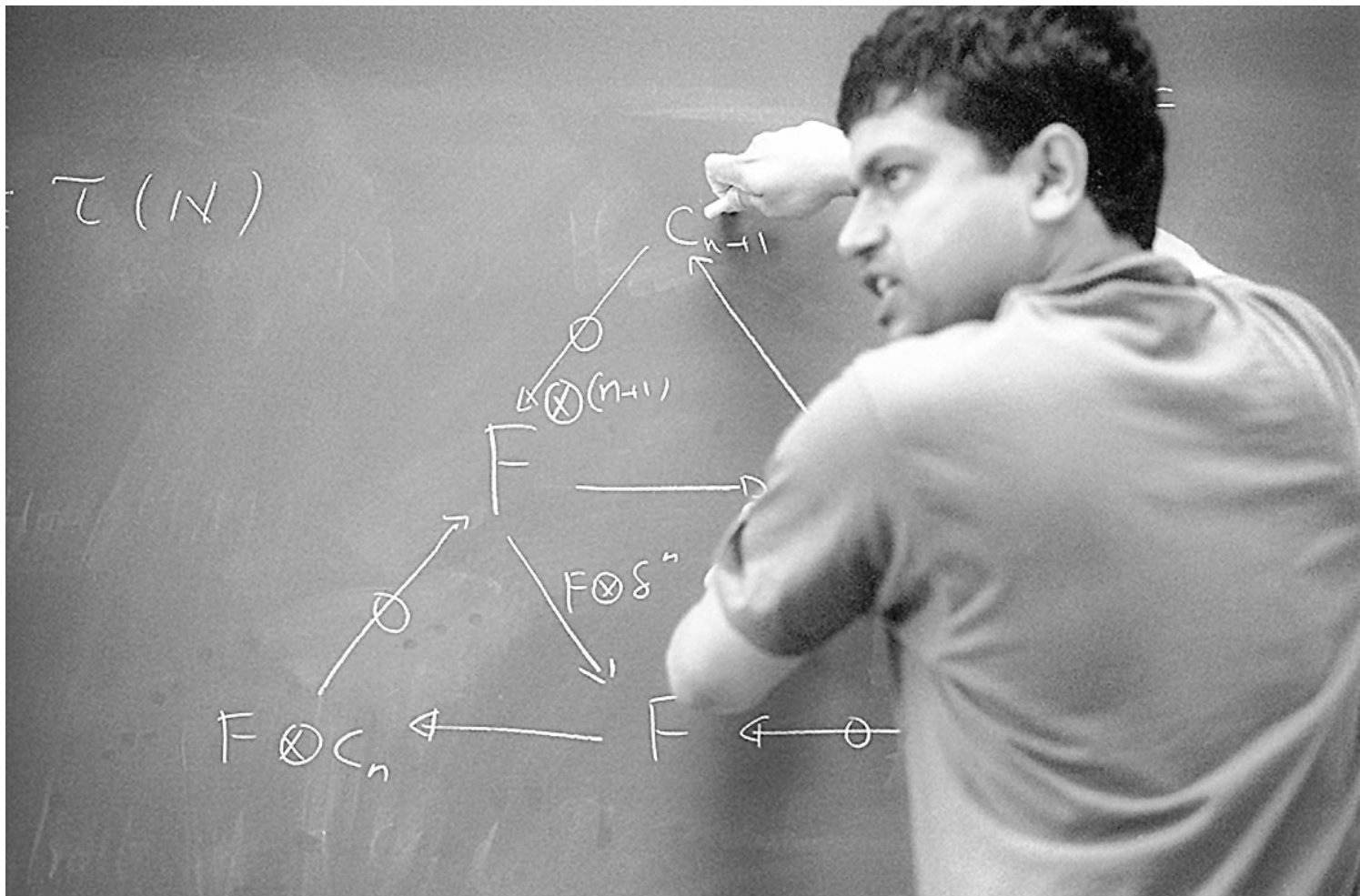


Beautiful Minds
Pure Math, Pure Joy



Photographs by Ed Alcock for The New York Times



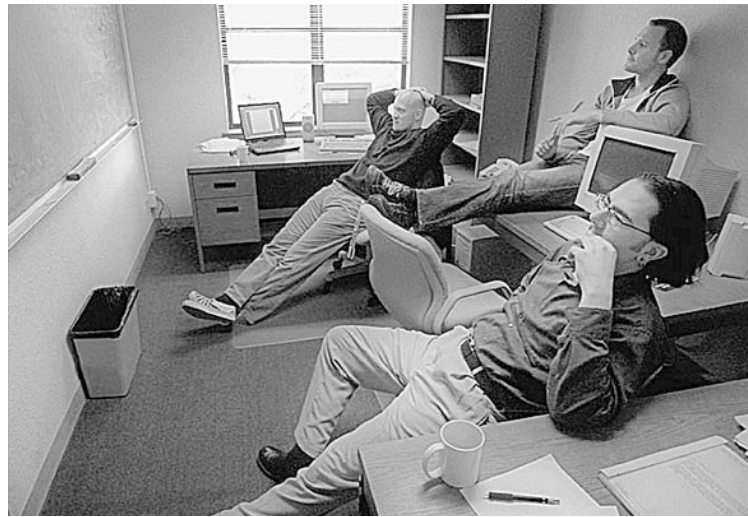
By DENNIS OVERBYE

A mathematician, the Hungarian lover of numbers Paul Erdos once said, is a device for converting coffee into theorems. Here, then, are a few glimpses into the Truth Factory. The Mathematical Sciences Research Institute, sustained mostly by the National Science Foundation, sits on a hill above the University of California at Berkeley, where it attracts people from around the world for stints of up to a year to lose themselves in subjects like algebraic geometry or special holonomy.

Consider it an embassy of another world, a Platonic realm of clarity and beauty, of forms and relations, where the answers to questions not yet asked already exist.

Higher mathematics — as opposed to what we do every April 15 — has been relevant ever since Archimedes leaped out of his bath shouting “Eureka!” more than 2,000 years ago. Nobody knows when some abstruse bit of math will float off a blackboard at a place like this and become — often decades later — a key tool in cryptography, biology, physics or economics (as in “A Beautiful Mind”).

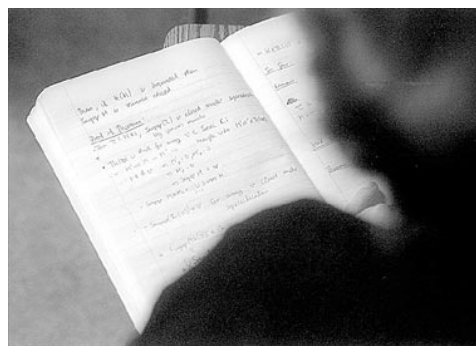
Take string theory, a mathematically labyrinthine effort to construct a so-called theory of everything out of the notion that the



Doing the math: clockwise, from top, Srikanth Iyengar making his case at the Mathematical Sciences Research Institute in Berkeley; waging mental battle with a proof; taking notes at a seminar; and participating in a question-and-answer session.

fundamental elements of nature are tiny strings flopping and wriggling in an 11-dimensional space-time. It has been called a piece of 21st-century physics that fell by accident into the 20th century.

In their quest to negotiate this labyrinth, string theorists have made a hot topic of something called Riemann surfaces, invented by the German mathematician Georg Friedrich Bernhard Riemann 150 years ago, but



they have also helped blaze new fields of mathematics.

“Since our theories are so far ahead of experimental capabilities, we are forced to use mathematics as our eyes,” Dr. Brian Greene, a Columbia University string theorist, said recently. “That’s why we follow it where it takes us even if we can’t see where we’re going.”

So in some ways the men and women seen here scrutinizing marks on their blackboards collectively represent a kind of particle accelerator of the mind.

