Infoteca's E-Journal

An Electronic Compilation of Scientific and Cultural Information by
Sistema de Infotecas Centrales, Universidad Autónoma de Coahuila

CONTENTS

Launch of the Ocean Surface Topography Mission

When we hear the word *topography*, most of us think of mountains and valleys on dry land. But the surface of the ocean has topography, too, and the variation in the height of the sea surface from place to place reveals important information about weather, climate, and rising sea level. On June 20, 2008, NASA launched the Ocean Surface Topography Mission (OSTM)/Jason 2 satellite, the latest in a series of U.S./French satellites to collect observations of ocean surface height.

This image shows OSTM/Jason 2 in the process of liftoff atop a Delta II rocket. The satellite launched at 12:46 a.m. Pacific Daylight Savings Time from Vandenberg Air Force Base, California. Shortly after launch, OSTM/Jason 2 separated from the rocket's second stage and spread its solar arrays. Ground controllers examining OSTM/Jason 2's signals judged it to be operating as expected.

Since heated water expands in volume, warmer ocean areas are "taller" than cooler areas. Scientists have used ocean surface topography data to calculate the energy imbalance in the world's oceans caused by global warming, to monitor the comings and goings of natural climate fluctuations like El Niño and La Niña, and to improve predictions of hurricane intensity.

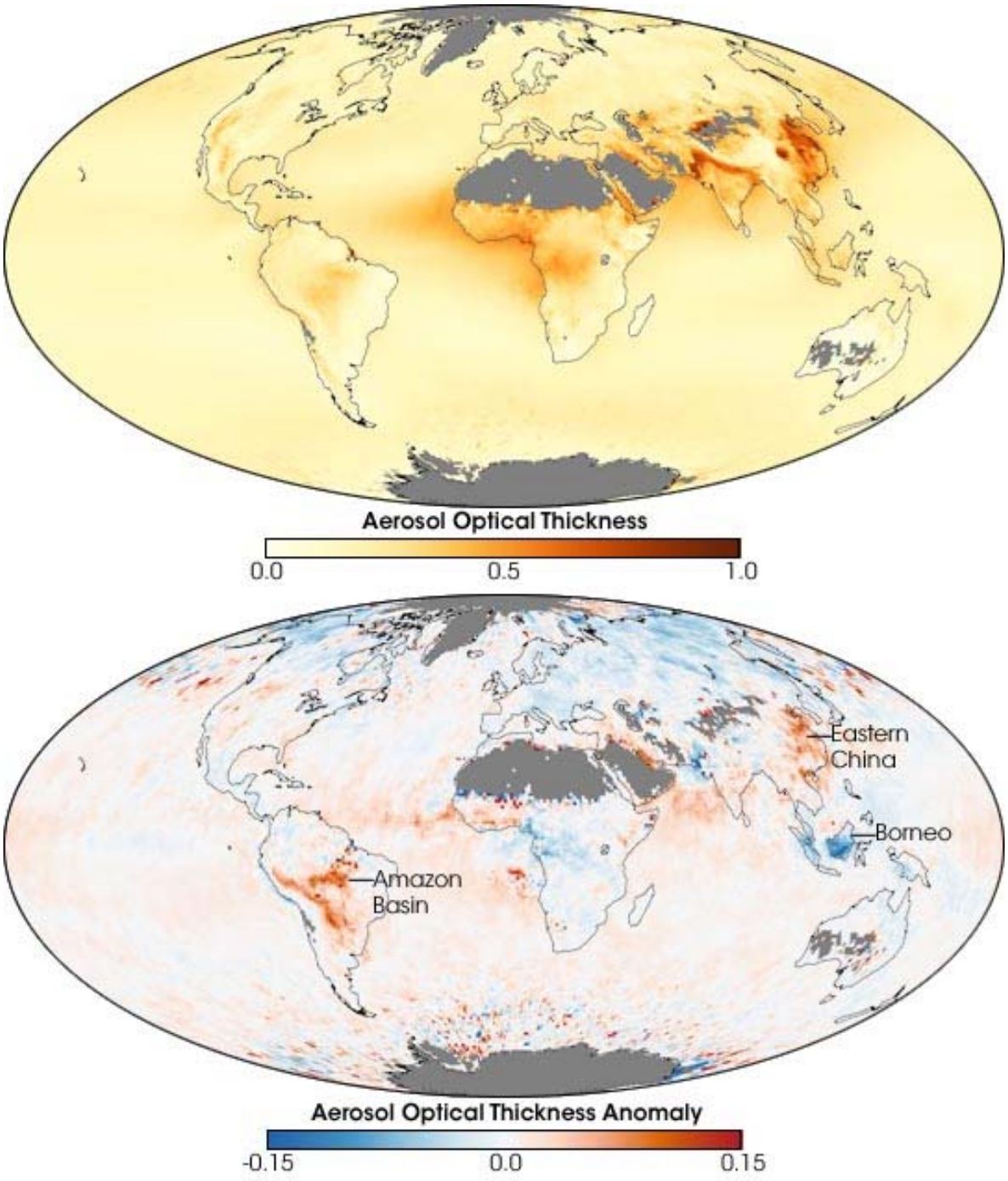
The OSTM/Jason 2 satellite carried several instruments to measure ocean height and water vapor in Earth's atmosphere, and instruments to verify the accuracy of these measurements by determining the satellite's precise position at all times. Jason 2 will settle into orbit just behind Jason 1, and the two spacecraft will fly in formation, making nearly simultaneous measurements, for about six months to allow scientists to precisely calibrate OSTM/Jason 2's instruments.

Once cross-calibration is complete, Jason 1 will alter course, adjusting its orbit so that its ground tracks fall midway between those of OSTM/Jason 2. Together, the two spacecraft will double global data coverage. This tandem mission will improve our knowledge of tides in coastal and shallow seas and internal tides in the open ocean, while improving our understanding of ocean currents and eddies.

