

Philip Uri Treisman

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Professor of Mathematics
Director, Charles A. Dana Center
University of Texas, Austin

BIOGRAPHICAL SKETCH PHILIP URI TREISMAN

Uri Treisman is currently Professor of Mathematics and Director of the Charles A. Dana Center at the University of Texas, Austin. He received his B.A. degree at UCLA, and the M.A. and Ph.D. at the University of California, Berkeley, all in mathematics. Treisman has worked broadly in the areas of strengthening mathematics and science education at all educational levels, supporting minority achievement, and promoting innovation in educational volunteerism and community service. He is probably best known in the educational community for his work, done while a doctoral student at Berkeley, that challenged the commonly accepted remedial approaches to mathematics – particularly calculus – for minority students and replaced them with honors programs that were carried out in an environment of high expectations. This involved recognition of the value of collaborative learning, the use of small group teaching and study, and significant faculty sponsorship and commitment. A key element was providing students with challenging problems and expecting them to deliver. This led not only to a sense of accomplishment among the students, but got them intellectually engaged and excited about a subject that many had thought was dull, uninteresting and useless. It is clear that it changed people's lives and the way they approached learning. The model has been widely disseminated with great success, at both the college and high school level.

Treisman also has been associated with state, national and international programs designed to improve precollege mathematics education. This is a primary thrust of the Dana Center, established in 1993 at the University of Texas-Austin by Professor Treisman, and designed "...to create programs that support the efforts of Texas students, especially ethnic minority and rural students, to achieve at the highest levels and to pursue advanced degrees in mathematics-based fields." Many of the concepts and programs developed by the Center have been utilized by other states to accomplish this objective.

Treisman has been widely honored for his work. These recognitions include a MacArthur Foundation Fellowship (1992-1997), a Charles A. Dana Award for Pioneering Achievement in American Higher Education (1987), a Newsweek Magazine recognition as one of "25 American Innovators on the Cutting Edge (1989), and a designation as one of the outstanding leaders in higher education in the 20th century" by Black Issues in Higher Education (1999).

Prepared by Jules B. LaPidus
September, 2001

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• **Philip Uri Treisman, Ph.D.**
Professor of Mathematics and Director, Charles A. Dana Center

Uri Treisman is professor of mathematics and director of the Charles A. Dana Center, an organized research unit of the College of Natural Sciences at the University of Texas at Austin. For his studies at the University of California at Berkeley of the factors that support high achievement among minority students in calculus, he received the 1987 Charles A. Dana Award for Pioneering Achievement in American Higher Education and, in July 1992, was named a MacArthur Fellow. In December 1999, he was named as one of the outstanding leaders in higher education in the 20th century by the magazine *Black Issues In Higher Education*. Professor Treisman serves as the senior advisor on education to the Charles A. Dana Foundation.

Professor Treisman's current research interests lie in education policy with a focus on the dynamics of education accountability and school finance systems. Under a mandate from the 76th Texas Legislature, the Dana Center is designing and managing a study of the Cost of Education Index, a major component of the Texas school finance system.

Professor Treisman also continues his longstanding work in designing programs that strengthen the teaching and learning of high school and college mathematics and science. He currently serves as executive director of the Texas Statewide Systemic Initiative, a National Science Foundation-funded project dedicated to strengthening K-12 mathematics and science education in Texas. The Texas SSI coordinated the process of developing the state's mathematics and science curriculum frameworks, which were adopted by the Texas State Board of Education in 1997. He has also served as the chairman of the College Board's Council on Academic Affairs and currently serves on the Board's Advanced Placement Commission and its Task Force on Minority High Achievement. Professor Treisman also serves on the Policy and Priorities Committee of the Education Commission of the States and is a founding board member of the National Center for Public Policy in Higher Education. He has been president of the board of the Consortium for Mathematics and its Applications (COMAP) since 1995 and a

Education since 1996. Professor Treisman also serves on the Committee on Opportunities in Science of the American Association for the Advancement of Science and on the advisory board of the Merck Institute for Science Education.

Professor Treisman has recently completed terms on the National Academy of Sciences' Mathematical Sciences Education Board and its Coordinating Council for Mathematics, Science, and Engineering Education. He currently serves as a member of three National Academy of Sciences committees: the Special Oversight Commission for the Mathematics Learning Study, the Special Oversight Commission on Programs for the Advanced Study of Mathematics and Science in American High Schools, and the Study Committee on Understanding the Influence of Standards in K-12 Mathematics, Science, and Technology Education. Professor Treisman is a founding board member of AVID (Advancement Via Individual Determination), an award-winning public school program now active in 900 middle and high schools in the United States and in most U.S. military schools abroad. He is an advisor to the Military Child Education Coalition and serves as an expert juror for its Secondary Education Transition Study of the challenges of transition for high school-aged students in military families. Professor Treisman was appointed a founding member of the Texas Commission on Volunteerism and Community Service by former Texas Governor Ann Richards and was reappointed by Governor George W. Bush. In all his work, he is committed to improving the quality of public deliberation and to serving as an advocate for equity and excellence in education for all children.

