

MSRI: RAISING THE FLOOR: PROGRESS AND SETBACKS IN THE STRUGGLE FOR QUALITY MATHEMATICS EDUCATION FOR ALL

May 7, 2006

Dr. Robert Moses, *The Algebra Project*

Biography:

In his young adult life, Mr. Moses was a pivotal organizer for the civil rights movement as a field secretary for the Student Non-Violent Coordinating Committee (SNCC), and was director of SNCC's Mississippi Project. He was a driving force behind the Mississippi Summer Project of 1964 in organizing the Mississippi Freedom Democratic Party (MFDP), which challenged the Mississippi regulars at the 1964 Democratic Convention. From 1969-1976, he worked for the Ministry of Education in Tanzania, East Africa, where he was chairperson of the math department at the Samé school. Mr. Moses returned to the USA in 1976 to continue to pursue doctoral studies in Philosophy at Harvard. A MacArthur Foundation Fellow from 1982-87, Mr. Moses used his fellowship to develop the concept for the Algebra Project, wherein mathematics literacy in today's information age is as important to educational access and citizenship for inner city and rural poor middle and high school students as the right to vote was to political access and citizenship for sharecroppers and day laborers in Mississippi in the 1960s. As founder and president of the Algebra Project Inc., Mr. Moses also serves as director of the project's materials development program. See more at <http://www.algebra.org>. Together with Algebra Project Inc. board member Danny Glover, Moses and others recently launched a national discussion calling for an amendment to the U.S. Constitution for Quality Public School Education as a Civil Right; see more at <http://www.qecr.org>. Mr. Moses has received several college and university honorary degrees and honors, including the Heinz Award for the Human Condition, the Nation/Puffin Prize for Creative Citizenship.

Primary Research Interests: Mathematics as an Organizing Force for Quality Public School Education for Every Child in the USA.

MAY 8, 2006

Keynote address: Dr. Goodwin Liu, *Stanford University*

Title: Education, Equality and National Citizenship

Since *Brown v. Board of Education*, law and policy in pursuit of equal educational opportunity have focused on eliminating inequality between schools or between districts within states. However, it has long been the case—and it remains so today—that the most serious educational inequality in America exists not within states, but *across* states. Despite the persistence of this inequality and its disproportionate burden on poor and minority students, who tend to live in poor states, the problem has evaded our constitutional radar and draws little policy attention. Professor Liu argues that interstate disparities in educational opportunity stand in tension with the Fourteenth Amendment guarantee of national citizenship and that ameliorating the disparities is a constitutional duty of the federal government.

Biography: Goodwin Liu is an assistant professor of law at Boalt Hall. His primary areas of expertise are constitutional law, education policy, civil rights, and the Supreme Court. He has published widely on these subjects in law reviews and general media. His latest work is "Education, Equality, and National Citizenship" (forthcoming *Yale Law Journal* 2006). With Boalt Hall dean Christopher Edley, he is co-director of a multi-year, interdisciplinary project called "Rethinking *Rodriguez*: Education as a Fundamental Right" in the newly launched Chief Justice Earl Warren Institute for Race, Ethnicity, and Diversity. Before joining the Boalt faculty in 2003, Professor Liu was an appellate litigator at O'Melveny & Myers in Washington. He clerked for Justice Ruth Bader Ginsburg at the Supreme Court and for Judge David Tatel on the U.S. Court of Appeals for the D.C. Circuit. A Stanford alumnus, Rhodes Scholar, and graduate of Yale Law School, Professor Liu serves on the board of directors of the ACLU of Northern California, the American Constitution Society in Washington, and Chinese for Affirmative Action in San Francisco. In January 2006, he testified before the Senate Judiciary Committee on the nomination of Judge Samuel Alito, Jr. to the Supreme Court.