- **References**
- Buis, A., and Cole., S. (2008, June 20). NASA launches ocean satellite to keep a weather, climate eye open. Jet Propulsion Laboratory. Accessed June 24, 2008.
- Domingues, C.M., Church, J.A. 1,2, White, N.J.,2, Gleckler, P.J. 3, Wijffels, S.E., Barker, P.M., Dunn, J.R. (2008). Improved estimates of upper-ocean warming and multi-decadal sea-level rise. *Nature*, 453, 1090-1093.
- Scott, M. (2006, April 24). Earth's Big Heat Bucket. Earth Observatory. Accessed June 24, 2008.

Photograph by NASA. Caption by Michon Scott and Rebecca Lindsey, based on a press release from NASA/JPL.

http://earthobservatory.nasa.gov/Newsroom/NewImages/images.php3?img_id=18069



Since 2000, the Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Terra satellite has been measuring global patterns of aerosols—tiny particles suspended in the air—in order to help scientists understand the complicated influences that aerosols have on Earth's climate. The maps above show average global aerosol patterns based on data from 2000-2007 (top) and 2007 aerosols compared to the average (bottom).

The top map shows *aerosol optical thickness* in shades of yellow (few aerosols) to dark red (many aerosols). Aerosol optical thickness indicates how much light aerosols prevented from passing though the atmosphere. (In this case, MODIS measured light with a 550-nanometer wavelength, which is yellow-

green.) Gray areas, such as Antarctica and the Sahara Desert, show where the Earth's surface is too bright for scientists to be able to calculate the fainter "signal" from aerosols.

The aerosol patterns shown result from a mixture of human and natural activities. Northern Africa, eastern China, and the Middle East all experience dust storms. China's coal-fired power plants and vehicles produce large amounts of aerosols. Northern and central Africa, Southeast Asia, Indonesia, and Central and South America all have significant agricultural burning seasons. In the North American West, both natural and human-caused forest fires occur in the mountain forests; a sinuous line of red follows the Rocky Mountains. North of Antarctica, relentless winds whip salty sea spray into the air.

The second map shows how the 2007 annual mean deviated from the eight-year mean. Places where there were more aerosols than average are red, while places where there were fewer aerosols than average are blue. Burning in South America was particularly strong in 2007. Smoke from the Amazon Basin spread southward to coastal Uruguay and northern Argentina. Eastern China stands out as a strong positive anomaly in 2007, exhibiting higher annual mean aerosols than even its already high, eight-year mean. India shows a slightly positive anomaly, as does the Sahel region of West Africa.

On the other hand, smoke from Indonesia, particularly the island of Borneo, where peat fires often choke the skies in the burning season, was unusually low, as was smoke from central Africa. Aerosol levels in high boreal latitudes were also unusually low, indicating that 2007 was not a big year for boreal forest fires.

NASA images by Jesse Allen, based on MODIS aerosol data provided by Richard Kleidman (SSAI), Lorraine Remer (NASA/GSFC), and Shana Mattoo (SSAI). Caption by Rebecca Lindsey, based on interpretation provided by these scientists on the NASA-GSFC Climate and Radiation http://climate.gsfc.nasa.gov/viewImage.php?id=230

http://earthobservatory.nasa.gov/Newsroom/NewImages/images.php3?img_id=18068

What Makes An Old Geyser Faithful?

New research suggests that how often Old Faithful and other Yellowstone geysers erupt may depend on annual rainfall patterns. (Credit: USGS)

ScienceDaily (Jun. 16, 2008) — New research suggests that how often Old Faithful and other Yellowstone geysers erupt may depend on annual rainfall patterns.

Geysers are rare hot springs that periodically erupt bursts of steam and hot water. Old Faithful has remained faithful for at least the past 135 years, showering appreciative tourists every 50 to 90 minutes (most recently an average of 91 minutes).

USGS researcher Shaul Hurwitz and his colleagues from Stanford University and Yellowstone National Park have discovered that changes of water supply to a geyser's underground plumbing may have a large influence on eruption intervals; that is, the time between eruptions. For example, geysers appear to lengthen and shorten their intervals on cycles that mimic annual dry and wet periods.

Multi-year precipitation records also strongly correlate with geyser behavior. Based on these results, the study proposes that an extended drought should result in longer intervals between eruptions, and perhaps even cessation of activity in some geysers. In contrast, in years with high precipitation, eruption intervals should be more frequent.

Additional information: Geysers are extremely rare; perhaps less than 1000 exist worldwide, with more than half of them in Yellowstone National Park. The famous Old Faithful Geyser was named in 1870 during the Washburn-Langford-Doane Yellowstone expedition and was the first geyser in the Park to be named.

Old Faithful eruptions can be viewed on any computer on Earth via a video camera deployed by the National Park Service. Instrumental data which records geyser eruption times is available at the Geyser Observation and Study Association web site. Long-term meteorological trends can be inferred from seasonal streamflow trends like those in the Madison River.

This study is a cooperative effort involving the U.S. Geological Survey and the National Park Service.

Journal reference:

1. . **Climate-Induced Variations of Geyser Periodicity in Yellowstone National Park, USA**. *Geology*, June, 2008

Adapted from materials provided by U.S. Geological Survey.

http://www.sciencedaily.com/releases/2008/06/080614080441.htm

Durable, Inexpensive, Bamboo Houses Can Be Assembled Quickly For Earthquake Victims

Bamboo house prototype on Hunan University campus. (Credit: Image courtesy of University of Southern California)

ScienceDaily (Jun. 16, 2008) — A USC professor on sabbatical in China has created a prototype of a sturdy, quick-to-build bamboo house designed to help the vast number of people made homeless by the May 12 Sichuan earthquake.

Yan Xiao, an expert in structural design and retrofit in the USC Viterbi School's Sonny Astani Department of Civil and Environmental Engineering, has been experimenting with bamboo-based materials for highly demanding structural uses in China's Hunan province and recently built the world's first bamboo truck bridge there, in the city of Leiyang.

He went to nearby Sichuan province on May 13, the day after the earthquake, returned to the Chinese Ministry of Education Key Laboratory at Hunan University, where he has been serving as director, and immediately went to work on a housing solution.

