IAS

The Institute Letter

Fall 2009

THE NEW YORK TIMES, SUNDAY, APRIL 10, 1955.

INSTITUTE SHOWS ITS ACHIEVEMENT

25 Years of Advanced Study Reflected in Bibliography of 1,000 Members' Work

Special to The New York Times.

PRINCETON, N. J., April 9—Four thousand publications ranging from Dr. Albert Einstein's latest writings on space and relativity to T. S. Eliot's "The Cocktail Party" are listed in a bibliography published this week by the Institute for Advanced Study on its twenty-fifth anniversary.

The 270-page volume lists all publications that resulted from research and scholarship at the institute since its inception in 1930. This represents "a literal record of the institute's primary work," Dr. J. Robert Oppenheimer, director of the institute, said in the preface.

"The institute is devoted to learning in the double sense of the continued education of the individual and of the intellectual enterprise on which he is embarked," he added.

eign Policy, 1919-39" at the invitaton of the British Foreign Office.

Four Volumes by Toynbee

Arnold J. Toynbee, a former member of the institute and now associated with the Royal Institute of International Affairs in London, worked on his monumental "A Study of History" during his five semesters here from 1947 to 1953. The bibliography lists Volumes VII through X as connected with his studies here and also records work done on "Religio Historici," now in progress.

Recent publications by George F. Kennan, former Ambassador to Russia and a permanent member of the institute since 1951, are listed. His "Realities of American Foreign Policy," published last year, was based on the Stafford Little Lectures he gave at Princeton University.

Mr. Eliot studied at the institute as a temporary member during the first semester of 1948-49. The bibliography records the work he did on "The Cocktail Party, a Comedy" while he was here.

Nine Nobel Prize winners are represented in the bibliography. Those who received awards in physics are Max T. F. Von Laue, 1914; Dr. Einstein, 1921; Dr. Bohr, 1922; Dr. Paul A. M. Dirac,, 1933; Dr. Isidor I. Rabi,

A Community of Scholars

On April 10, 1955, the *New York Times* announced the publication of a bibliographic volume published under J. Robert Oppenheimer, then Director of the Institute for Advanced Study, on the occasion of the Institute's twenty-fifth anniversary. The volume covered the work of one thousand former and present Members of the Institute and included four thousand publications ranging from Albert Einstein's latest writings on unified field theory to T. S. Eliot's *The Cocktail Party*.

The volume was brought up to date in 1980 on the occasion of the Institute's fiftieth anniversary and published as *A Community of Scholars: The Institute for Advanced Study 1930–1980*. In his foreword, Harry Woolf, then Director of the Institute, quoted Oppenheimer: "History teaches—and even the brief history of the Institute confirms—that new knowledge leads to new power and new wisdom, and alters the destiny and heightens the dignity of man."

Recently, a list of scholars formally affiliated with the Institute from its founding in 1930 up to the present day has been published on the Institute's website at www.ias.edu/people/cos. The Institute's eightieth anniversary presents a fitting occasion to invite past and present Institute scholars to submit additional biographical and bibliographical information, which will be published online for the Institute community beginning in March 2010 (see article on page 3 for more detail).

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The Institute Letter

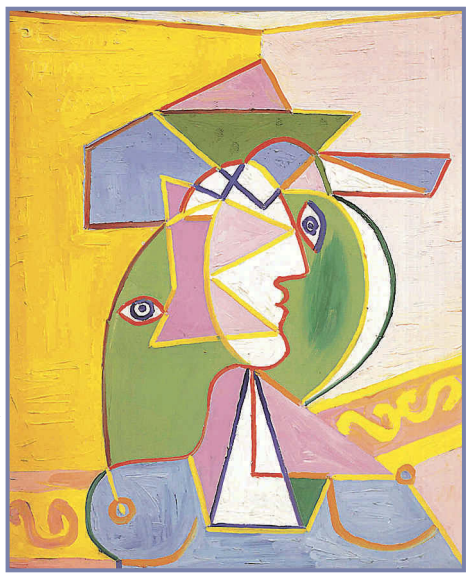
Institute for Advanced Study

Fall 2009

Picasso Harlequin

A Major Exhibition Explores Picasso's Clash of Incompatible Manners

BY YVE-ALAIN BOIS



ESTATE OF PABLO PICASSO/ARTIST'S RIGHTS SOCIETY, NEW YORK

Pablo Picasso, Woman in a Hat, *1934*

Two years ago I was asked to organize a medium-size Picasso exhibition in Rome, the first in that city since 1953, that would function as an introduction to the artist's work for a whole generation of Romans who had not been exposed to it (unless they had traveled, of course). Had I known that I would not be able to borrow anything from the Musée Picasso in Paris because it had rented out its entire collection for several years, or anticipated other frustrations of the same magnitude, I probably would have declined the offer. But what I call the "smell of turpentine" was so strong that I discarded all caution—I find few things as rewarding as being able to bring together several artworks and engineer a dialogue among them. And the intellectual

(Continued on page 8)

Understanding the Genetic Evolution of the Pandemic H1N1 Virus

BY RAÚL RABADÁN

On March 28, 2009, a nine-year-old girl visited a clinic near San Diego with a fever and cough. Similar cases of febrile respiratory illness followed within the next two weeks in several places in California and Texas. At the same time, Mexican public health authorities were reporting an increasing number of cases of respiratory disease, some of them leading to serious complications, severe pneumonia, and death. In Mexico City, the number of patients with severe respiratory illness increased dramatically, with 854 cases of pneumonia and 59 reported deaths by April 24. None of the initial patients in the United States had traveled to Mexico

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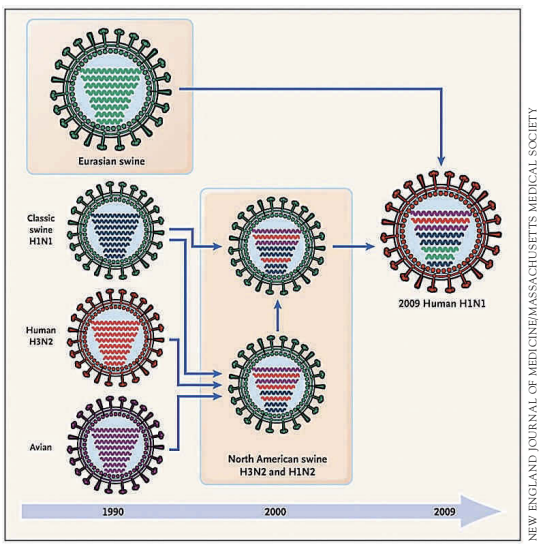


NEW ENGLAND JOURNAL OF MEDICINE/MASSACHUSETTS MEDICAL SOCIETY

The history of reassortment events in the evolution of the 2009 influenza A (H1N1) virus

Is There Dark Matter in Orbit around the Earth?

BY STEPHEN L. ADLER

For slightly over a year, I have largely put aside my longtime interests in the foundations of quantum mechanics and in particle physics, and have been working on dark matter. This interest came about in two different ways. The first was a paper on models for modifications of the Schrödinger equation on which I was working with my frequent collaborator Angelo Bassi during the 2007–08 academic year. The models called for a noise source to act weakly on ordinary matter, and one of the mechanisms I decided to try was dark matter collisions with ordinary matter. I started learning about dark matter through a lunch with IAS Visitor Masataka Fukugita, whom I had met at a dinner at Peter and Sue Goldreich's. Following this, I made what I considered a "toy model" for the paper I was writing with Angelo—not a realistic mechanism for our purposes, but it got me learning and thinking about dark matter.

The second way was a news item that my wife Sarah showed me in the *Economist* about the so-called "flyby" anomalies. When spacecraft are put in "flyby" orbits, passing close to the earth to produce large changes in direction, the outgoing velocity is found to deviate from expectations by about a part in a million. (A review for a general physics audience is given in "Earth Flyby Anomalies," by Michael M. Nieto and John D. Anderson, *Physics Today*, October 2009.) Sometimes the spacecraft slows down slightly (as would be expected from normal drag), but in some cases it speeds up, a really weird effect if true. I made a mental note to look for the article when published in a journal, and when a detailed report appeared in *Physical Review Letters*[1], I asked Scott Tremaine what he thought. He said that the group at Jet Propulsion Lab that wrote it has a reputation for careful work, so one couldn't just dismiss it. So I started to think about possible explanations.

NASA/JHUAPL

The earth flyby of the asteroid-lander NEAR spacecraft resulted in an unexplained velocity increase of over one centimeter per second, much larger than estimated measurement errors.

Having been in physics for nearly fifty years, I have seen many purported new effects be discounted as improvements have been made in the experiments or the analysis. The most probable explanation of the flyby anomalies is that they are the result of an inadvertent omission of some conventional physics from the analysis. People are still actively pursuing this route, but so far nothing convincing has emerged, and many things have

(Continued on page 10)

1 J. D. Anderson et al., *Physical Review Letters* 100, 091102 (2008)

News of the Institute Community

YVE-ALAIN BOIS, Professor in the School of Historical Studies, has edited *Gabriel Orozco* (MIT Press, 2009), a collection of critical writings on the artist, whose work has been called "uncategorizable." It includes essays by prominent critics such as Benjamin Buchloh, Briony Fer, Molly Nesbit, and Bois. He has also edited *Picasso Harlequin 1917–1937* (Skira, 2009), a multi-author volume that functioned as the catalogue for an exhibition he curated in the fall of 2008. The essays concern Picasso's unprecedented diversity as an artist during the two decades separating his trip to Rome and his creation of *Guernica*.

Princeton University Press has published *The Empire of Trauma: An Inquiry into the Condition of Victimhood* by DIDIER FASSIN, James D. Wolfensohn Professor in the School of Social Science, and Richard Rechtman, Medical Director of the Institut Marcel Rivière in France. The authors use ethnographic work on victims of disasters, wars, and persecutions to analyze more broadly the moral significance of trauma, its use as a political resource for reparation, testimony, or proof, and the advent of the victim in the contemporary world.

ERIC S. MASKIN, Albert O. Hirschman Professor in the School of Social Science, has been elected an Honorary Fellow of Jesus College in the University of Cambridge. He was also inducted into the Royal Academy of Economic and Financial Sciences of Spain and presented an address to the Catalan Parliament as part of the induction ceremonies.

CHRISTIAN HABICHT, Professor Emeritus in the School of Historical Studies, was honored in September with a festschrift, *Attika Epigraphica. Studies in Honor of Christian Habicht*, edited by Athanasios A. Themos and Nikolaos Papazarkadas, and presented to him in Athens. The volume, the tenth monograph of the Greek Epigraphic Society, contains twenty-one papers delivered in Athens by authors from seven countries to mark Habicht's eightieth birthday in April 2006.

Princeton University Press has published *The Cognitive Challenge of War: Prussia 1806*, an expanded text of the 2008 Lees Knowles Lectures given at the University of Cambridge by PETER PARET, Professor Emeritus in the School of Historical Studies. The work is a case study of a clash between traditional and innovative methods of war, and of the military, political, and cultural efforts of the defeated to master and effectively respond to new methods.

ANDREW WILES, Institute Trustee and current Visitor in the School of Mathematics, has been appointed to a Royal Society 2010 Anniversary Research Professorship in the University of Oxford. Currently Eugene Higgins Professor of Mathematics at Princeton University, Wiles will take up this new position at Oxford's Mathematical Institute and Merton College in 2011.

