The Irvine Division of the Academic Senate of the University of California
is pleased to present an evening of Distinguished Faculty Lectures

THURSDAY, DECEMBER 4, 2008
7:00 p.m.
UCI University Club

MAPPING MOTION:
Education for Movement Artists

Loretta Livingston
Professor of Dance
2008-2009 Recipient of the Distinguished Assistant Professor Award for Teaching

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IN SILICO ONCOLOGY:
Mathematical and Computational Modeling of Solid Tumor Growth

John S. Lowengrub
Professor of Mathematics
2008-2009 Recipient of the Distinguished Mid-Career Faculty Award for Research

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POLITICAL PSYCHOLOGY AND MORAL CHOICE

Kristen R. Monroe
Professor of Political Science
2008-2009 Recipient of the Distinguished Faculty Award for Research

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In addition, the following Senate Awards will be announced:

William H. Parker
Professor of Physics and Astronomy
2007-2008 Recipient of the Daniel G. Aldrich Jr. Distinguished University Service Award

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Chancellor Michael V. Drake cordially invites you
to a reception immediately following the lectures.

2008-2009 Daniel G. Aldrich Jr. Distinguished University Service Award

William H. Parker
Professor of Physics and Astronomy

My earliest memory of an interest in physics is from sixth grade when the public school I attended offered to purchase for every student a paperback book of our choice. I choose "The Birth and the Death of the Sun" by George Gamow. I read and reread the book until it literally fell apart. From that moment onward I never considered any career other than that of a physicist. I attended Allegheny College in northwest Pennsylvania, a small private liberal arts college, and majored in physics and math. Allegheny College was an easy choice for college since both my parents received their undergraduate education at Allegheny. As a senior undergraduate the department chairman drove me across the state to visit the University of Pennsylvania to explore the possibility of graduate education. While a graduate student escorted me around the Penn department, my undergraduate professor arranged for me to be admitted to Penn with full financial support. I do not recall ever officially applying for admission. Following completion of a doctoral degree I accepted the position as Assistant Professor at UC Irvine. Again I don't recall ever officially applying for the position; the department chair, Ken Ford, offered me the position one hour after I delivered a department seminar.

For the first few years at UC Irvine, I disappeared into the basements of Steinhaus Hall and later Rowland Hall to immerse myself in experimental work involving macroscopic quantum phenomena in superconducting metals. I emerged from the laboratory in 1976 after promotion to full professor and accepted my first part time administrative position. I was invited by Jim McGaugh to serve as a faculty assistant in the Office of Academic Affairs with responsibilities in academic planning. During the next few years I also became involved in enrollment planning, academic space management, and financial planning under the guidance of Jim McGaugh and Bill Lillyman. Much to my relief I never was involved in academic personnel issues.

In the early 1980s I was asked to get involved in the development of the for-sale faculty housing on the campus now known as University Hills. My only previous experience in real estate was the purchase my personal residence but I was naïve enough to never question my lack of experience. Very quickly I learned enough to conduct serious negotiations with real estate professionals, bankers, lawyers and politicians about the seemingly impossible task of selling homes on leased land, with constrained appreciation and restricted purchaser eligibility, and within the bureaucratic labyrinth of the University of California. Obtaining approval from The Regents to proceed with the construction of University Hills was a fascinating odyssey involving a reluctant administration in the Office of the President (including the General Counsel and Treasurer of the University), the skill and vision of Chancellor Dan Aldrich, and two supportive Regents. I served as the President of the Irvine Campus Housing Authority during its early years. As a result of this real estate experience, over the years I had the opportunity to represent the campus in discussions leading to the Irvine Barclay Theatre, the Beckman Laser Institute and Medical Clinic, the University Research Park and Plumwood House.

