Minority Relations Key To Diversity in Sciences

By ROBERT LI

Capping a day of talks and poster presentations at Tuesday’s Graduate Science Symposium, Caltech trustee Dr. Shirley Malcom gave a keynote speech in which she urged Caltech and other universities to better promote the entry of women and underrepresented minorities into science, technology, engineering, and math careers.

Currently the head of the Directorate for Education and Human Resources Programs at the American Association for the Advancement of Science as well as a Caltech trustee since 1999, Dr. Malcom has succeeded despite her beginnings at a segregated high school in the South. After receiving her PhD in ecology from Penn State University, Dr. Malcom has been very active in the push to reform the current education system in order to better serve women and minorities. She served on the NSF’s policy making body, the National Science Board, from 1994 to 1998. From 1994 to 2001, she also served on the President’s Committee of Advisors on Science and Technology. For her nearly 30 years of work, the National Academy of Sciences gave Dr. Malcom its most prestigious award, the Public Welfare Medal, earlier this year. Despite the efforts of the last few decades, there is still a great disparity in the percentage of women and underrepresented minorities within the science, technology, engineering, and math (STEM) fields. Only 3% of the people in STEM jobs are black and only 19.0% are white females. Overrepresented are white males at 63.8% and Asians at 11%. The situation is improving, however, as the percentage of all minorities in STEM fields has been increasing steadily (albeit at a slow rate) since the 1970s. Dr. Malcom believes that we must accelerate this trend because by 2030, there will be an majority race in the United States (already California and Texas have no racial majorities).

The reason for the underrepresentation vary wildly by group. According to Dr. Malcom, women face an underlying belief that they “don’t have what it takes,” as well as a lack of a social network and being forced to balance a career and a life.

In high schools, girls are being turned away from the high level math and science courses that are necessary for a STEM career. Intervention programs have arisen as a response to this situation and they have been shown to be highly successful. Regarding the underrepresentation of minorities in STEM careers, Dr. Malcom believes that this is due to teachers questioning the intellectual capacity of minority students, people having different and lower expectations and the legacy of the “separate and equal” doctrines.

To remedy these issues, Dr. Malcom wants STEM-oriented intervention programs to be started in high schools and at a number of things. Aside from diversification, the public must be educated on the need for women and minorities. Dr. Malcom wants science to be taught as a career option to everyone, and not just those who are “good at math.” She believes that the perception of STEM careers as difficult and only for the “best and brightest” must be changed in order to increase diversity in the sciences.

Call him the virtuous vagabond, the preacher who fought slavery with savagery in an 1831 rebellion that killed 58 whites in the sleepy plantation town of Southampton, Virginia. Textbooks condemn his cruelty—and Gandhi Nat was not—but was the Prophet of Southampton simply a sane man lashing out against an insane system?

“In many ways Nat Turner’s been a troublesome property for all of us,” explained African-American filmmaker Charles Burnett, who earlier this year put the finishing touches on the controversial documentary “Nat Turner: A Troublesome Property.” “When we screened it there was this need for the filmmakers to come to some kind of conclusion as to who Nat Turner really is.”

This, the question of Turner’s identity viewed in the film’s eyes as a balance of idealism and direct action, underlined debate last Tuesday night in the Broad Center’s Rock Auditorium, where Burnett presented his film and took questions from a mixed crowd of students, faculty, staff and local residents.

“How people view Nat really depends on race,” maintained Hu- manities Professor Robert Rosenstone, who coordinated the event. “And yet, we don’t do much with race at Caltech.” Showing the film, he said, is also part of an effort “to raise some very relevant questions” about historical interpretation and race.

The documentary opens with a recount of Turner’s watershed slave rebellion and its role as a stepping stone to the Civil War. It then diverges into interpretation, inter- Continued on Page 8, Column 4

Continued on Page 2, Column 3

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Continued on Page 2, Column 3
Length of Gaze Important; ‘Template Of Beauty’ Weakened by Face Study

By ROBERT TINDOL

PASADENA, Calif.-Beauty may be in the eye of the beholder, but a new psychophysical study from the California Institute of Technology suggests that the length of the beholding is important, too.

In an article appearing in the December 2003 issue of the journal Nature Neuroscience, Caltech biology professor Shinsuke Shimojo and his colleagues report that human test subjects asked to choose between two faces will spend increasingly more time gazing at the face they eventually choose as the one more attractive.

Also, test subjects will typically choose faces that are systematically biased, even if they were shown previously for a longer time by the experimenter. In addition, the results show that the effect of gaze duration on preference also holds true for choices between abstract geometric figures.