DEREK BERMEL, current Artist-in-Residence, has been nominated for a Grammy Award for his recording *Voices* (BMOP/sound, 2009) in the category of Best Instrumental Soloist Performance with Orchestra. The awards will be presented at the fifty-second annual Grammy Awards ceremony in Los Angeles on January 31.

SIOBHAN ROBERTS, currently a Director's Visitor, has been awarded the Euler Book Prize of the Mathematical Association of America, presented annually for an outstanding book about mathematics. Roberts was recognized for her book *King of Infinite Space: Donald Coxeter, the Man Who Saved Geometry* (Walker and Company, 2006).

LAKHDAR BRAHIMI, former Director's Visitor (2006–08) affiliated with the School of Social Science, has been awarded the first-class medal of unification by President Ali Abdullah Saleh of Yemen. Brahimi is the former Special Adviser to the Secretary-General of the United Nations and the former Foreign Minister of Algeria.

JULIA CLANCY-SMITH, current Member in the School of Social Science, has been selected by the American Historical Association as the recipient of the 2009 William Gilbert Award for the Best Article on Teaching History. The article, "An Undergraduate and Graduate Colloquium in Social History and Biography in the Modern Middle East and North Africa," appeared in *Teaching Life Writing Texts*, edited by Miriam Fuchs and Craig Howe (Modern Language Association).

SUSAN RANKIN, current Member in the School of Historical Studies, has been elected a Fellow of the British Academy.

MICHAEL AIZENMAN, former Member in the School of Natural Sciences (1984–85) and the School of Mathematics (1991–92, 1997–98), has received the 2010 Dannie Heineman Prize for Mathematical Physics. Aizenman is currently Professor of Physics and Mathematics at Princeton University.

KAUSHIK BASU, former Member (1985–86) in the School of Social Science, has been appointed by Prime Minister Manmohan Singh of India as the Chief Economic Adviser to the Ministry of Finance. Basu is currently C. Marks Professor of International Studies and Professor of Economics, Chair of the Department of Economics, and Director of the Center for Analytic Economics at Cornell University.

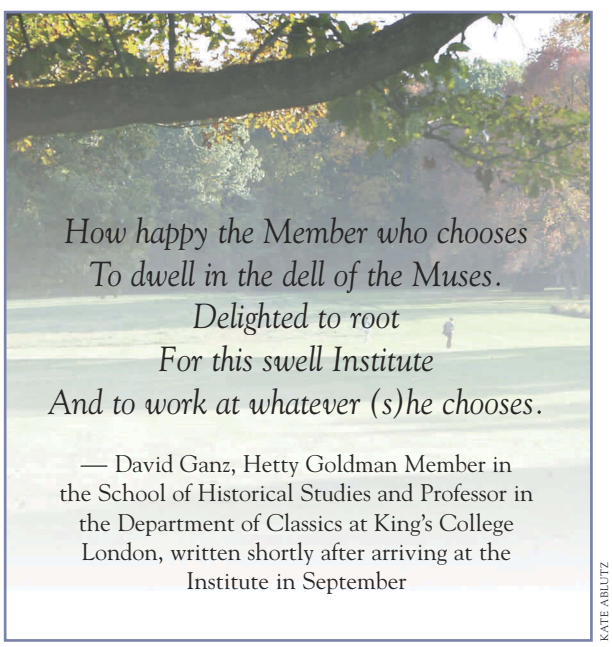
MARIA CHUDNOVSKY, former Member (2003–05) in the School of Mathematics, has received, with three collaborators, the 2009 Delbert Ray Fulkerson Prize, awarded jointly by the American Mathematical Society and the Mathematical Programming Society every three years for outstanding papers in discrete mathematics. She and her colleagues were recognized for their paper "The Strong Perfect Graph Theorem," which appeared in the *Annals of Mathematics* 164 (2006). Chudnovsky is currently Associate Professor of Industrial Engineering and Operations Research at Columbia University.

MICHAEL GREEN, former Member (1970–72) in the School of Natural Sciences, has been elected the eighteenth Lucasian Professor of Mathematics in the University of Cambridge, succeeding Stephen Hawking. The Lucasian Chair, established in 1663, has previously been held by Isaac Newton and Paul Dirac.

JAMES GUNN, former Member (2005) and Visitor (1974) in the School of Natural Sciences, has been awarded the National Medal of Science. Gunn is the Eugene Higgins Professor of Astronomy at Princeton University.

YOSEF KAPLAN, former Member (2007–08) in the School of Historical Studies, was elected President of the World Union of Jewish Studies at the Fifteenth World Congress of Jewish Studies, held in Jerusalem in August. Kaplan is currently the Bernard Cherrick Professor of the History of the Jewish People in the Mandel Institute of Jewish Studies at the Hebrew University of Jerusalem.

HIROSI OOGURI, former Member (1988–89) in the School of Natural Sciences, has been awarded the 2009 Nishina Memorial Prize, the oldest physics award in Japan, presented by the Nishina Memorial Foundation. Ooguri is the Fred Kavli Professor of Theoretical Physics at the California Institute of Technology and Principal Investigator at the Institute for the Physics and Mathematics of the Universe.



— David Ganz, Hetty Goldman Member in the School of Historical Studies and Professor in the Department of Classics at King's College London, written shortly after arriving at the Institute in September

KATE ABLUTZ

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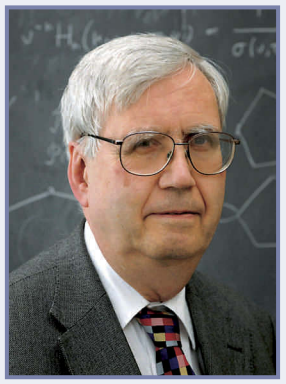
Questions and comments regarding the *Institute Letter* should be directed to Kelly Devine Thomas, Senior Publications Officer, via email at kdthomas@ias.edu or by telephone at (609) 734-8091.

Issues of the *Institute Letter* and other Institute publications are available online at www.ias.edu/about/publications.

Letter from the Director



CLIFF MOORE

The Institute's mission, of providing leading scholars and scientists the resources and freedom to follow their own research guided by their own intellectual curiosity, has remained unchanged since its foundation. As 2009 draws to a close, for more than one reason, the Institute is reflecting on its mission and how best to further those aims. A two-year process of review, involving studies of all aspects of the Institute's workings, academic and administrative, is nearing its close. Reviews of one form or another have been conducted at roughly ten-year intervals since the mid-1950s.

Our latest Decadal Review affirms that the Institute remains a leading center for theoretical research, providing its Members and Visitors with exceptional opportunities for the development of their ideas, and increasingly it has acted as inspiration or paradigm for the founding of new institutes for advanced study around the world. That said, excellence is not maintained by complacency; our review has shown us a number of areas where there are opportunities for improvements in or fine-tuning of our operations.

Beyond the agenda set by our review, the global financial crisis has forced us, like other academic institutions, particularly those financed substantially from endowment, to look hard at all aspects of our operations to see where costs can be reduced without any appreciable damage to the academic life of the Institute. The Institute depends on its endowment for eighty percent of its core operating expenses and, although our investments have fared better than those of many comparable institutions, losses have been substantial and we have had to work hard to reduce expenditure while leaving the life and work of the Institute as little affected as possible. In addition to the very significant savings that we have made in this way, the Institute's Trustees have been extremely generous in establishing a support fund for the Institute's operating budget, aimed at providing $30 million over the three years 2009–2012. The Institute is enormously indebted to them.

Over the last five years, we have been pursuing a quiet campaign to raise resources and the sums received and pledged now total $130 million. Although these donations of more than $25 million a year demonstrate the value that is placed on the Institute and its mission, further significant additions to endowments, through both contributions and investment performance, will be necessary for the Institute to continue to provide an environment of the highest quality for research to so many scholars and scientists.

The founding Director of the Institute, Abraham Flexner, not only articulated the mission of the Institute with remarkable prescience, he also understood the importance of donations to support it: "There has been in recent years a very distinct tendency toward the giving of sums, large and small, on specific conditions or for the promotion of specific ends. . . . Our universities have grown great not by reason of the special funds that they possess but because of increasing endowments, the income of which can be deflected from one individual to another, from one subject to another, as time goes on."

Flexner began by specifying that the Institute should be "small and plastic" and two decades later Robert Oppenheimer observed that "if we get big we will spoil everything, because the kind of intimacy that is possible in a place of this size is hard to maintain in a place ten times as big." Echoing these thoughts, the Decadal Review cautioned that any argument for growth must be weighed against its adverse consequences. No substantive growth is planned for the Institute over the coming decade, but it is essential that we work to secure the financial basis of the Institute, and, if possible, to find the resources to enable us to undertake the developments recommended by the Decadal Review. We are always deeply grateful to the individuals, foundations, and organizations that provide us with the funding flexibility to act quickly to take advantage of opportunities to attract outstanding scholars to the Institute to further its aim of fostering fundamental research.

—*Peter Goddard*

A Community of Scholars

Since its founding in 1930, the Institute for Advanced Study has remained, in the words of its founding Director Abraham Flexner, "small and plastic." While its influence, through the achievements of its Faculty and Members and through the new institutions it has inspired, has been wide and profound, the Institute retains the intimacy and focus envisioned by its founders. It is, in its very essence, a community of scholars, both those who are here now, and more broadly, all who have benefited from membership.

In its eightieth year, the Institute is endeavoring to create an online presence for this community at www.ias.edu/people/cos, first with the posting of a comprehensive list of scholars formally associated with the Institute throughout its history, and subsequently, through the sharing of biographical and bibliographical information that will be published for the Institute community beginning in March.

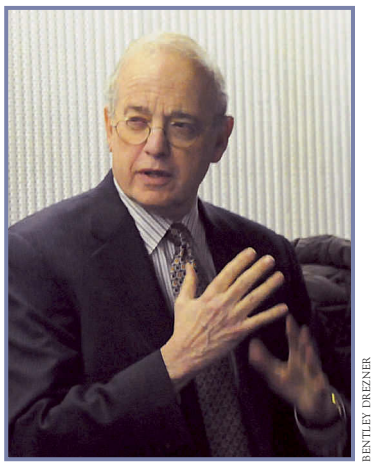
What began with twenty-three Members invited to the School of Mathematics in 1933 has grown to include more than seven thousand historians, mathematicians, physicists, and social scientists throughout the world that now make up the Institute community. Common among these scholars is the experience of benefiting from Flexner's prescient view that the research that has the most profound impact on knowledge and understanding, and so often that which ultimately has the most profound impact on everyday life, is that driven by curiosity rather than immediate application.

Individually, the scholars and scientists who have spent time at the Institute have been remarkably prolific; collectively, they have literally changed the world and our understanding of it. In every decade, from every region of the world, preeminent scholars and those who would become so have come to the Institute to expand the frontiers of knowledge. From Albert Einstein to the renowned Faculty who lead the Institute today, the Faculty and Members of the Institute throughout its history represent a continuum of remarkable intellectual achievement and commitment. In developing an online update to the 1930–80 publication *A Community of Scholars*, the Institute aims to provide a useful and important record of the intellectual progress of our time as well as a way for former and current scholars to continue their contact with the Institute and with each other.

In early 2010, former scholars affiliated with the Institute will receive letters from the Director, Peter Goddard, that describe the online project and provide instructions for submitting biographical and bibliographical information via an online form. The hope is that scholars will submit this information by March 1. Should you have questions regarding *A Community of Scholars*, please contact cos@ias.edu. ■

Harold T. Shapiro Elected to the Board of Trustees

Harold T. Shapiro, President Emeritus of Princeton University and the University of Michigan, has been elected to the Board of Trustees of the Institute for Advanced Study. Shapiro is currently Professor in the Department of Economics and the Woodrow Wilson School of Public and International Affairs at Princeton University, where his fields of interest include econometrics, bioethics, science policy, and the evolution of postsecondary education.