Respondent: Nicholas Lemann, *Columbia University*

Biography: B.A., Harvard. Managing editor, *The Washington Monthly*; associate editor, executive editor, *Texas Monthly*; national staff reporter, *The Washington Post*; national correspondent, [Atlantic Monthly](#); staff writer, *New Yorker*; author of several books including, *The Promised Land: The Great Black Migration and How It Changed America* (1991), [The Big Test: The Secret History of the American Meritocracy](#) (1999).

1:30 - 3:00 PM EQUITY: UNARTICULATED ASSUMPTIONS – MULTIPLE PERSPECTIVES

Ricardo Cortez, *Tulane University*

Abstract:

One major challenge to equity and quality in learning mathematics is access to programs, workshops, and other activities that supplement a student's learning experience at their local school. I will present efforts over the past decades whose goals are to provide research opportunities to undergraduate students outside their home institutions, to introduce them to a network of mentors and advisors, and to promote graduate education among minorities.

Biography:

Ricardo Cortez was born on the east side of Manhattan but lived in San Salvador, El Salvador from the age of 4 until the age of 18. Dr. Cortez returned to the United States and received bachelors degrees in mathematics and mechanical engineering from Arizona State University. Dr. Cortez received a Ph.D. in applied mathematics from the University of California at Berkeley. After a three-year postdoctoral fellowship at the Courant Institute of Mathematical Sciences at New York University, he moved to New Orleans in 1998, where he is an Associate Professor at Tulane University. His research areas are computational fluid dynamics and applications to biology. Dr. Cortez has been a member of SACNAS for 16 years and has been involved in summer research programs for minority undergraduates since 1991.

Helen Moore, *American Institute of Mathematics*

Title: A look at the research

Abstract:

Controlled studies can reveal interesting and often unintentional biases. I'll talk about a few studies related to testing of mathematical and spatial ability and their implications.

Biography:

Helen Moore graduated from the NC School of Science and Mathematics and UNC at Chapel Hill. She received her PhD in mathematics from SUNY at Stony Brook in 1995, where she served as Associate Director of Project WISE (Women in Science and Engineering). She took a tenure-track position at Bowdoin College in Maine, and created and taught a course on Women in Science. She left Bowdoin for a lecturer position at Stanford University, and taught talented minority engineering students in the Stanford Summer Engineering Academy. For the past four years, she has been the Associate Director of the American Institute of Mathematics (AIM), in Palo Alto, CA, and in charge of increasing the participation of under-represented groups in research activities at AIM. Dr. Moore's research involves mathematical modeling of diseases such as HIV and leukemia, and optimization of drug therapies. She has just accepted a position to continue her research at Genentech, focusing on cancer drug therapies.

Freida Jacques (Onondaga Nation School)

Staffas Broussard (Univ. of New Orleans)

Tuesday, May 9, 2006

Carlos Cabana and an Algebra class

Tuesday afternoon: Four perspectives on equity in mathematics

1:30 - 2:15 PM **Putting the morning's class in a national and international context: Na'ilah Nasir Suad , *Stanford University*
With Michael Heimlich, Grace Atukpawu, & Kathleen O'Conner**

Title: Race and Identity in Math Class: The complexity of students' positionings of self in math.

Abstract:

In diverse classroom environments, issues of race and its' connection to academic achievement and learning can arise (both implicitly and explicitly) in complex and multifaceted ways. Our presentation will focus on the various ways students' position themselves with respect to academics, mathematics, and race as they take part in their mathematics classes in a diverse high school. In particular, we will focus on the racial and academic positionings of the African American students, as race came up more often and more explicitly for these students, and we will illustrate the complexity of how race and identity operate in the classroom in multiple moments of classroom interaction.