The prototype bamboo quake relief house he built in less than two weeks adopted a modular design that can be adjusted according to specific family needs.

"The modular units are connected by bolts and are easy to manufacture and assemble," Xiao said. "Four to six workers can assemble a 22.3 square meter (240 square foot) house in about four hours. The majority of the structural materials used are processed bamboo veneer sheets, a kind of bamboo fiber composite."

Xiao said that interior detailing is similar to the wood frame houses in North America, noting that the design conforms to current U.S. building codes requirements for quake resistance.

"The relief house contains two windows, fans and locations for LPG stove or bath unit, satisfying basic needs for shelter for a family of up to four," he said.

A first batch of 20 units donated by Hunan University will be sent to the affected area soon, Xiao said. A Chinese newspaper, the China Press, wrote a story about Xiao's work, leading to contributions for further units.

The cost per square meter of the units as manufactured in China and based on local material costs is about 350 to 500 RMB, or $50-$70 U.S, he said.

Xiao ticked off the advantages of the structures: "Unlike tents, the bamboo quake relief house is insulated for heat and sound, is fireproof, allows residents to secure their possession and is more durable," he said. "It is also inexpensive compared with temporary houses using other traditional materials, such as light-gauged steel. Finally, bamboo is a green and sustainable construction material, widely available in China and other Asian countries."

The Chinese government estimated that more than one million relief temporary housing units are needed in Sichuan.

Adapted from materials provided by University of Southern California.

http://www.sciencedaily.com/releases/2008/06/080610122111.htm

Groundbreaking Depression Research Being Tested In Real-world Setting

ScienceDaily (Jun. 16, 2008) — UT Southwestern Medical Center psychiatry researchers have taken what they learned from their groundbreaking research on treating depression and are applying it to real-world clinical settings.

The Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study was the largest ever on the treatment of major depressive disorder and is considered a benchmark in the field of depression research. The six-year, $33 million study initially included more than 4,000 patients from clinics across the country.

STAR*D provided evidence for step-by-step guidelines to address treatment-resistant depression and found that half of depressed patients became symptom-free or had major improvement after the first two treatments with medication.

Based on those findings, Dr. Madhukar Trivedi, professor of psychiatry at UT Southwestern and a leader of the STAR*D study, developed a computerized treatment system and is now testing it in a Nashville, Tenn.-based mental and behavioral health care organization.

"This is exciting because although this project incorporates elements of STAR*D and cutting-edge algorithms developed and refined by UT Southwestern researchers over decades, it moves way beyond that," said Dr. Trivedi.

The computer software provides a step-by-step guide to assist doctors as they're treating patients. For example, the program prompts physicians with more specific questions that go beyond "Do you feel better?" after taking medication.

"This computerized system gives doctors assistance at the time that they are seeing the patient," Dr. Trivedi said. "It's like walking with someone learning to ride a bike versus just sitting there and telling them how to ride."

The administration of depression treatment is often inadequate, Dr. Trivedi said.

"Major depressive disorder treatment lags behind the care of other chronic diseases," said Dr. Trivedi. "It's not like an infection where you treat for a short time and that's it."

Doctors often don't ask follow-up questions of their patients, and they certainly do not routinely use systematic measurement tools to gauge progress, he said.

"My interest is in helping clinicians, researchers and patients in real-practice settings," Dr. Trivedi said. "It's a different magnitude of complexity when you go to a busy clinical practice setting away from academic centers."

In the STAR*D project, also led by Dr. A. John Rush, professor of clinical sciences and psychiatry at UT Southwestern, only about 50 depression patients from each test-site clinic were selected to participate.

"Studying depression in a very small setting with an isolated patient population was important as we sought to answer certain essential questions, but it is different from the regular practice of doctors and patients," Dr. Trivedi said.

In the current research project, all patients with depression at study sites will be included. The number of patients could reach 8,000, depending on how many are scheduled for treatment with Centerstone, a

nonprofit provider of community-based behavioral health services that has partnered with Dr. Trivedi. Centerstone operates facilities in middle Tennessee and southern Indiana.

"Previous research has pulled out a few drops of water from a pond, whereas now we are looking at the whole pond and all its possible murkiness," Dr. Trivedi said. Centerstone facilities were chosen in part because of their cohesiveness and technological capabilities.

"We know depression is similar to other chronic illnesses and yet treatable. We know we have a lot of options," Dr. Trivedi said. "While we are still developing other treatment alternatives, it's important to make sure that the research we have now works in the real world. This work with Centerstone will help ensure that depressed patients receive the most effective treatment regime available."

The work is funded by a $1.2 million grant over three years awarded by the Agency for Health Care Research Quality for an information technology initiative.

Adapted from materials provided by UT Southwestern Medical Center, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080612070402.htm

Australian Dinosaur Found To Have South American Heritage

Articulated hand of the predatory dinosaur Megaraptor from the mid-Cretaceous of Argentina. Fossils of Megaraptor are now known from similarly aged rocks in southern Australia. (Credit: Image courtesy of University of Queensland)

ScienceDaily (Jun. 15, 2008) — Australia's links to South America have just gotten a bit closer, but not due to economic forces, rather fossil forces. University of Queensland palaeontologist Dr Steve Salisbury was part of an international team of palaeontologists from the US, Argentina and Australia that identified a fossil that had previously only been found in South America.

Dr Salisbury, from UQ's School of Integrative Biology, said an upper arm bone found at Dinosaur Cove in southern Victoria, shares a suite of unique features with a medium-sized predatory dinosaur from Argentina called Megaraptor.

He said it was the first time a dinosaur with unquestionable affinities to animals from other Southern Hemisphere continents had been recognised in Australia.

"Throughout much of the Age of Dinosaurs, Australia formed part of the southern super-continent of Gondwana," Dr Salisbury said.

"As a result, there has long been an expectation that our dinosaur fauna would show similarities to similarly aged faunas from adjoining Gondwanan landmasses, in particular Antarctica, New Zealand and South America.