But the “unreasonable effectiveness” of mathematics in explaining the world, as the physicist Eugene Wigner once put it, is a minor motivation at best for those immersed in the field. Most mathematicians say they are in it for the math itself, for the delirious quest for patterns, the thrill of the detective chase and the lure of beautiful answers.

“Math is sense,” said Dr. Robert Osserman, a Stanford professor and deputy director of the institute, quoting from the play “Copenhagen.” “That’s what sense is.”

Judges Keep the State After School

By SAM ROBERTS

LAST week, New York’s highest court found that the state’s financing formula for public schools denies New York City students their constitutional right to a “sound basic education,” but the court left several sound basic questions unresolved:

Does spending more money guarantee better education?

If New York City gets more, won’t other local districts in the state receive less? If not, where’s the additional money going to come from?

The State Court of Appeals punted the last question, leaving it to the Legislature to decide who should pay for fixing a process that, the court said, “allocates to city schools a share of state aid that does not bear a perceptible relation to the needs of city students.”

Frank J. Macchiarola, a former city schools chancellor and now the president of St. Francis College in Brooklyn, who was an adviser to the plaintiffs, said: “The treatment in urban schools is not as good as the treatment in suburban schools, and that’s wrong. But the problem is that there are just totally inadequate schools under the present system.”

The plaintiffs, a coalition called the Campaign for Fiscal Equity, insisted they were not seeking equity merely for equity’s sake. The judges agreed that equality wasn’t the goal.

The city’s 1.1 million public school students — 84 percent of them racial minorities and 80



A classroom at one overcrowded New York school, P.S. 246 in the Bronx, in 1999.

percent of them foreign born — “have a right not to equal state funding but to schools that provide the opportunity for a sound basic education,” the court said.

Largely discounted by the court were the state’s arguments: that the city’s schools have been mismanaged; that the city itself is obligated to spend more on education; and that perhaps several hundred million dollars are wasted annually by unnecessarily diverting students to special education programs for the disabled.

The court found that the system fails to attract and retain experienced teachers, that large class size affects student performance and that computers and library books are inadequate (not just old and classics, as an appeals court suggested).

they are spent.

It set three goals: that the state figure out the actual cost of providing a sound basic education; that every school receive the resources it needs to do so; and that “the new scheme should ensure a system of accountability to measure whether the reforms actually provide the opportunity for a sound basic education.”

The first challenge for the Legislature, said Michael A. Rebell, executive director and counsel for the Campaign for Fiscal Equity, is to determine “how much money do you need?”

Baruch’s School of Public Affairs Congratulates

Our Executive MPA Graduates
 Class of 2003

- | | |
|--|--|
| Karen Alexander
<i>MetroPlus Health Plan</i> | Audrey M. Henry
<i>Mayor’s Office of Health Insurance Access</i> |
| Mary T. Brouder
<i>High School of Telecommunication Arts and Technology</i> | Melaney M. Henry
<i>MTA New York City Transit</i> |
| Trang Bui
<i>NYC Department of Design and Construction</i> | Susie Ospina
<i>YMCA</i> |
| Roxana Dragomir
<i>Beth Israel Medical Center</i> | Raquel Pena
<i>Maximus, Inc.</i> |
| Yvette Douglas Elliot
<i>NYC Department of Health Tuberculosis Control Program</i> | Christina Post
<i>United Nations</i> |
| Denise Galloway
<i>Association for Neurologically Impaired Brain Injured Children</i> | Saturnina Prince-Boyce
<i>Regulatory Affairs Department, Kings County Hospital Center</i> |
| Mary E. Hagood
<i>The Legal Aid Society, Juvenile Rights Division</i> | Tara Regist
<i>Stuyvesant High School Alumni Association</i> |
| Michael J. Halpern, MSW, CSW
<i>Kingsbridge Heights Community Center</i> | Benjamin Rohdin
<i>Baruch College, Weissman School of Arts and Sciences</i> |
| Jacquelyn E. Harris
<i>NYC Department of City Planning</i> | Alexandra Rycar
<i>Independent Management Consultant</i> |
| | Dawn S. Walker
<i>Girl Scout Council of Greater New York</i> |
| | Gabriela Yzunza
<i>Bancomext, Trade Commission of Mexico</i> |

These students earned a Master of Public Administration (MPA) degree in just two years while working full time. All classes are held on Saturdays. Program fee includes books, registration, meals, and staff support. Financial aid and scholarships are available.