BENTLEY DREZNER

Harold Shapiro

As part of the Institute's recent Decadal Review, a comprehensive assessment undertaken during the past two years of how well the Institute has been fulfilling its mission, Shapiro served as Chair of the Institute's Visiting Committees for the Schools of Natural Sciences and Historical Studies.

Shapiro received his undergraduate degree from McGill University in 1956 and his Ph.D. from Princeton in 1964, both in economics. He then joined the faculty of the University of Michigan, where he was named Vice President for Academic Affairs in 1977 and elected President in 1980. Shapiro took office as President of Princeton University in 1988 and served until 2001, when he became President Emeritus. He continued to teach during his presidencies at both universities.

During the administration of President George W. Bush, Shapiro served as a member and Vice Chair of the President's Council of Advisors on Science and Technology from 1990 to 1992. He also served President William Jefferson Clinton's administration as Chair of the National Bioethics Advisory Commission from 1996 to 2001.

Shapiro is the author of several books, including *A Larger Sense of Purpose: Higher Education and Society* (Princeton University Press, 2005). In 2008, he was awarded the Clark Kerr Medal for Distinguished Leadership in Higher Education, presented annually by the Academic Senate of the University of California, Berkeley.

Shapiro is an elected Member of the National Academy of Sciences' Institute of Medicine and of the American Philosophical Society. He is a Fellow of the College of Physicians of Philadelphia, an active Member of the European Academy of Sciences and Arts, and a Fellow of the American Association for the Advancement of Science.

He serves on the boards of a number of charitable, medical, and educational institutions, including the Alfred P. Sloan Foundation, Technion–Israel Institute of Technology, the University of Medicine and Dentistry of New Jersey, and DeVry Inc., where he is Chairman of the Board. ■

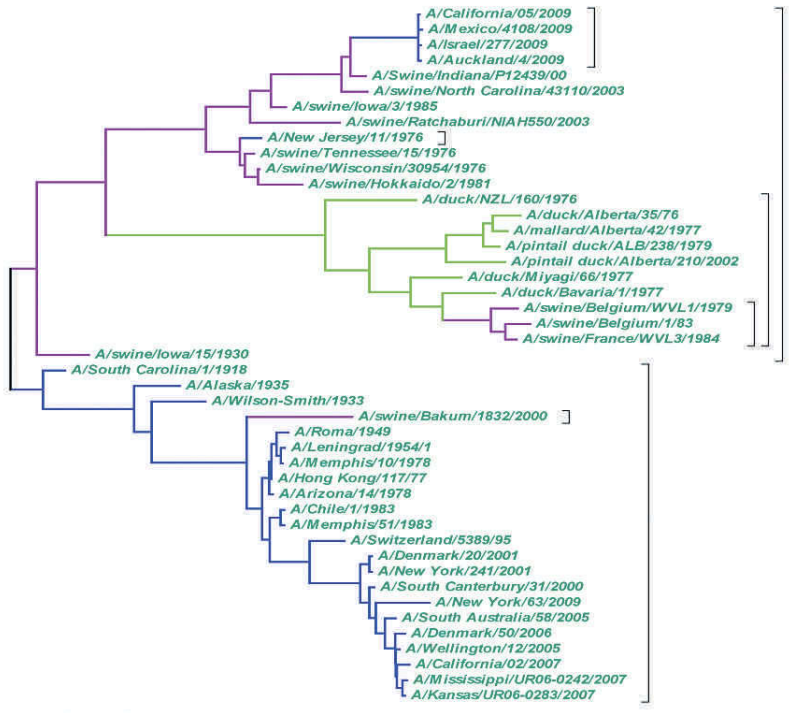
H1N1 *(Continued from page 1)*

before the onset of the respiratory illness.

The analysis of data relating to the first cases, released on April 21 by the Centers for Disease Control and Prevention, indicated that the respiratory illness was caused by an influenza virus, similar to the H1N1 viruses that were circulating in pigs in North America. Genetically and antigenically, swine H1N1 viruses are sufficiently different from human seasonal viruses, making vaccination or previous exposure to seasonal viruses unlikely to provide protection. In addition, none of those infected seemed to have been in proximity to pigs, suggesting that the emergent virus was able to transmit from human to human. The same swine origin H1N1 influenza virus was isolated in specimens from patients in Mexico. In contrast to the seasonal influenza, the new virus afflicted young and healthy adults preferentially.

At the end of April, it was clear that a novel influenza virus was spreading in North America from human-to-human transmission, causing febrile respiratory illness, and in some cases, pneumonia and death. Mexican authorities reacted energetically by canceling classes and public events. In April, the World Health Organization (WHO) issued an alert that the new strain had pandemic potential. By April 28, mild cases were reported in Canada, Spain, Israel, the United Kingdom, and New Zealand. On June 11, WHO officially declared the first pandemic of the twenty-first century.

Influenza A viruses, including seasonal and pandemic H1N1 viruses, are RNA viruses with an enormous capacity for evolving and diversifying. The size of a human genome is three billion bases, with coding for more than twenty thousand genes. We make a few copies of ourselves (our children) every twenty to thirty years, and these copies are very similar to us (the mutation rate in humans is 10^{-8} per replication per base). In contrast, RNA viruses, like flu or HIV, are very small (10,000 bases and only 10 genes), produce millions of copies every day, and their mutation rate is four orders of magnitude higher that humans. Humans and RNA viruses demonstrate two distinct strategies that evolution has followed: humans produce a small number of high-fidelity copies, while RNA viruses produce an enormous quantity of lousy copies. But despite their apparent simplicity, with only ten proteins, these viruses are able to hijack and use the complex machinery of the cell.



BIRKHÄUSER ADVANCES IN INFECTIOUS DISEASES/SPRINGER

The phylogenetic structure of the HA gene of influenza A, from the 1918 Spanish influenza pandemic through the 2009 H1N1 pandemic. Viruses isolated in swine are indicated by purple lines, those in humans by blue lines, and those in birds by green lines.

In addition to mutations, influenza viruses present another method of evolution called reassortment. The flu genome is made of eight different pieces, called segments. When two different viruses co-infect the same cell, they can produce a progeny containing the genetic material of both parental strains. This process is at the heart of pandemics, when novel viruses generated by reassortment are able to transmit from human to human.

The recent H1N1 virus arose as a complicated reassortment process whose story is still not fully elucidated. By comparing the new virus to the 10,000 different genomes that have been collected and sequenced since 1918, we are able to trace back its

(Continued on page 8)

Expanding the Horizons of Knowledge Beyond One's Original Expertise

Raúl Rabadán was a particle physics Member in the School of Natural Sciences from 2003–06 and a biology Member from 2006–08. His Membership was supported by Trustee Martin A. Chooljian and his wife Helen in 2007–08.

Rabadán, now Assistant Professor in the Department of Biomedical Informatics and in the Center for Computational Biology and Bioinformatics at the Columbia University College of Physicians and Surgeons, recently led a group of researchers that studied the evolution of influenza viruses and the origins of pandemics by analyzing large datasets containing genomic information. After the first news of the H1N1 epidemic outbreak, the group worked intensely to decipher the origins, diversification, and spread of the pandemic and the factors that could contribute to the virulence of the virus. The results were published in several journals, including the New England Journal of Medicine, Public Library of Science, *and* Eurosurveillance.

Some of this work on the H1N1 virus was performed in close collaboration with Arnold Levine, Professor in the School of Natural Sciences. In addition to Rabadán, other members of the group were: Vladimir Trifonov (former Member in the School of Mathematics, 2006–07); Hossein Khaibanian; Benjamin Greenbaum (Eric and Wendy Schmidt Member in Biology in the School of Natural Sciences, 2008–10); Alexander Solovyov; Joseph Chan; Oliver Elliott; and Antony Holmes.

Rabadán, whose current interests include developing theoretical and quantitative ways of understanding the evolution of biological systems, in particular viruses and cancer, describes his experience at the Institute and his decision to pursue biological research.

CLIFF MOORE

Raúl Rabadán (sitting, to right) with Professor Arnold Levine (far left), Benjamin Greenbaum (standing), and Nina Bhardwaj (far right), a visiting lecturer, prior to a Simons Center for Systems Biology seminar

I arrived at the Institute for Advanced Study in October 2003, after spending two years as a fellow at CERN, the European Laboratory for Particle Physics, in Geneva, Switzerland. For any theoretical physicist the Institute is a mythical place, and the offer to become a Member presented the possibility of a life-changing experience. I had never been to the Institute, and my only references to the place amounted to a few biographies, physics articles related to my own research, anecdotes from colleagues, and my own imagination.

Upon my arrival, I found a small institution (compared to the colossal CERN), vibrant and frenetic with intellectual activity, lost in the peace of the woods of Princeton. The scientific intensity was extraordinary, and almost immediately, I started to collaborate with other Members in the physics group, in astrophysics, and in mathematics. Due to its size, it is almost impossible not to learn from researchers in other fields at the Institute, which provides a unique opportunity to expand the horizons of knowledge beyond one's original expertise. I remember many conversations with Faculty and Members, the lunches, the walks around the pond while drinking my coffee at 3:00 p.m., and the many friends that I have kept from my first years at the Institute.

In 2005, I attended some lectures on viruses given by Arnold Levine, a Professor in the School of Natural Sciences who heads the Simons Center for Systems Biology. Immediately after these lectures, I became fascinated with biology, and viruses in particular. In my free time, I enjoyed reading books and articles about biology and interacting with the Members in systems biology. In spite of having the name biology in it, the systems biology group is an interdisciplinary team made up mostly of physicists, mathematicians, and computer scientists, with only a few biologists, all interested in obtaining a quantitative understanding of biological problems. With Levine's scientific guidance and deep biological insights, in a few months, I was passionately absorbed in biology, trying to disentangle evolutionary patterns in RNA viruses, in particular HIV and influenza. It became clear to me that biology was experiencing a revolutionary expansion, with large amounts of unexplored data and the urgent need for theoretical understanding.

At some point, I found myself faced with the dilemma of whether to continue my work in physics in a research position in my native country, Spain, or to accept an offer to stay another three years as an IAS Member in systems biology. Although changing my field of research was obviously risky from a career point of view, I was seduced by the research problems, the approach, and the dynamics of the systems biology group at the Institute.

When Columbia University offered me the possibility of starting a new group in 2008, I could not find a better model than the one I experienced at the Institute. I put together an interdisciplinary team with researchers from physics, astrophysics, computer science, engineering, medicine, and other fields, with the common aim of solving real and important biological problems. I have maintained many collaborative relationships at the Institute, and it is always a pleasure to return and see familiar and new faces. ■

A Funny Thing Happened to Me on the Way to the Institute

BY PETER CLARKE

Peter Clarke, Emeritus Professor of Modern British History in the University of Cambridge and formerly Master of Trinity Hall, was a Director's Visitor at the Institute in spring 2009. He is the author of many books, including The Last Thousand Days of the British Empire *(Bloomsbury Press, 2008);* The Keynesian Revolution in the Making, 1924–36 *(Clarendon Press, 1988); and the final volume of* The Penguin History of Britain, Hope and Glory, Britain 1900–2000 *(Penguin Books, 2004).*

When I came to the Institute as a Director's Visitor in January 2009, I had very little idea of what to expect, but at least I knew what I expected to be working on during the two months of my stay. This is the candid story of how my expectations were defeated—much to my own benefit and, I hope, to the credit of the Institute as well.