I served as Vice Chancellor for Research and Dean of the Graduate Division during 1993-95 and again during 2000-2006. These positions provided another fascinating learning experience. I became engaged with such diverse issues as human subjects, academic integrity (a.k.a. faculty academic misconduct), animal care, intellectual property, contract and grant terms and conditions, federal earmarks, export controls, student visas, federal financial aid policies, etc. While these issues had their own challenges and rewards, the most rewarding experiences while serving as dean and vice chancellor arose as a result of interactions with faculty in all academic disciplines as we pursued the common goal of building a leading research university. After leaving positions in the central administration, I expected to return full time to teaching and research. However I currently serve as chair of the Department of Physics and Astronomy. I have never learned to say "no" when asked to serve the campus!

Teaching has always been a personal pleasure of mine and, as a consequence, I have taught every year I have been at UC Irvine. Standing in front of students is like entering a separate world where the issues and problems of the campus never penetrate. The focus is entirely on the subject matter of the course and the interaction with the

students. Some form of escape is essential for the sanity of anyone who has spent as much time in the campus administration as I.

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2008-2009 Distinguished Assistant Professor Award for Teaching

Loretta Livingston
Professor of Dance

I think of myself as a movement artist. Dance is included in this thought, but the category is much larger. Movement—in its broadest sense—is a language for me. It is the way I organize my observations of the world. It is the way I attempt to have dialogues with life as I experience it.

Human beings approach the act of dancing from multiple angles and for myriad reasons. It has a place in human culture. For a child, the first approach might be through instruction and lessons, or it might be through inventing personal movement vocabularies. For me, it was both: the formal study of dance forms and the creation of fantastic choreographies. I use the word "fantastic" purposefully—meaning the use of unbridled imagination, being fanciful, and allowing creativity a fullness of form. My love of discipline kept me engaged in the study of dance techniques but my love of discovery eventually led me to become a choreographer and a director.

Within my commitment to a life as a movement artist in the field of contemporary dance, I have had time and room to allow my focus to shift. As a young dancer, the drive to perfect the physical training of my body as an instrument gradually turned to mature investigations of authenticity and range in my performance skills. This led me to ask questions about the capacity of movement to capture what it means to be human, which became the main topic of my dance making when I turned to choreographic craft. This took me to the task of shaping a personal aesthetic and making choices about the ways in which I prefer to practice my art making, which then led me to collaborative work. The drive to meet other artists at the leveling ground of an idea pushed me to learn the skills necessary to be a director of large cross-disciplinary projects, mixing movement, music, text and video art in atypical performance environments. This has served me in my current international projects, working with dance artists in Turkey, Korea and Singapore. My desire for specificity in observing and describing movement prompted me to become certified as a Laban/Bartenieff Movement Analyst, earning the privilege to use the theoretical framework and language of movement studies developed by German dance artist and theorist Rudolph Laban. My research in examining dance through Laban Movement Analysis has led me to creating dance for camera and screen dance, prompted by my desire to look even more closely at movement. Each moment in my evolution as an artist is linked to the previous, and all were built on inquiry—asking "what if…"

I believe inquiry is where the arts and education overlap. It is a practice: distilling precise questions from intelligent curiosity and going where the research leads. I teach from this point of view. I offer students the rigor it takes to be a practicing artist, grounded in theory and historical context and driven by an appetite for discovery and innovation. But I encourage the humanity in our work as well. Movement serves as a language in physical form, allowing us to navigate domains of space and time in relation to gravity, finding expressivity through the choices we make. The body instinctively shapes itself towards an idea, giving evidence of inner narrative and universal human experience. It speaks!