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PHILIP URI TREISMAN

ADDRESSES

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EDUCATION

1985 Ph.D., University of California at Berkeley (Thesis Advisor: Leon Henkin, Dept. of Mathematics)
1983 M.A., Mathematics, University of California at Berkeley
1969 B.A., Mathematics, University of California at Los Angeles (summa cum laude)

PROFESSIONAL EXPERIENCE

Professor, Department of Mathematics, University of Texas at Austin, August 1991 to present.
Director, Charles A. Dana Center, University of Texas at Austin, November 1988 to present. (The Dana Center was based at the University of California at Berkeley from November 1988 to August 1991.)
Principal Investigator and Executive Director, Texas Statewide Systemic Initiative, 1994 to present.
Principal Investigator, the STAR (Support for Texas Academic Renewal) Center, 1995 to present.
Principal Investigator, TEXTEAMS (the Texas discretionary K-12 Eisenhower program), 1995 to present.
Principal Investigator, the Stewart B. McKinney Homeless Education Act Program for Texas, 1996 to present.
Senior Advisor to the Education Program, The Charles A. Dana Foundation, New York, New York, 1993 to present.
Principal Investigator, TENET (the Texas Education Network), 1995 to 1998.
Principal Investigator and Director, AmeriCorps for Math and Literacy, UT Austin, 1994 to 1997.
E. M. Lang Visiting Professor, Department of Mathematics, Swarthmore College, January 1990 to August 1991.
Director, Undergraduate Programs, Professional Development Program, University of California at Berkeley, September 1987 to June 1989.

SELECTED HONORS

Named one of the outstanding leaders in higher education in the 20th century, *Black Issues In Higher Education*, December 1999.
MacArthur Foundation Fellowship, 1992 to 1997.
Doctor of Science, Honoris Causa, Washington College, Chestertown, Maryland, 1994.
Honorary Degree, Doctor of Humane Letters, Marymount Manhattan College, New York, 1992.
Outstanding Contribution to Making Mathematics Work for Minorities, Mathematical Science Education Board, National Research Council, 1990.
Named one of "25 American Innovators on the Cutting Edge" (one of 3 in education), *Newsweek*, 1989.
Charles A. Dana Award for Pioneering Achievement in American Higher Education, 1987.
Phi Beta Kappa, 1969.

ACTIVE MEMBERSHIPS IN LEARNED SOCIETIES

American Association for Higher Education (AAHE)
American Mathematical Association of Two-Year Colleges (AMATYC)
American Mathematical Society (AMS)
Association for Research on Nonprofit Organizations and Voluntary Action (ARNOVA)
Association for Supervision and Curriculum Development (ASCD)
Mathematical Association of America (MAA)
National Council of Teachers of Mathematics (NCTM)
Texas Association of Supervisors of Mathematics (TASM)
Texas Council of Teachers of Mathematics (TCTM)

SELECTED APPOINTMENTS, PANELS, & ADVISORY BOARDS

- Commissioner, Texas Commission on Volunteerism and Community Service, 1994 to present; Executive Committee, 1996 to present; Chair, Higher Education Committee, 1997 to 1998.
- Member, Board of Directors, National Center for Public Policy and Higher Education, November 1998 to present.
- Member, National Research Council's:
- Oversight Committee on Advanced Courses, 1999–present;
 - Oversight Committee on Mathematics Learning Study, 1998–present;
 - Oversight Committee on the Influence of Standards, 1998–present.
- Member, Policy and Priority Committee, Education Commission of the States, April 1999 to present.
- Member, Policy Review Board, Public Agenda, August 1999 to present.
- Member, Texas Pledge Advisory Committee, July 1999 to present.
- Member, Commission on the Future of the Advanced Placement Program, The College Board, 1998 to present.
- Member, George Soros's Open Society Institute's Education Advisory Committee, January 1997 to present.
- Member, Graduate School Professional Development Advisory Board, University of Texas at Austin, 1998 to present.
- Member, Public School Outreach Task Force of the Initiative for Educational Diversity, Office of the President, University of Texas at Austin, 1997 to present.
- Member, Advisory Board, Merck Institute for Science Education, 1996 to present.
- Member, Committee on Opportunities in Science (COOS), American Association for the Advancement of Science, 1996 to present.
- Member, Editorial Board, *The Journal of Mathematics and Science: Collaborative Explorations*, Virginia Mathematics and Science Coalition, 1996 to present.
- Member, Management Team, National Institute for Science Education, 1995 to present.
- President, Board of Directors, Consortium for Mathematics and its Applications (COMAP), 1995 to present.
- Member, Advisory Board, Workshop Physical Science, Dickinson College, Carlisle, Pennsylvania, 1995 to present.
- Member, Board of Directors, and Chair, Advisory Board on Project Dissemination, AVID, San Diego County Office of Education, 1992 to present.
- Member, National Science Foundation National Visiting Committee for the University of Washington-based A New Model for Education in Physics Departments: Improving the Teaching of Physics from Elementary through Graduate School, 1995 to present.
- Member, National Science Foundation National Visiting Committee for the University of Wisconsin, Madison-based The Reform of Undergraduate Chemistry Education, 1995 to present.
- Member, National Science Foundation National Visiting Committee for the Temple University (Pennsylvania)-based Collaborative for Excellence in Teacher Preparation, 1994 to present.
- Member, Graduate Studies Committee for Science and Mathematics Education, University of Texas at Austin, 1993 to present.
- Member, Education Committee for the College of Natural Sciences Foundation Advisory Council, 1992 to 1999.
- Member, Advisory Committee, Mathematicians in Education Reform, 1991 to 1999.
- Member, Board of Directors, Puerto Rican Alliance for Minority Participation, 1993 to 1998.
- Special Advisor to the Governing Board, University of Texas System, Alliance for Minority Participation, 1992 to 1996.
- Member, Advisory Board, Center for Science, Mathematics, and Engineering Education, the National Research Council, 1995 to 1998.
- Member, National Panel, Diversity Works, Association of American Colleges and Universities, 1996 to 1998.
- Member, Advisory Board, Amarillo Area Center for Advanced Learning, National Science Foundation, 1995 to 1996.
- Member, Advisory Committee, Education and Human Resources Directorate, National Science Foundation, 1991 to 1995.

