications of Partial Differential Equations in Image Processing and Computer Vision*”

- March 11**
 - **MATTHEW JACKSON**, Caltech, Humanities and Social Sciences, “*Social Networks in Labor Markets*”

- March 18**
 - **STEVE FRANK**, UC Irvine, Department of Ecology & Evolutionary Biology, “*Foundations of Social Evolution*”

IMBS SPRING 2004

- April 15**
 - **RUSS HARDIN**, New York University, Department of Politics, “*Social Capital*”

- April 22**
 - **MICHAEL LEYTON**, Rutgers University, Department of Cognitive Sciences, “*A Generative Theory of Shape*”

- April 29**
 - **GERARD ROLAND**, UC Berkeley, Department of Economics, “*How do electoral rules shape party structures, government coalitions, and economic policies?*”

- May 6**
 - **ROBERT BOYD**, UCLA, Department of Anthropology, “*The evolution of altruistic punishment*”

- May 13**
 - **GEOFFREY IVERSON**, UC Irvine, Department of Cognitive Sciences
(1) “*The analytic form of the daylight locus (with Charlie Chubb)*”
(2) “*Cone-based coordinates for Munsell chips (with Kim Romney & Ti-Lien Hsia)*”

- May 20**
 - **VINCENT MERLIN**, Department of Economics, University Caen, France
“*Probability Models for the Analysis of Voting Rules in a Federal Union*”

- May 27**
 - **STERGIOS SKAPERDAS**, Department of Economics, University of California, Irvine, “*What kind of order out of anarchy? Self-governance, autocracy, and predatory competition*”

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June 10

- **DON HOFFMAN**, UCI, Department of Cognitive Sciences, “*Part of Visual Objects*”

SOCIAL DYNAMICS AND EVOLUTION
WINTER 2004

January 26

- **DOUG WHITE**, Anthropological Sciences, Social Networks, “*Network Processes in Evolving Systems*”

February 4

- **DURAN BELL**, Anthropological Sciences, “*Wealth as the foundation to the dynamical processes of social formations*”
- **B. NICK COLBY**, Anthropological Sciences, “*An alternate view of culture, evolution, and biocultural success that accommodates interdisciplinary findings and yields falsifiable theoretical statements*”

February 11

- **CHRISTOPHER CHASE-DUNN**, Director, Institute for Research on World Systems, UC Riverside, “*Dynamics of urban, regional and ecosystem networks Since the Iron age*”

February 18

- **DONALD SAARI**, Director, Institute for Mathematical Behavioral Sciences “*Dynamics in the Study of Evolution*”

February 25

- **SANDER VAN DER LEEUW**, Department of Archeology, Nanterre, and Anthropology Chair, Arizona State University, “*The study of long-term socio-natural dynamics at the regional scale in Southern France*”

March 3

- **MATTHEW MAHUTGA**, Dept. of Sociology, UCI, “*Assessing Change through Globalization and the 'New International Division of Labor': A Network Analysis of International Trade, 1965-2000*”

March 10

- **TONY SOELLER**, NACS Research Computing Specialist in GIS (Geographic Information Systems), “*Introduction to GIS and subsidized access to high-end computing and computational resources at San Diego Supercomputer Center*”

March 17

- **REIN TAAGEPERA**, Professor Emeritus, Dept. of Political Science, UCI “*Expansion and Contraction Patterns of Large Polities*”
- **ANDREY KOROTAYEV**, Princeton Institute for Advanced Studies “*Historical Dynamics Pretests: Do Turchin's results on States and Empires replicate for City size?*”

SOCIAL DYNAMICS AND EVOLUTION
SPRING 2004

April 6

- **HAL STERN**, Department of Statistics, UCI, *“Methods for combining information in dynamic systems”*

April 13

- **CAROL HUGHES**, Head Librarian, UCI, *“eScholarship and the eJrnl concept”*

April 20

- **DWIGHT READ**, Professor of Anthropology, UCLA, *“Rethinking Kinship: Implications for the Modeling of Culture”*

May 4

- **DONALD SAARI**, Director, Institute for Mathematical Behavioral Sciences, *“Part II, Generalized dynamical modeling”*

May 11

- **ANDREY KOROTAYEV AND NATALIA KOMAROVA** (Russian State University for the Humanities and Rutgers), *“A new mathematical model of pre-industrial demographic cycles”*

May 18

- **PETER TURCHIN**, Department of Ecology and Evolutionary Biology, University of Connecticut, *“Using the methods of nonlinear analysis to investigate historical dynamics”*

June 1

- **ROBERT GARFIAS**, Department of Sociology, UCI, *“Playing the numbers by Ear: An Ethnomusicologist looks at Diffusion and Migration Data”*

TOPICS IN PUBLIC POLICY
FALL 2003

October 3

“Why government adopts inefficient trade policies, such as quotas rather than tariffs”

October 17

“Fuel Efficiency of Cars”

October 31

“The Aversion to Pricing”

November 17

“Why policy reforms are delayed.”

SPRING 2004

April 30

1. *“Selected Measures of Household Income Dispersion: 1967 to 1999.”*
2. *“Limits to Redistribution in a Democracy: A Survey.”*

May 14

“Why the welfare state looks like a free lunch.”

May 28

“Why doesn’t the U.S. have a European-Style welfare state?”

June 11

“Income Inequality: Issues and Policy Options”

V. BUDGET

A. Appropriations and Expenditures

Appropriations:

2003-04 Allocation	\$ 90,649.00
2002-03 Carry Forward	\$ 35,668.86
Conference Support	<u>\$ 6,197.72</u>
Total budget for 03-04	\$132,515.58

Expenditures:

Salaries	\$37,884.34
School Administrative Support	\$ 7,500.00
Conference/Colloquia	\$24,738.34
Equipment	\$ 3,929.66
Supplies & Expenses	\$ 3,609.66
Graduate Student Support	<u>\$12,000.00</u>
Total Expenditures:	<u>\$ 89,662.00</u>
 <i>Carry Forward to 2004-05</i>	 \$ 42,853.58

2004-05 Encumbrances:

Graduate Student Support	\$15,100
Conference Support	\$ 5,000

B. Extramural Funding Activity

IMBS faculty research was supported by 24 research grants. At present, 2 individual grants are pending. Following is a detailed breakdown of the extramural funding.

GRANTS AWARDED AND ACTIVE:

PI	Source	Amount	Dates
Birnbaum <i>"Judgment and Decision Making on the Internet"</i>	NSF	\$99,324	7/02-6/04
Birnbaum <i>"Advanced Training Institute on Social Psychology: Using the Internet to Conduct Experiments"</i>	NSF	\$151,765	7/01-6/04
Birnbaum <i>"Effects of Terrorism on Judgments and Decisions Concerning Civil Liberties". Co-PI with Jennifer Devenport.</i>	NSF	\$23,639	7/01-6/03
Braunstein <i>Visual Perception of Surfaces Defined Through Motion</i>	NIH Fogarty Int'l	\$58,285	7/02-6/05
Brown/Stevers <i>Inference in Dynamic Environments</i>	AFRL/AFOSR	\$380,000	7/03-6/06
Brownstone <i>Update vehicle choice models for the California Air Resources Board.</i>	UC Davis	\$12,980	6/03-7/04
Butts <i>"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).</i>	NSG ITR	\$8,957,651.00	10/03-9/08
Chubb <i>"Semantic Biological Image Management and Analysis." Co-PIs: P. Sheu, C. Cotman.</i>	NSF	\$300,003	8/03 – 7/06
Chubb <i>"Effects of Temporal Lobectomy on Sensory Deficits in TLE." PI A. Grant. Co-PIs C. Chubb, G. Hickok, F-G Zeng.</i>	NINDS	\$688,560	9/03 – 5/08
Dosher <i>Color Pattern Appearance and Detection</i>	NSF	\$151,045	9/00 – 8/03

Dosher	NIH	\$1,103,244	7/00-6/04
<i>Functions and Mechanisms of Perceptual Learning</i>			
Dosher	Air Force	\$331,837	1/01-12/04
<i>Color Pattern Appearance and Detection</i>			
Faust	CORCLR	\$25,000	5/02-6/05
<i>Social Networks in Hollenbeck: Gangs and Communities</i>			
Grofman	Borchard Foun.	\$25,000	2004
<i>A conference on Pluralitarian/Majoritarian Electoral Systems (Borchard Foundation, with \$2,500 supplemental funding from the UCI Center for the Study of Democracy; with James Adams and Shaun Bowler)</i>			
Hoffman	Alzheimer's Assoc.	\$387,000	8/02-7/04
<i>The role of parts in the visual perception of objects.</i>			
Kaminski	CSD, NSF	\$13,300	3/04-4/05
<i>Transitional Justice in Comparative Perspective, Co-PI with Monika Nalepa)</i>			
Kaminski	CSD, GPACS	\$19,300	1/04-12/04
<i>Conference on Transitional Justice in October 2004, Co-PI with Monika Nalepa</i>			
Keller	U.S. EPA	\$895,234	8/00-7/03
<i>Identification and Control of Non-Point Sources of Microbial Pollution in a Coastal Watershed.</i>			
Keller	NSF	\$6,900,000	9/04-8/09
<i>Decision Center for a Desert City. Serve on decision research team with Craig Kirkwood, Don Keefer, and Bill Verdini of ASU.</i>			
Luce	NSF	\$210,000	3/02-2/05
<i>Algebraic and Stochastic Models of Structures arising in Utility Theory and Psychophysics</i>			
Romney/Batchelder	NSF	\$ 280,000	2/02-1/05
<i>Research in the Foundation and Practice of Social Measurement</i>			
Saari	NSF	\$ 99,999	7/03-6/04
<i>Examining Model Validation for Engineering Design</i>			
Skaperdas	MacArthur Foun.	\$ 99,000	7/02-6/03
<i>Investing in Conflict Management: An Economic Approach</i>			
Small	Calif. Air Resources.	\$ 75,590	6/03-9/05
<i>Study to evaluate effects of improved fuel economy on vehicle miles traveled and resulting economic impacts. (Lead P.I. with co-PIs D. Brownstone and K. Van Dender).</i>			

Smyth	NSF-DARPA-NSA	\$435,000.	10/02 – 9/04
<i>Entity-Based Data Mining from Spatiotemporal and Text-Based Data Streams.</i> (Consultant: M. Steyvers)			
Sperling	AFO: Scientific. Res.	\$438,624	4/04-12/06
<i>Deriving a Computational Theory of Visual Spatial Attention.</i>			
Steyvers/Brown	CORCLR	\$11,950	7/03-6/04
<i>The Dynamics of Decision Making and Criterion Setting: Data and Theory</i>			
White	EU Grant sub- contract component	\$10,000	1/02-12/05
<i>Society as a Complex System</i> (PIs on the main grant are Profs. Sander van der Leeuw, David Lane and Geoffrey West)			
Zhao	ONR	\$650,000	11/01-10/04
<i>ONR: Time Reversal and Imaging in Heterogeneous and Noisy Environments</i>			
Zhao	DARPA	\$500,000	2/04-11/05
<i>Time Reversal and Imaging in a Multiscale Environment and Applications to Imaging and Communications.</i>			

INDIVIDUAL PROPOSALS PENDING

Butts	NSF, SBE, HSD	\$502,197	2/04-11/05
<i>“Information Diffusion Through Interpersonal Networks in Crisis Settings”</i>			
Faust	CORCLR	\$25,000	5/02-6/05
<i>“Social Networks in Hollenbeck: Gangs and Communities”</i>			

VI. APPENDICES

APPENDIX A CURRENT FACULTY MEMBERS

This year the Institute added two new members. Professors Natalia Komarova and Hongkai Zhao. They are included below.