2008-2009 Distinguished Mid-Career Faculty Award for Research

John S. Lowengrub
Professor of Mathematics

As a youth growing up in Bloomington, Indiana my interests focused naturally on basketball, soccer and biology. Although my father is a mathematician, my keen interest in mathematics came later, only after I went away to Cornell University for undergraduate studies. While mathematics had always come easily to me, it wasn't until I started studying partial differential equations that I began to understand the unique ability of mathematics to model physical and biological systems in ways that enable prediction and control. Through the mathematical looking glass, seemingly disparate systems such as drop dynamics during oil recovery, microstructure formation in alloys and solid tumor growth, are seen to share common features and the structure of the governing mathematical models are surprisingly similar. For example, all these systems involve instabilities at interfaces separating different phases or components where there is a competition between destabilizing and stabilizing mechanisms resulting in complex, nonlinear dynamics. From Cornell, I went on to the Courant Institute of Mathematical Sciences at New York University for graduate school. The Courant Institute has a long and rich history and consists of a 13 story building in Greenwich Village devoted to the study of mathematics and computer science. One of the best things about Courant was that classes met once per week for two hours at a time. This gave students lots of time to explore New York City and to pursue their mathematical curiosity. At Courant, I worked with Prof. Russel Caflisch (who is now director of the Institute for Pure and Applied Math at UCLA); my thesis involved a theoretical study of an "old" numerical algorithm (dating from the 1930s) for simulating the dynamics of interfaces between two fluids. In particular, I proved that this algorithm (the "point vortex method") converged to the correct solution of the equations. This ran counter to the expectation of the field at that time. I spent one more year at Courant as a postdoc and during that time, Tom Hou (who is now a Prof. at Caltech), Jonathan Goodman (Courant) and I extended these results to more general fluid flows, much to the consternation of some experts in the field. After Courant, I went to Stanford University as a Szego Assistant Professor where I had the privilege of working with Prof. Joe Keller who is one of the pre-eminent applied mathematicians in the world. At Stanford, I continued to pursue studies of fluid mechanics. After Stanford, I went to the Institute for Advanced Study during a year of special emphasis on mathematical modeling of fluid dynamics. At the Institute, Tom Beale (Prof. at Duke U.), Tom Hou and Michael Shelley (now a Prof. at Courant) developed very elegant and efficient analyses and computational algorithms for simulating the dynamics of fluid interfaces with surface tension. For this work, Hou, Shelley and I were awarded the Frenkiel Prize by the American Physical Society, Division of Fluid Dynamics. After the Institute, I went to the University of Minnesota where I spent 10 years, with one year off at the University of North Carolina. At Minnesota, I learned about materials science and discovered that many of the advances we had made in fluid dynamics could be applied to problems in materials science with appropriate modification. I began a long collaboration with Prof. Perry Leo in the Dept. of Aerospace Engineering and Mechanics (AEM) to study such problems. At Minnesota, I also worked with Prof. Chris Macosko in the Dept of Chemical Engineering (CEMS) and Materials Science on multi-component polymeric flows. By the time I left Minnesota, I held faculty appointments in both AEM and CEMS. Towards the end of my time at Minnesota, I started going back to my biology roots and realized that solid tumor growth has many similarities to problems in materials science, although tumor growth is much more complex.

Since coming to UCI in 2003, I have made studies of solid tumor growth a high priority for my research. Indeed, my long-time collaborator Vittorio Cristini (Prof. at U. Texas Health Science Center in Houston) and I have made significant advances in the development of multi-scale mathematical models that integrate experimental data. We are working with clinicians at the M.D. Anderson Cancer Center in Houston to design new experiments to test the predictive capabilities of the mathematical models eventually leading to their use in quantitative clinical outcome prognostication and in the development of new, individualized therapies. We also anticipate the models to be capable of aiding in the design of new anti-cancer drugs. At the same time, I have also continued to study materials science where my research has in the past several years focused on thin films and in particular on the understanding and controlling the formation of nanostructures such as quantum dots which are critical components of miniaturized advanced electronic and magnetic devices. I still work in fluid dynamics where now I focus on models of single-cells, or hollow vesicles, interacting with a fluid.