The findings show that human preferences may be more fundamentally tied to “feedback” between the actual visual input and the internal, cognitive-psychoanalytic attributes than was formerly assumed.

Earlier work by other researchers had suggested that perceived beauty has somehow been impressed on its or her brain due to early exposures to other people’s faces, such as the mother.

In contrast, Shimojo says, the new results come from experiments especially designed to minimize the influence of earlier biases and existing preferences. Even when images of faces were held up long enough to access possible biases due to ethnic origins and even such trivial factors as hair styles, the results still show strongly that the gaze is subconsciously oriented toward the eventual choice.

The second experiment is “gaze manipulation,” in which the faces were not shown simultaneously, but in sequences of varying duration on one side of the computer screen. In other words, one face was shown for a longer time (900 milliseconds) than the other face (300 milliseconds) and as a control, the test subjects were asked to choose between abstract geometric shapes of the length of time correlated highly with the eventual choice.

The Leonid meteor shower gets its name because the meteors appear to radiate from the constellation of Leo, the lion. Leo rises in the eastern sky around 10 p.m. PST, and by midnight it may be high enough for any reason. All written work is subject to the California Tech

The Leonid meteor shower gets

its name because the meteors appear to radiate from the constellation of Leo, the lion. Leo rises in the eastern sky around 10 p.m. PST, and by midnight it may be high enough to see them. The Leonid meteor shower is also known as a “shooting” or “falling” star.

This year’s Leonid meteor shower is expected to peak this Tuesday, November 18.

Continued from Page 1, Column 1

Share of Drug-Fighting Aid Package

American companies receive Leonid’s share of drug-fighting aid package.

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Continued from Page 1, Column 1

(pinpoint the exact field they want to image; more often than not, non-cocaine crops get destroyed. Furthermore, not only is this an economic issue, but also a political issue as well. After the US spends millions of dollars of causing the collapse of the Medellin Cartel, the former political power of Colombia, there was a redistribution of power among the different military groups in Colombia.

The paramilitary, for example, conveniently jumped into the drug trafficking market to build its ranks and influences. By building their alliances with the traffickers and receiving support from the Colombian military, their numbers grew from 4,000 in 1995 to over 8,000 in 2001.

The mission of the paramilitary is to eliminate all “independent rebel groups.” If you are in an organization, for example, a human rights organization, you are a rebel, too,” remarked the director of the Colombian Human Rights Association in Colombia.

The forces opposing the paramilitary are the guerrilla groups, who also benefit from drug trafficking. The only difference is that the guerrilla groups work for the good of the Colombian people, whereas the paramilitary works for preserving the status quo of the rich minority. One way or another, they all receive a lot of benefits from the Cocaine production, making it even harder to suppress.

But the US Government is not completely innocent either. The coca industry also provides US multinational corporations the opportunity to make millions of dollars by exploiting the “War on Drugs.”

The $3.3 billion aid package to Colombia was a result of the failure of the eradication campaign, 70% will end in the hands of the US military and chemical corporations; as well as the US military. A mere 1% is earmarked for the peace process.

By making helicopters for the US military stationed at Colombia, corporations such as United Tech and Sikorsky will receive millions of dollars. Rockwell, another example, will benefit from their sale of surveillance systems and MPIH for the paramilitary.

With so much money going into the military, the US government is actually generating warfare instead of stopping it. Other interests such as oil, cheap labor and natural resources also come into factor.

In conclusion, Plan Colombia, instead of countering drug production by the guerrilla groups for which the US government can benefit, is driving drug lords to the country and its people for all its worth. “Plan Colombia,” is in reality, “the Plan of Death.”

Gerrard Ungarman, the producer, sends his film to the country for further discussion. He operates as a completely independent director and a producer, delivering important messages to the public.

The film is currently being shown in Santiago and future projects and he hopes to bring more to the Caltech community in the following. The film has been screened in Los Angeles and other locations, as well. He is planning to perform in front of a large audience, perhaps in New York, for example, receiving funding from a family inheritance, he is confident that the film will have a positive impact and that it will be seen by a large number of people.

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Continued from Page 1, Column 1
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by TOM FLETCHER

Committee Reporting Update

At last week’s Faculty Board meeting, a number of committee chairpersons took off on committee reporting for one month, until their next meeting, when they can discuss it in detail. They are still feeling out the terri­"
Dear Editors,

It really frustrated me, when I heard the news recently, that "I could only get a grant for making a movie on William Sty, and not on Turner as the main character." In this day and age, it seems as though a director who wants to make a movie specifically on the reign of the slaver very east is forced to instead make a movie about a white writer who was centuries later forced to create a story in reference to one of the greatest perpetrators of human rights. We, as a black community,...