MEMBERS

Aldo Antonelli, (Ph.D Philosophy, University of Pittsburgh). Associate Professor of Philosophy, University of California, Irvine. Research areas: knowledge representation and 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). Associate 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). Director, Institute for Mathematical Behavioral Sciences, and Professor of Cognitive Sciences, University of California, Irvine. Research areas: Mathematical modeling and measurement methodology in the social and behavioral sciences.

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.

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.

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

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

Carol Cicerone, (Ph.D. Psychology, University of Michigan). Professor of Cognitive Sciences, University of California, Irvine. Research areas: Vision, especially human color vision and the regulation of visual sensitivity; biological bases of visual perception.

Barbara Doshier, (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.

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.

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.

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.

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.

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, 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). Assistant Professor of Cognitive Sciences, University of California, Irvine. Research areas: Computational models of memory, reasoning and perceptions.

Justin Tobias, (Ph.D. Economics, University of Chicago). Assistant Professor of Economics, University of California, Irvine. Research areas: nonparametric methods in econometrics, Bayesian econometrics and the economics of education.

Douglas White, (Ph.D. Anthropology/Social Theory, University of Minnesota). Professor of Anthropology, University of California, Irvine. Research areas: Social 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.

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.

AFFILIATE MEMBERS

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.

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.

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.

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.

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

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.

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.

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.

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.

Christian Werner, (Ph.D. Geography, The Free University of Berlin). Professor Emeritus of
Economics, University of California, Irvine. Research areas: Network theory, graph theory,
operations research methods, models of geographic linkages and distributions.

APPENDIX B
SCIENTIFIC PUBLICATIONS OF MEMBERS, ACADEMIC 2003-04¹

Jeffrey Barrett

Barrett, J. A. The Quantum Mechanics of Everything. Forthcoming in the *British Journal of Philosophy of Science*.

Barrett, J. A. Relativistic Quantum Mechanics Through Frame Dependent Constructions. Forthcoming in *Philosophy of Science*.

Aitken, W. and J. A. Barrett. Computer Implemented Deduction and the Curry Paradox. Forthcoming in the *Journal of Philosophical Logic*.

Aitken, W. and J. A. Barrett. Stability and Paradox in Algorithmic Logic. Forthcoming.

Michael Birnbaum

Birnbaum, M. H., & Martin, T. (2003). Generalization across people, procedures, and predictions: Violations of stochastic dominance and coalescing. In S. L. Schneider & J. Shanteau (Eds.), *Emerging perspectives on decision research* (pp. 84-107). New York: Cambridge University Press.

Birnbaum, M. H. (2004). Methodological and ethical issues in conducting social psychology research via the Internet. In C. Sansone, C. C., Morf, & A. T. Panter (Eds.), *Handbook of Methods in Social Psychology* (pp. 359-382). Thousand Oaks, CA: Sage.

Birnbaum, M. H. (2004). Human research and data collection via the Internet. *Annual Review of Psychology*, 55, 803-832.

Birnbaum, M. H. (2004). Causes of Allais common consequence paradoxes: An experimental dissection. *Journal of Mathematical Psychology*, 48, 87-106.

Birnbaum, M. H. (2004, in press). Tests of Rank Dependent Utility and Cumulative Prospect Theory in Gambles Represented by Natural Frequencies: Effects of Format, Event Framing, and Branch-Splitting. *Organizational Behavior and Human Decision Processes*,

Birnbaum, M. H. (in press). Base rates in Bayesian inference. In R. Pohl (Eds.), *Cognitive Illusions* (Chapter 2).

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

Birnbaum, M. H., & Reips, U.-D. (in press). Behavioral research and data collection via the Internet. In R. W. Proctor & K.-P. L. Vu (Eds.), *Handbook of human factors in Web design*. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Myron Braunstein

Feria, C. S., Braunstein, M. L., & Andersen, G. J. (2003). Judging distance across texture discontinuities. *Perception*, 32, 1423 – 1440.

Ni, R., Braunstein, M. L., & Andersen, G. J. (in press). Texture orientation and biases in judged motion direction in structure-from-motion displays. *Visual Cognition*.

Ni, R., Braunstein, M. L., & Andersen, G. J. (in press). Perception of scene layout from optical contact, shadows and motion. *Perception*.

Zhong, H., & Braunstein, M. L. (in press). Effect of background motion on the perceived shape of a 3-D object. *Vision Research*.

Scott Brown

Brown, S. & Heathcote, A. A ballistic model of choice response time. *Psychological Review*. (in press).

Brown, S. & Heathcote, A. QMLE: Fast, robust and efficient estimation of distribution functions based on quantiles. *Behavior Research Methods, Instruments, & Computers*. (in press).

Heathcote, A., Brown, S. & Cousineau, D. Estimating lognormal, Wald and Weibull RT distributions with a parameter dependent lower bound. *Behavior Research Methods, Instruments, Computers*. (in press).

Cousineau, D., Brown, S. & Heathcote, A. Methods and packages for fitting RT distributions. *Behavior Research Methods, Instruments, & Computers*. (in press).

Heathcote, A. & Brown, S. (2004). Beyond curve fitting? Comment on Liu, Mayer-Kress & Newell. *Journal of Motor Behavior*, 36(2), 225-232

Heathcote, A. & Brown, S. Reply to Speckman and Rouder: A theoretical basis for QML. *Psychonomic Bulletin & Review*. (in press).

Mike Burton

M. L. Burton, et al. Sampling from the United States Census Archives. Accepted for publication by *Field Methods*.

M. L. Burton, E. Greenberger, and C. Hayward. Mapping the Ethnic Landscape. Accepted for publication by *Cross-Cultural Research*.

Carter Butts

Butts, Carter T. (2003). "Predictability of Large-scale Spatially Embedded Networks" In Ronald Breiger, Kathleen Carley, and Philippa Pattison (eds.), *Dynamic Social Network Modeling and Analysis: Workshop Summary and Papers*, 313-323. Washington, D.C.: National Academies Press.

Butts, Carter T. and Hilgeman, Christine. (2003). "Inferring Potential Memetic Structure from Cross-Sectional Data: An Application to American Religious Beliefs." *Journal of Memetics - Evolutionary Models of Information Transmission*, 7(2).

Butts, Carter T. and Pixley, Joy E. (2004). "A Structural Approach to the Representation of Life History Data." *Journal of Mathematical Sociology*, 28(2), 81-124.

Mehrotra, Sharad; Butts, Carter T.; Kalashnikov, Dmitri V.; Venkatasubramanian, Nalini; Altintas, K.; Hariharan, R.; Lee, Haimin; Ma, Yiming; Myers, Amnon; Wickramasuriya, Jehan; Eguchi, Ron; Huyck, Charles. (2004). "CAMAS: A Citizen Awareness System for Crisis Mitigation." In *Proceedings of ACM SIGMOD International Conference on Management of Data*, demo publication, June 13-18, 2004.

Mehrotra, Sharad; Butts, Carter T.; Kalashnikov, Dmitri V.; Venkatasubramanian, Nalini; Rao, Ramesh; Chockalingam, G.; Eguchi, Ron; Adams, B.; and Huyck, Charles. (2003). "Project RESCUE: Challenges in Responding to the Unexpected." *SPIE Journal of Electronic Imaging, Displays, and Medical Imaging*, 5304, 179-192.

Charles Chubb

Nguyen, A., Chubb, C. and Huff, F.J., "Visual identification and spatial localization in Alzheimer's disease." *Brain and Cognition*, 55 (2), 155-166, 2003.

Bindman, D., and C. Chubb, "Brightness assimilation in bullseye displays." *Vision Research*, 44 (3), 309-319, 2004.

Bindman, D., and C. Chubb, "Mechanisms of contrast induction in heterogeneous displays." *Vision Research*, 44 (13), 1601-1613, 2004.

Chubb, C. "Attentional processes in texture perception." Chapter forthcoming in *Neurobiology of Attention*, Eds. L. Itti, G. Rees, and J. Tsotsos, Academic Press/Elsevier.
Chubb, C., M. S. Landy, J. Econopouly, "A visual mechanism tuned to black," *Vision Research*, in press.

Morgan, M.J., C. Chubb, J. Solomon, “Probability multiplication as a new principle in psychophysics.” Chapter forthcoming in *Seeing Spatial Form*, Eds. M.R. Jenkin & L.R. Harris, Oxford University Press.

DeFigueiredo

“Beyond Volterra and Wiener: Optimal Modeling of Nonlinear Dynamical Systems in a Neural Space for Applications in Computational Intelligence” in “COMPUTATIONAL INTELLIGENCE: The Experts Speak”, edited by D. B. Fogel and C. J. Robinson, IEEE Press and JohnWiley & Sons, USA, 2003

R. Oten, R.J.P. de Figueiredo “An efficient method for L-filter design”, *IEEE Transactions on Signal Processing* [see also *IEEE Transactions on Acoustics, Speech, and Signal Processing*], Vol. 51, no.1, Jan. 2003, Pages 193 – 203

R. Oten, R.J.P. de Figueiredo “Adaptive alpha-trimmed mean filters under deviations from assumed noise model” *IEEE Transactions on Image Processing*, Vol. 13 , no. 5 , May 2004 , Pages 627 – 639

Katherine Faust

Using Correspondence Analysis for Joint Displays of Affiliation Networks.” in *Models and Methods in Social Network Analysis*, edited by Peter J. Carrington, John Scott, and Stanley Wasserman. New York: Cambridge University Press. Forthcoming

Contractor, Noshir S., Stanley Wasserman, and Katherine Faust. Testing Multi-Theoretical Multilevel Hypotheses about Organizational Networks: An Analytic Framework and Empirical Example. *Academy of Management Review*. Forthcoming.