As a historian of modern Britain, I generally divide my time these days between Cambridge, England, where I am happy to revisit my old university and its libraries, and Pender Island, British Columbia, where the best library in my field is in the house that my wife Dr. Maria Tippett and I have built there. Living for most of the year on a remote island off the west coast of Canada, I already had calm and tranquil surroundings for writing. In coming to Princeton, I looked forward to exploiting the rich resources for research provided under the auspices of the Institute—and in this I was not disappointed.

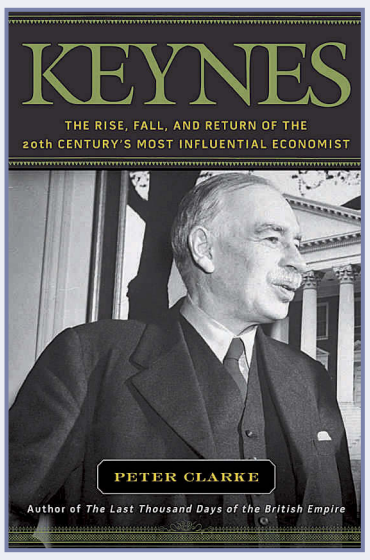
But within a week or two of my arrival, I had to confess to the Director that I was not in fact working on Churchill and the concept of the English-speaking peoples, the topic that I had originally proposed. Peter Goddard did not turn a hair, immediately assuring me that this was in the best traditions of the Institute. This provided not only encouragement but a daunting challenge. True, I gladly fulfilled a commitment to give a Friends Forum on February 4 on "The Two Careers of Winston S. Churchill," which explored the seriousness of Churchill's commitment—and earnings—as a writer. But my attention was mainly turned in another direction, towards financial problems on a larger scale than those of Churchill's tax returns.

It was the time of the inauguration of a new president in Washington, which we watched, with colleagues and with excitement, on the television link-up provided in Wolfensohn Hall. These were early days of innocence in the Obama presidency, promising hope and audacity. Both were to be needed in confronting a serious economic crisis. Moreover, the debate over appropriate responses to it inevitably aroused echoes for a historian of the circumstances in which President Franklin D. Roosevelt had taken office seventy-six years previously, inaugurating the New Deal with his message that there was nothing to fear but fear itself. Whether this was an appropriate response to the Great Depression of the 1930s, whether the thinking behind the New Deal was consistent or correct, whether it represented an early test for a Keynesian stimulus strategy, were historical questions that were suddenly given a new twist.

Academic economists and historians, marooned in what is usually derided as their ivory tower, have long made a frugal living out of debating such issues. In the tower at Princeton, just up the road, one economist decided to republish his collected academic articles about ten years ago. "I guess I am a Great Depression buff, the same way people are Civil War buffs," he wrote in the preface, and barely a dog barked as the unworldly man confessed to his harmless little hobby. "I have enjoyed studying the Great Depression because it is a fascinating event at a pivotal time in modern history," he continued. "How convenient for me, then, professionally speaking, that there is also so much to learn from the Depression about the workings of the economy."

In January 2009, I sensed my new project in much the same terms as Ben Bernanke (for it was he of course). And while it has not yet given me the same degree of professional advancement and job opportunities, I am well pleased that I decided to write an accessible account of the thinking of John Maynard Keynes and of the reception of his ideas. At any rate, I recently had the pleasure of presenting the Director with a copy of my book, *Keynes: The Rise, Fall, and Return of the 20th Century's Most Influential Economist*, published by Bloomsbury in London in September and by Bloomsbury Press in New York in October, on the anniversary of the Great Crash of 1929.

Thus the foundations for this book were laid at the Institute, not only through the availability of research facilities but through the intellectual stimulation of many informal discussions with other scholars. Their reactions to news of what I was doing helped me frame questions that my book sought to answer—especially why the thinking of an economist who died more than sixty years ago should continue to have such relevance for us today. As soon as I got back to Pender Island at the end of February, I began the eleven weeks of actual writing. I like to think that I was wound up like a coiled spring in releasing the energy that had been stored up at the Institute—or perhaps this metaphor simply reveals continuing deficiencies in my understanding of physics that further conversations over lunch might have remedied. ■



John Maynard Keynes

John Maynard Keynes was inconsistent far less often than is alleged. But he was guilty of changing his mind—usually for the better. What reason do we have for supposing that he would have denied us similar license? In policy, we are surely not wrong, more than seventy years after his General Theory, to improvise particular measures appropriate to our own times. Keynes's name is thus rightly invoked to license fresh approaches to the novel economic difficulties of our own era—to tackle them actively rather than take refuge in inert doctrinal purity.

It is indeed Keynesian to applaud government for trying something, and on a large scale too, when faced with obvious market failure. And the yardstick that Keynes introduced for assessing the costs is still valid: whether the economy itself can be expanded by such measures, generating the very resources that finance the initial stimulus. That is what justifies government action, not only for reasons of short-term expediency, but also in the long run.

—Peter Clarke in *Keynes: The Rise, Fall, and Return of the 20th Century's Most Influential Economist* (Bloomsbury Press, 2009)

Talking Points

From and About the Institute Community

Pierre first started visiting Moscow in the 1970s, deep in the USSR era; at the time, such visits from a foreign mathematician, while not expressly forbidden, were quite non-trivial to arrange, and all the more valuable for that. He has continued to keep in touch with Moscow mathematicians ever since. . . . In 2004 Pierre received the Balzan prize, one of the most distinguished scientific prizes in the world. Pierre decided to spend it "for the benefit of the struggling Russian school of mathematics." Thus the yearly "Pierre Deligne Contest for Young Mathematicians" was started. . . . During the past four years, sixteen Deligne fellowships have been awarded. Now Pierre intends to continue the contest by using his personal funds. It is hard to overestimate the debt of gratitude we owe Pierre.

—"*A Tribute to PIERRE DELIGNE" [Professor Emeritus in the School of Mathematics],* Moscow Mathematical Journal, *January–March 2009*

I am very skeptical about all the pronouncements that are made by the experts. I know how completely uncertain the subject is. But I don't claim to be an expert myself, so I won't argue with anybody about details. And I am certainly not a spokesman for the opponents of the prevailing dogmas. I haven't given much time to it and I don't pretend to know what the real answers are. What I know for sure is that most of the people who make pronouncements don't know, either.

—FREEMAN DYSON, Professor Emeritus in the School of Natural Sciences, giving his perspective on global warming on The Charlie Rose Show, *August 14, 2009*

From the very beginning of its existence, the Muslim world practiced and developed an elaborate legal system meant to control and to judge all aspects of life . . . This system, known as *sharia*, was based on the Qur'an, an immutable divine revelation, and the *hadith*, a huge body of actions and statements attributed to the Prophet, whose authenticity—and reliability for believers—was discussed for centuries. . . . Although a consensus was established on many issues, and was often adopted by the legal systems of Muslim states in our times, this consensus was not total or universal. With variations that arouse the passions of modern historians and politicians, the opinions and judgments of this tradition of legal interpretation can, in theory at least, range from absolute and constant to near-anarchical and open-ended.

—OLEG GRABAR, Professor Emeritus in the School of Historical Studies, in "Seeing and Believing: The Image of the Prophet in Islam—the Real Story," The New Republic, *November 4, 2009*

I remember going into Professor Habicht's office—he always had time no matter how busy he was—and saying "How would you like it if *IG* II^2 2971 dates to around 250 instead of 314?" He took his copy of *Inscriptiones Graecae* off the shelf to take a look at the text, knotted his brow a bit, and said he'd think about it. Back to my office I went. I did not expect to hear anything for a day or two, as I had interrupted him in the midst of his work. Was I ever mistaken! About one half hour later I opened my door to his knock. There he stood a broad grin on his face, positively beaming. "Perfect," he said and left me to figure it out. Of course, he later kindly read what I wrote and helped me tremendously with it.

—STEPHEN V. TRACY, current Visitor and former Member in the School of Historical Studies, in Attika Epigraphika, *a volume of the proceedings of an epigraphic conference held in honor of CHRISTIAN HABICHT, Professor Emeritus in the School of Historical Studies*

The point of just war theory is to regulate warfare, to limit its occasions, and to regulate its conduct and legitimate scope. Wars between states should never be total wars between nations or peoples. Whatever happens to the two armies involved, whichever one wins or loses, whatever the nature of the battles or the extent of the casualties, the two nations, the two peoples, must be functioning communities at the war's end. The war cannot be a war of extermination or ethnic cleansing. And what is true for states is also true for state-like political bodies such as Hamas and Hezbollah, whether they practice terrorism or not. The people they represent or claim to represent are a people like any other.

—AVISHAI MARGALIT, George F. Kennan Professor in the School of Historical Studies, and MICHAEL WALZER, Professor Emeritus in the School of Social Science, in "Israel: Civilians and Combatants," The New York Review of Books, *May 14, 2009*

The Tavern and the Meeting House

George Dyson Explains How Princeton University Began with a Tavern and the Institute Began with a Meeting House

BY GEORGE DYSON

It was the Lenni Lenape! It was the tribes of the Lenni Lenape! The sun rose from water that was salt, and set in water that was sweet, and never hid himself from their eyes . . . It was but yesterday that the children of the Lenape were masters of the world.

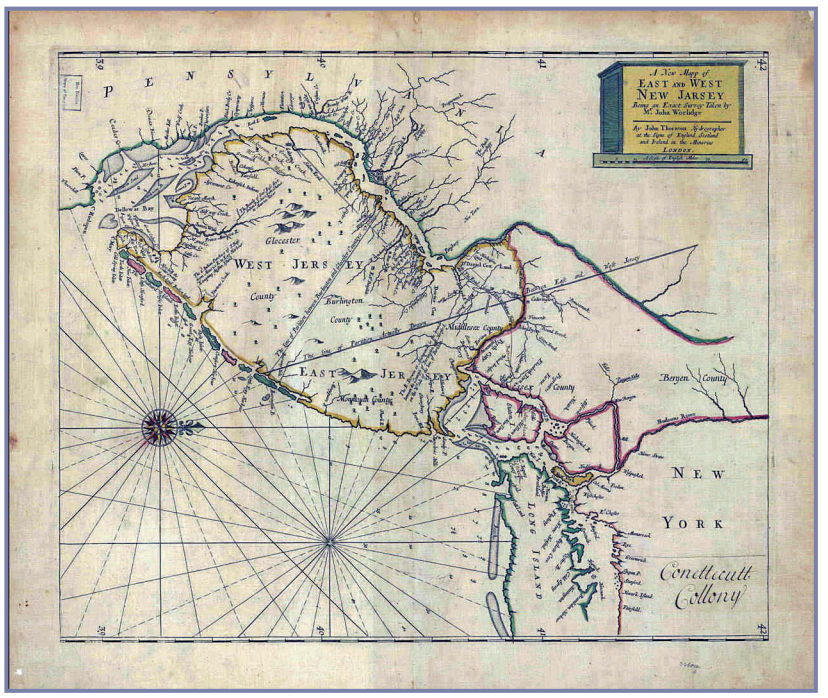
— James Fenimore Cooper, *The Last of the Mohicans*

New Jersey's original inhabitants, the Lenni Lenape ("Men of Men") abandoned the interior in summer and headed either to the Jersey shores or to encampments on the estuaries of Delaware Bay. "From June to this present month, August," reported William Penn (1644–1718) during his first summer on the Delaware in 1683, "we have had extraordinary heats."