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Member, National Panel on American Commitments: Diversity, Democracy, and Liberal Learning, Association of American Colleges, 1993 to 1996.
Member, Board of Directors, American Association of Higher Education, 1991 to 1995.
Member, Task Force on Curriculum and Pedagogy Reform in Mathematics for the First Two Years of College, American Mathematical Association of Two-Year Colleges, 1993 to 1995.
Member, Technical Advisory Subgroup for Goals Three and Four, National Education Goals Panel, 1993 to 1994.
Chair, Task Force on Teaching Growth and Effectiveness, Mathematical Sciences Education Board, National Academy of Sciences, 1993.
Chair, Council of Academic Affairs, The College Board, 1991 to 1993.
Member, Charter Committee, Academic Affairs Assembly, The College Board, 1992 to 1993.
Member, Committee of the Undergraduate Program in Mathematics, Mathematics Association of America, 1991 to 1995.
Member, Mathematical Sciences Education Board, National Academy of Sciences, 1990 to 1993.
Member, Panel on College and University Programs, Mathematics Association of America, 1990 to 1992.

SELECTED PUBLICATIONS, *January 1990 to present*

Philip Uri Treisman and Edward J. Fuller, "Searching for Evidence of the Effectiveness of Systemic Education Reform," *Brookings Papers on Education Policy*, 2001.
Joseph F. Johnson, Jr., Ed Fuller, and Philip Uri Treisman. "What Superintendents Should Know About State Accountability Systems: Lessons from Texas." *The School Administrator*. December 2000.
Celeste D. Alexander, Charles A. Dana Center; Timothy J. Gronberg, Texas A&M University; Dennis W. Jansen, Texas A&M University; Harrison Keller, Charles A. Dana Center; Lori L. Taylor, Principal Researcher; Philip Uri Treisman, Charles A. Dana Center, *A Study of Uncontrollable Variations in the Costs of Texas Public Education*, presented to the Texas legislature, November 1, 2000.
College Board and the Charles A. Dana Center, UT Austin. *Advanced Placement Program Mathematics Vertical Teams Toolkit* [manual], 1998.
Charles A. Dana Center, UT Austin. *Increasing Enrollment, Retention, and Graduation in Texas Public Higher Education: Four Studies for the Texas Senate Education Committee* [report], 1998.
"Remarks," Published address in "Research on Systemic Reform: What have we learned? What do we need to know?" *Synthesis of the Second Annual NISE Forum, Volume 2: Proceedings*. University of Wisconsin-Madison: National Institute for Science Education, December 1997.
Coauthor, with American Commitments National Panel, an initiative of the Association of American Colleges and Universities (Panel: Suzanne Benally, Alfred H. Bloom, Johnnella Butler, Carlos Cortes, Bonnie T. Dill, Troy Duster, Ramon Gutierrez, Patrick J. Hill, Harry H. Kitano, Lee Knefelkamp, Elizabeth K. Minnich, Caryn McTighe Musil, Gayle Pemberton, Carol Schneider, Uri Treisman, Frank Wong), *The Drama of Diversity and Democracy: Higher Education and American Commitments*. Report, 1st in a series, 46pp; *Liberal Learning and the Arts of Connection for the New Academy*. Report, 2d in a series, 42pp; *American Pluralism and the College Curriculum: Higher Education in a Diverse Democracy*. Report, 3d in a series, 45pp. Washington, DC: AAC&U, 1995.
With Rose Asera. "Routes to Mathematics for African-American, Latino and Native American Students in the 1990s: The Educational Trajectories of Summer Mathematics Institute Participants," in *Changing the Culture: Mathematics in the Research Community*, edited by N. Fisher, H. Keynes, and P. Wagreich; Issues in Mathematics Education, Conference Board of Mathematical Sciences, pub. by the American Mathematical Society with the Mathematical Association of America, 1995.
"Studying Students Studying Calculus: A Look at the Lives of Minority Mathematicians," A Mary P. Dolciani Lecture, *The College Mathematics Journal*, Vol. 23, Nov. 1992.
"Challenges for College Mathematics: An Agenda for the Next Decade," Report of a Joint Task Force of the Mathematical Association of America & the American Association of Colleges, with Lynn A. Steen, et al. *Focus*, Nov./Dec. 1990, Special Insert, 28 pp, Mathematical Association of America.

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With R. E. Fullilove, III, "Mathematics Achievement Among African American Undergraduates at the University of California, Berkeley: An Evaluation of the Mathematics Workshop Program," *Journal of Negro Education*, Vol. 59, Summer 1990, pp. 463-478.

'A Study of the Mathematics Performance of Black Students at the University of California, Berkeley," *CBMS Issues in Mathematics Education*, "Mathematicians and Education Reform: Proceedings of the July 6-8, 1988 Workshop," January 1990, pp. 33-46.

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THE CHARLES A. DANA CENTER
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September 21, 2001

Dr. Jules LaPidus
3516 Sterling Avenue
Alexandria, Virginia 22304

Dear Dr. LaPidus,

I'm sending you a packet of articles and publications that provide a sense of the depth and breadth of Professor Uri Treisman's work. I hope that the items we've compiled are helpful and provide you with sufficient information about Professor Treisman's work as an educator, reformer, advisor, and advocate for more equitable education systems in Texas and beyond.

In overview, Professor Treisman's contributions to U.S. and international education fall into three overlapping categories:

- Supporting minority high achievement;
- Strengthening K-12 mathematics and science education, and
- Driving innovation in educational volunteerism and community service.