Rindfuss, Ronald R., Aree Jampaklay, Barbara Entwisle, Yothin Sawangdee, Katherine Faust, and Pramote Prasartkul. The Collection and Analysis of Social Network Data in Nang Rong, Thailand. *Network Epidemiology: A Handbook For Survey Design and Data Collection*. Martina Morris (ed.). Oxford: Oxford University Press. 2004

Michele Garfinkel

Garfinkel, M. Stable Alliance Formation in Distributional Conflict. *European Journal of Political Economy*. Forthcoming, (currently online--science direct).

Garfinkel, M. Global Threats and the Domestic Struggle for Power. *European Journal of Political Economy*, June 2004.

Garfinkel, M. On the Stability of Group Formation: Managing the Conflict Within. *Conflict Management and Peace Science*, Spring 2004.

Comment on "The Macroeconomic Consequences of Terrorism, *Journal of Monetary Economics* (forthcoming in July 2004) with Ivan Jeliaskov, (50 percent co-author).

Garfinkel, M. Political Pressure, Rhetoric and Monetary Policy. *Public Choice*. March 2004 (A book review)

Amihai Glazer

Glazer, Amihai and Priya Ranjan. Preference heterogeneity, wage inequality, and trade. *Journal of International Economics*, 2003, Volume 60, No. 2, August, pp. 455-469.

Glazer, Amihai, Mark Gradstein, and Priya Ranjan . Consumption variety and urban agglomeration. *Regional Science and Urban Economics*, 2003, Volume 33, No. 6, pp. 653-661.

Glazer, Amihai. Motivating devoted workers. *International Journal of Industrial Organization*, 2004, Volume 22, Issue 3 , March, pages 427-440.

Glazer, Amihai and Eckhard Janeba. Strategic investment by a regulated firm. *International Tax and Public Finance*, 2004, Volume 11, No. 2, pp. 123-132.

Cowen, Tyler and Amihai Glazer "Taxation and pricing when consumers value freedom." *Social Choice and Welfare*, forthcoming.

Glazer, Amihai and Mark Gradstein "Elections with contribution maximizing candidates. *Public Choice*, forthcoming.

Glazer, Amihai. Rent-seeking games. In Charles K. Rowley, and Fritz Schneider, eds. *Encyclopedia of Public Choice*, Volume II, pp. 502-504. Dordrecht: Kluwer Academic Publishers, 2004

Glazer, Amihai. Why government succeeds. In Charles K. Rowley and Fritz Schneider, eds. *Encyclopedia of Public Choice*, Volume II, pp. 613-616. Dordrecht: Kluwer Academic Publishers, 2004.

Bernard Grofman

Grofman, Bernard and Robert Stockwell. 2003. Institutional design in plural societies: Mitigating ethnic conflict and fostering stable democracy." In Ram Mudambi, Pietro Navarra and Guiseppe Sobbrío (eds.), *Economic Welfare, International Business and Global Institutional Change*. New York: Edward Elgar, Publishers, 102-137.

Regenwetter, Michel, A. A. A. Marley, and Bernard Grofman. 2003. General concepts of value restriction and preference majority." *Social Choice and Welfare*, 21(1):149-173.

Taagepera, Rein and Bernard Grofman. 2003. Mapping the indices of seats-votes disproportionality and inter-election volatility.” *Party Politics*, 9(6):659-677.

Grofman, Bernard. 2003. Electoral laws, parties, and public policy. In Yukio Adachi and Tosimasa Moriwaki (eds) *Public Policy: A Festschrift for Katsumi Yamakawa*. Koyoto, Japan: Shobo, Ltd. 299-311.

Grofman, Bernard. 2004. Alternative voting methods. In Charles Rowley and Friedrich Schneider (eds.), *Encyclopedia of Public Choice*, 9-12.

Grofman, Bernard. 2004. Arrow's impossibility theorem. In Charles Rowley and Friedrich Schneider (eds.), *Encyclopedia of Public Choice*, 25-27.

Grofman, Bernard. 2004. Black's single-peakedness condition. In Charles Rowley and Friedrich Schneider (eds.), *Encyclopedia of Public Choice*, 43-45.

Donald Hoffman

The interaction of colour and Motion. In *Colour: Mind and the Physical World*, D. Heyer and R. Mausfeld (Eds.) Oxford University Press, 361-377. D. Hoffman.

Colour construction. Commentary in *Colour: Mind and the Physical World*, D. Heyer and R. Mausfeld (Eds.) Oxford University Press, 273-274. D. Hoffman.

An internalist account of colour. Commentary in *Colour: Mind and the Physical World*, D. Heyer and R. Mausfeld (Eds.) Oxford University Press, 435-436. D. Hoffman.

Facial attention and spacetime fragments. *Axiomathes*, 13, 303-327. T. Davies, D. Hoffman.

Kann man Gott abschreiben? In *Im Anfang war Kein Gott: Naturwissenschaftliche und Theologische Perspektiven*, Tobias Daniel Wabbel (Ed.) Duesseldorf: Patmos. Pages 166-174. D. Hoffman. (Dismissing God. In *In the beginning was no god.*)

Tarow Indow

Tarow Indow, Examination of three systems of surface color by scaled color differences, *Vision and Visual Perception*, a special issue of *Arquivos Brasileiros de Oftalmologia*, 2003, No.5, 16-25.

Geoff Iverson

Wagenmakers, E.J., Ratcliff, R., Gonzales, P., & Iverson, G. (2004). Assessing Model Mimicry using the Parametric Bootstrap. *Journal of Mathematical Psychology*, 48, 28-50.

Myung, J. I., Karabatsos, G. & Iverson, G. J. (April, 2004). A Bayesian Approach to Testing Decision Making Axioms. Submitted to the Journal of Mathematical Psychology.

Iverson, G., Myung, J. I., & Karabatsos, G. (July, 2004). Intransitivity of Preference: Revisited. Submitted to Psychological Review.

Marek Kaminski

Games Prisoners Play, 2004, published by Princeton University Press.

Kaminski, M. General Equilibrium Model of Multiparty Competition, accepted by *Social Choice and Welfare*.

Kaminski, M. Social Choice and Information. Informational Structure of Uniqueness Theorems in the Social Sciences, accepted by *Mathematical Social Sciences Translations*.

Kaminski, M. "Do Parties Benefit from Electoral Manipulation? Electoral Laws and Heresthetic in Poland, 1989-93. Selected for the Ukrainian edition of the Polish journal *Studia Socjologiczne* that will include best articles published in "SS" after the fall of communism.

Robin Keller

Co-author of "Distribution and Administration of Potassium Iodide in the Event of a Nuclear Incident," Committee to Assess the Distribution and Administration of Potassium Iodide in the Event of a Nuclear Incident, Board of Radiation Effects Research, Division of Earth and Life Studies, National Research Council of the National Academies, National Academies Press, Washington, DC.

S. David Brazer and L. Robin Keller. Applying Design Research to Educational Decision Making, working paper. (An email from editor A. Kelly in Fall 2003 states that a revised version will be published in a volume edited by Anthony (Eamonn) Kelly and Richard Lesh following GMU-NSF Knowledge Design Meeting, Santa Fe, Jan. 2003. Final acceptance pending.)

S. David Brazer and L. Robin Keller. Capturing the Subtlety and Complexity of Educational Decision Making: A Conceptual Framework, 1-30-04, under review, *Educational Administration Quarterly*.

Joanna Ho, L. Robin Keller and Pamela Keltyka. How Do Information Ambiguity and Timing of Contextual Information Affect Managers' Goal Congruence in Making Investment Decisions in Good Times vs. Bad Times? To be submitted July 2004 to *Journal of Risk and Uncertainty*

Igor Kopylov

Kopylov, I. Subjective Probabilities on “Small Domains” (submitted to *Econometrica*).

Kopylov, I. Maxmin Expected Utility with Epsilon Contaminated Set of Priors. Working paper.

Note on Gul-Pesendorfer’s Representation of Temptation. Working paper

Vladimir Lefebvre

“From Prediction to Reflexive Control.” *Reflexive Processes and Control*, 2003, No.1, Vol.2, pp. 86-102 (with X. Kramer, T. Kaiser, S. Schmidt, J. Davison).

“Mentalism and Behaviorism: Merging?” *Reflexive Processes and Control*, 2003, No.2, Vol.2, pp. 56-76.

“Bipolarity, Choice, and Entro-Field”, (accepted).

“Structure-Determined and Emergent Procedures of Decision Making” with D. Birx and S. Schmidt (accepted).

“On Sharing a Pie Modeling Costly Pro-Social Behavior”, (accepted).

R. Duncan Luce

Luce, R.D. (2003). Rationality in choice under certainty and uncertainty. In S. Schneider & J. Shanteau (Eds). *Emerging Perspectives in Judgment and Decision Making*. Cambridge, England: Cambridge University Press. Pp. 64-83.

Luce, R.D. (2003). Whatever happened to information theory in psychology? *Review of General Psychology*, 7, 183-188.

Luce, R.D., & Steingrimsson, R. (2003). A model of ratio production and estimation and some behavioral properties. In B. Berglund & E. Borg (Eds). *Fechner Day 2003. Proceedings of the annual conference of the International Society for Psychophysics*.

Luce, R.D. (2004). Symmetric and asymmetric matching of joint presentations. *Psychological Review*, 111, 446-454.

Luce, R.D. (2004). Increasing increment generalizations of rank-dependent theories. *Theory and Decision*, 55, 87-146.

Luce, R.D. & Marley, A. A. J. (2004) Additive utility representations of gambles: Old and new axiomatizations. *Journal of Risk and Uncertainty*, in press.

Steingrimsson, R., & Luce, R.D. (2004). Evaluating a model of global psychophysical judgments I: Behavioral properties of summations and productions. Submitted.

Steingrimsson, R., & Luce, R.D. (2004). Evaluating a model of global psychophysical judgments II: Behavioral properties linking summations and productions. Submitted

Marley, A. A. J. & Luce (2004). Independence properties vis-à-vis several utility representations. Submitted.

Mark Machina

“Choice Under Uncertainty,” in *Encyclopedia of Cognitive Science*, Lynn Nadel (Editor-in-Chief), Nature Publishing Group, Macmillan Publishers Ltd., 2003.

“States of the World and the State of Decision Theory,” in Donald J. Meyer (ed.), *The Economics of Risk*, W.E. Upjohn Institute for Employment Research, 2003.

“Non-Expected Utility Theory,” forthcoming in *Encyclopedia of Actuarial Science*, Jozef Teugels and Bjørn Sundt (Editors), John Wiley & Sons, 2004.

“Structural Attribution of Observed Volatility Clustering” (with Clive Granger), forthcoming in *Journal of Econometrics*.

“ ‘Expected Utility/Subjective Probability’ Analysis without the Sure-Thing Principle or Probabilistic Sophistication,” forthcoming in *Economic Theory*.