Letter: Political Correctness Sickening

Dear Editors,

I hope you can understand...I am expressing my opinion on a topic which is of personal importance to me. I believe that it is crucial for individuals, especially those in positions of authority, to be aware of the negative effects of political correctness on society as a whole. It is important to acknowledge that such policies can lead to a lack of free speech and hinder the ability of individuals to express their own views. I urge you to consider this issue and take action to promote a more open and honest dialogue on this topic.

Sincerely,

[Your Name]
are. Center. Want a.
rected to the CUE or to the chairs of
made, the signed to the Academic Policies com-
Writing
Division to prepare a plan to institute faculty and/or student committee(s)
SUASH. At this time olessor cott should ideally be able to determinesounding board for an essay or report d f h

THE CALIFORNIA TECH COMMENTARY NOVEMBER 17, 2003

h Core Curriculum Steering Commlt- cI'fl'C problem. The problem shouldabout a statement lor a researc pro-
student's budget
days
made fresh
of academic advising has been as-
It was pointed out that since the Ium Steering Committee has been
Update, Evaluations
also begun to discuss ways of improv- Once this decision
develop strategies for improving your another, and establish what the pri - ing evaluations and feedback, and the
reading service, but a chance to de- get all members familiar with one widescale improvement ofthe teach­
sultants offer useful feedback at any ing teaching feedback and evaluation CUE began to assign tasks to address
proposed changes to the Core 1 writ- for further examination and recom­
posed.

CUE: Update, Evaluations
By KATHRYN ISHU
Last June, on the advice of an ad-
base committee of faculty, administra-
tors and students, the Council on Un-
dergraduate Education (CUE) was formed to address the chaos of both of the key faculty committees, ad-
ministrators and students and would be chaired by Vice Provost David Goodstein. Since the first meeting (reported in the Tech 11/11/2003), the
ASCIT Board of Directors has ap-
proved new student representatives

to the CUE. In addition to Goodstein and other members, the CUE now includes students Shana-
Penelope Gunterman, and Liz
Futnauge. Professor Andrew Igersoll, chair of the faculty Aca-
Aca-
demic Policies committee has also been
added.

The second full meeting of the CUE
occurred on Monday, November 10th, and was attended by all members except Professor Chris Hitchock, Chair of UASH. At this time Professor Scott Fraser presented a report from the Curricular Assessment and Commit-
tee. The committee has asked the HSS to prepare a plan to institute proposed changes to the Core 1 writ-
ing requirement. The committee has also begun to discuss ways of improv-

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**CHICOS Project Set to Install 50th High School Cosmic Ray Detector**

**By JILL PERRY**

PASADENA, Calif. - A large crane set up 250 feet high above a white, funnel-shaped cosmic ray detector on the roof of San Fernando Middle School on Nov. 19 and as soon as a few cables were slung between the crane and the school, the deployment began.

The detector is the 50th to be in- stalled in an array of cosmic ray detectors that Caltech and Los Alamos are building throughout Southern California. It is one of several detectors at the school, which is located at 130 N. Brand Boulevard, San Fernando. The deployment of the detector signals that the event is not open to the gen- eral public.

The California High School Cosmic Ray Observatory (CHICOS) is a collaborative effort between the California Institute of Technology, Cal State Northridge, UC Irvine and public and private high schools and middle schools in Los Angeles and throughout Southern California.

Speakers at the installation will include Caltech professor Steve Kazenov, Los Angeles Unified School District board member Julie Korenstein, LAUSD superinten- dent Sue Shannon, San Fernando Middle School principal Arturo Del Razo and Caltech professor Robert McKeown, who created the CHICOS project and is participating students and teachers.

After the detectors are lifted to the roof and activated, there will be a few public remarks and then teach- ers and students will demonstrate how the equipment collects data on cosmic ray showers and discuss their own role in the project.

**The CHICOS Project**

The CHICOS project demonstrates how hands-on experiences can inspire enthusiasm for science among middle and high school students—enthusiasm that is crucial to the future of California science and discovery for discovery.

The CHICOS project captures "cosmic rays" slaming into Earth's atmosphere with the energy of a brick falling from the sky. In order to detect the cosmic rays, detectors must be placed as far apart as a large football field, over many square miles to capture signs of the incoming rays.

The CHICOS project makes up parts of an all-critical array.

Deployment of the CHICOS array began in fall 2001 and the plan is to install 90 detectors by 2004. Students and teachers from CHICOS schools worked in a Caltech lab during the past two summers, building and testing equipment for one week. During this period, students are given daily presentations on related scientific topics.