Penn landed in Delaware Bay on October 27, 1682, after a passage (from Deal, England) of fifty-nine days aboard the *Welcome* during which smallpox broke out and thirty-one of his ninety-nine fellow colonists died. Penn, who had survived smallpox at the age of three, ministered to the sick during the voyage and arrived in excellent health. The Lenape met the newcomers with diplomacy, but the colonists had technology and immunity on their side. "What is the matter with us Indians," Chief Tenoughan, of the Schuykill River, asked William Penn, "that we are thus sick in our own Air, and these Strangers well?"

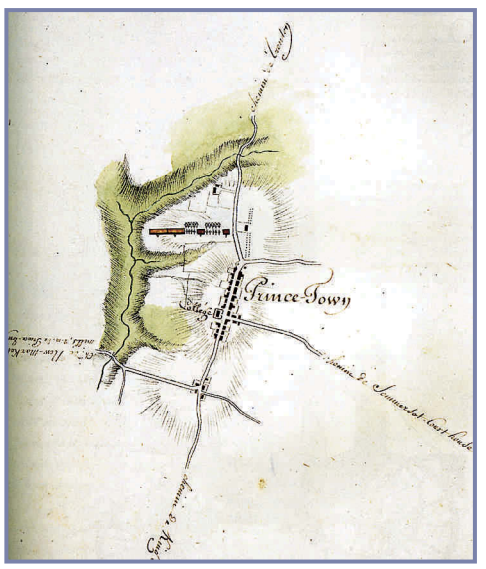
Following his Restoration in 1660, Charles II of England had challenged the Dutch claims to North America, granting the entire territory between Virginia and New France to his brother, the Duke of York (later James II), in 1664. The territory was named New York, and a portion of it, between the Delaware and Hudson rivers, was named New Jersey, with the west half (bordering the Delaware River and Delaware Bay) assigned to Lord Berkeley and the east half (bordering the Hudson River and the Atlantic Ocean) assigned to Sir John Carteret.

In 1675, Lord Berkeley sold his interest in West New Jersey for £1,000 to John Fenwick and Edward Byllynge, two Quakers whose subsequent dispute over the property was referred for arbitration to William Penn. Fenwick sailed for America, while Byllynge fell into debt and eventually transferred his interest to a group of creditors including Penn, who also purchased an interest in East New Jersey (including much of what would become Princeton) at auction in 1682 for £3,400 from Carteret's estate.



East and West New Jersey in 1696

William Penn was the rebellious son of Admiral Sir William Penn (1621–70), who led the English fleet in two wars against the Dutch and captured Jamaica for Cromwell in 1655. Sent to Oxford at age fifteen and soon expelled, the younger Penn took up with the Quakers, a nonconformist sect, and was imprisoned seven times. Admiral Penn died in 1670, leaving his son to manage his estate, including £16,000 owed to it by the Crown. Officially £11,000 in "victualling expenses," plus interest, rumors lingered that the admiral had covered the king for a gambling debt.



Prince-Town circa 1781

Penn petitioned the king, in 1680, for a settlement of this debt, proposing the Crown grant him "a tract of land in America, lying north of Maryland, on the east bounded with Delaware River, on the west, limited as Maryland is, and northward to extend as far as plantable, which is altogether Indian." Charles and James said yes—resolving the debt, and exporting one of the ringleaders of a troublesome religious sect. The colony of Pennsylvania, with its capital Philadelphia, was the result.

To the west of Pennsylvania lay open wilderness, while to the east the wilds of New Jersey began to be squeezed between two growing populations centered upon Philadelphia and New York. The most direct connection between the two settlements was overland across the "waist" of New Jersey, between the head of navigation on the Delaware River (near present-day Trenton, upstream from Philadelphia) and the head of navigation on the Raritan River (near present-day New Brunswick, upstream from New York). This well-worn Lenni Lenape footpath became, in succession, a trail passable by horses, a wagon road, the "King's Highway" for stagecoaches, and finally State Routes 27 and 206.

In 1683, a settler named Henry Greenland opened a tavern near the midpoint of the wagon road, and around this nucleus the village of Prince-Town began to form. The proprietors of East and West New Jersey met at Greenland's Tavern in 1683 to decide their common boundary (marked by the present-day Province Line Road) and thus put Princeton on the map. The Nassau Tavern (and Nassau Inn), successor to Greenland's Tavern, is still where coaches drop off travelers and Princeton University houses its guests.

Meanwhile, a small group of Quakers were seeking to distance themselves as far as possible from the increasingly secular influences of Philadelphia and New York. Halfway between the Raritan and the Delaware, and slightly to the south of the overland trail, was a small stream named Wapowog by the Lenape, flowing through land that was taken up in 1693, as his share of the original grant to the proprietors of East New Jersey, by William Penn. Six close-knit Quaker families, with Penn as an absentee partner, founded a colony here in 1696, and named it Stony Brook. Instead of a tavern, they built a Quaker Meeting House, where Friends congregate, at the edge of the Institute Woods, to this day.

The patriarchs of these families were Benjamin Clarke, William Olden, Joseph Worth, John Hornor, Richard Stockton, and Benjamin Fitz Randolph, with Stockton becoming the largest landowner thanks to 5,500 acres purchased for £900 in 1701 from William Penn (who reserved 1,050 acres "as to said William Penn shall seem meet and convenient" for himself). Benjamin Clarke purchased 1,200 acres between Stony Brook, the Province Line, the present Stockton Street, and the present Springdale Road, in 1696, conveying 400 acres (including the site of the Institute for Advanced Study) to his brother-in-law, William Olden, and deeding 9.6 acres in trust for the Quaker Meeting House and Cemetery in 1709.

When the College of New Jersey (established by Presbyterians) was moved from Newark to Princeton in 1752, John Stockton and John Horner, who put up a £1,000 bond and provided 10 acres of cleared land and 200 acres of woods, were careful to site the future University near the tavern, on the main road. When Abraham Flexner, Oswald Veblen, and the Bambergers selected a location for the Institute, they chose Olden Farm, near the meeting house on Stony Brook.

It took more than five years for the founders to reach agreement—not only on a specific site, but on whether the Institute should purchase land or not. "The way to reform higher education in the United States is to pay generous salaries and then use any sort of makeshift in the way of buildings," argued Flexner in 1932.[1] Four years later, after conceding to the purchase of Olden Farm, Flexner was still complaining to Veblen that "I would far rather rent additional floor space in 20 Nassau Street and get our minds so full of the purposes for which we exist that we will all become relatively indifferent to buildings and grounds."[2]

Louis Bamberger, although approving the purchase, admitted to Flexner that "some of our coworkers in the management of the Institute were inclined to rush along with more haste than wisdom," and noted that "Mrs. Fuld has repeatedly commented on a policy of acquiring so much land for an institution that proclaimed not size but highest standards."[3] Flexner, in return, warned the Bambergers, via their legal counsel and founding Trustee Herbert Maass, that Veblen "is a most excellent person, but the word 'building' or 'farm' has an intoxicating effect upon him."[4]

Veblen, an avid outdoorsman who, after winning one prize in sharpshooting and another prize in math, had taken time off from his undergraduate studies to travel down the Iowa and Mississippi rivers in the style of Huckleberry Finn, found the combination of the Bamberger fortune and the depressed land prices of the 1930s a potent mix. "There is no educational institution in the United States which has not in the beginning made the mistake of acquiring too little rather than too much land," he wrote to Flexner, urging the acquisition of "a sufficiently large plot of land, which would thus be kept free from objectionable intruders."[5]

The latter argument had the desired effect. "I have it in mind now to go down to Princeton quietly for a week or so for the purpose of familiarizing myself with the general situation, for that may help us in our final choice," Flexner reported in October 1932. "I should like to be away from undergraduate activities and close to graduate activities."[6]

There was no turning back, once word leaked out that the Institute was looking for a home. "The fact that we propose to locate in the vicinity of Princeton is now a matter of public knowledge to such an extent that, I believe, we are being made the victim of a dis-

George Dyson, a historian of science and technology and son of Freeman Dyson, Professor Emeritus in the School of Natural Sciences, is a former Director's Visitor (2002–03) who is writing a history of the IAS Electronic Computer Project (1945–58).

tinct firming up in prices, and that we had better attempt to come to an early decision," Maass advised Flexner in November 1932.[7]

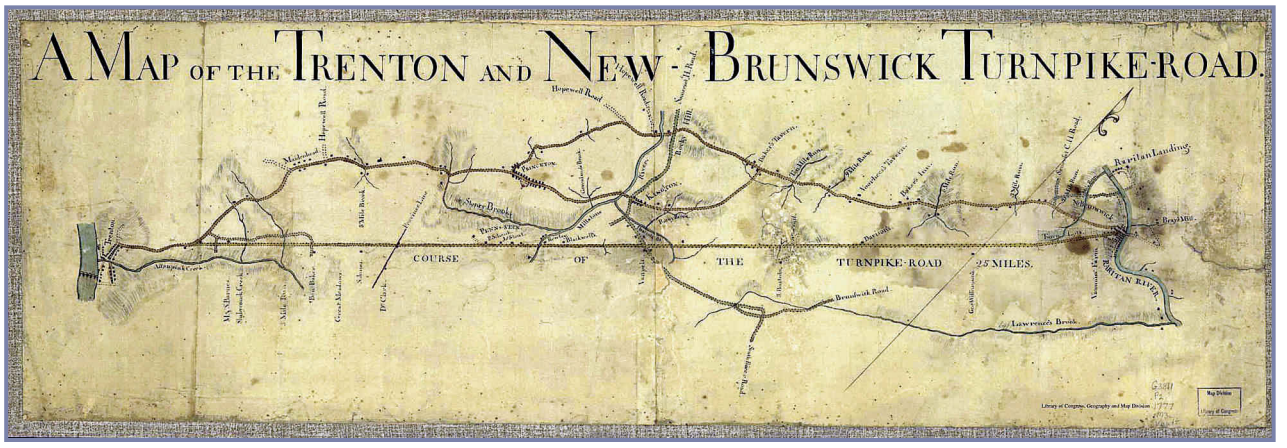
Veblen jumped at the chance. "If we are going to have inflation, would it not be well to speed up the land question?" he argued. "At least two of the proposed sites seem good to me."[8] By 1936 some 256 acres had been purchased for a total of $290,000.[9] The acquisitions included the 200-acre Olden Farm, purchased after lengthy negotiations for $175,000. This included Olden Manor—the former William Olden house and now the Director's residence—as well as a cluster of farm workers' houses at the end of Olden Lane, and a large, working barn.