I've selected representative samples of his work in each domain, described below.

Supporting minority high achievement

For the past 25 years, Professor Treisman has studied the dynamics of minority student achievement at the university and precollegiate levels. He was among the first to observe and document the fact that most educational efforts designed to serve minority students were focused on the students' putative deficiencies. He observed that universities were creating administrative offices to address issues of minority student achievement, but they were not holding faculty and departments responsible for minority student success. His studies identified the strengths of African-American students enrolled in UC Berkeley's calculus courses. Based on these studies, he created programs—now widely disseminated in the U.S. and abroad—for supporting very high levels of minority student achievement in freshman and sophomore mathematics and science courses. This work directly shaped the character of university programs designed to train minority engineers in historically white campuses. Adaptations of the program he created—variously referred to as Emerging Scholars, Excel, and the Mathematics Workshop Program—now exist in over 150 mathematics departments and dozens of science departments nationwide. These programs have been carefully evaluated and have been the subject of several research papers, doctoral dissertations, and national reports. I've enclosed a small sample of these articles.

Professor Treisman also created a variety of programs and strategies for increasing minority student enrollment and success in advanced high school mathematics and science courses. Possibly the best known and well documented of these is vertical teaming—a strategy central to the College Board's Advanced Placement equity efforts. I've enclosed the executive summary of the College Board's

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Advanced Placement Program Mathematics Vertical Teams Toolkit. Uri's preface will give you a sense of the strategy.

Strengthening K-12 mathematics and science education

In 1991, when Uri accepted a position with the University of Texas at Austin, he created an organized research unit—the Charles A. Dana Center—in the College of Natural Sciences, dedicated to strengthening precollegiate mathematics education in Texas. He organized and still leads the National Science Foundation-funded Texas Statewide Systemic Initiative, which now serves as an umbrella for a large number of state and local efforts focused on equity and excellence in mathematics and science education. The Texas SSI and the Dana Center have principal responsibility for most of the state's organized professional development programs for mathematics teachers. As part of this work, Uri created a strategy called "action teaming" which helped to insulate the state from the so-called "Math Wars" of the 1990s. He managed the process of creating the state's mathematics and science curriculum standards, which are the basis of the state's mathematics and science accountability tests.

In the past ten years, Texas mathematics performance has improved dramatically. While there are many individuals and entities that can share the credit for these gains, most Texas policy and education leaders would agree that the Dana Center has been an important contributor to this success. I've enclosed some data from recent state, national, and international assessments that show the growth in Texas students' mathematics achievement.

Driving innovation in educational volunteerism and community service

Throughout his professional career, Uri has been a leader in the design of support systems for leaders of volunteers working in education and community service. In recognition of this work, he was appointed a founding member of the Texas Commission on Volunteerism and Community Service by Governor Ann Richards and was reappointed to the Commission by Governor George W. Bush. He is currently the vice president and president-elect of the board of the Texas Foundation for Volunteerism and Community Service, a nonprofit organization committed to "serving those who serve." Among his innovations in this domain are TxServe and MathServe. TxServe is a web-based support structure for local volunteer leaders and managers, now operated by the Texas Workforce Commission. MathServe is an international competition managed by the Consortium for Mathematics and its Applications (COMAP), a nonprofit whose board Uri chairs. MathServe challenges teams of high school and college students to submit evidence of their effectiveness in using mathematics for the public good. Its motto is "serving with heart and mind." I've enclosed a MathServe brochure for your reference.

Uri's most recent work in this domain was serving as senior juror for a Department of Defense study of the effects of high mobility in military families on the educational achievement of their children. I've enclosed the just-released report—the U.S. Army's *Secondary Education Transition Study*. The study makes strong recommendations for volunteer-based efforts to improve the education of children in military families.

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In addition to the above materials, I've also enclosed a copy of Uri's curriculum vitae, some local press coverage of his work both nationally and in Texas, and a two-page fact sheet about the work of the Dana Center.

Professor Treisman is deeply honored to be nominated for the Brock International Prize in Education. And our Center staff are very excited that our director might be recognized by such a distinguished award. If I can be of further assistance in helping you prepare for the November 3rd awards committee meeting, please don't hesitate to contact me. I can be reached at my direct line (512-232-2264) or via email (janisg@mail.utexas.edu).

Best regards,



Janis Guerrero, Ph.D.
Director for Communications and External Relations

enclosures

Treisman's Model

In the late 1970's and early 1980's, graduate student Uri Treisman at the University of California, Berkeley, was working on the problem of high failure rates of minority students in undergraduate calculus courses. According to Treisman (1985), the African-American calculus students at Berkeley "were valedictorians and leaders of church youth groups, individuals who were the pride of their communities. ... Thus, these students had come to Berkeley highly motivated and under great pressure to succeed" (p. 21). Nevertheless, folklore blamed the high failure rates on the students' lack of motivation, lack of educational background, and lack of family emphasis on education (Treisman, 1992). Treisman's work (Treisman, 1985) challenged these hypotheses, and replaced the remedial approaches with an honors program that encouraged students to collaborate on challenging problems in an environment of high expectations (Conciatore, 1990).

Treisman's mathematics workshop recruited mostly African-American and Latino students having relatively high SAT Mathematics scores or intending to major in a mathematics-based field or both. Key elements of the workshop involved:

1. the focus on helping minority students to *excel* at the University, rather than merely to avoid failure;
2. the emphasis on collaborative learning and the use of small-group teaching methods; and
3. the faculty sponsorship, which has both nourished the program and enabled it to survive. (Treisman, 1985, pp. 30-31)

Each of these elements is discussed in more detail below.