“Almost-Objective Uncertainty,” *Economic Theory* 24 (July 2004), 1-54.

Penelope Maddy

Maddy, P. Second Philosophy, to appear in the *Journal of the Indian Council of Philosophical Research*.

McBride

Explication of the Cultural Transmission Model, with Elisa Bienenstock, *American Sociological Review* 69: 138-143

Anthony McGann

McGann, Anthony. The Tyranny of the Supermajority. *Journal of Theoretical Politics* 16.1, 2004.

Hout, Eliora van der & McGann, Anthony. Equal Protection Implies Proportional Representation. IMBS Working Paper, submitted to *Journal of Theoretical Politics*, 2004.

Latner, Michael and McGann, Anthony. Geographical Representation under Proportional Representation. Center for the Study of Democracy Working Paper, submitted to *Electoral Studies*, second revision.

Anthony McGann & Herbert Kitschelt. The Radical Right in The Alps: The Evolution of Support for the Swiss SVP and Austrian FPÖ. *Party Politics* 11, forthcoming..

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Dale Poirier

Bayesian Semiparametric Inference in Multiple Equation Models, (with Gary Koop and Justin Tobias), *Journal of Applied Econometrics*, forthcoming.

Bayesian Variants of Some Classical Semiparametric Regression Techniques, (with Gary Koop), *Journal of Econometrics*, forthcoming.

Do Dropouts Suffer from Dropping Out? Estimation and Prediction of Outcome Gains in Generalized Selection Models, (with Mingliang Li and Justin Tobias), *Journal of Applied Econometrics*, Vol. 9 (March 2004), 203-225.

The Roles of Birth Inputs and Outputs in Predicting Health, Behavior, and Test Scores in Early Childhood” (with Kai Li), *Statistics and Medicine*, Vol. 22, Issue 22 (November 2003), 3489-3514.

Bayesian Analysis of an Econometric Model of Birth Inputs and Outputs, (with Kai Li), *Journal of Population Economics*, Vol. 16 (August 2003), 597-625.

Empirical Bayesian Inference in a Nonparametric Regression Models, (with Gary Koop), in A.C. Harvey, S.J. Koopman, and N. Shephard, eds., *State Space Models and Unobserved Components: Theory and Applications* (Cambridge: Cambridge University Press, 2004), Chapter 8, 152-170, forthcoming.

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Estimation and Prediction in Non-Gaussian Selection Models with Application to Estimating the Impact of Dropping Out of High School on Test Scores (with Mingliang Li and Justin Tobias).

Donald Saari

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Stergios Skaperdas

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Brian Skyrms

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Time to Absorption in Discounted Reinforcement Models (with Robin Pemantle), *Stochastic Processes and Applications* 109 (2004) 1-12.

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Kenneth Small

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George Sperling

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Hal Stern

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Mark Steyvers

Griffiths, T., & Steyvers, M. Finding Scientific Topics. *Proceedings of the National Academy of Sciences*, 2004, 101 (suppl. 1), 5228-5235.

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Douglas White

White, Douglas R. and Johansen, Ulla. Network Analysis and Ethnographic Problems: Process Models of a Turkish Nomad Clan. *Walnut Creek, CA. Alta Mira/Lexington*. In Press.

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2004 Douglas R. White, Walter W. Powell, Jason Owen-Smith and James Moody. "Networks, Fields and Organizations: Micro-dynamics, scale and cohesive embeddings." *Computational and Mathematical Organization Theory* 10(1):95-117. Special issue on Mathematical Representations for the Analysis of Social Networks within and between Organizations, guest edited by Alessandro Lomi and Phillipa Pattison. Preprinted as *Santa Fe Working Paper* 2004-03-009.

Walter W. Powell, Douglas R. White, Kenneth W. Koput, and Jason Owen-Smith. "Network Dynamics and Field Evolution: The Growth of Inter-organizational Collaboration in the Life Sciences." *American Journal of Sociology* 209, in press. Preprinted as *Santa Fe Working Paper* 2003-02-004.

Woodrow W. Denham and Douglas R. White, "Multiple Measures of Alyawarra Kinship," *Field Methods*, in press.

Ted Wright

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Hongkai Zhao

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Y.R. Tsai, L.T. Cheng, S. Osher, H. Zhao. Fast Sweeping Algorithms for a Class of Hamilton-Jacobi Equations, *SIAM Journal on Numerical Analysis*, Vol 41, No 2, pp. 673-694, 2003.

H. Zhao. Fast Sweeping Method for Eikonal Equations. To appear in *Mathematics of Computation*.

H. Zhao. Analysis and Visualization of Large Set of Unorganized Data Points Using the Distance Function, submitted.

H. Zhao. Analysis of the Response Matrix for an Extended Target. To appear in *SIAM Applied Mathematics*.

Z. Li, X. Lin, M. Torres, H. Zhao. Generalized Snell's Law for Weighted Minimal Surface in Heterogeneous Media, to appear in *n* Methods and Applications of Analysis.

S. Hou, K. Solna, H. Zhao. Imaging of Location and Geometry for Extended Targets Using the Response Matrix. To appear in *Journal of Comp. Phys.*

APPENDIX C IMBS TECHNICAL REPORTS, 2003-04

MBS 03-04	Structural Change and Homeostasis in Organizations: A Decision-Theoretic Approach	Carter T. Butts Kathleen M. Carley
MBS 03-05	Latent Algebraic Structure in American Religious Beliefs, 1988-1998	Carter T. Butts Christin Hilgeman
MBS 03-06	Additive Utility Representations of Gambles: Old, New, and Needed Results	R. Duncan Luce A. A. J. Marley
MBS 03-07	Introductory Chapter to the 3 rd Edition of Algebra of Conscience	Vladimir A. Lefebvre
MBS 03-08	The Assessment of Knowledge in Theory and in Practice	Jean-Paul Falmagne Eric Cosyn Jean-Paul Doignon Nicolas Thiéry
MBS 03-09	Valuing Sequences of Lives Lost Or Saved Over Time: Evidence of Gain/Loss Asymmetry	Jeffrey L. Guyse L. Robin Keller
MBS 03-10	From Prediction to Reflexive Control	X. H. Kramer T. B. Kaiser S. E. Schmidt J. E. Davidson V. A. Lefebvre
MBS 03-11	Mentalism and Behaviorism: Merging?	Vladimir A. Lefebvre

MBS 03-12	Geometry of Chaotic and Stable Discussions	Donald G. Saari
MBS 03-13	Consequences of Reversing Preferences	Donald G. Saari Steven Brney
MBS 03-14	Are Part Wise Comparisons Reliable?	Donald G. Saari Katri K. Sieberg
MBS 04-01	Additive Utility Representations of Gambles: Old and New Axiomatizations	R. Duncan Luce A.A.J. Marley
MBS 04-02	Evaluating a Model of Global Psychophysical Judgments: I. Behavioral Properties of Summations and Productions	Ragnar Steingrimsson Duncan Luce
MBS 04-03	Evaluating a Model of Global Psychophysical Judgments: II. Behavioral Properties of Linking Summations and Productions	Ragnar Steingrimsson Duncan Luce
MBS 04-04	A New Foundation for Support Theory	Louis Narens
MBS 04-05	Negative Externalities and Sen's Liberalism Theorem	Donald G. Saari
MBS 04-06	Bipolarity, Choice, and Entropy	Vladimir A. Lefebvre
MBS 04-07	Equal Protection Implies Proportional Representation	Eliora Van der Hout Anthony McGann
MBS 04-08	Bayesian Inference from Continuously Arriving Informant Reports, with Application to Crisis Response	Carter T. Butts Fabio Leite
MBS 04-09	Exact Bounds for Degree Centralization	Carter T. Butts
MBS 04-10	The Profile Structure for Luce's Choice Axiom	Donald Saari
MBS 04-11	Independence Properties Vis-à-vis Several Utility Representations	A. A. A. Marley R. Duncan Luce

APPENDIX D
COLLOQUIA AND CONFERENCES OF IMBS MEMBERS, 2003-04²

Michael Birnbaum

Birnbaum, M. H. Experimental Dissection of the Allais Paradox Refutes Prospect Theory. Conference in Behavioral Economics, Irvine, May, 2003.

Birnbaum, M. H. Evaluation of Cumulative Prospect Theory as a Descriptive Theory of Risky Decision Making. Society for Mathematical Psychology Meetings, Ogden, UT, July, 2003.

Birnbaum, M. H. A Web-Based Program of Research on Decision Making. Research Conference on Subjective Probability, Utility and Decision Making, Zurich, July, 2003.

Birnbaum, M. H. Advanced Techniques in Internet Research: JavaScript. Society for Computers in Psychology Meetings, Vancouver, Canada, November, 2003.

Birnbaum, M. H. The Case Against Cumulative Prospect Theory. Psychonomic Society Meetings, Vancouver, Canada, November, 2003.

Birnbaum, M. H. I'm not really overweight; it just needs redistribution. 42nd Bayesian Research Conference, Fullerton, CA, January, 2004.

Birnbaum, M. H. New Paradoxes of Choice and Prospect Theory. Invited colloquium to UCSD Psychology Department. La Jolla, April, 2004.

Birnbaum, M. H. Ten "New Paradoxes" of Risky Decision Making. Conference on Individual Decision Making. UC Irvine, May, 2004.

Birnbaum, M. H. Ten "New Paradoxes" of Risky Decision Making Refute RDU and CPT. Invited Address, University of Zurich, Switzerland, June, 2004.

Birnbaum, M. H. A historical and experimental review of Behavioral Decision Making. (A 10 hour mini-course) University of Zurich. June, 2004.

Birnbaum, M. H. New Paradoxes of Choice. 11-th International Conference on the Foundations & Applications of Utility, Risk and Decision Theory (fur xi). Paris, June 30-July 4.

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

Bian, Z., Brauntein, M. L., & Andersen, G. J. (2004, May). The ground dominance effect does not depend on where the judgment is made. Vision Sciences Society, Sarasota, FL.

Bocheva, N., & Braunstein, M. L. (2004, May). Texture orientation and biases in judged motion direction in structure-from-motion displays. Vision Sciences Society, Sarasota, FL.

Feria, C., Braunstein, M. L., & Andersen, G. J. (2004, May). The effect of surface curvature on perceived distance. Vision Sciences Society, Sarasota, FL.

Ni, R., Braunstein, M. L., & Andersen, G. J. (2004, May). Interaction of optical contact, shadows and motion in determining perceived scene layout. Vision Sciences Society, Sarasota, FL.

Zhong, H., & Braunstein, M. L. (2004, May). Perceived rigidity of translating and rotating objects with a moving background. Vision Sciences Society, Sarasota, FL.