"I am, as you and Mrs. Fuld are, very glad that we have acquired a site, though I think it would be prudent for the present to keep the matter quiet," Flexner wrote to Bamberger in October 1935. "Though I do not wish to criticize either Mr. Maass or Professor Veblen, I think there is some danger that they will both be too enthusiastic about the acquisition of additional land."[10] The Bambergers responded, as Maass reported to Flexner in December, by "[playing] Santa Claus by paying for the land."[11]

Veblen was not to be constrained. Over the next few years, he drove a series of bargains with depression-strapped landowners to extend the Institute's holdings to a total of 610 acres, including the Institute Woods. "I have walked over the new property of the Institute several times since there has been a hard crust on top of the snow," he reported in early 1936. "This enables one to explore the woods down near the brook much better than one will be able to after the ground gets soft again."[12]

Among the properties acquired was the Maxwell estate, to the west of Olden Farm, extending from Mercer Street toward Stony Brook. "The Maxwell House is a composite," noted the Committee on Buildings and Grounds. "The front of the house was the front of old St. George's Hall which stood at 13th and Arch Streets, Philadelphia. The Corinthian columns in the halls came from a row of houses built by John Jacob Astor at Broadway and 11th Street, New York. The Italian marble mantel in the drawing room came from the home of A. T. Stewart, and the carved wooden mantel in the library from the dining room of J. P. Morgan, the chandelier from a chateau in France, etc. The pipe organ was installed in 1914."[13]

The purchase of the remainder of the Maxwell estate (complicated, as it remains today, by its status as a historic battlefield) was concluded by Frank Aydelotte, Flexner's successor, in 1945. "I think this is the psychological moment to close the deal," Aydelotte reported to Maass in September 1945. "With this tract in our possession, the Institute will have one of the finest pieces of educational real estate that I know of anywhere."[14]



The route between Trenton and New Brunswick in 1777

Aydelotte was right. The Institute's holdings now extended from the Graduate College to the Quaker Meeting House on Stony Brook, and included not only these fields and woodlands, but their Quaker legacy, and a direct link to the original inhabitants, via William Penn. "I find them . . . of a deep natural sagacity," Penn wrote to his friend Robert Boyle of the Royal Society, after his first tour of the Lenni Lenape country in 1683. "The low dispensation of the poor Indian out shines the lives of those Christians, that pretend an higher."

While still in England, Penn had drafted a constitution for the new colony, issued in 1676 as the "Concessions and Agreements of the Proprietors, Freeholders, and Inhabitants of the Province of West New Jersey." Exactly one hundred years before the Declaration of Independence, this document established a representative democracy with freedom of religion and assembly, trial by jury, economic liberty, and other principles that would later be incorporated into the Constitution of the United States. Richard Stockton and John Witherspoon, both children of the Stony Brook settlement, were signers of the Declaration of Independence, and following the Revolutionary War the Continental Congress met from June to November 1783 in Princeton at Nassau Hall. On October 8, a delegation representing five hundred Quakers appeared before Congress in Princeton, "soliciting the Christian interposition of Congress, for the discouragement and prevention of the slave trade."

While negotiations for the purchase of Olden Farm were underway, the Bambergers expressed their hope that the Institute's School of Economics and Politics would "contribute not only to a knowledge of these subjects but ultimately to the cause of social justice which we have deeply at heart."[15]

This objective, as well as its physical location, the Institute owes to William Penn. ■

The following materials in the Institute's Shelby White and Leon Levy Archives Center were consulted in the writing of this article:

1 Flexner to Bamberger, December 1, 1932
2 Flexner to Veblen, January 6, 1937
3 Bamberger to Flexner, October 29, 1935
4 Flexner to Maass, December 15, 1937
5 Veblen to Flexner, April 12, 1934
6 Flexner to Maass, October 18, 1932
7 Maass to Flexner, November 9, 1932
8 Veblen to Flexner, March 13, 1933
9 Maass, Trustees' Minutes, April 13, 1936
10 Flexner to Bamberger, October 28, 1935
11 Flexner to Bamberger, December 19, 1935
12 Veblen to Aydelotte, February 13, 1936
13 Conversation on the Maxwell Property, September 16 and 17, 1940 (Beatrice Stern files, Buildings and Grounds)
14 Frank Aydelotte, Memorandum for Herbert H. Maass, September 7, 1945
15 Louis Bamberger to the Trustees, April 23, 1934

The Edward T. Cone Concert Series: An Eclectic Mix of Performances

This season's Edward T. Cone Concert Series, known as "The Harmonic Series," is the first to be presented under composer and clarinetist Derek Bermel, who joined the Institute as Artist-in-Residence in July. Offering music from classical to cabaret, from virtuoso violin to jazz piano, the season "brings together an eclectic mix of performers, styles, and composers," says Bermel, who recently received a Grammy nomination for his performance in his album *Voices* (BMOP/sound, 2009). "We hope to engage and challenge our audience's perceptions of classical and contemporary music."

The series opened on October 16 and 17 with Bermel on clarinet and Christopher Taylor on piano performing works by Brahms, Milhaud, Leonard Bernstein, Sebastian Currier, Paul Moravec, and Bermel, who was represented by three works—*SchiZm*, *Thracian Sketches*, and *Turning*.

On December 4 and 5, Pulitzer Prize–winning composer and pianist William Bolcom, bass/baritone Kevin Deas, violinist Timothy Fain, mezzo-soprano Carla Jablonski, cellist Joshua Roman, pianist Howard Watkins, and mezzo-soprano Joan Morris performed a selection of sonatas and songs composed by Bolcom.

The concert series will continue in the second term with performances by virtuoso violinist Midori and pianist Charles Abramovic on January 15 and 16, playing music by John Adams, Toshio Hosokawa, James MacMillan, Krzysztof Penderecki, and Huw Watkins.

The season will conclude with a world premiere duo-recital by jazz pianists Vijay Iyer and Craig Taborn on March 19 and 20. All concerts are held at 8:00 p.m. in Wolfensohn Hall.

CLIFF MOORE

Artist-in-Residence Derek Bermel with pianist Christopher Taylor

Throughout the season, Bermel is organizing a series of concert talks to accompany the performances. The first talks were given in October by Anthony Tommasini, chief music critic of the *New York Times*.

In November, Bermel also hosted a writer's talk featuring Steve Bodow, head writer and supervising producer of *The Daily Show with Jon Stewart*.

For more information about the Artist-in-Residence program and the Edward T. Cone Concert Series, visit www.ias.edu/air. ■

The local classical radio station WWFM is broadcasting a new series called "Music from the Institute for Advanced Study," cohosted by Artist-in-Residence Derek Bermel. In addition to featuring current concerts in the Edward T. Cone Concert Series, the program features music from past Artist-in-Residence performances.

The broadcast airs between 8:00 p.m. and 10:00 p.m. on the last Saturday of each month. For more information, please visit www.wwfm.org.

challenge was particularly exciting. It might sound strange, but it is a question one does not think of very often: what is specific to an artist, and how can one summarize his or her achievement? In the case of Picasso, this is quite a conundrum, for the two aspects of his production that are absolutely unique are its quantity and its diversity.

No artist, throughout the entire history of world art, is known to have produced as many works as Picasso—and this without the help of any assistant (as opposed to Rubens's army of apprentices working for him in his studio, for example). The only time he requested any help was when he wanted to learn a technique (in the late twenties he asked his friend Julio Gonzales how to weld metal, in the early fifties he asked a potter how to work a wheel); as soon as he had mastered the technique in question, he would retreat into the solitude of his studio and, more often than not, find ways to subvert its conventions. If one counts everything, all of his drawings and sketches, one can estimate that Picasso's output is well above 30,000 works—which is to say that no matter how large an exhibition could be, it would only include a minute proportion of his production.

ESTATE OF PABLO PICASSO/ARTISTS RIGHTS SOCIETY, NEW YORK

Pablo Picasso, Italian Woman, *1917*

ESTATE OF PABLO PICASSO/ARTISTS RIGHTS SOCIETY, NEW YORK

Pablo Picasso, Harlequin, *1917*

With this in mind, I chose to concentrate on the second unparalleled characteristic of Picasso's work, its astonishing heterogeneity—which is the main reason I focused on the years 1917–37, the most diverse period of his career. Many artists develop several distinct styles throughout their life, but sequentially, one at a time, moving forward without return—as did Picasso himself at the beginning of his career (his Blue Period was followed by a Rose Period, then Cubism, itself divided into several chronological phases). But starting timidly in 1915–16 and then in full force during his sojourn in Rome, in February through May 1917, Picasso developed a new attitude that would remain an essential feature of his aesthetics. From then on, he would never abandon anything; he would always invent new styles but no longer discard old ones. Perhaps under the spell of the classical monuments and sculptures of antique Rome, or the paintings he saw in Pompei and Naples, Picasso discarded any idea of "evolution" and "progress." Over the years he would build a phenomenal arsenal of forms and approaches, and feel free to summon any one of them any time he wished, any time he saw fit.

There is an obvious playfulness in the way Picasso constantly shifted his artistic identity when least expected—and the title of the show, "Picasso Harlequin," was meant to reflect that: he was like Harlequin, a character with whom he identified all his life and of whom he drew and painted many versions in various, often incompatible, styles. Like Harlequin, he could become anything he wanted, put on any mask, take out any card from his sleeve. He could be several artists at once. Thus on the same day or week or month, he could offer a cubist, a neoclassical and a surrealist version of the same subject, for example, and he would relish in such clashes of incompatible manners. The hundred etchings of the *Suite Vollard*, which were included in the show, provide a perfect case in point (most of the plates are dated, so it is particularly easy to observe the rapidity of his identity switches). To signal that this distinctive aspect of Picasso's work was the topic of the show, I placed at its very entrance two paintings that have only in common the fact that they are his, even though they were made just a few months apart—the cubist *Italian Woman*, painted in Rome in April through May 1917, and the neoclassical *Harlequin*, painted in Barcelona in the early fall of that year (to drive the point home I could have found works that are strictly contemporary, but they would not have matched the sheer force of those two towering sentinels).

Like Harlequin, he could become anything he wanted, put on any mask, take out any card from his sleeve. He could be several artists at once. Thus on the same day or week or month, he could offer a cubist, a neoclassical and a surrealist version of the same subject, for example, and he would relish in such clashes of incompatible manners.

Picasso was obviously proud of his work's multifariousness. However, this should not be confused with fickleness. He liked to work in series, often staying with the same topic for months in a row, and sometimes returning years later to a series that he felt had not yielded all it could. Picasso's visual memory is indeed spectacular. The *Woman in a Hat* that Picasso painted in July 1934, for example, is directly reminiscent of sketches he made in the fall and winter of 1912–13; the *Head of a Horse* he painted in 1937 as a study for *Guernica* seems to derive from a sketchbook he filled in fall 1917 while resting in Barcelona from his exhausting work in Rome for the ballet *Parade*. Unlike Harlequin, Picasso had a very long attention span, and he was anything but lazy. These are the only two major differences in their character, not enough to renounce the metaphor of Harlequin's tricks and costume for Picasso's prodigiously varied production. ■

Yve-Alain Bois, Professor in the School of Historical Studies, is a specialist in twentieth-century European and American art and has curated a number of influential exhibitions in the past decade, including "Picasso Harlequin 1917–1937," which was exhibited at the Complesso del Vittoriano in Rome (October 11, 2008–February 8, 2009). He is currently working on several long-term projects, including a study of Barnett Newman's paintings, the catalogue raisonné of Ellsworth Kelly's paintings and sculptures, and the modern history of axonometric projection.

H1N1 *(Continued from page 4)*

ancestors. The new virus is related to swine viruses isolated in two continents, North America and Eurasia. The North American ancestors were isolated in pigs between 1998 and 2002 and were the result of a reassortment between swine, avian, and human viruses, the so-called triple reassortment at the end of the nineties. The origin of the Eurasian ancestors is more mysterious. They were found in Europe in the early nineties, and since then the data is sparse. How, when, and where these two ancestors met is still an open question, which probably will only be solved with a better worldwide surveillance system.