For more information, call 212-802-5912, e-mail SPA_Admissions@baruch.cuny.edu, or visit www.baruch.cuny.edu/spa.



THE AMERICAN DREAM STILL WORKS.

Prepare To Enter The Global Marketplace

Touro’s M.S. degree program in International Business Finance will give you the wide-ranging business expertise to thrive in today’s global work environment.



Scholarships and financial aid are available to qualified students. To apply, contact the Touro College Graduate Business Programs, 27 West 23rd Street, New York, NY 10010. (212) 463-0400, ext.681.

Now accepting applications for September classes.

Education Job Market
 Put yourself in a better position.™

Director of Technology

Mineola UFSD seeks highly qualified administrative leader to join our team. 12 mo., competitive salary, excellent benefit plan. Candidates with experience and knowledge in the following areas are encouraged to apply:

- Leading staff development in Technology
- Integrating technology with curriculum
- Developing system for data warehousing and configuring relational data bases
- Holds SAS or SDA
- Facilitating district information systems for continuous improvement; aggregating and disaggregating data from student performance and school quality indicators

For more information and application, visit www.mineola.k12.ny.us to apply on-line. Paper applications are not accepted



DOBBS FERRY

Westchester County, New York
September 2003 Anticipated Vacancies

- High School
 - SPECIAL ED TEACHER
 - SOCIAL STUDIES TEACHER (Leave Replacement)
 - FORENSIC SCIENCE TEACHER - PT (.6)
- Middle School
 - SCIENCE TEACHER (Earth Science certification required)
- Middle/High School
 - MATH TEACHER (Middle School Math Enrichment (.6) High School Math A (.4))
- Elementary
 - PHYS ED (Anticipated Vacancy) Coaches
 - FOOTBALL - Varsity Assistant
 - SOCCER
 - Varsity Boys
 - Varsity Girls
 - Assistant - Boys and Girls
 - BASKETBALL - Varsity Boys

On-line application preferred: www.pnwboes.org/teacherapplication

OK, send resume and certification to:
 Dobbs Ferry Search #129-35
 c/o Regional Services
 Putnam/Northern Westchester BOCES
 P.O. Box 711
 Yorktown Heights NY 10598-4399
 No phone calls, please • AA/EOE

COPIAGUE PUBLIC SCHOOLS

High School Assistant Principal

- Assist the Principal in all aspects of the high school operation, with emphasis on supervision and coordination of programs.
- Responsibilities may include staff evaluation, scheduling, discipline and supervision.
- Knowledge of educational technology and its applications
- Min. five (5) years successful teaching exp.
- Previous administrative and/or supervisory experience a plus
- NYS certification as School Administrator/Supervisor (SAS)
- Salary Range: Mid \$60's to low \$80's

Elementary Administrative Assistant to the Principal

- Assist the Principal in all aspects of the elementary school operation, with emphasis on supervision and coordination of programs.
- Responsibilities may include staff evaluation, scheduling, discipline and supervision.
- NYS certification as School Administrator/Supervisor (SAS) and N. K. Grades 1-6
- Salary Range: Mid \$60's to low \$80's

On-line application preferred: www.Copiague.k12.ny.us
 or send/fax cover letter, resume and copy of certification by July 11, 2003 to:
 Mr. Charles A. Leung,
 Assistant Superintendent for Personnel & Administrative Services, Copiague Public Schools Search #60-28,
 2650 Great Neck Road, Copiague, New York 11726 Fax (631) 841-4621
 BOCES AN AFFIRMATIVE ACTION/EOE