"Of the Australian dinosaurs that have been recognised so far, the consensus has been that some are relics of groups that went extinct much earlier in other parts of the world, while others have been seen as early representatives of groups that are more typical of the Northern Hemisphere.

"Partly as a result, it has been proposed that Australia was somehow isolated from the rest of Gondwana, either through geographic or climatic barriers.

Dr Federico Angolin, from the Argentinean Museum of Natural Sciences, said when the six palaeontologists on the research team independently recognised the close similarity between the Dinosaur Cove fossil and the remains of Megaraptor from Argentina, they knew they had an important discovery on their hands.

"Megaraptor is a unusual type medium-sized theropod, best known for its enormous clawed hands," Dr Federico Angolin said.

"The proportionately large hand means that Megaraptor has a very distinctive forearm, which is how we were able to identify the Australian fossil.

Project leader Nate Smith, from The Field Museum in Chicago, said fossils of Megaraptor have previously only been found in central and southern Patagonia, in rocks at least 15 million years younger than those in southern Victoria.

He said it was first thought to be a member of Dromaeosauridae, the group of predatory dinosaurs that includes the Velociraptor, but the Australian material has helped show Megaraptor actually belongs to the same group of dinosaurs as Africa's "crocodile mimic" dinosaur Suchomimus and the sail-backed Spinosaurus - the Spinosauroidea.

"The recognition of Megaraptor in Victoria provides the first definitive evidence for interchange between the dinosaur faunas of South America and Australia during the Cretaceous," Mr Smith said.

"Our results are consistent with several geological models for rifting between the southern continents during the time that these dinosaurs existed.

"This discovery indicates that we might need to rethink the longstanding claims of the Northern Hemisphere affinities for many Australian dinosaurs, and of geographic and/or climatic isolation of Australian dinosaur faunas."

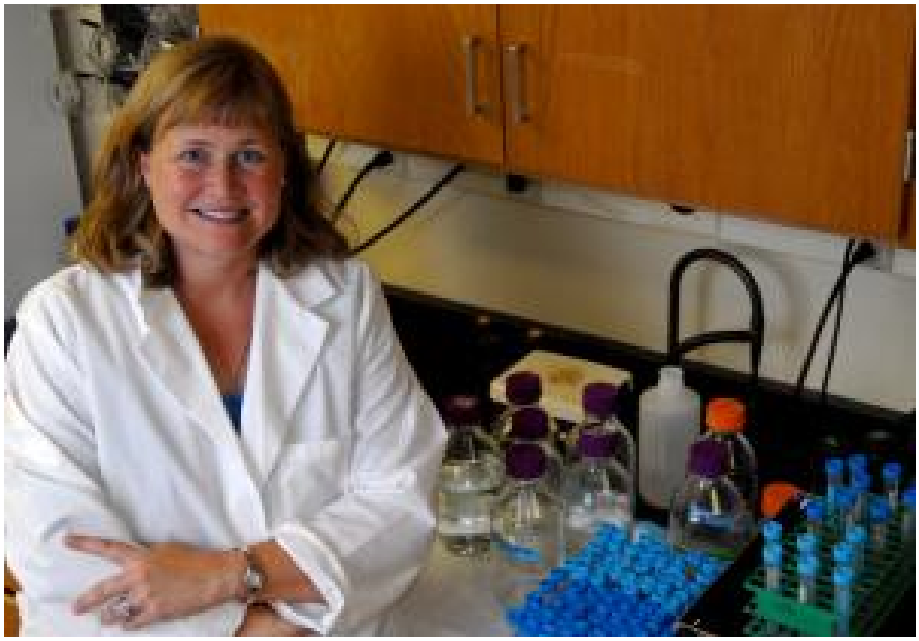
The results of the study are published online through the Proceedings of the Royal Society of London.

The research was funded by the University of Chicago, Carnegie Museum of Natural History and The University of Queensland.

Adapted from materials provided by University of Queensland.

http://www.sciencedaily.com/releases/2008/06/080613111410.htm

Engineer Develops Detergent To Promote Peripheral Nerve Healing



Dr. Christine Schmidt. The test tubes (at left) contain detergents and chemicals for decellularizing nerve tissue. (Credit: Photo by Erin McCarley)

ScienceDaily (Jun. 15, 2008) — A detergent solution developed at The University of Texas at Austin that treats donor nerve grafts to circumvent an immune rejection response has been used to create acellular nerve grafts now used successfully in hospitals around the country. Research also shows early promise of the detergent solution having possible applications in spinal cord repair.

The solution – combined with an enzyme treatment conceived at the University of Florida in Gainesville – is licensed by AxoGen, an Alachua, Florida-based company, and is used to create an acellular nerve graft from human cadaver tissue, called AVANCE Nerve Graft. Nationwide, nearly 100 patients suffering nerve injuries have received AVANCE grafts, all involving peripheral nerves which transmit sensory information between the brain and muscles.

Christine Schmidt, a biomedical engineering professor, developed the detergent solution in her lab with Terry Hudson and Curt Deister, chemical engineering graduate students at the time, who are now with Genentech in California and with AxoGen, respectively.

“Surgeons are reporting some early successes,” she says.

These grafts are being used to treat people with traumatic injuries potentially resulting from lacerations, gunshots and everyday accidents, but it also has been used to treat cavernous nerves after the removal of the prostate. The AVANCE product has treated wounded soldiers and can treat the nerves in hands, arms, legs and the face.

Traditional treatment of these types of nerve trauma required harvesting an intact nerve from the patient’s body and transplanting it to repair the damaged area. However, that requires two surgeries, is more costly and leads to loss of nerve function and possible infection at the donor nerve site, Schmidt says.

Synthetic, tubular grafts are another surgery repair option. However, Schmidt says they are limited to repairing very small injuries. She adds AVANCE nerve grafts are able to bridge long nerve gaps, provide

a three-dimensional pathway supporting nerve regeneration and are easily bendable because they are human nerve harvested from tissue donors, making it easier for surgeons to handle.