Scott Brown

Inference in dynamic environments. Brown, S. & Steyvers, M. Paper presented at the 44th Annual Conference of the Psychonomic Society, Vancouver, British Columbia, Canada. 2003

A ballistic model for response time. Brown, S. & Heathcote, A. Paper presented at the 23rd International Cognitive Science Conference, Sydney, Australia. 2003

David Brownstone

Valuing Time and Reliability: Assessing the Evidence from Road Pricing Demonstrations, (with K. Small), June 2003. Presented at International Association of Travel Behavior Modelers in Lucerne, Switzerland, August 2003.

Mike Burton

Language Families and Social Structure. Michael L. Burton, Carmella C. Moore, and A. Kimball Romney. Presented at meetings of Society for Cross-Cultural Research, San Jose, February 2004.

Production and Circulation of Food in Yap. James Egan, Michael Burton, and Karen L. Nero. Presented at meetings of Society for Economic Anthropology, Atlanta, April, 2004.

Carter Butts

Butts, Carter T. "Latent Structure in Multiplex Relations." (6/2004). NAACSOS Conference, Pittsburgh PA.

Lawson, Gabriel C. and Butts, Carter T. "Information Transmission Through Human Informants: Simulation." (6/2004). NAACSOS Conference, Pittsburgh, PA.
Mehrotra, S.; Butts, C.T.; Kalashnikov, D.V.; Venkatasubramanian, N.; Altintas, K.; Hariharan, R.; Lee, H.; Ma, Y.; Myers, A.; Wickramasuriya, J.; Eguchi, R.; Huyck, C. *CAMAS: A Citizen Awareness System for Crisis Mitigation*. (6/2004). SIGMOD 2004, Paris, France.

Butts, Carter T. "An Exponential Family of Permutation Models for the Comparison of Adjacency Structures." (5/2004). 22nd Sunbelt Network Conference (INSNA), Portoroz, Slovenia.

Butts, Carter T. and Hilgeman, Christine. "Latent Algebraic Structure in American Religious Belief, 1988-1998." (8/2003). ASA Meeting, Atlanta, GA.

Charles Chubb

"Isolation and analysis of human visual substances", Institute of Ophthalmology, University College London, Bath Street, London, England, June 25, 2003.

"Human sensitivity to contrast is 3-dimensional", AIC conference, Jackson Hole, WY, Feb. 5, 2004.

"The three dimensions for encoding contrast in simple textures", C. Chubb, M.S. Landy, J-H Nam, D.R. Bindman, G. Sperling. Poster presented by C. Chubb at the annual meeting of the Vision Sciences Society, Sarasota, FL, May 4, 2004.

"A visual mechanism tuned to black." (Paper presented at the 11th Joint Symposium on Neural Computation, University of Southern California, Los Angeles, CA, May 15, 2004.

DeFigueirideo

Rui J.P. de Figueiredo and Byung Moo Lee "A New Pre-Distortion Approach to TWTA Compensation for Wireless OFDM Systems" *Proc. of the 2nd. IEEE International Conference on Circuits and Systems for Communications (ICCSC-2004)*, Moscow, Russia, June 30 - July 2, 2004. (Invited Plenary Lecture).

Byung Moo Lee and Rui J.P. de Figueiredo "Enhanced V-BLAST Performance in MIMO Wireless Communication Systems" *Proc. of the 2nd. IEEE International Conference on Circuits and Systems for Communications (ICCSC-2004)*, Moscow, Russia, June 30 - July 2, 2004.

J. G. R. C. Gomes, S. K. Mitra, and Rui J. P. de Figueiredo, "A Complexity Comparison Between Multilayer Perceptrons Applied to On-Sensor Image Compression", *Proc. of 2004*

IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP-2004), Montreal, Canada, May 2004, pp. V.753 – V.756.

Rui J. P. de Figueiredo, Lead Panelist on the *Forum on Future Directions in Circuits and Systems*, at the *2004 International Symposium on Circuits and Systems (ISCAS 2004)*, May 23 –May 26, Vancouver, Canada

Opening Welcome Address at the *2nd. IEEE International Conference on Circuits and Systems for Communications (ICCSC-2004)*, Moscow, Russia, June 30 - July 2, 2004.

Amihai Glazer

Optimal Incentive Contracts When Workers Envy Their Boss, Presented at the Public Choice Society Meetings, Baltimore, March 2004

Battles Over Trade Protection, Presented at the Public Choice Society Meetings, Baltimore, March 2004

How Rent Seeking Can Promote Efficiency, Presented at the Public Choice Society Meetings, Baltimore, March 2004

Bernard Grofman

Rein Taagepera's approach to the study of electoral systems. Paper presented at the Festschrift Conference Celebrating Rein Taagepera's 70th Birthday, Tartu University, September 5-6, 2003.

Preferential voting and the promotion of moderation: Exploring the theory and practice. Paper presented at the Development Research Symposium in Pacific States: Re-Assessing Roles and Remedies, Fraenkel, Jon and Bernard Grofman. University of the South Pacific, Suva, Fiji, September 30, 2003.

Ecological regression and ecological inference in the presence of systematic bias in the measurement of the independent variable. Grofman, Bernard and Matthew Barreto. Paper presented at the Southern Political Science Association annual meeting, New Orleans, LA, January 7-10, 2004.

Evaluating the Impact of Test-Score Based Decisions on Differential Group Success. Grofman, Bernard and Samuel Merrill. Paper presented at the Annual Meeting of the Public Choice Society, March 12, 2004, Baltimore, MD.

Anticipating the Impact of Test-Score Based Decisions on Differential Group Success. Grofman, Bernard and Samuel Merrill. Paper presented at the European Public Choice Society Annual Meeting, April 16, 2004, Berlin, Germany.

Donald Hoffman

Brain Imaging Studies of Face Perception. UC Irvine.

Visual Intelligence. Sole Technology, Inc., Lake Forest, CA.

Ellipsoidal Basis Function Networks for Classification. Navy NSWC, Panama City, Florida.

Geoff Iverson

The Analytical Form of The Daylight Locus. Annual meetings of the Society for Mathematical Psychology, (with C. Chubb). Weber State University, Ogden, Utah. July, 2003.

Model Mimicry and the Parametric Bootstrap, (with E. J. Wagenmakers, and R. Ratcliff). Annual meetings of the Society for Mathematical Psychology. Weber State University, Ogden, Utah. July, 2003.

The Winer lectures: "Intransitivity of Preference: Revisited". Purdue University. November 2003.

Marek Kaminski

Workshop "Transition to Democracy", Greece, Olympia, July 5-18, 2004 (five lectures on "Electoral Manipulation and Transition", July 5-8)

Games Prisoners Play: Institute of Sociology, Warsaw University, Warsaw, March 30, 2004.
Parametric Rationing Methods, University of California, Irvine, October 21, 2003.

Do Parties Benefit from Electoral Manipulation? Department of Political Science Colloquium, University of California, Irvine, March 19, 2004.

Robin Keller

Co-chaired a session on "Advances in Decision Analysis," at the October 2003 conference of the Institute for Operations Research and the Management Sciences (INFORMS). Paper presented by Xiaona Zheng, Dipayan Biswas and L. Robin Keller on "Time-Weighted Utility for Multiobjective Multistakeholder Perspectives for Environmental Problems."

"The Effects of Peer Presence and Warning Signs on Beach-Goers' Perceived Probabilities of Going in Polluted Beach Water," co-authored with Dipayan Biswas. Society for Risk Analysis conference in December 2003, in Baltimore. Presented by Dipayan Biswas.

Discounting work presented at the Sixth STAR Environmental Research Seminar, October 8-9, 2003 in San Francisco.

Igor Kopylov

Southwest Economic Theory Conference, UC Irvine, Feb28, 2004

Risk, Uncertainty and Decisions, Kellogg School of Management, Jun 24, 2004.

Vladimir Lefebvre

“Mentalism and Reflexion,” invited paper at III International Symposium on Reflexive Processes and Control, Moscow, Russia, October 2003.

“Cognition and Belief,” invited paper at Rerikh’s International Center, Moscow, Russia (700 attendees), October 2003.

“Peculiarity of National Reflexion,” invited paper at III International Symposium on Reflexive Processes and Control, Moscow, Russia, October 2003.

“Skinner Box: Mathematical Representation,” presentation at Joint Mathematics Meetings in Phoenix, January 2004.

R. Duncan Luce

Linking Ratio Estimation and Production and a Reason to Expect a Power Psychophysical Function. Society for Mathematical Psychology, Weber State University. Ogden, Utah. Luce, R.D. & Steingrimsson, R., July 26, 2003.

A Model of Ratio Production and Estimation. and Behavioral Predictions. International Society for Psychophysics, Larnaca, Cyprus. Luce, R.D. & Steingrimsson, R., October 19-, 2003.

To Honor L. J. Savage, But Do Avoid His Formulation of the Decision Situation. IMBS Colloquium, UCI. Luce, R.D., & Marley, A.A.J., January 29, 2004.

Mark Machina

Georgetown University, Department of Economics Seminar, September 4, 2003

Brown University, Department of Economics Seminar, September 8, 2003

University of Maryland, Department of Economics Seminar, September 9, 2003

Johns Hopkins University, Department of Economics Seminar, September 10, 2003

Duke University, Fuqua School of Business Seminar, September 17, 2003

University of Rochester, Department of Economics Seminar, September 19, 2003

University of Southern California, Department of Economics Seminar, November 10, 2003

Stanford University, Department of Economics Seminar, April 8, 2004

Texas A&M University, Department of Economics Seminar, April 12, 2004

University of Texas - Austin, Department of Economics Seminar, April 14, 2004

Rice University, Department of Economics Seminar, April 15, 2004

Rady Handbook of Economic Forecasting Conference, UCSD, April 16, 2004

15th Jerusalem Summer School in Economic Theory, Hebrew Univ. of Jerusalem, June 20-29, 2004

Eleventh International Conference on Foundations of Utility & Risk Theory, Paris, July 2, 2004

Penelope Maddy

“Mathematical existence”, plenary talk, Association for Symbolic Logic, May 2004, Carnegie Mellon University.

Michael McBride

UC Irvine, Logic and Philosophy of Science, June 2004 Public Choice Society/Economic Science Association Meetings, Baltimore, MD, March 2004.

Institute on Global Conflict and Cooperation Jr. IR Colloquium, San Diego, CA, February 2004.

Anthony McGann

Public Choice Society Conference, The Calculus of Consensual Democracy, 2004

American Political Science Association Conference, Immigration and the Median Voter, 2003

American Political Science Association Conference, The Domestic Politics of Economic Sanctions (with Solomon Major), 2003.