Collaborative learning.

In his initial investigation, Treisman "was struck by the sharp separation that most black students maintained---regardless of class or educational background---between their school lives and their social lives" (Treisman, 1985, p. 12). He went on to compare these students with their Asian counterparts---who had a history of being very successful in the calculus courses---noting that most of the black students studied alone while the Asian students sought peers with whom to collaborate. More than merely studying together, the Asian students formed academic communities:

Composed of students with shared purpose, the informal study groups of Chinese freshmen enabled their members not only to share mathematical knowledge but also to "check out" their understanding of what was being required of them by their professors and, more generally, by the University. ...

[Treisman] observed Chinese students in their study groups ask each other questions ranging from whether one was permitted to write in pencil on a test to how one might circumvent certain University financial aid regulations. More important was the fact that these students routinely critiqued each other's work, assisted each other with homework problems, and shared all manner of information related to their common interests. Their collaboration provided them with valuable information that guided their day-to-day study. (Treisman, 1985, pp. 13-14)

Since "interactions like these were extremely rare among the blacks" (Treisman, 1985, p. 16), the key then was to build a community based in the study of mathematics, to create a merging rather than a separation of academic and social lives.

Challenging mathematics and high expectations.

In partnership with collaborative learning strategies, the mathematics employed was challenging, engaging, and meaningful. Treisman (1985) explained,

Because of their participation in [a special high school program], these students saw themselves as an academic elite group. They were accustomed to being the tutors, not the ones in need of tutoring. ... Knowing the students' sensitivities, [he] took care that the Workshop not appear to be a tutoring session. The problem sets (called worksheets) were always difficult, with near-impossible problems thrown in frequently to protect the Workshop's non-remedial veneer. (p. 26)

While "most visitors to the program thought that the heart of our project was group learning ... the real core was the problem sets which drove the group interaction" (Treisman, 1992, p. 368). The best problems were not quick, procedural applications of formulas that had one right answer; rather they were deep, thought-inspiring problems (perhaps with multiple parts) that engrossed the students. Where remediation approaches worked to reduce deficiencies, Treisman's model built on the students' already existing strengths.

Faculty sponsorship.

Critical to the success of the Berkeley program was the faculty sponsorship aspect. "The traditional faculty response to minority students at that time was to hire someone to deal with them, create tutorial programs for them, and house them in a temporary building on campus somewhere" (NSF, 1991, p. 4). By contrast, in the mathematics workshop model, "the significant points were to build a community around the courses and manage the courses by faculty, not tutors in temporary buildings" (NSF, 1991, p. 7). Furthermore, "the faculty courted students, and students quickly chose mathematics as a major" (NSF, 1991, p. 6).

Overview.

As described by Gillman (1990), the program at Berkeley

is an intensive, demanding program for talented students, particularly minority students, who are planning career[s] in mathematics-based profession[s]. ... They are told that they are among the most promising freshmen and that the program is seeking students with a deep commitment to excellence. ... The emphasis is on students' strengths rather than their weaknesses ... the direct opposite of tutoring or other remedial programs. (p. 8)

The resulting model replaces regular calculus discussion sections with workshop-style discussion sections, in which the students collaborate on non-textbook, non-routine problems. During these work sessions (which meet for larger blocks of time than traditional classes), "[students] begin working the problems individually, then, when things get tough, in collaboration with one another. These experiences lead to a strong sense of community and the forging of lasting

friendships" (Gillman, 1990, p. 8).

The Berkeley program has been so successful that it has spread to other universities and colleges throughout the country. Modified versions have entered high schools, in forms designed to fit the particular environment and needs. As Treisman has stressed, the program is *not remedial*---nor should it be---and care is taken with replications that they do not revert to remedial programs.

Austin American-Statesman

UT professor on far-reaching path with math

■ After mistake on test, Philip Uri Treisman now a calculus pioneer

By MARY ANN ROSER
American-Statesman Staff

Two measly points can change a life.

For Philip Uri Treisman, a celebrated educator and MacArthur "genius" grant winner, an IQ score two points lower than he needed to skip a grade shattered him at age 11 — and then transformed him.

"That accident of two points on that day turned me into a mathematician," said Treisman, a University of Texas math professor and director of a research center aimed at strengthening public schools. Treisman became nationally known in the 1980s for his method of teaching calculus to minority students and recently was named one of the outstanding educators of the 20th century by the magazine *Black Issues in Higher Education*.

That "accident" of two points also caused him to be wary of high-stakes tests and to be motivated to help the students who flub them. Treisman's name is on the Rolodexes of policymakers across the country and in Texas, where lawmakers and Gov. George W. Bush seek his counsel on public schools.

Treisman, 53, agonized last year over testifying in favor of a Texas high school exit exam that minority groups challenged in court. Despite his testimony, which stunned minority leaders, he said he remains "extremely sensitive to the danger in tests and... the sin of underestimating promise."



Uri Treisman:
His IQ score in sixth grade motivated him to learn more and reach out to minorities.

sixth-grade class took an IQ test to determine who would skip the eighth grade and start high school early. Treisman said he was the only one in his circle from a Jewish neighborhood in Brooklyn who didn't crack the 130-point threshold.

Although an IQ of 100 is considered average, Treisman said he was embarrassed by his 128-point score. The test's "objective evidence" proved his inferiority, he said.

His mother, Ethel Michaels, recalled it as his biggest childhood disappointment. She spoke to the principal, but the test's verdict stood.

While Treisman's eighth-grade math class was covering old material, his friends in the ninth grade were onto something new: algebra. Teasing him, they tossed around mysterious terms such as "x" and "y."