“This method has broader applicability,” Schmidt says. “Formerly a patient’s only option was to use their own nerve or the completely synthetic grafts.”

By using the detergent solution, the donor nerve is stripped of the cellular lipid components, which causes the immune rejection response when implanted. Schmidt’s laboratory spent four years developing the solution to be strong enough to remove rejection-inducing factors, but mild enough to preserve the delicate physical architecture of the nerve essential for regeneration. The resulting tolerated transplanted nerve provides a type of scaffolding that serves as a bridge between the two ends of the severed nerve to promote regrowth. And because the immunogenic lipid components have been extracted, patients don’t require immunosuppressant drugs.

AxoGen learned about the detergent processing work in Schmidt’s lab, licensed it and combined it with the University of Florida enzyme treatment that removes other regrowth inhibiting factors, creating the AVANCE product.

“So they’ve taken something from our lab that works really well and made it work even better,” Schmidt says.

Schmidt now is conducting spinal-cord lab testing in animals using detergent-treated peripheral nerve grafts. She is working with post-doctoral fellow Zin Khaing, a central nervous system expert.

AxoGen’s AVANCE Nerve Graft was first used on a patient in July 2007, when a 38-year-old man underwent surgery to repair a facial nerve at the Mayo Clinic in Rochester, Minn. In a recent case, it was used to repair several damaged nerves in three fingers of a Dallas resident at University Hospital – Zale Lipshy.

Adapted from materials provided by University of Texas at Austin.

http://www.sciencedaily.com/releases/2008/06/080610105948.htm

Untangled Quantum Quirk Is Significant Step Toward Quantum Computing

ScienceDaily (Jun. 15, 2008) — Quantum computing has been hailed as the next leap forward for computers, promising to catapult memory capacity and processing speeds well beyond current limits. Several challenging problems need to be cracked, however, before the dream can be fully realized.

Two Arizona State University researchers, Richard Akis and Regent's Professor David Ferry, both of the electrical engineering department's Nanostructures Research Group, have proposed a solution to one of the most controversial of these conundrums and, in the process, may have taken a significant step toward realizing a quantum computing future. Their solution appeared in a special April 2008 issue of the Journal of Physics: Condensed Matter.

Two basic requirements of any computer are the capacity to store a value (information) and the ability to read that value. Yet even these most basic requirements present cutting-edge challenges to quantum physicists.

Today's computers store data logically as bits--ones and zeroes represented physically as positive or negative charges in a storage medium. Quantum computers, conversely, will store data logically as quantum bits, or "qubits"--an entire range of values represented physically by an electron's angle of spin.

Electrons and other subatomic particles spin like tiny tops, complete with tilt, or "precession." Since there are an infinite number of angles at which an electron can tilt, there are theoretically an infinite number of values that a qubit can store. Practically speaking, however, the number of available values will be constrained by technology and other theoretical limitations of computer science.

Currently, researchers are hard pressed to build even simple quantum computers. The problem is that quantum states are notoriously difficult to pin down and measure. Akis and Ferry's research, combined with that of former ASU colleague Jonathan Bird, could yield insights that help solve these problems.

Bird, now at University of Buffalo, has made important strides toward measuring quantum states using "entanglement," a characteristic of quantum mechanics by which two quantum particles interact at a distance. His measurement technique is based on quantum states produced by electron-electron interactions.

"This is like the 'readout' of a spin," Akis says. "It all has to do with e-e interactions, but from a remote distance."

Bird's method is only useful, however, if it has something to measure and a theory to back it up, but electron-electron interactions are complex and poorly understood. Indeed, simple quantum mechanics models often ignore electron-electron interactions entirely, instead relying on "one-electron approximation" models, which leave a number of questions unanswered.

Akis and Ferry were wrestling with one of the most controversial of these questions when they came up with a model that explained the electron-electron interactions Bird was measuring. They immediately saw the potential.

"Bird's experiment is more than a pretty measurement--there are indications that you could use this in quantum computing applications," Ferry says.

Their findings could also have important implications for quantum data storage. One way to store qubits is via a quantum point contact (QPC)--the quantum equivalent of a computer gate. Generally, the quantum behavior of electrons is represented by a stair-step graph of the conductance of these gates. Usually, the steps are either twice or half of a particular conductance value, and work just fine under a

simple one-electron approximation model. Electrons are simply treated like bullets shooting through gates and not interacting with their other electrons.

These models fail to explain at least one odd case, however, which inspired the Journal of Physics: Condensed Matter to dedicate an entire issue to papers addressing it. The case breaks the usual pattern of QPC conductance plateaus, occurring at the 70 percent mark instead of half or twice a particular conductance value.

Akis and Ferry skipped the one-electron approximation and showed that the odd behavior at the 70 percent mark was due to interactions between up- and down-spinning electrons. This explanation means that the oddball conductance plateau can be read using Bird's method and provides an explanation for the electron-electron interactions that the method measures.

"We all use the same basic ideas--everyone agrees that you have to have e-e interactions or some manifestation of that," Akis says. "But the complete explanation is still kind of up in the air. A lot of it is based upon the model you use."

According to Akis and Ferry, electrons passing through QPCs react to them much as water would react to a series of hills and valleys. Electrons of one type of spin find it easier to clear these "hills" than electrons of the opposite spin, which mostly rebound away. Thus sorted, the particles that cleared the hills can be partially confined via a hole in the middle of the gate, resulting in a local spin polarization that can be measured via Bird's entanglement method.

"Bird's experiment is the kind of thing where you say to yourself, 'well, this could start to nail down what's really going on,'" Akis says.

Adapted from materials provided by Arizona State University, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080611093854.htm

World-record Supercomputer Mimics Human Sight Brain Mechanisms

Less than a week after Los Alamos National Laboratory's Roadrunner supercomputer began operating at world-record petaflop/s data-processing speeds, Los Alamos researchers are already using the computer to mimic extremely complex neurological processes. (Credit: LeRoy N. Sanchez, Records Management, Media Services and Operations, Image courtesy of DOE/Los Alamos National Laboratory)

ScienceDaily (Jun. 15, 2008) — Less than a week after Los Alamos National Laboratory's Roadrunner supercomputer began operating at world-record petaflop-per-second data-processing speeds, Los Alamos researchers are already using the computer to mimic extremely complex neurological processes.