2008-2009 Distinguished Faculty Award for Research

Kristen R. Monroe
Professor of Political Science

My wish for every young scholar is to find a research project that takes you places you never knew existed, forces you to re-examine the theoretical foundations of your discipline and the parameters of your paradigm, seeing the world in a different way. This happened to me in 1988 when I began what I thought would be a short project on altruism. After a traditional introduction to the study of politics at Smith -- political history and institutions, classic political thought – I encountered the neo-behavioral revolution at the U of Chicago, where I studied political science and international relations. Additional study in econometrics and political economy left me a rational actor theorist who approached the world intellectually by assuming people do what they perceive is best for them, subject to information and opportunity costs.

My rational approach to life crashed when my brother died from leukemia and I realized how unfair and inexplicable the world frequently was. Having my first child showed me the limitations of a self-interested model for human behavior. (People kept telling me to let the baby cry himself to sleep. My reason told me it was cruel to let another person cry when all I had to do was pick him up to make him happy. But I soon realized reason had little to do with it. I simply was not programmed to let a baby cry.) I realized then that my rationalist, Enlightenment approach to life, while valuable, carried severe limitations. I needed alternate models to fully understand human behavior. (Why this realization was so long in coming is another interesting question.)

My personal and intellectual life converged when I began examining the foundational assumptions of social science. I realized that neither altruism not collective behavior – the stuff of politics -- fit the rational model and I set out to figure out why this was the case. I reviewed literature on altruism in fields as diverse as biology, religion and philosophy, as well as social science. I found many scholars simply did not take seriously behavior that challenged some of our most important paradigms: rational actor theory, psychological egoism, benefit/cost analysis, evolutionary biology. Most explanations were simply veiled attempts to smuggle altruism into a self-interest-based paradigm. Empirically oriented, I designed a survey to test the diverse explanations for altruism. Can you explain altruism through reciprocity, in which I help you now so you will help me later? Am I nice to you because doing so makes me feel good, as Hobbes famously posited? Do groups with altruists fare better in the long run, and hence deliberately protect their altruistic members? These were some of the questions I addressed by interviewing entrepreneurs (individuals who pursue their own self-interest) and altruists ranging on a continuum from philanthropists to Carnegie Hero Commission recipients and rescuers of Jews during the Holocaust. None of the traditional explanations explained the people I interviewed.

To understand altruism, I turned to psychology and cognitive science and much of *The Heart of Altruism* explains altruism as a particular way of viewing the world. Altruists see themselves as individuals at one with all humanity. Where the rest of us see a stranger, an altruist sees a fellow human being. I was further struck by the extent to which altruists' choices were limited by their perceptions of themselves in relation to others, perceptions that limited and constrained altruists' choice options, not just morally but empirically. I concluded that identity sets our choices, much as a menu in a restaurant limits the dinner choices. I expanded my analysis with an in-depth consideration of moral courage during the Holocaust, and *The Hand of Compassion* expanded my thoughts on how the moral psychology might work. My current work asks if the phenomenon I found for altruists holds for all individuals. Can we speak of an ethical perspective -- as we do of a justice system -- understanding that concept as a kind of cognitive framework through which ethical issues are processed to produce our different treatment of others? I believe so. The critical factors in this ethical framework are our self-image, perceptions of our selves in relation to others, worldview, canonical expectations about ordinary human behavior, idealized cognitive models, and how we cognitively classify and categorize others. All these factors produce a sense of moral salience, the sense that someone else's suffering is – or is not – something that concerns us. It is this sense of moral salience that moves some people beyond moral insensitivity, indifference or an underlying sympathy for others' distress toward a felt imperative to take action to alleviate that suffering. My current work links my findings on moral courage to other forms of prejudice, discrimination and to positive policies to foster less "us versus them" behavior and toward the casting of broader categories of concern that altruists construct.

So what began as a short research project on altruism has sent me in new directions, enriching my soul as well as my intellectual life, and fostering a sense of wonderment at the human capacity to find the good even in the darkest of nights. I could wish nothing more for any scholar.

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