As previously mentioned, this virus is evolving and diversifying. More than a thousand viruses have been isolated and sequenced around the globe. The viruses from New York, Tokyo, Paris, Mexico, Argentina, and other locations show a very similar genome with subtle differences. By taking all this information into account, we can estimate that the most recent common ancestor to the H1N1 viruses that are currently spreading in the world is very recent, probably from the end of January or the beginning of February 2009, which is compatible to the first reported cases in Mexico and the United States. The viruses from these different locations show a strong geographic correlation, suggesting local spread in many different places around the globe, and an increasing diversity.

At the moment, the most effective strategy to fight influenza viruses is vaccination. The first step in the process of creating an influenza vaccine is to choose a virus that we think will represent the circulating virus in the near future. The high evolutionary speed, obtained through mutations and reassortments, is a very successful strategy that makes RNA viruses, like flu, very hard to predict. However, there are several lessons that we, as a species, are learning, including awareness that basic science provides the best guidance for implementing effective public health measures. We need an effective worldwide system of surveillance for emerging viruses, to map and to identify mutations that could confer resistance to drugs or vaccines, to learn how to assess the transmissibility of a pathogen in humans, and to identify the molecular factors that determine the virulence of a pathogen. ■

Fostering Conversations about Mathematics among Different Nations

The 2009 International Seminar on Mathematics Education, a program of the Institute for Advanced Study/Park City Mathematics Institute (PCMI), brought together teams from Australia, Cambodia, Denmark, Israel, Namibia, Peru, Vietnam, and the United States to discuss the teaching of functions and engage in a broader dialogue on mathematics education.

Team members from each country presented a response to specific questions related to teaching functions based on their country's view of secondary education. Participants from each of the other countries then raised questions and discussed the perspectives of their own cultures.

"The opportunity to work at close quarters with fellow professionals from many different countries is a very rare one, and I feel privileged to have been involved," said Barry Kissane, Senior Lecturer in the School of Education at Murdoch University in Australia, who was among the seminar participants. "Even those of us fortunate enough to attend international conferences do not usually have the chance to work so closely for such a long period on matters of common interest."

BARRY KISSANE

Participants in the 2009 International Seminar on Mathematics Education discussed how the teaching of functions could be integrated into the curriculum in their home countries.

Subtitled "Bridging Policy and Practice," the International Seminar is one of the most significant components of PCMI. Its intent is to foster conversations among different nations about the teaching of mathematics. Each year, participants from teams representing seven countries join those from the United States to focus on a designated concept, how it should be taught, and what teachers require in order to teach it. Participants also consider the implications of technology and the mathematical knowledge needed by teachers working with the subject matter.

The International Seminar was introduced in 2001 by Elaine Wolfensohn and Herb Clemens, then Director of PCMI and Professor of Mathematics at the University of Utah, now at the Ohio State University. Elaine Wolfensohn, the wife of James Wolfensohn, then Chairman of the Institute's Board of Trustees and now Chairman Emeritus, became interested in initiating such a program while traveling with her husband during his tenure as President of the World Bank.

"I discovered that among the many needs in the developing world was the need to improve the teaching of mathematics," said Elaine Wolfensohn, whose Wolfensohn Family Foundation and Botwinick-Wolfensohn Foundation provide funding for the International Seminar. "During the ten years of Jim's presidency, I spent much of my time visiting schools in all regions of the world. Since mathematics is an international language, I always observed the math classes. I visited donor countries such as Japan and Singapore where math was taught extraordinarily well. I realized that our American high school teachers could benefit from learning more about what works in other countries and that developed countries could help those in the developing world to improve the teaching of math."

> *"I realized the world had the opportunity to share what works in the teaching of mathematics."*
>
> —Elaine Wolfensohn

Johnny Lott, Director of the Center for Excellence in Teaching and Learning, Professor of Education and Mathematics at the University of Mississippi, and Professor Emeritus in the University of Montana's Department of Mathematical Sciences, began his involvement at PCMI as a participant and became involved in helping to organize the International Seminar several years ago.

"Participants need a working knowledge of English, and we generally have two representatives from each country. One is typically a university mathematics educator and the other a secondary school teacher. This way, we get not the official country view of a subject, but the individual view," Lott said.

The first night of the program, participants from each country present a twenty-minute talk on the overall seminar topic. Individual participants then discuss how the subject can be integrated into his or her country's curriculum.

Participants are divided into three groups and work together during the week-long program to develop briefs that are then made available online for use by mathematics educators around the world. "We try very hard to come up with an approach that will work in all the participants' countries," Lott said.

Issues emerging from the conversations at the 2009 seminar produced briefs, including *Teacher Professional Development in the Teaching and Learning of Functions*; *Assets, and the Pitfalls in Using Technology in Teaching and Learning Functions*; and *The Place of Functions in the School Mathematics Curriculum*. These briefs will appear with previous policy briefs and the proceedings of earlier seminars at PCMI's online Math Forum (http://mathforum.org/~pcmi/). The 2010 International Seminar will focus on image processing.

"The seminar was long enough for us to get to know each other and understand the many different cultural contexts from which we came. This helped us to see our professional work in a new light," Kissane said of the 2009 seminar. "The diversity of participants was a major reason for the success of the seminar, but so was the inspired leadership. In 'normal' circumstances, those in less powerful positions do not easily have a voice, nor do those for whom English is not their first language. Both of these impediments to communication were successfully addressed. My participation has been a highlight of my career." ■

Professional Development Program for New Jersey Mathematics Teachers Seeks Funding for Growth

In 2007, as an outgrowth of the New Jersey Professional Development and Outreach group, PCMI launched the Institute for New Jersey Mathematics Teachers (INJMT), a week-long residential program modeled closely on PCMI's Secondary School Teachers Program.

Participants in INJMT spend an intense week immersed in mathematically based professional development to enrich their knowledge and confidence. In 2008, INJMT engaged twelve teacher-participants from various New Jersey middle and high schools. In 2009, content was added, and a new set of teachers from a wider geographic area of the state participated.

With the success of the program, PCMI is seeking funding to establish this New Jersey–based annual program as a resource for additional New Jersey teachers and schools. A growing base of experienced teacher-leaders would allow the INJMT summer program to influence teaching practices at the high school level and the undergraduate level, as well as furthering the professional development of New Jersey's teachers. In this hoped-for expansion of the INJMT, teams of four or more teachers from a broad range of schools and districts would be encouraged to participate, deepening the potential impact for systemic change.

New Director for PCMI

The Institute for Advanced Study/Park City Mathematics Institute (PCMI) is a program of professional development for the mathematics community, including research mathematicians, graduate students, undergraduate students, mathematics education researchers, undergraduate faculty, and mathematics teachers at the secondary school level. Richard Hain, Professor of Mathematics at Duke University, took over as Director of PCMI as of September. Hain, whose work focuses on topology of algebraic varieties, Hodge theory, and moduli of curves, was a Member in the School of Mathematics at the Institute in 1985–86 and 1994. He succeeds Robert Bryant, Director of the Mathematical Sciences Research Institute in Berkeley, California, who organized the Undergraduate Summer School program from its inception until 2000 and was named Director of the PCMI program in 2007.

"PCMI is a very impressive program, and I am honored to be its new director," said Hain. "Its many parts are all strong and interact in such a way that PCMI is greater than the sum of its parts."

PCMI was founded in 1991 as the Regional Geometry Institute by a consortium of universities led by the University of Utah. In 1993, the Institute for Advanced Study became the sponsoring institution of PCMI, and the first summer session under the Institute's auspices was held in 1994. PCMI is affiliated with the Institute's School of Mathematics.

This year, PCMI received funding from the Botwinick-Wolfensohn Foundation, the Clay Mathematics Institute, the George S. and Delores Doré Eccles Foundation, Mr. and Mrs. Charles L. Jaffin, Math for America, the Mathematical Sciences Research Institute, the National Science Foundation, the National Security Agency, Eric and Wendy Schmidt, and the Wolfensohn Family Foundation. The Department of Mathematics at the University of Utah also provides support.

been ruled out. Hence there is a chance that the effect is an indicator of new physics. I personally believe that if new physics is involved, it is very unlikely to implicate Maxwell's equations for electromagnetism, because these, and their relativistic extension to quantum electrodynamics, have been tested to fantastic precision. I am also skeptical that the flyby anomalies can be attributed to changes in Einstein's theory of general relativity, which has also been well-tested in the framework of metric theories that obey the equivalence principle (in a freely falling elevator, you feel no gravity), and within this framework one can show that possible effects are at least a factor of one hundred too small to be relevant. So deviations from gravity would have to take the form of a theory that does not obey Einstein's equivalence principle, and this too has been tested to great accuracy.

This leaves another possibility: effects of dark matter. We now know that ordinary matter is only a minor component of the universe; for every gram of ordinary matter, there are five grams of a mysterious "dark matter," which participates in Newtonian gravitational forces, but is electrically neutral and so does not readily emit or absorb light (hence the "dark"). So far there are no firm experimental indications of its properties, beyond what is inferred from astrophysics and cosmology. The question I have been investigating is whether dark matter gravitationally bound to the earth could be responsible for the flyby anomalies. Could collisions of the spacecraft with dark matter near the earth cause the observed velocity changes?

I have written three papers addressing this question. In the first[2], I showed that if there were a dark matter component that underwent an exothermic (energy releasing) reaction when colliding with a spacecraft proton or neutron, by converting to a lower mass particle, then the spacecraft nucleon would get a "kick" and the observed velocity increases could result. In this paper, I also studied various physical constraints to see whether there is an allowed range of dark matter particle masses and interaction cross sections that could also explain the magnitude of the observed flyby anomalies. The answer is that there is a small window, but it requires dark matter masses much lighter than conventionally assumed in the standard "cold dark matter" model, and larger interaction cross sections with ordinary matter than conventionally assumed.

As a result of circulating the preprint on this, I was invited to give a talk at a space science conference in the summer of 2008 and had some very useful conversations with people there. This led to my second paper[3], which was a determination of an upper limit of how much dark matter could be in orbit around the earth, by using current tracking data for satellites, the moon, and asteroids. By comparing lunar laser ranging of the moon, which gives the sum of the gravitational masses of the earth, the moon, and everything in between, with ranging of the LAGEOS geodetic satellite, which gives the earth gravitational mass, and ranging of a spacecraft tracking the Eros asteroid, which gives an accurate lunar mass, one gets an upper limit for the amount of dark matter that can lie between the earth and the moon. It turns out to be four billionths of the earth's mass—not much mass, but enough, it turns out, to be compatible with a dark matter explanation for the flyby anomalies.

The third paper[4], which I just finished this summer, involves making a detailed model for dark matter in orbit around the earth and using it to fit the flyby anomaly data. It is easy to see that Saturn-like rings of dark matter in the earth's equatorial plane don't work—most of the flybys would pass inside the rings, so there would be no scattering. So I tried the next simplest model, which was to consider a bunch of dark matter in a circular orbit, with its orbital plane tilted with respect to the earth's equator. Because the earth has an equatorial bulge, its gravitational field differs from the spherically symmetric field of a point particle, and this symmetry deviation causes a tilted orbit to precess (i.e., slowly rotate) in time around the earth's axis, with the angle between the orbit plane and the earth's equatorial plane remaining fixed. Over a long period of time, this traces out a shell. My model then consists of two dark matter shells, one composed of elastic scatterers (to give flyby velocity decreases) and one composed of inelastic exothermic scatterers (to give the velocity increases). Parameters of the model are the radius, width, density times interaction cross section, and tilt angles of the two shells—eight parameters in all. The six known flybys are very well fitted—better than I had expected—with shell radii in the 30,000 to 35,000 kilometer range. One might suspect "overfitting," but if one attempts to use just an inelastic shell and fit only the two flybys with the smallest estimated errors, one cannot get a good fit. And if one omits any one flyby from the two-shell fit, the model still gives a reasonable prediction for the omitted one. So the model has a certain "rigidity," and is not just a case of fitting a wiggly curve through data points.