Dale Poirier

European Meeting of the Econometric Society, Stockholm, Sweden, August 23, 2003

University of California, Davis, November 7, 2003

Kobe University, Kobe, Japan, December 19, 2003

“What is in a Word or Two?” University of California, Irvine, April 9, 2004

World Meeting of the International Society for Bayesian Analysis (ISBA), 2004

Vina del Mar, Chile, May 18, 2004

University of California, Riverside, June 2, 2004

Donald Saari

Oberwolfach, Germany, conference on Design of Electoral Systems March, 2004, “The mathematical source of all voting paradoxes”.

Banff Institute for Research Studies. (Banff, Canada) April, 2004, “A new way to analyze central configurations.”

Dept. of Economics, Universite de Caen, Caen, France, June 2004, “A new approach toward evolutionary game theory”

GEMMA, Universite de Caen, Caen, France, June 2004, “Geometry of Voting”

National MAA Conference: Mathfest, Boulder, CO, July 2003, Invited featured lecture, “Geometry of Departmental Discussions”

Ordinal and Symbolic Data Analysis: UCI, August 2003, “Symmetry and other data structures,”

Applications of Discrete Math and Theory. Computer Science: DIMACS, Rutgers, Oct. 2003, “New approaches to answer the puzzles of social choice.”

Special session; AMS National Meeting, Phoenix, Jan. 2004, “Rethinking central configurations”

Workshop, Santa Fe Institute, Santa Fe, NM, April 2004, “Modeling social science issues with dynamics”

Evolutionary game theory, IMBS, UCI, March, 2004, “Toward a qualitative approach toward evolutionary game theory”

Economics, University of Cal., San Diego, December 2003, “From Arrow's Theorem to Evolutionary Game Theory”

Telecast to PR firms in 8 states including firms in Boston, Chicago, Minneapolis, San Francisco), Jan 2004, “The importance of economics and decision theory—for you”

Mathematics Dept., Cal Poly at Pomona, Feb. 2004, “Election Time! Will we elect whom we really want?”

Oberlin College, Feb. 2004:

Public Lecture, “Another election season, but will we elect whom we really want?”

Mathematics Dept., “Evolution of Newton's universe”

Mathematics Dept., “Departmental discussion can be chaotic”

Economics Dept., “Arrow's theorem: does it really mean what we have been told?”

Mathematics Dept., Three lectures on “Chaotic dynamics and how this can be used.”

University of Nebraska, April, 2004:

Rowlee Lecture and Tom Osborn Visiting Lecturer, “Elections! Now, that is real chaos!”

Mathematics Dept., -“The evolution of Newton's universe,”

Economics Dept., “Arrow's and Sen's theorems: Do they really mean what we have been told?”

Stergios Skaperdas

Claremont-McKenna College, Economic Seminar, September 2003

Meeting on "Conflict and Economic Performance," Peace Research Institute of Oslo and University of Oslo, Norway, December 2003.

UC Berkeley, Positive Political Theory Seminar, February 2004.

Athens University of Economics and Business, Microeconomics Seminar, March 2004.

Wissenschaftszentrum Berlin für Sozialforschung (Social Science Research Center Berlin), Market Processes and Governance seminar, April 2004.

UC Irvine, IMBS Colloquium, May 2004.

Meeting on “Between War and Peace,” Center for the Study of Civil Wars, “ Peace Research Institute of Oslo, June 2004.

Brian Skyrms

Social Software Conference Carlsberg Academy Copenhagen, Denmark. May 2004

American Philosophical Association -Pacific Meetings (Author Meets Critics Session on my book *The Stag Hunt and the Evolution of Social Structure*), March 2004.

American Philosophical Association (Eastern Meetings), December 2003.

University of Vienna Ramsey Centenary Conference, November 2003.

Alasdair McIntyre Lecture Duke University, November 2003.

University of Konstanz (3 lectures), October 2003.

Washington State University, October 2003

Kenneth Small

Valuing Time and Reliability: Assessing the Evidence from Road Pricing Demonstrations, (with David Brownstone). 10th International Conference on Travel Behaviour Research, Lucerne, Switzerland, Aug. 2003.

Valuing Time and Reliability: Assessing the Evidence from Road Pricing Demonstrations (with David Brownstone). Conference on Theory and Practice of Congestion Charging, Imperial College, London. Aug. 2003.

Out on a Limb: Pricing Futures, Luncheon speaker, International Symposium on Road Pricing, Key Biscayne, Florida, Nov. 03.

Leadoff speaker, Session on Transportation Issues, Conference on Urban Sprawl and Transportation Policy, Weidenbaum Center Forum, Washington University, St. Louis, May 04.

Invited presentations at educational, governmental institutions (or similar organizations)

Univ. of Maryland at College Park, April 04

Univ. of Illinois at Urbana-Champaign, May 04

Northwestern University, Evanston, Illinois, May 04

Univ. of Texas at Austin, June 04

George Sperling

Sperling, G., & Ding, J. European Conference on Visual Perception, Paris, France, September 2, 2003. A neurally-based computational theory of binocular combination.

Gobell, J., Tseng, C.-H., & Sperling, G. European Conference on Visual Perception, Paris, France, September 5, 2003. Toward a general model of the spatial distribution of visual attention.

Sperling, G., Wurst, S., & Lu, Z-L. (2003). Paper read by G. Sperling, Psychonomic Society, Vancouver, BC, Canada, November 6-9, 2003. Quantifying the efficiency of visual attentional selection.

Sperling, G. Twenty-Ninth Annual Interdisciplinary Conference, Jackson, Wyoming, February 3, 2004. Long-term persistence of spatial attention.

Sperling, G., & Hsu, A. Paper presented by G. Sperling. Vision Sciences Society, Sarasota, Florida, May 1, 2004, Revisiting the Lincoln picture problem.

Chubb, C., Landy, M., Nam, J.-H., Bindman, D. R., & Sperling, G. Poster presented by C. Chubb. Vision Sciences Society, Sarasota, Florida, May 4, 2004, The three dimensions for encoding contrast in simple textures.

Sperling, G. 11th Joint Symposium on Neural Computation, University of Southern California, Los Angeles, California, May 15, 2004. A linear systems approach to modeling the spatial distribution of visual attention.

University of California, Irvine, CA. Institute for Mathematical Behavioral Sciences, Colloquium, October 9, 2003. How the brain computes visual motion.

Justus-Liebig-Universitaet, Otto-Behaghel-Str. 10, 35394 Giessen, Germany, Abteilung Allgemeine Psychologie, Seminar, September 10, 2003. The three-systems theory of motion perception and how it applies to isoluminant color motion.

New Bulgarian University 21, Montevideo Str. Sofia 1635, Bulgaria Department of Cognitive Science and Psychology, Seminar, September 15, 2003. How the brain computes visual motion.

Bulgarian Academy of Sciences, Acad. G. Bonchev Str., Bl. 23, 1113 Sofia, Bulgaria, Institute of Physiology, Seminar, September 16, 2003. Neural Computations in Visual Selective Attention.

New Bulgarian University 21, Montevideo Str. Sofia 1635, Bulgaria, Department of Cognitive Science and Psychology, Seminar, September 17, 2003. Spatial attention and short-term memory.

Smith Kettlewell Research Institute, San Francisco, California, Colloquium, February 18, 2004. Quantifying Visual Spatial Attention.

Ramesh Srinivasan

“Alternation rivalry and steady-state EEG/MEG”, Society for Neuroscience, New Orleans, LA, Nov 2003,

“Rivalry between visual streams and the cortical dynamics of conscious experience”, Association for the Scientific Study of Consciousness, Antwerp, Belgium, June 2004

Hal Stern

“Better Sports through Statistics,” “Bayesian Statistics: How? Why?”, October 2003.

Keynote Speaker -- Fall Meeting, Southern California American Statistical Association Chapter, Pomona, CA.

“The Complete Idiot’s Guide to Rating Sports Teams”. IMS Mini-Meeting on Sports and Statistics, Worcester Polytechnic Institute, Worcester, MA, November 2003.

“Variance Components Analysis of a Multi-Site fMRI Study”, Contributed Poster, International Society for Bayesian Analysis (ISBA) World Meeting, Vina del Mar, Chile, May 2004.

“Bayesian Exploratory Data Analysis is not an Oxymoron”, Contribution to a debate *On Bayesian Exploratory Analysis*, ISBA World Meeting, Vina del Mar, Chile, May 2004.

IMBS Decisions Group, University of California, Irvine, CA, December 2003.

IMBS Social Dynamics Group, University of California, Irvine, CA, February 2004

Mark Steyvers

University of Colorado, Boulder. LSA workshop for LSA: A road to meaning. “Probabilistic alternatives to LSA”. May 2004.

University of California, San Diego. AI research seminar. “Learning about authors and documents”, May 2004.

Iowa State University. Colloquium at the Psychology Department: “Semantic Representation and the Topics Model”, October 2003.

University of California, Riverside. Psychology Department, Cognitive Lunch: “Semantic Representation and the Topics Model”, October 2003.

Douglas White

“Network Dynamics and Field Evolution: The Growth of Inter-organizational Collaboration in the Life Sciences.” Walter W. Powell, Douglas R White, Kenneth W Koput, Jason D. Owen-Smith (Presenter). Annual Meeting, American Sociological Association. Session: Social Networks as Resources. August. 2003

Workshop Participant, Social Scaling. Santa Fe Institute. August 2003

Invited lecture, “Kinship Networks and Demography.” Stanford, Anthropological Sciences. November 2003.

Invited lecture, “Networks, cohesion and scaling.” Château de Champs-sur-Marne, Conference on the Information Society as a Complex System. December 2003..

“Network Processes in Evolving Systems. Opening research focus group discussion,” MBS program in Social Dynamics and Evolution. January, 2004, UCI.

“Quantitative Network Analysis,” with Bob Hanneman. Time-mapping Globalization in the World-System. February 2004, UC Riverside.

Invited workshop presentation. “Réseaux de Parenté,” séminaire Pajek – Sorbonne. Paris, June 2004.

Invited lecture, “Social Networks of the Internet,” Complexity Science Institute of Paris, June 2004. (Clémence Magnien).

Invited lecture, “Modeling the Dynamics of Network Formation and Evolution.” Workshop on Dynamics of groups and institutions: Their emergence, co-evolution and environment. Santa Fe Institute and the Research Centre of the Slovenian Academy of Sciences, June 2004.

Hongkai Zhao

International Conference on Numerical and Applied PDEs, Changchun, China, June 2004.

International Workshop on Wave Propagations, Beijing, China, June 2004.

SIAM meeting on Materials Sciences, LA, CA., May 2004.

International Conference on Numerical Methods in Imaging, Science and Information Processing, Singapore, December 2003.

Workshop on Computational Techniques for Moving Interfaces, Pacific Institute for the Mathematical Sciences, Banff, Canada, August 2003.