Students have worked with CHICOS data independently from home and school and are encour- aged to make real scientific contri- butions to cosmic ray research. Many additional students are reached through site visits, educational programs, and presentations as part of a growing class of curriculum users developed by CHICOS educators and teachers.

In the last decade, particle astrophysicists have operated several large detectors to study cosmic rays because the origin of the particles is unknown. It is assumed that the particles are atomic nuclei accelerated to prodigious energies by violent mag- netic activity somewhere beyond our galaxy.

For more information about CHICOS, see the web page: www.chicos.caltech.edu. News me­ dia planning to attend should call (626) 395-3227 by 5 p.m. Nov. 18.

For more information about the school and its participation in the CHICOS project, contact: Debbie Thompson, (626) 395-3227.

**Caltech Conventional Wisdom Watch**


**Ensminger to Describe Experiments in Lecture**

PASADENA, Calif. - Social norms instruct much of human so­ cial interaction in all societies and they often flavor profound differ­ ences across cultures. But where do these norms come from and how exactly do they change over time and what impact do they have on economic perfor­ mance?

Jean Ensminger, a professor of anthropology and chair of the divi­sion of the humanities and social sciences at the California Institute of Technology, will discuss these topics in a talk, "Experimenting with Social Norms," the third of the 2003-2004 Ernest C. Watson Lec­ ture Series at Caltech.

Her talk will take place on Wednesday, November 19, at 8 p.m. Ensminger will base her talk on re­ search she's conducted since 1978 with the Orma tribe, partially na­ tive to the border area of Baluchistan, Pakistan and Iran. The Orma, who number about 200,000, are the last nomadic tribe in the world to live in this part of the world.

To register, call (626) 395-3227 by noon, Thursday, November 19, or email caltech.lectureseries@caltech.edu. A $5 fee is charged to cover the cost of the lecture series. Checks should be made payable to the Caltech Education Initiative.

Education Initiative: Caltech takes RSKE; invites high school students to participate in summer research program. Scouts looking for young prospects.

**Meteor Watch: Localized only showers once a year. Math majors forced to up the ante; project bimonthly cleanings.**

**BY ROBERT TINDOL**

PADADENA, Calif.—For the past several decades, astrophysicists have been puzzling over the origin of powerful but seemingly dif­ ferent explosions that light up the cosmos several times a day. A study this week demonstrates that all three flavors of these cosmic explosions—gamma ray bursts, X-ray flashes and supernovae of type Ic—are in fact connected by a common mechanism. Scientists have realized that the connected particles moving about in antipodal jets always give off prodigious amounts of gamma radiation, sometimes for hundreds of seconds. On the other hand, a large super­ nova of type Ic in our local part of the universe seems to be weaker explosions that produce only short bursts. The insight gained the burst of March 29 promised to us previously studied cosmic explosions, says Berger. "In all cases we found that the total energy of the explosion is the same. This means that cosmic explosions are beaus with different faces but the same body."

According to Sir Kulkarni, MacArthur Professor of Astronomy and chair of the Astronomy Division at Caltech and Berger's thesis supervi­ sor, these findings are significant because they suggest that many more explosions may go undetected. "By relying on gamma rays or X-rays to tell us when an explosion is tak­ ing place, we may be exposing only the tip of the cosmic explosion iceberg."

The mystery we need to confront at this point, Kulkarni adds, is why the energy in some 150 explosions differs so drastically from one to another. At any rate, says Dale Frail, an astronomer at the VLBA, a part of the Caltech University's Very Large Array, "This shows the power of the model, astrophysicists will almost certainly make progress in the near future."

In a few months NASA will launch a gamma-ray detector satellite called Swift, which is expected to locate about 100 gamma-ray bursts each year. Even more im­ portantly, the satellite will be able to make accurate positions of the bursts within one or two minutes of initial detection.

The Nature article is titled "Common Orig­ in For Cosmic Explosions Inferred From Calakmul of Mexico," and it was co-authored by Kulkarni's team, which includes Caltech astronomers Kirk Easterday, Andrew Frail, David Frail, and M. Travert and Jean-Pierre Trigilio.