Welcome to the new frontier of research at Los Alamos: science at the petascale.

The prefix "peta" stands for a million billion, also known as a quadrillion. For the Roadrunner supercomputer, operating at petaflop/s performance means the machine can process a million billion calculations each second. In other words, Roadrunner gives scientists the ability to quickly render mountainous problems into mere molehills, or model systems that previously were unthinkably complex.

Late last week and early this week while verifying Roadrunner's performance, Los Alamos and IBM researchers used three different computational codes to test the machine. Among those codes was one dubbed "PetaVision" by its developers and the research team using it.

PetaVision models the human visual system--mimicking more than 1 billion visual neurons and trillions of synapses. Neurons are nerve cells that process information in the brain. Neurons communicate with each other using synaptic connections, analogous to what transistors are in modern computer chips. Synapses store memories and play a vital role in learning.

Synapses set the scale for computations performed by the brain while undertaking such tasks as locomotion, hearing or vision. Because there are about a quadrillion synapses in the human brain, human cognition is a petaflop/s computational problem.

To date, computers have been unable to match human performance on such visual tasks as flawlessly detecting an oncoming automobile on the highway or distinguishing a friend from a stranger in a crowd of people. Roadrunner is now changing the game.

On Saturday, Los Alamos researchers used PetaVision to model more than a billion visual neurons surpassing the scale of 1 quadrillion computations a second (a petaflop/s). On Monday scientists used PetaVision to reach a new computing performance record of 1.144 petaflop/s. The achievement throws open the door to eventually achieving human-like cognitive performance in electronic computers. PetaVision only requires single precision arithmetic, whereas the official LINPACK code used to officially verify Roadrunner's speed uses double precision arithmetic.

"Roadrunner ushers in a new era for science at Los Alamos National Laboratory," said Terry Wallace, associate director for Science, Technology and Engineering at Los Alamos. "Just a week after formal introduction of the machine to the world, we are already doing computational tasks that existed only in the realm of imagination a year ago."

Based on the results of PetaVision's inaugural trials, Los Alamos researchers believe they can study in real time the entire human visual cortex--arguably a human being's most important sensory apparatus.

The ability to achieve human levels of cognitive performance on a digital computer could lead to important insights and revolutionary technological applications. Such applications include "smart" cameras that can recognize danger or an autopilot system for automobiles that could take over for incapacitated drivers in complex situations such as navigating dense urban traffic.

Los Alamos National Laboratory's computation science team working with Roadrunner includes: Craig Rasmussen, Charles Ferenbaugh, Sriram Swaminarayan, Pallab Datta, all of Los Alamos; and Cornell Wright of IBM.

The PetaVision Synthetic Cognition team responsible for the theory and codes run on Roadrunner includes: Luis Bettencourt, Garrett Kenyon, Ilya Nemenman, John George, Steven Brumby, Kevin Sanbonmatsu, and John Galbraith, all of Los Alamos; Steven Zuker of Yale University; and James DiCarlo from Massachusetts Institute of Technology.

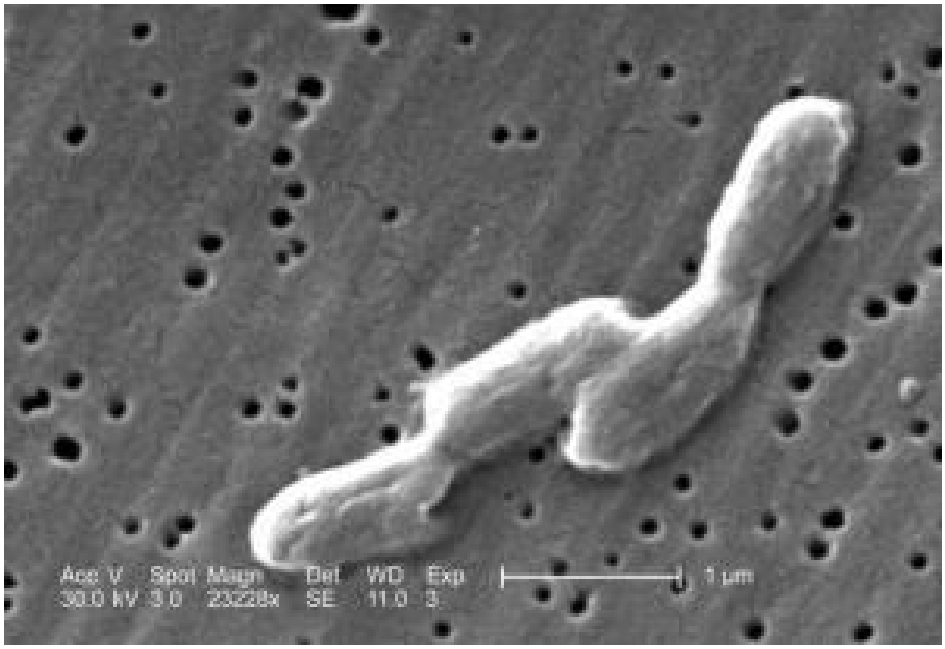
The Roadrunner is the world's first supercomputer to achieve sustained operating performance speeds of one petaflop/s. In partnership with Los Alamos and the National Nuclear Security Administration, Roadrunner was built by IBM and will be housed at Los Alamos National Laboratory, where it will be used to perform calculations that will vastly improve the nation's ability to certify that the United States nuclear weapons stockpile is reliable without conducting underground nuclear tests. Roadrunner also will be used for science and engineering such as energy research, understanding dark energy and dark matter, materials properties and response, understanding complex neural and biological systems, and biomedical applications.