Applied Mathematics Seminar, Duke University, NC., November 2003

Numerical Analysis Seminar, NC State, NC., November 2003.

APPENDIX E
FACULTY AWARDS/ACHIEVEMENTS

Michael Birnbaum

Research and Creative Activity Award for the School of Humanities and Social Sciences at CSUF.

Scott Brown

Award for “Teaching Excellence in Undergraduate Education”.

Carter Butts

Elected to the council of the ASA Section on Mathematical Sociology, 2004-2006.

Author/maintainer, social network analysis package of social network analysis tools for the R statistical computing system (software).

DeFigueiredo

Gh. Asachi Medal and Honorary Professor, the Technical University of Iasi (TUI), Romania.

IEEE Circuits and Systems Transactions Guillemin-Cauer Best Paper Award.

Elected Member, UN-sponsored International Informatization Academy

Elected Honorary Member, Russian Popov Society.

Member, Executive Committee for Communications and Networking, UC IUCRP (UC Industry-University Cooperative Research Program).

Katherine Faust

Editorial Boards: *Sociological Methodology*, *Social Networks*.

Methodology Section of American Sociological Association, board member (elected).

International Network for Social Network Analysis, Treasurer and member of Board (elected).

Michelle Garfinkel

Editorial boards of:

- Journal of Money, Credit and Banking.
- Journal of Macroeconomics.
- Journal of Economics and Business.
- Defense and Economics.

Bernard Grofman

Recipient (with Timothy Brazill) of the Duncan Black Prize of the Public Choice Society for best paper published in *Public Choice* in 2002, “Identifying the Median Justice on the Supreme Court through Multi-Dimensional Scaling: Analysis of the ‘Natural Courts’ 1953-1991”, 2003.

Donald Hoffman

Who's Who Among America's Teachers, Edition 8, 2004.

Marek Kaminski

Elected affiliate member of the Department of Economics.

Robin Keller

GSM Operations and Decision Technologies (ODT) Area Coordinator, 2003-04 and ODT Recruiting Committee, 2003-04.

Executive Committee, Institute for Mathematical Behavioral Sciences.

UCI Graduate Council (oversees graduate programs), Fall 2002-Spring 2004.

GSM Economics Recruiting Committee, 2003-04.

Decision Analysis Society of INFORMS, Past-Chair (renamed Past-President), 2002-04.

Three awards to my students based on our research collaborations: two dissertation proposal awards to Dipayan Biswas for his behavioral decision theory topic and a Decision Analysis Society student travel grant to Xiaona Zheng (to attend the October 2003 INFORMS Conference and present our EPA-funded work on “Time Weighted Utility for Multiobjective Multistakeholder Perspectives for Environmental Problems,” co-authored with me, Dipayan Biswas and Tianjun Feng).

Duncan Luce

The Frank P. Ramsey Medal of the Decision Analysis, INFORMS, October, 2003.

Daniel G. Aldrich, Jr. Distinguished University Service Award, UCI, January, 2004. The Norman Anderson Award for Lifetime Contributions to Psychology, the Society of Experimental Psychologists, March, 2004.

Mark Machina

Who's Who in America, 58th Ed., Marquis Publishing, 2003.

Dale Poirier

Current editorships:

Associate Editor for *Journal of Econometrics*.

Associate Editor for *Bayesian Analysis* (new Bayesian journal).

UCI Statistics Search Committee

Donald Saari

Elected to American Academy of Arts and Sciences.

Elected as Chair of the Board of Trustees, Mathematical Science Research Institute.
Awarded UCI Distinguished Faculty Award for Research.

Chief Editor, *Bulletin of the American Mathematical Society*.

Council: American Mathematical Society.

Council: Society for Social Choice & Welfare.

Expert Panel, Review of MITAC for Canadian Centres of Excellence.

NRC committees: Math Science Education Board, Committee for evaluating K-12 math education, IIASA.

Assoc. Ed/Ed board: Social Choice & Welfare, Economic Theory, Positivity, Qualitative Theory of Dynamical Systems.

Stergios Skaperdas

Member of Program Committee: Economic Theory conference, Rhodes, Greece, July 2003.

Co-organizer, Southwest Economic Theory Conference, UC Irvine, February 2004.

Co-organizer, Conference on "Rationalist Approaches to War and Conflict," WZ-Berlin, July 2004.

Associate Editor, *Economics of Governance*.

Associate Editor, *Global Crime*.

Brian Skyrms

Elected President of the Philosophy of Science Association

Kenneth Small

Distinguished Transportation Research Award, Transportation Research Forum, 2004

Visiting Patterson Scholar, Northwestern University, April-June 2004

Academic Keys *Who's Who in Social Sciences Higher Education*.

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).

Edward Elgar *Who's Who in Economics* (2003).

Editing positions:

Associate Editor, *Transportation Research B*, 2004-

Book series co-editor, *Transportation Research, Economics and Policy*, Kluwer

Academic Publishers, 1993 – 2003.

Membership on journal editorial boards:

Editorial Board, *Urban Studies*, 1992-2003.

Editorial Board, *Regional Science and Urban Economics*, 1987-

Editorial Board, *Journal of Urban Economics*, 1989-

Editorial Board, *Transportation*, 1993-

Editorial Board, *Journal of Transport Economics and Policy*, 1995-

Editorial Board (founding member), *Journal of Economic Geography*, 1999-2003.

Scientific panels:

Member, Expert Panel on Benefit-Cost Analysis and Public Investment in Transit and Highways, organized by the National Research Council for the U.S. General Accounting Office, Washington, D.C., June 2004.

George Sperling

International Neural Network Society (INNS) Helmholtz Award for 2004. The Award includes a \$500.00 prize and a plaque.

Editorial Board: *Journal of Vision*.

Acting editor, reviewer: Numerous journals, especially, Proceedings of the National Academy of Sciences, Vision Research.

Hal Stern

Member, National Academy of Sciences Panel on American Community Survey.

Committee to Visit the Department of Statistics, Harvard University.

Chair, American Statistical Association Section on Bayesian Statistical Science.

Mark Steyvers

Invitation to brief the Science Advisor of the President on current text-mining techniques at the Office of Science and Technology Policy (OSTP), Washington, D.C. Also present were members of the Social, Behavioral & Economic Sciences Subcommittee of the National Science & Technology Council, June 2004.

American Psychological Association New Investigator Award; Division 3 – Journal of Experimental Psychology, Learning, Memory & Cognition, 2004.

Douglas White

External Faculty, Santa Fe Institute, July 2004.

International Who's Who.

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)

<u>Student</u>	<u>Advisor</u>
	Garfinkel
** Khalid R. Alkhatir	Small
** Issam Alshahroui	Wright
Susan Anderson	Sperling
** Greg Applebaum	Saari
* Garrett Asay	Brownstone
** Islam Azzam	Saari
Anna Bargagliotti	Grofman
* Matthew Barreto	Kaminski
Jerry Benzl	Braunstein
* Zheng Bian	Small
* Baishali Bakshi	Skaperdas
** Ashish Chaturvedi	McBride
Chi Chun Chan	Hoffman
* Maia Cook	Freeman/White
** William Fitzgerald	Glazer
Seiji Fujii	Smyth
* Scott Gaffney	Skyrms
Doug Hill	White
** Ralph Jester	Skaperdas
Hao Jia	Keller
** Yanbo Jin	Narens
* Rolf Johnson	Hoffman
** Kelly Jonelit	Saari
Jason Kronewetter	White
Gabe Lawson	Brownstone
** Jae Lee	Brown/Falmagne
* Fabio Leite	Saari
* Lingfang Li	Brownstone
** Su Liu	Small
* Sachio Muto	Hoffman
* Colleen Nilson	Hoffman
John Pyles	Keller
** Kuntara Pukthuanthong	Wright
Thomas Richardson	Hoffman
** Tony Rodriguez	Garfinkel
** Daniel Salinas	DeVany
* Joel Schwarzbart	Saari
** Sandeshika Sharma	Skyrms
* Carol Skrenes	Brownstone
** Seiji Steinmetz	White
** Jeffrey Stern	Braunstein
** Carey Strumpf	Skaperdas
Amjad Toukan	Sperling
** Chia-Huei Tseng	

*	Jeremy Verlinda	Poirier
**	Helen Wei	Small
**	Hsiang Yin	Saari
	Kevin Zollman	Skyrms
*	Huiying Zhong	Braunstein

(ii) MA Degrees in Mathematical Behavioral Science During Academic 2003-04

Garrett Asay
Yan Zhang

**APPENDIX G
CONFERENCES AND WORKSHOPS**

**CONFERENCE ON
ORDINAL AND SYMBOLIC DATA ANALYSIS
Irvine - California - USA - August 20-23, 2003**

Schedule & Program

Thursday, August 21

- 8:00am - 8:45am Registration: SSPA 2142
- 8:45am - 9:00 am Welcome Address by **Jean-Claude Falmagne**
- 9:00am - 2:30pm SESSION 1: Chair: Donald Saari
- 9:00am -10:00am **Invited Address: Donald Saari**
“Symmetries and Other Data Structures”
- 10:00am -10:30am Coffee Break/Registration SSPA 2142
- 10:30am - 11:30am **Invited Address: Olivier Hudry**
“Links Between Some Tournament Solutions”
- 11:30am - 12:30pm **Invited Address: Fred Roberts**
“Voting, Meta-Search and Bioconsensus”
- 12:30pm - 2:00pm LUNCH
- 2:00pm - 4:00pm **SYMPOSIUM: MEDIA THEORY**
Chair: Sergei Ovchinnikov
- Sergei Ovchinnikov:
“Media Theory – Examples and Representations”
- David Eppstein:
“Algorithms for Media”
- Yung-Fong Hsu and Michel Regenwetter:
“The Tuning In and Out Model: A Random Walk and its Application to A Presidential Election Survey”
- 4:00pm - 4:30pm Coffee Break SSPA 2142
- 4:30pm - 6:30pm SESSION 2: Chair: Robert E. Jamison
- 4:30pm - 5:30pm Bernard Fichet:
“The Twenty Two Minimal Dichotomy Decompositions of the Equilateral Distance on Five Points”
- 5:30pm - 6:00pm Open Session: Random Talks

7:00pm – 10:00pm Banquet Dinner:
Kitayama Japanese Restaurant
Newport Beach

Friday, August 22

9:00am - 12:30pm SESSION 1: Chair: Kenneth Bogart

9:00am - 10:00am **Invited Address: Kenneth Bogart**
“Interval Orders and their Higher Dimensional Analogs”

10:00am - 10:30am Coffee Break SSPA 2142

10:30am - 11:30am **Invited Address: Robert E. Jamison**
“Trees Invariant Under a Half-Turn”