"They had no sense of the magnitude of the effect this had on me," said Treisman, who has a closely cropped beard, short gray hair and a boisterous laugh. "I was determined to understand what they knew."

He went to his sanctuary, the public library, for help. It had long been his escape from a difficult home situation — poverty and a schizophrenic father who lived mostly in a state hospital.

Treisman's mother worked long hours as a nurse's aide to provide for her three sons, but the family also needed welfare. As the oldest boy, Treisman fetched the handouts.

"I had very clear memories of going to get the surplus butter... and the humiliation of it," he said. "People treated you like you were garbage. You were made to feel guilty."

He created an alternative reality, getting lost in books about other cultures. He learned foreign words and phrases and tested them in nearby ethnic neighborhoods. He once spoke broken Norwegian to a coffee shop owner who was so charmed she directed her young daughter to converse with him.

Many years later he would draw on those skills to work with minority

Education, empowerment

As an eighth-grader, Treisman secretly taught himself algebra. He didn't like it at first, but by the end of the year, he was moving on to calculus.

"It became my hobby," he said. "I couldn't stop doing it."

His ninth-grade algebra teacher gave him college calculus books to work on in class. He devoured them. Before long, he was earning money as a calculus tutor for high school and college students.

He also was awakening politically after a chance encounter with a young girl on the train. This "very, very cute girl from the Bronx" got him interested in the socialist Zionist movement. He also was involved in civil rights and community organizing. He decided he would live on a kibbutz, a communal farm in Israel, one day.

After graduating from high school in 1964, he joined a kibbutz and learned horticulture. But a severe snakebite during his first year sent him back to the United States for months of recovery. He considers it another life-changing accident.

He moved to Los Angeles, enrolled in community college and worked as a landscaper.

In his early 20s, he transferred to the University of California at Los Angeles to complete his bachelor's degree and won the outstanding undergraduate math student award.

In fall 1971, at 25, Treisman enrolled in graduate school at UC-Berkeley to pursue a doctorate in math. He remained interested in civil rights and volunteered as a tutor for inner-city fourth-graders.

"I was interested in education as a route to empowerment," he said.

Many of his friends were studying the social sciences, and he was fascinated by their research on teaching and learning.

Knowing of Treisman's interests, Berkeley math professor Leon Henkin suggested that he work in a special program

Treisman's math methods copied across U.S.

designed to increase the number of women and minorities in math and science.

Treisman had heard complaints from other teaching assistants that while their Asian American students were excelling in calculus, most of their black and Hispanic students were failing.

"That threw gasoline on a fire that was already burning in me," he said.

He decided to find out the reason for the achievement gap and figure out a way to plug it. He befriended black and Chinese students — he learned Cantonese — and went home with them to watch them study.

What Treisman discovered was groundbreaking.

He traced the difference in achievement to study methods — not motivation, family income or parental background. The Chinese students studied together in groups and collaborated, while the black students studied alone. He wondered:

What if a diverse group of students met in workshops outside of class, were given credit for attending and given very tough problems to solve in collaboration?

Treisman, still a graduate student at Berkeley in 1978, tested the concept. Data showed that the majority of black and Hispanic students in the new program made A's or B's in calculus.

"Unlike previous scholars, Uri was looking at social interactions," said Henkin, Treisman's mentor. "I learned more from him than he learned from me."

The road to UT

As those successes captured national attention, Treisman was far from finishing his dissertation. He had switched gears to write about his discovery, but he kept missing deadlines. Finally, Henkin took over some of Treisman's classes and stayed up late one night typing the dissertation to avoid another missed deadline. Treisman got his doctorate in 1985.