Roadrunner was built using commercially available hardware, including aspects of commercial game console technologies. Roadrunner has a unique hybrid design comprised of nodes containing two AMD OpteronTM dual-core processors plus four PowerXCell 8iTM processors used as computational accelerators. The accelerators are a special IBM-developed variant of the Cell processors used in the Sony PlayStation® 3. Roadrunner uses a Linux operating system. The project's total cost is approximately $120 million.

Adapted from materials provided by DOE/Los Alamos National Laboratory.

http://www.sciencedaily.com/releases/2008/06/080612140031.htm

Salmonella: Trickier Than We Imagined



This scanning electron micrograph (SEM) depicts four highly magnified rod-shaped, motile, Gram-negative Salmonella infantis bacteria, which are attached. (Credit: Janice Carr)

ScienceDaily (Jun. 15, 2008) — Salmonella is serving up a surprise not only for tomato lovers around the country but also for scientists who study the rod-shaped bacterium that causes misery for millions of people.

In research published June 4 in the online journal PloS One, researchers say they've identified a molecular trick that may explain part of the bacteria's fierceness. A team from the University of Rochester Medical Center has identified a protein that allows the bacteria to maintain a low profile in the body, giving the bacteria crucial time to quietly gain a foothold in an organism before the immune system is roused to fight the invader.

"Inflammation immediately after a bacterial infection occurs helps the body fight off bugs like Salmonella quickly," said Jun Sun, Ph.D., the leader of the team and assistant professor of Gastroenterology and Hepatology. "But it may be that Salmonella is especially equipped with tools to allow it to evade the immune system early on, growing quietly and then really making the host quite ill. Salmonella is trickier than we imagined."

Sun's team found that a virulence protein known as AvrA dampens the inflammatory response. That helps the bacteria avoid the wrath of the immune system and gives the infection crucial time to grow and develop before it needs to expend energy to fight off immune cells like neutrophils, which would attack the intruder more quickly if the bacteria attacked the body in a more clear-cut fashion.

"AvrA allows Salmonella to make peace with you, buying the bacteria a little time to survive in the body," said Sun. "That's bad news for the body, because then the bacteria spreads. AvrA allows the bacteria to do harm in the body without the body realizing it. Bacteria have been evolving for millions of years. That gives them some tricks that perhaps we don't understand yet."

AvrA is one of several proteins in Salmonella that affect cells in the wall of the intestines and stomach known as epithelial cells. These cells link up tightly together thanks to molecules known as tight junction

proteins, which form an elaborate barrier to keep molecules and substances in or out of the colon. The bacterium employs several proteins enabling it to loosen these junctions, effectively breaking up the barrier and making the body vulnerable to the infection.

While several of Salmonella's proteins allow it to loosen up and punch through this latticework, Sun's team unexpectedly found that AvrA allows the bacteria to maintain these tight junctions. This ability reduces the body's inflammatory response and allows the bacteria to avoid detection by the immune system for some time, enabling the bacteria to survive in the host. The severe symptoms of infection, including nausea, vomiting, diarrhea, and abdominal cramps, typically hit anywhere from 8 to 72 hours after initial exposure to the bug.

"It's a surprising finding, which is why we've repeated our studies many times and done tests in different experimental models," said Sun, whose team studied the phenomenon in the laboratory, in mice, and in cultured human cells.

AvrA is one of several virulence proteins that Salmonella has at its disposal, using syringe-like molecular machinery to shoot toxins and proteins into cells just seconds after its first encounter with a cell in the small or large intestine. The protein is especially adept at functioning in low-acid locales like the gut and bears close resemblance to a virulence protein known as YopJ that is active in Yersinia -- the bug that caused the Black Plague.

Sun is one of several scientists who have shown that AvrA reduces inflammation in the body, acting to some degree like new arthritis medications by reducing the activity of an inflammatory molecule known as NF-Kappa B.

There are thousands of types of the bug. Sun studied Salmonella Typhimurium, one of the two most common types; that bacterium and Salmonella enteritidis together cause more than half the Salmonella illnesses seen in people. While the current outbreak in tomato involves a much more rare form, Salmonella saintpaul, Sun says that the AvrA gene is in more than 80 percent of Salmonella types overall, including the "saintpaul" variety.

Other researchers working on the project, which was funded by the National Institute of Diabetes and Digestive and Kidney Diseases, include Anne Liao, Yun Zhao, and Yinglin Xia of the University of Rochester; Elaine Petrof of Queen's University in Kingston, Ontario; and Erika Claud of the University of Chicago.

Adapted from materials provided by University of Rochester Medical Center.
http://www.sciencedaily.com/releases/2008/06/080613104801.htm

Fat Mass And Obesity-associated Genes Increase Risk Of Disease In Mexican-Americans

ScienceDaily (Jun. 15, 2008) — A study from the University of Southern California (USC) suggests people of Mexican-American descent who have genetic variants of fat gene FTO and Arachidonate 5-Lipoxygenase (5-LO) had higher triglyceride and lower HDL levels.

"Our results confirm the association between FTO and fat mass and indicate that the 5-LO promoter modifies the association between FTO and lipid levels," says Mary Helen Black, candidate for PhD in Statistical Genetics and Genetic Epidemiology, at the Keck School of Medicine of USC and lead author of the study. "The genetic interaction between 5-LO and FTO was significantly associated with an inverse relationship between triglycerides and HDL levels."

The study examined 1286 participants from 165 Mexican American family members of a proband with a history of gestational diabetes and 107 control trios from the BetaGene study. Results suggest subjects who have the FTO rs9939609 A allele and at least one 5-LO short repeat allele had a 26 percent higher triglyceride count and 8 percent lower HDL cholesterol levels compared to participants with the FTO TT genotype. In contrast, among participants with two 5-LO long repeat alleles, those with an FTO A allele showed very little change in triglycerides or HDL compared to those with the FTO TT genotype.

"Understanding the interaction between these genes may help us understand the mechanism by which FTO affects adiposity. Because obesity and dyslipidemia are often precursors to diabetes, these gene interactions may play a vital role in future drug target development, which is another step toward advancing personalized medicine," Black says.