11:30am - 12:30am **Invited Address: Edwin Diday**
“Tessellation of Concepts by Spatial Clustering in Symbolic Data Analysis”

12:30pm - 2:00pm LUNCH

2:00pm - 4:00pm **SYMPOSIUM: ORDER POLYTOPES**
Chair: Jean-Paul Doignon

Sergei Ovchinnikov:
“Weak Order Cubical Complexes”

Samuel Fiorini:
“Turning Factor-Critical graphs into Facets of the Linear Ordering Polytope”

Reinhard Suck:
“Categorical Judgement in the Random Utility” Framework”

4:00pm - 4:30pm Coffee Break SSPA 2142

4:30pm - 6:00pm SESSION 2: Chair: Michel Regenwetter

4:30pm – 5:00pm Mireille Gettler Summa:
“Distribution Analysis on Gene Arrays Through Symbolic Data Analysis”

5:00pm – 5:30pm Patrice Bertrand:
“On Interval-families, Transitive Orientations and Gall Arc-equivalence in Graphs”

5:30pm - 6:00pm Alex Grossman:
“A Rank-based Classification Method Applied to Biological

Sequence Data"

6:00pm - 6:30pm Open Session: Random Talks

Saturday, August 23

9:00am -12:30am SESSION 1: CHAIR: MEL JANOWITZ

9:00am - 10:00 am **Invited Address: Mel Janowitz**
"A Natural Classification of Isotone Real Mappings"

10:00am -10:30 am Coffee Break SSPA 2142

10:30am -11:30 am **Invited Address: Marc Pirlot**
"Preferences for Multi-Attributed Alternatives: Traces, Dominance, and Numerical Representations"
(work by Denis Bouyssou and Marc Pirlot)

11:30am – 12:30pm **Invited Address: Michel Regenwetter**
"Aggregation of Probabilistic Ordinal Preferences"

12:30am - 2:00 pm LUNCH

2:00am - 6:00pm SESSION 2: CHAIR: FRED ROBERTS

2:00pm – 3:00pm **Invited Address: Rudolf Wille**
" Formal Concept Analysis as Basis for Ordinal Data Analysis"

3:00pm – 3:30pm Coffee Break SSPA 2142

3:30pm – 6:00pm Jean-Paul Doignon:
"Counting Structures of Preference"

Thierry Marchant:
"Measurement Based on Classes"
(work by Denis Bouyssou and Thierry Marchant)

*SOUTHWEST ECONOMIC
THEORY CONFERENCE 2004
February 27th & 28th*

Department of Economics
Institute of Mathematical Behavioral Sciences
School of Social Sciences
University of California, Irvine

Social Science Plaza A, Room 2112

FRIDAY
27th FEBRUARY

- 1.00—1.40 pm **Joerg Oechssler** (University of California, Santa Barbara)
“Imitation – Theory and Experimental Evidence,” (joint with Jose Apesteguia and Steffen Huck)
- 1.40—2.20 pm **Wei Li** (University of California, Riverside)
“A Model of Gossip”
- 2.20—3.00 pm **Juan Carrillo** (University of Southern California)
“A Theory of Influence,” (joint with Isabelle Brocas)
- 3.00—3.30 pm ***BREAK***
- 3.30—4.10 pm **Vineet Kumar** (University of California, San Diego)
“Rate of Return Dominance in Walrasian Monetary Equilibrium,”
(joint with Starr Ross)
- 4.10—4.50 pm **Luisa Lambertini** (University of California, Los Angeles)
“Is There a Risk-Premium Puzzle?” (joint with Costas Azariadis)
- 4.50—5.30 pm **Christopher Chambers** (California Institute of Technology)
“Multi-Utilitarianism in two-Agent Quasilinear Social Choice”
- 5.30 pm ***DINNER--SSPB 1208***

SATURDAY
28th FEBRUARY

- 8.30—9.05 am **John Wooders** (University of Arizona)
“Auctions with a Buy Price,” (joint with Stanley S. Reynolds)
- 9.05—9.40 am **Jinwoo Kim** (University of Southern California)
“Interdependent Value Auctions with Insider Bidders”
- 9.40—10.15 am **Stan Reynolds** (University of Arizona)
“Supply Function Equilibria with Pivotal Suppliers,” (joint with Talat Genc)
- 10.15—10.35 am ***BREAK***
- 10.35—11.10 am **Mark Johnson** (Arizona State University)
“The Structure and Two Complexities of Economic Choice Semiautomata”
- 11.10—11.45 am **Steven Scroggin** (University of California, San Diego)
“Bounded Rationality in Randomization”
- 11.45—12.20 pm **Igor Kopylov** (University of California, Irvine)
“Subjective Probabilities on ‘SMALL’ Domains”

- 12.20—2.00 pm **LUNCH**
- 2.00—2.35 pm **Gary Charness** (University of California, Santa Barbara)
 “Group Play in Games and the Role of Consent in Network Formation,” (joint with Matthew O. Jackson)
- 2.35—3.10 pm **Santanu Roy** (Southern Methodist University)
 “The Economics of Controlling a Biological Invasion,” (joint with Lars J. Olson)
- 3.10—3.45 pm **Isabelle Brocas** (University of Southern California)
 “Multi-agent Contracts with Positive Externalities”
- 3.45—4.20 pm ***BREAK***
- 4.20—4.55 pm **Ichiro Obara** (University of California, Los Angeles)
 “The Full Surplus Extraction Theorem with Hidden Actions”
- 4.55—5.30 pm **Richard Scheelings** (University of California, Los Angeles)
 “Spousal Guarantees”

<p>Conference on EVOLUTIONARY GAME THEORY March 19-20, 2004</p>	<p>Sponsored by Institute for Mathematical Behavioral Sciences, Center for Decision Analysis, History and Philosophy of Science, and a generous gift from an anonymous donor</p>
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BECKMAN CENTER BOARD ROOM

FRIDAY, MARCH 19

- 1:00-2:00** **Simon Levin** – *“Towards an Evolutionary Ecology of Ecosystems and the Biosphere”*
- 2:15-3:15** **Ted Bergstrom** – *“Storage for Good Times and Bad: A Tale of Rats and Men”*
- 3:30-4:00** **Coffee Break**
- 4:00-5:00** **Brian Skyrms** – *“Learning to Network”*
- 5:15-6:15** **Silke Rolles** – *“An Infinite Stochastic Model of Social Network Formation”*

6:30 DINNER - BECKMAN CENTER DINING ROOM

SATURDAY, MARCH 20

9:00-10:00 **Morris Hirsch** – *"A Smale type solution for multiplayer Prisoners Dilemma"*

10:15-10:30 **Coffee Break**

10:30-11:30 **Peyton Young** – *"Learning Nash Equilibrium"*

11:45-1:30 **LUNCH – BECKMAN CENTER DINING ROOM**

1:30-2:30 **Susan Holmes** – *"Interaction Networks in Biology"*

2:45-3:00 **Coffee Break**

3:00-4:00 **John Duffy** – *"Experiments with Network Formation"*

4:15-5:15 **Donald Saari** – *"Toward a Qualitative Evolutionary Game Theory"*

**The Second Annual Graduate Student Conference on
Social Choice and Behavioral Sciences**

Sponsored by the Institute for Mathematical Behavioral Sciences

April 28th, 2004

Social Science Plaza A, room 2112

CONFERENCE MISSION

We would like this conference to be a forum for promoting interaction among graduate students researching in similar fields. The conference will also be an excellent opportunity to learn about the on-going research in the growing field of mathematical behavioral sciences.

Section 1 Chair – Garrett Asay

10:00 – 10:30 **Jason Kronewetter** (Mathematics) - "Decisions on a Continuum of Choices"

10:30 – 11:00 **Lingfang (Ivy) Li** (Economics) - "Geometric Proof and Resolution of Sen's Theorem"

15 minute break

Section 2 Chair – Lingfang (Ivy) Li

11:15 – 11:45 **Douglas E. Hill** (Logic & Philos. of Sci.) - “Cooperation, Institutions and Errors: The Leviathan Verses the Champagne Fairs”

11:45 – 12:15 **Anna Bargagliotti** (Mathematics) - “The Solution Process”

12:15 – 1:15 Lunch

Section 3 Chair – Anna Bargagliotti

1:15 – 1:45 **Fabio Leite** (Cognitive Sciences) - “Investigating the Effects of Input-Strength Variability on Reaction Time”

1:45 – 2:15 **Kevin Zollman** (Logic & Philos. of Sci.) - “Talking to Neighbors: The Evolution of Regional Meaning”

15 minute break

Section 4 Chair – Jason Kronewetter

2:30 – 3:15 **Amjad Toukan** (Economics) - “Privately Held or Publicly Owned? Large Shareholders and the Struggle for Corporate Control”

3:15 – 3:45 **Arnab Mukherji** (Rand Corp.) - “Do Elections Abet Violent Crime?”

3:45 – 4:15 **Garrett Asay** (Economics) - “Negative Campaigning: A Newsworthy Strategy?”

*Conference on
"INDIVIDUAL DECISIONS"
May 7-8, 2004*

*Sponsored by
Institute for Mathematical Behavioral Sciences,
Center for Decision Analysis
and
a generous gift from an anonymous donor*

SOCIAL SCIENCE PLAZA A ROOM 2112

FRIDAY, MAY 7

- 1:00 – 2:00 Professor Peter Wakker (Department of Quantitative Economics, Maastricht University, The Netherlands)
"Psychology's Diminishing Sensitivity versus Economic's Intrinsic Utility of Money: How the Introduction of the Euro Can Be Used to Disentangle the Two Empirically"
- 2:15 – 2:30 * BREAK * - SSPA 2142
- 2:30 – 3:30 Professor Michael Birnbaum (Department of Psychology, California State University, Fullerton)
"New Paradoxes of Choice that test RDU and Prospect Theories"
- 3:45 – 4:45 Professor John Dickhaut (Carlson School of Management, University of Minnesota)
"Anomalies of Individual Behavior in Auctions"

SATURDAY, MAY 8

- 9:15 – 10:15 Professor Craig Fox (Anderson School of Business, UCLA)
"Judgment under uncertainty: Arbitrary partitions and insufficient reason"
- 10:30 – 10:45 * BREAK * - SSPA 2142
- 10:45 – 11:45 Professor Edi Karni (Department of Economics, Johns Hopkins University)
"Subjective Expected Utility Theory Without States of the World"
- 12:00 – 2:00 * LUNCH *
- 2:00 – 3:00 Professor Shlomo Benartzi (Anderson School of Management, UCLA)
"Participants' Behaviour in Retirement Savings Plans"
- 3:15 – 3:30 * BREAK * - SSPA 2142
- 3:30 – 4:30 Professor Craig McKenzie (Department of Psychology, UC San Diego)
"Framing Effects and Information Leakage"