Incisive tests for the future will include putting in possible constraints from high-orbiting satellites, making predictions for new flybys as data becomes available, looking for spacecraft temperature increases caused by the postulated dark matter scattering, and of course seeing the results of earth-bound experiments trying to detect dark matter and determine its properties. In the meantime, others will continue to look for conventional physics explanations of the mysterious flyby anomalies. I think it will take several years, at least, for things to be clarified, and in the meantime I have other projects to pursue, but this has been a fascinating exercise that has taught me new topics in physics, and brought me in touch with a space science community with which I had no previous contact. ■

2 S. L. Adler, *Physical Review D* 79, 023505 (2009)

3 S. L. Adler, *Journal of Physics A: Mathematical and Theoretical* 41, 412002 (2008)

4 S. L. Adler, arXiv: 0908.2414

Stephen L. Adler has been a Professor in the School of Natural Sciences since 1969. In a series of remarkable, difficult calculations, he demonstrated that abstract ideas about the symmetries of fundamental interactions could be made to yield concrete predictions. The successful verification of these predictions was a vital step toward the modern Standard Model of particle physics, which describes elementary particles and their interactions. In some of his more recent work, he has been exploring generalized forms of quantum mechanics, both from a theoretical and a phenomenological standpoint.

An Opportunity and Challenge for the Friends of the Institute

The Institute for Advanced Study is deeply appreciative of the support of the Friends, whose annual gifts provide its largest source of unrestricted income. This income allows the Institute the crucial ability, in founding Director Abraham Flexner's words, to direct funds "from one individual to another, from one subject to another, as time goes on."

In the 2009 fiscal year, Friends contributed more than $580,000, making a significant difference during a time when the Institute's endowment, which provides 80 percent of the operating costs for core activities, suffered significant losses. During the 2008–09 academic year, the Friends' unprecedented support fully funded four visiting scientists and scholars at the Institute—one Member in each of the Schools. In addition, Friends' gifts helped to sustain the Institute's libraries; support its outreach programs, such as the IAS/Park City Mathematics Institute, Prospects in Theoretical Physics, and the Artist-in-Residence program; and leverage funding, providing essential matching dollars for grants from the National Endowment for the Humanities to the School of Historical Studies.

The Institute continues to rely strongly on this generosity, and this year, Friends have been presented with an extraordinary opportunity to raise additional funds. Martin and Helen Chooljian, longtime Friends of the Institute, have put forth a challenge grant to match every increase in giving and every new Friends contribution, up to a total of $100,000. This creates an excellent prospect for Friends who have been considering an upgrade to a higher giving level, and it provides an important stream of unrestricted support that can be used by the Institute where it is needed most. Any increase in giving will qualify for the Chooljians' match, which means that any amount that a Friend contributes above last year's gift will be doubled. John Rassweiler, Chair of the Friends, has taken the lead in meeting the challenge, increasing his giving to join the Chairman's Circle from the Director's Circle, and every member of the Friends Executive Committee has pledged to increase his or her gift. The challenge is being met by contributions from new members as well, with eleven new Friends joining so far this year.

KATE ABLUTZ

Martin Chooljian

The Chooljians hope that their matching gift will persuade other Friends to give more than they did last year. "Helen and I feel privileged to be able to support the Institute's distinguished community of scholars," said Marty Chooljian, who is also a member of the Institute's Board of Trustees. "We hope that, through this challenge, we are able to encourage others to join us by increasing their annual gifts. As donors to IAS, we strengthen the Institute's financial position and together our contributions help to ensure the Institute's role as the world's leading independent center for research and intellectual inquiry." ■

For information about increasing your contribution or becoming a Friend of the Institute, contact Pamela Hughes, Senior Development Officer, at (609) 734-8204 or phughes@ias.edu. Additional information is also available at www.ias.edu/people/friends.

Lecture on Public Policy: Torture and Accountability in the "War on Terror"

David Cole, a Professor at the Georgetown University Law Center and editor of *The Torture Memos: Rationalizing the Unthinkable*, presented the lecture "Torture and Accountability in the 'War on Terror': What Should Be Done?" at the Institute for Advanced Study in October. Addressing the once-secret memos issued by lawyers in the Office of Legal Counsel of the United States Department of Justice that authorized tactics such as waterboarding, Cole argued that the lawyers failed their constitutional and ethical responsibilities, and became accomplices to criminal conduct.

"This is a story about how law and lawyers failed, in my view," said Cole. "The lawyers were approached by the CIA in connection with the detention of Abu Zubaydah and asked whether these techniques, which included stripping suspects naked, keeping them awake for eleven days straight, slamming them into walls, forcing them into painful stress positions, slapping them in the face and abdomen repeatedly, and ultimately waterboarding them, were legal under U.S. law, under international law, and under our constitution. The lawyers concluded that they were legal. That every one of these measures was perfectly lawful, meaning it was not torture. It was not cruel. It was not inhumane. It was not degrading. It did not violate the Geneva Convention's requirement that we treat all detainees in a military conflict humanely."

In so doing, Cole argued, these lawyers failed to uphold their role as the "constitutional conscience" of the executive branch. "These lawyers were the only line of defense for the individuals against whom these tactics would be employed." Instead of requiring the CIA to conform its conduct to the law, the lawyers, through their continued justification that the tactics fell short of the criteria of torture, "contorted the law to conform the law to what the CIA wanted to do," said Cole.

CLIFF MOORE

David Cole was invited to speak at the Institute as part of its annual series, Lectures on Public Policy, which aims to address issues relevant to contemporary politics and social conditions and scientific matters of broad import. A video of his lecture may be viewed at www.video.ias.edu/Torture-and-Accountability.

"These memos and this system developed into essentially an officially sanctioned, professionalized application of cruelty," Cole continued. The methods were "vetted by the highest lawyers in our government, approved by Cabinet-level officials from Dick Cheney on down, and overseen in its minutia by doctors and psychologists who were implicated in the program."

Who should now be held accountable, and what set of responses are required and appropriate? Aside from exploring prosecutorial options, Cole proposed a number of actions, including requiring the inclusion of interested parties, such as the military and the State Department, in future decisions made by the Office of Legal Counsel and setting up an independent nonpartisan commission to provide a full accounting of what happened and make judgments about whether laws were broken.

"We can't, as President Obama has suggested, simply look forward and not backwards, because if we do so, then the law in this country will be that when we have a president who doesn't believe in torture, like President Obama, we won't torture. But when we have a president, or more relevantly a vice president, who does believe in torture, we will. Torture becomes a policy option. That's where the state of the law at this point remains," said Cole. "The whole point of the convention against torture, this international treaty that we played a central role in getting the world to sign onto, that President Reagan signed and the Senate ratified under his tenure, was to take torture off of the table as a policy option under any circumstance. We've put it back on through these tactics, and absent some accountability, it will remain an option on the table." ■

Planned Gifts Provide Institute with Funding for Memberships and Research

Friends Chair John Rassweiler Includes IAS in His Estate Plans

ANDREA KANE

John Rassweiler

As a Friend of the Institute for Advanced Study since 1992, John Rassweiler has long supported and valued the Institute's role as a place for scholars to freely pursue their research and accomplish important work toward their scholarly development.

More recently, Rassweiler has taken on the role of Chair of the Friends Executive Committee, and has grown to appreciate the day-to-day administration of the Institute. "I place great value on the exceptional level of fiscal responsibility and prudence with which the Institute carries out its mission," he said.

In recognition of these important factors, Rassweiler recently made a decision to incorporate a bequest for the Institute in his estate plans, and noted, "It was an easy way for me to make a larger gift to the Institute, above and beyond my annual membership at the Chairman's Circle level. I was working with my attorneys on a minor revision to my will, and simply told them of my intentions, and asked that they send a letter to the Institute."

Rassweiler, now retired, earned a Ph.D. in biochemistry from the University of Illinois and was the founder, owner, and President of Health Enhancement Systems, Inc.

The Institute benefits tremendously from planned gifts such as John Rassweiler's bequest. Bequests of all sizes are an important way for donors to achieve their long-term philanthropic goals, especially during times of economic uncertainty. Bequests continue a tradition of generosity marked by gifts such as Albert Einstein's home, which was left to the Institute by his daughter. The Einstein Legacy Society, named in honor of this gift, recognizes those individuals who include the Institute in their estate plans.

If you are interested in learning more about bequests, charitable remainder trusts, or other planned gifts, please contact Catie Newcombe, Senior Development Officer, at cnewcombe@ias.edu or (609) 951-4542. If you have already included the Institute in your estate plans, please contact us to receive invitations to events and to be recognized as you wish in the Annual Report listing of the Einstein Legacy Society. Additional information about ways to support the Institute is available at www.ias.edu/support.

The Loughlin Family's Charitable Remainder Trust: "All Our Goals Were Met"

Robert Loughlin, who has been a Friend of the Institute for Advanced Study with his wife Virginia since 1994, believes in the Institute's commitment to pure research and recognizes its impact on invention and innovation. His father founded the Boonton Radio Corporation in 1934, which developed and manufactured precision electronic instruments that he invented. His firm was one of many involved in the emerging radio industry in Boonton, New Jersey, which at the turn of the century was a thriving community of inventors, making it a Silicon Valley of its day. In 1959, Hewlett Packard purchased Boonton Radio Corporation, its second acquisition. Hewlett-Packard stock became an important resource for the Loughlin family, and Bob Loughlin has taken seriously his role as steward of this asset.

ANDREA KANE

Virginia and Robert Loughlin

In the late 1990s, the Loughlins undertook an effort to plan their estate. Their goals were to provide for their five sons and daughters-in-law and thirteen grandchildren; minimize estate and capital gains taxes; and share with others beyond their own family. One of the beneficiaries of this planning process was the Institute. The Loughlins established a ten-year charitable remainder trust in 2000, and funded the trust with low-basis Hewlett Packard stock. With this gift, they created a ten-year stream of income for their family, and were able to minimize estate, capital gains, and income taxes. When the trust matures in early 2010, the residuum will fund an endowment at the Institute to support two Memberships, one in the School of Natural Sciences and one in the School of Historical Studies, that are named in memory of Bob Loughlin's father, William D. Loughlin. The Loughlins meet with the William D. Loughlin Members each year, and enjoy learning firsthand about the work their generosity supports. Bob Loughlin recently reflected on the gift, the impact on his family, and the Institute, saying, "The gift was entirely successful. The funds were well managed so that we received a generous payout each year, nearly recovering our original gift, and ten years later there is a significant legacy to support research at the Institute. All our goals were met."

The Loughlins continue to be deeply involved in the life of the Institute. Ginny Loughlin serves on the Friends Executive Committee, and both attend Friends events on a regular basis. Their commitment through the Friends provides annual support for a third Membership at the Institute, the Ginny and Robert Loughlin Founders' Circle Member. They are members of the Einstein Legacy Society, and the Centennial Council, which recognizes the Institute's most generous and involved donors. ■