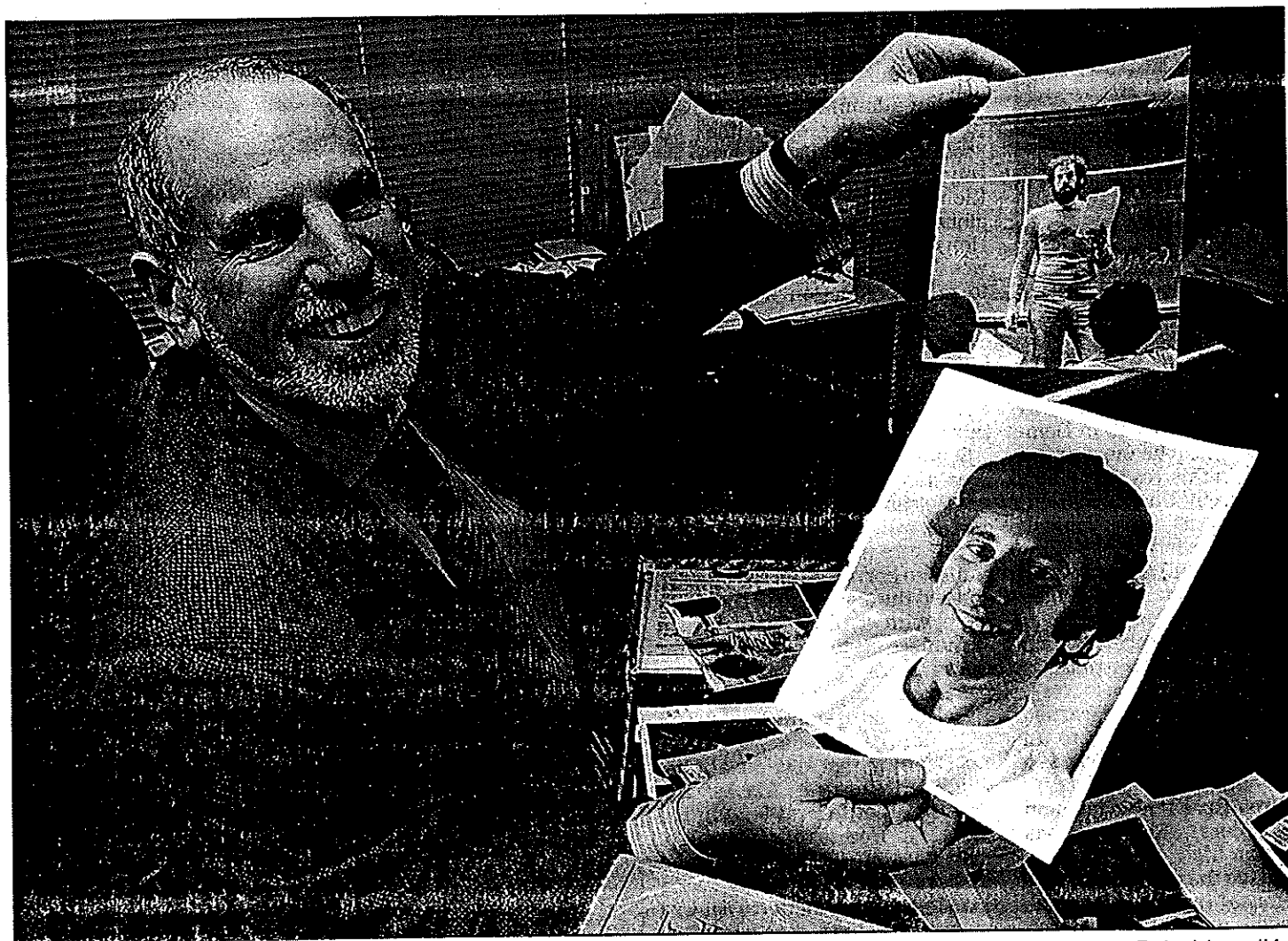
Two years later, he won the prestigious Dana Award for Pioneering Achievement in American Higher Education. The nonprofit Dana Foundation initially awarded him \$50,000, and Treisman created the Dana Center at Berkeley. His calculus workshops were copied by more than 100 U.S. universities, including UT.

Darrin Visarraga, a doctoral candidate in math at UT, said he was an undergraduate in California when he took a summer enrichment program that Treisman worked on.

"It changed my way of thinking," Visarraga said. "He makes a lot of material exciting to think about. If your argument was in the right direction, he would give you questions to think about, but he would never give you the answer."

Berkeley, meanwhile, didn't know what to do with Treisman. It was clear, however, he probably would not get tenure.

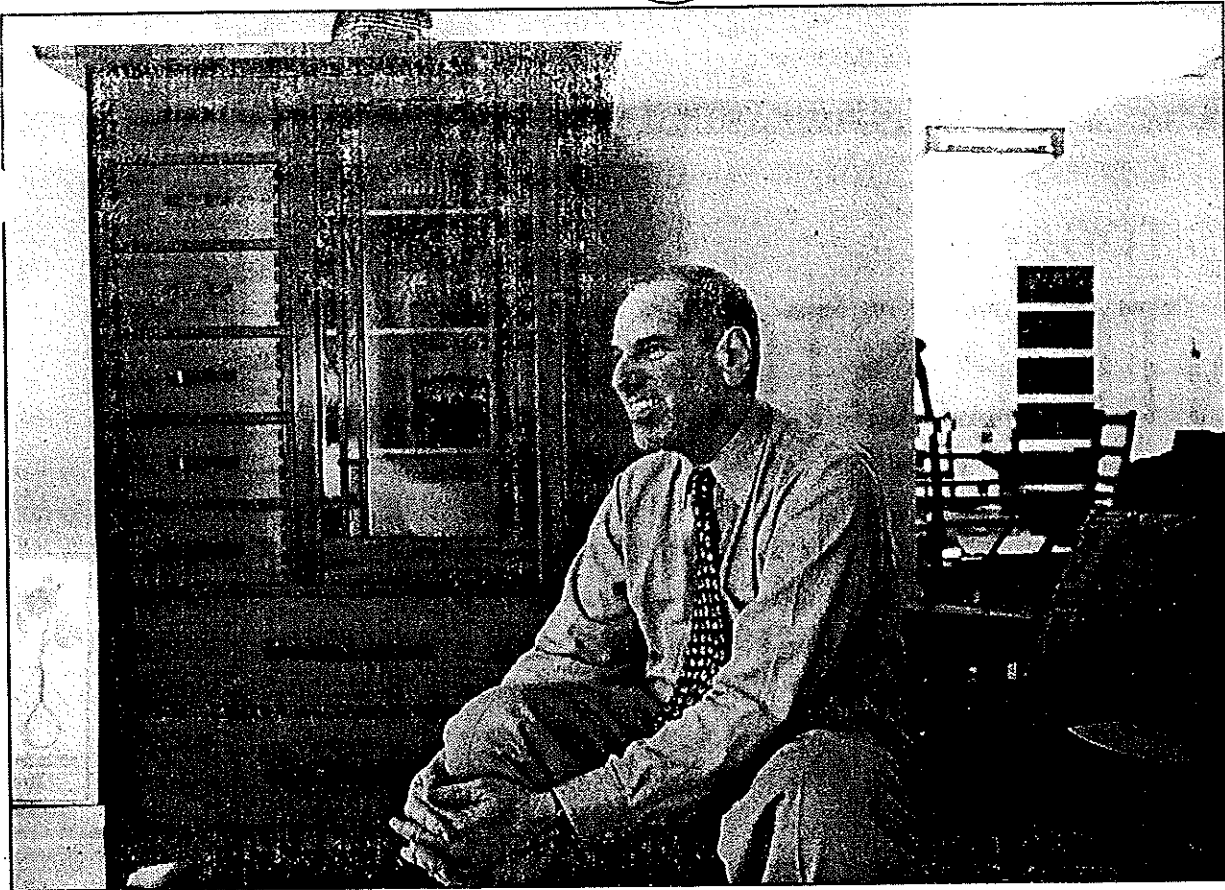
"On an arrogance scale of one to 10, I was a 12," Treisman said. "There were battles."