**Ensminger, the wonderful things about being an anthropologist is the relationships you develop with people over time. The longer I work in my field the more rewarding the research becomes. I have seen profound changes in this society, and appear­ ences can be deceiving—despite the fact that people still live in grass houses with no running water or electricity and where there are few roads, you would be amazed to hear of some of the extraordinary changes in gender relations, social structure and culture that are un­ dergoing each year. It is extremely difficult to begin to unravel the pro­ cesses that drive these changes without a longitudinal perspec­ tive—that is exactly what I am at­ tempting to do now.**

Her talk will also present experi­ mental economic research from a collaborative project with more than a dozen fellow anthropologists who have worked in other hunting and gathering, horticultural, herd­ ing and industrial societies.

Such data from controlled experi­ ments conducted around the world, she says, help to flesh out the pro­ cesses involved in the co-evolution of market institutions with social norms that govern cooperation, fair­ ness and trust.

Ensminger's lecture will take place in Beckman Auditorium, near Michigan Avenue south of Del Mar Boulevard, on Caltech's campus in Pasadena. Seating is available on a first-come, first-served basis. Caltech has offered the Watson Lecture Series since 1922, when it was conceived by the late Caltech physicist Edward N. Wilson to explain science to the local community.

**Energy Conundrum Solved By Study of Nearby Gamma Burst**

**By ROBERT TINDOL**

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Schneider Reaches for Understanding Through Study of Science, Literature

By DIANA LIN

On Friday afternoon, I found myself walking down the hall of Mudd Laboratory on the very southwest corner of campus to meet a professor I knew only by name, Tapio Schneider. At the very end of the old, brown-tiled hall, I arrived at the half-opened door labeled room 112 and awkwardly in­

entered, trying to decide whether to knock or not. As the door opened, a friendly, bespectacled face peered out and greeted me. "Hello, I'm Tapio Schneider," he said. "How can I help you today?"

"I'm just here to meet with you," I replied, slightly embarrassed. "I'm a student at Caltech and I'm interested in your research on climate models."

Tapio Schneider is an assistant professor in the Environmental Science and Engineering Department. He teaches the ACM1ESE 118 applied statistics and data analysis course and also courses about the dynamics of the atmosphere and oceans.

His field of study is concentrated on atmospheric science. He studies the causes and effects of different climates in different regions of the world by creating simulations and complex computer models to theorize why the weather is as it is today, how it was in the past, to better predict what will occur in the future. For example, he studies how the geographical location of Los Angeles, bordered by mountains, affects the wind patterns that contribute to the dry weather.

Tapio Schneider came to Caltech last year after earning his Ph.D. from a university in the United Kingdom. Although he admits that the En­
vironmental Science Department at Caltech is small, it is this very size that allows him to work with others from different concentrations to give a larger breadth of study. Here he has happily found a group of like-minded eager young scientists to research with. Part of his passion for science is his innate love for understanding the world around him.

He also studies literature, which he explains is another way of understanding people, society, and their surroundings. Literature is very similar to science in its fundamental motivation to understand the environment, despite common per­
cep­tion that the two fields are op­

posites. Tapio Schneider very much looks forward to the hybrid research he does at Caltech, armed with the computer within the warm bright room of his office.

In addition to his research, he con­

tinues to pursue his hobbies in cross-country skiing, swimming and running. Schneider's unique approach to his work is one for a Caltech student body notorious for its too-tiny frac­
tion of minorities. "I just think that the opportunity to see that and to meet with a filmmaker is a great thing," said Humanities Professor Cathy Jarca, who assisted Schneider in orchestrating the event.

And that's exactly what the direc­tor had in mind. "People have read the stories, the history books, but they want to know more," offered Burnett. "They want to know what Nat Turner means to us. And with­

out imposing our values on it, that's what we've tried to do."

Diversity for Enrichment Rather Than Filling Void

Continued from Page 1, Column 5

sifying the faculty and revamping the system of admissions, Dr. Malcolm urges Caltech and similar institutions to establish better rela­
tionships with minority serving in­
stitutions (MSIs) such as the histori­cally black colleges in the South.

She also believes universities should offer minorities opportuni­
ties for earlier research experiences in order to attract them to STEM careers at an early age.

To make these things happen, Dr. Malcolm calls not for punishing de­
purposes and schools that fail to promote diversity but to reward fac­
tual efforts and divisions that “do the right thing.”

Regarding Caltech specifically, Dr. Malcolm believes that the Insti­tute should help underrepresented minorities build a community where “they can feel safe.” Citing her undergraduate experience at the University of Washington, Dr. Malcolm said that of the three blacks in her dorm, the other two flunked out and she nearly did so as well because she was too intimidated to ask her white chemistry professor for the help that she needed.

Concluding her talk, Dr. Malcolm called for society to not look at mi­nority representation as a deficit to be filled but as something that brings different ways of looking at the world and different experiences which, in the end, enriches every­

one.