2:15 – 3:00 PM **Equity issues at the university: Phil Kutzko, *University of Iowa***

Title: Equity and inclusion in graduate education: a model from the heartland

Abstract:

During the period 2003-2004, 1041 Ph.D.s were awarded in the mathematical sciences in the United States. Of this number 441 were US citizens or permanent residents and of this latter number, 18 were African Americans 14 were Latina/Latino and 5 were American Indians or Pacific Islanders. By contrast, the Department of Mathematics at the University of Iowa, a majority department in a majority university in a state with relatively few minority citizens, has awarded six Ph.D.s to underrepresented minority students in the last three years and expects to produce an average of three such Ph.D.s per year for the foreseeable future. My hope in this talk is to focus on how and why this happened: the process by which a department transformed itself over ten years from a

standard majority department to one that has begun to move beyond race and ethnicity and the cultural and spiritual underpinnings that have supported this transformation.

Biography:

Phil Kutzko was born and raised in New York City and is a product of the New York City public schools. He attended the City College of New York and received his M.S. and Ph.D. degrees at the University of Wisconsin. He joined the University of Iowa mathematics faculty in 1974. Kutzko's research is in the area of pure mathematics known as *the representation theory of p -adic groups*, an area with applications to the theory of numbers. He is the author, with Colin Bushnell, of a monograph in the Annals of Mathematics Studies (Princeton) and has lectured widely on his work. He is presently a University of Iowa Collegiate Fellow. Kutzko is honored to have played a part in the Department of Mathematics' activities in minority graduate education and in the extension of these activities to other departments at the three Iowa Regents universities. In this context, he directs the departmental Sloan Foundation minority fellowship program as well as the NSF-funded Iowa AGEP program, a large-scale project to increase the number of underrepresented minority graduate students in science, technology, engineering and the mathematical sciences at the three Iowa Regents universities. As of August, 2005 Kutzko has joined the University of Iowa Graduate College as its Director of Graduate Ethnic Inclusion. In this position he will extend the goals and practices of Iowa AGEP to graduate education at the UI.

3:30 - 4:15 PM Equity in practice at the school level: Youth literacy workers in Chicago activity with math teachers (Bob Moses & Young People's Project)

Title: The Young Peoples' Project, the Algebra Project, and the Flagway Game Campaign.

Biography:

Founded in 1996, The Young People's Project (YPP) is a nonprofit Organization with established sites in Jackson, MS, Chicago, IL, and the Greater Boston area of Massachusetts, and developing programs in Miami, FL, Delaware and Yuma, AZ. YPP is an outgrowth of, and partner organization to, the Algebra Project, a national math literacy effort aimed at helping middle and high school students in under-served, rural and inner city areas to successfully complete algebra by the 8th or 9th grade and engage a college preparatory math sequence in high school. Founded and directed by Bob Moses, the Algebra Project has been at the forefront of local and national education reform efforts for the past two decades.

For the past 10 years, YPP has worked with young people to develop and implement programs that allow high school and college students to serve as peer leaders, support the academic success and achievement of younger students, and promote and demonstrate the importance of a quality education. Currently, at each established site, YPP employs from 20 to 90 high school and college age students on a part time basis, and serves up to 1000 elementary and middle school students through a variety of math based programs. YPP is the recipient of a 5-year grant from the

National Science Foundation to build demand for Math Literacy, supporting the development of existing sites and the expansion to new areas of the country.

4:45 - 5:30 PM AISES (American Indian Science and Engineering Society)

Cathy Abeita, *Southwestern Indian Polytechnic Institute Albuquerque*

Abstract:

The American Indian Science and Engineering Society (AISES) Pre-college Summer Mathematics Programs. From 1987 to 1996, a case study of a successful national mathematics enrichment program for underrepresented pre-college students. The challenges, struggles and rewards of quality program design.

Biography:

Cathy was director of pre-college and teacher education programs with the American Indian Science and Engineering Society for ten years where she administered national university mathematics and science residential programs for Native American students and teacher enhancement programs, including curriculum and program design. She led a team of educators in the development of the National American Indian Science and Engineering Fair which has significantly increased the numbers of Native American students actively engaged in applied science and mathematics research.