Taylor Johnson/AA-S

Philip Uri Treisman, in his office at the University of Texas, wasn't always all suit and tie. After graduating from high school in 1964, he joined a kibbutz in Israel and learned

horticulture. He worked as a landscaper before heading to the University of California at Los Angeles and then graduate school at UC-Berkeley for a doctorate in math.



Treisman, at home with a cabinet he designed, says he agonized last year over testifying in favor of the Texas Assessment of Academic Skills test, a high school exit exam that minority groups challenged in court. 'The TAAS system, with all its faults, has . . . prevented schools from hiding minority student failure,' he said.

Sung Park/AA-S

The math department ultimately decided Treisman "had not done any mathematical research, and that was the end of it," Henkin said.

But Treisman was a hot commodity. UT was among his suitors and already had an Emerging Scholars Program, modeled after Treisman's workshops. Since the program's inception in 1988, about 80 percent of its students have made A's or B's in calculus. Before it, most black and Hispanic students failed, said Efraim P. Armendariz, chairman of UT's math department.

UT also wanted to replicate the Dana Center to strengthen public schools, and Treisman was hooked. He came to UT in 1991, getting walk-in tenure and a professorship. With support from the Dana Foundation, he created UT's Dana Center and became its director.

Within a year, he won a MacArthur Fellowship, also known as a "genius" grant, for his work with minority students. He got \$285,000, no strings attached.

Treisman was in demand as a speaker, adviser and member of education reform boards. He still is.

Frank Newman, former president of the Education Commission of the States and now a professor at Brown and Columbia universities, said Treisman has had "a major effect on education reform."

"He's something we badly need," Newman said. "A careful scholar . . . and a real pragmatist."

Although opinionated and outspoken, Treisman is fun and charming, said Carol Geary Schneider, president of the Association of American Colleges and Universities.

"He's a wonderful combination of passionate commitment and New York humor," she said. "He can put a lot of searing criticism in the form of entertaining stories, and he gets away with it because you're appreciating the humor and laughing at the style in which it's presented."

"He's kind of a one-man industry, generating a huge amount of systemic change."

Treisman considers himself "an itinerant anthropologist."

"I love listening to people in the Valley and the Panhandle," he said. "I love going out to Texarkana and listening to people talk about what they want. . . . I never thought I would be in a place where I could use the state system to support the things I care about."

A mentor with influence

Although he once considered himself a leftist, Treisman now disdains ideology, which shocks some of his longtime friends. Former Democratic Gov. Ann Richards appointed Treisman to the Texas Commission for Volunteerism and Community Service. Bush, a Republican, reappointed him in 1997.

"He's a well-informed, committed guy who sees the big picture," said Margaret LaMontagne, an education adviser to Bush.

Peter O'Donnell of Dallas, UT's largest donor, has adopted a group of Texas public schools to improve math instruction and called on Treisman to develop materials for teachers at each grade level to build on previously learned concepts.

"We're getting wonderful results," O'Donnell said. "He's our mentor."

Treisman has used his influence to back the state's public school accountability system, which is anchored by the Texas Assessment of Academic Skills. But he upset minority group leaders when he testified in a lawsuit against the state in favor of the TAAS exit exam, which denies diplomas to students who fail.

"We support holding schools accountable for producing successful results, but we don't agree that any one test should be the only criteria that's used to determine a student's future," said Albert Cortez, director of the Institute for Policy and Leadership at the Intercultural Development Research Association in San Antonio.

'He's a wonderful combination of passionate commitment and New York humor. . . . He's kind of a one-man industry, generating a huge amount of systemic change.'

Carol Geary Schneider, president of the Association of American Colleges and Universities



Larry Kolvoord/AA-S 1999 photo

Philip Uri Treisman came to UT in 1991, getting walk-in tenure and a professorship. With support from the Dana Foundation, he created UT's Dana

Center. One UT student, Darrin Visarraga, who studied in one of Treisman's programs at Berkeley, said it 'changed my way of thinking.'

Fighting for equal rights is part of big equation

Continued from Previous page

Too many Texas students lack access to a high-quality education and should not be punished for failing, said Cortez, who was on the losing side in the lawsuit. "Historically, he's always been on the side of the angels, but not on this one."

Given his own history with a high-stakes test, Treisman said he "really wrestled" with being an adversary of organizations he supports.

"I did it because I believe that

the TAAS system, with all its faults, has driven minority student performance," he said. "It has prevented schools from hiding minority student failure."

He suggests that districts with high failure rates be made to pay back the cost of educating those students. The money would be used to finance the higher educations of those students.

"There are twin sins here," he said. "Hiding failure is a sin, and underestimating promise is a lethal sin."

Treisman said he feels an obligation to protect students from both sins.

"The question is, what is the appropriate use of a human life?" he asked. "I was an outsider fighting for certain causes, and I became an insider . . . What is the responsibility of somebody who has the privilege to actually influence schools and children? That's the fundamental question, and that's what I wrestle with."

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