Cathy has been at SIPI since 1999 in various capacities. As Special Programs Coordinator, she was responsible for developing and implementing high school, post-secondary and teacher mathematics and science enrichment projects. She administered Upward Bound, NASA and Summer Transportation programs for high school students, including curriculum and program design. As Educational Specialist she worked with SIPI staff to prepare data collection instruments and analyze information for purposes of success measurement and wrote successfully funded grants. She was chosen to fill this position due to her administrative abilities, her content knowledge, her grant writing skills and her ability to find and implement resources that help SIPI fulfill its institutional mission. Currently, Cathy serves as Chair of Academic Support and Developmental Education.

Cathy is recognized in the educational community for her ability to envision a proposed project and locate the necessary physical and personnel resources necessary for theory to become reality. Her vast experience in curriculum and program development and implementation serves as a support to the work accomplished by content experts. Her professional network expands the opportunities she is able to offer students and staff to grow through internships, organizational affiliation, and mentoring situations. Cathy has a BS in Early Childhood and Family Studies and Human Resources from Southern Illinois University and an MA in Education, University of New Mexico with an emphasis in mathematics and science education and curriculum development.

Tuesday evening: National policy

7:30 - 8:30 PM "Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future" – a report of the National Academy of Sciences. Phillip Griffiths, Institute for Advanced Study

Title: Comments on the National Academies' Report, 'Rising Above the Gathering Storm'

Abstract:

This NAS report, issued last fall, warns that US leadership in science and engineering is likely to wane as other nations invest heavily in STEM education and research. In response, the report urges strong steps to strengthen the US S&E enterprise, beginning with improved K-12 teacher preparation and measures to attract and retain more US students to STEM fields. A NY Times editorial recently laid part of the blame for the current state of K-12 education on education colleges and part on the federal government and the states for not forcefully addressing the unqualified teacher problem. Reforms must certainly begin with education schools, but mathematics departments also have a critical role to play. State legislatures and the public also need to understand that teaching itself is a science as well as an art, and that teacher education, evaluation and hiring ought to give weight to both. In addition, the actions recommended in the report should be complemented by attention to flaws in undergraduate and graduate STEM education, identified by previous NAS reports, to ensure that a new round of investment to attract and retain highly talented students yields the desired result.

Biography:

Phillip A. Griffiths is a Professor in the School of Mathematics at the Institute for Advanced Study. He was the Institute's Director from 1991 to 2003 and previously Provost at Duke University. He has taught mathematics at Duke, Harvard, Princeton, and UC Berkeley. As Chairman of the Science Initiative Group, Dr. Griffiths provides scientific guidance, oversight and coordination for the Millennium Science Initiative (MSI), a program whose objective is to build capacity in modern science and engineering in developing countries as a vehicle for economic and social progress. Dr. Griffiths serves as a special advisor to the Mellon Foundation, and he is a Distinguished Presidential Fellow for International Affairs at The National Academies. He served on the National Science Board from 1991-1996.

Wednesday morning, May 10:

8:30 – 9:30 AM National policy – perspective of government and business (Charles Hokanson (US Dept. of Education)

9:30- 10:30 AM Response to national policy: Vinetta Jones, *Howard University*

Biography:

Vinetta C. Jones is the Dean of the School of Education at Howard University. She is widely regarded as a leading authority on the education reform movement in this country. She has written and lectured widely on issues related to the education of diverse populations, especially in the areas of mathematics and science. In a career that spans more than 30 years of service in public education, she has maintained a singular focus: developing and supporting professionals and creating institutional environments which develop the potential of all students to achieve high levels of excellence, especially those who have been traditionally underserved by the public education system. Dr. Jones served for eight years as Executive Director of EQUITY 2000 at the College Board where she led one of the largest and most successful education reform programs in the country. Dr. Jones has served on numerous boards and national committees. Holding a Ph.D. from the University of California, Berkeley and a Bachelors degree from the University of Michigan, Dr. Jones has received numerous awards and honors for her cutting edge work in education over the past three decades. In 2000 she was inducted into the "Education Hall of Fame" by the National Alliance of Black School Educators (NABSE).