The findings were presented as an oral presentation on Sunday, June 8, at the American Diabetes Association 68th Scientific Sessions held in San Francisco. Authors of the study "Arachidonate 5-Lipoxygenase (5-LO) Modifies the Association Between Fat Mass- and Obesity-Associated Gene (FTO) and Lipids in Mexican Americans (MA),"include Mary Helen Black, Jaana Hartiala, Anny H. Xiang, Enrique Trigo, Jean M. Lawrence, Thomas A. Buchanan, Richard M. Watanabe, Hooman Allayee.

Adapted from materials provided by University of Southern California, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080610092738.htm

One In Ten Adults In England Has A Non-earlobe Piercing

ScienceDaily (Jun. 15, 2008) — One in ten adults in England have had a piercing somewhere other than their ear lobe, with a quarter experiencing complications, and one in 100 piercings resulting in a hospital admission, according to a study on the British Medical Journal website.

The study, carried out by public health doctors from the Health Protection Agency and the London School of Hygiene and Tropical Medicine, also found that women are three times more likely than men to have a body piercing and the most popular piercing site is the navel.

Over ten thousand people (10,503) aged 16 and over took part in the survey. These are the first published estimates of the proportion of the English population with non earlobe piercings and the rate of complications after having a piercing.

Piercing is more common among women than men, with nearly half the women (46.2%) surveyed aged 16„ years having a body piercing. Of all the piercings in the survey a navel piercing was the most popular (33%), followed by nose (19%), ear (13%), tongue (9%), nipple (9%), eyebrow (8%), lip (4%) and genital (2%).

The type of piercing also varied by gender with nipple piercing being the most popular among men but one of the least popular among women, while navel piercing was by far the most popular in women but was rare in men. Genital piercing, while uncommon, was found to be twice as popular among men as women.

As well as being more likely to have a piercing, people aged 16„ years were also more likely to suffer from complications, with almost a third (31%) reporting problems and one in seven (15.2%) seeking professional help.

Four out of five (80%) piercings were performed in specialist piercing shops, with the researchers saying a "worrying" one in ten (9%) tongue piercings were performed by non-specialists. In every anatomical site, including the tongue and genital areas, they found a number of people who said they had performed the piercing themselves or they'd had it done by a friend or relative.

The most common problems with piercings were swelling, infection and bleeding, with tongue piercings being the most likely to cause problems--almost half resulted in complications. Serious complications were significantly more likely to occur if the piercing had been performed by a non-specialist.

The researchers say the clear trend in piercing by age group in both sexes confirms that piercing is a fairly recent phenomenon and add, if its popularity continues, it could "place a significant burden on health services for many years."

Adapted from materials provided by BMJ-British Medical Journal, via EurekAlert!, a service of AAAS.

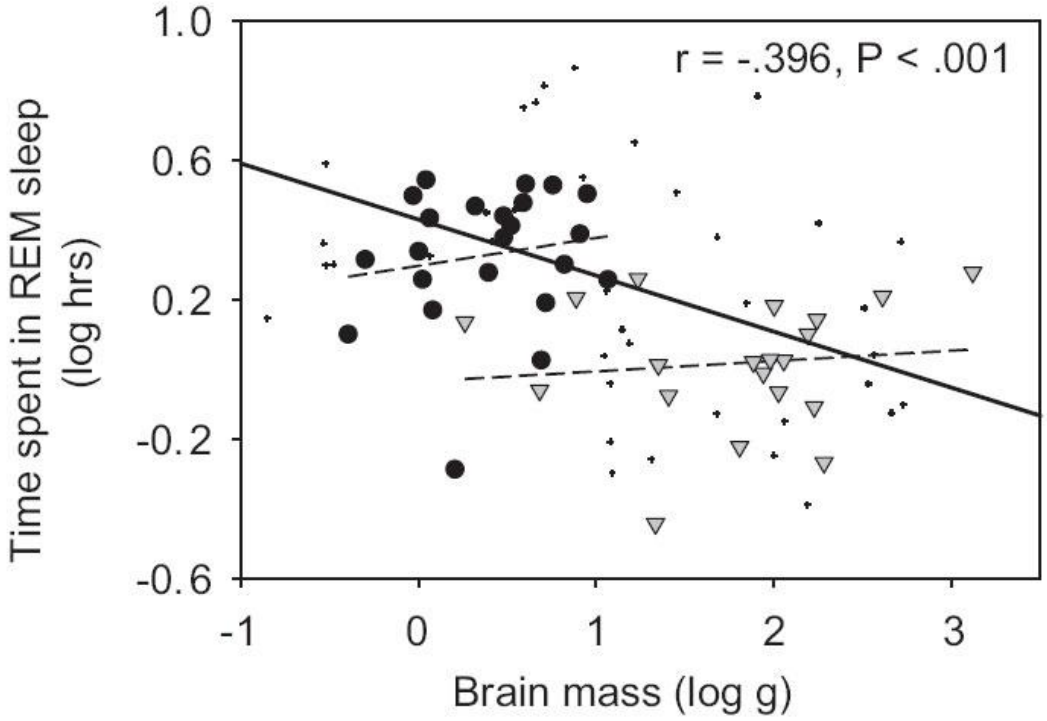
http://www.sciencedaily.com/releases/2008/06/080613103406.htm

Why brainy animals need more REM sleep after all

- 13:50 19 June 2008
- NewScientist.com news service
- Jo Marchant

	Total sleep (h)	% REM sleep	% Brain mass
Southern opossum *Didelphis marsupialis*	19.4	41	0.24
Large hairy armadillo *Chaetophractus villosus*	20.4	28	0.47
Western European hedgehog *Erinaceus europaeus*	10.1	40	0.46
Human *Homo sapiens*	8	31	2.12
Domestic dog *Canis familiaris*	8.6	22	0.5
Domestic cat *Felis sylvestris*	13.2	32	0.87
Cow *Bos taurus*	4	23	0.17
House mouse *Mus musculus*	13.2	11	1.9

Table illustrating how sleep varies with brain size. For each animal, the table gives (a) how many hours of sleep it takes per day, (b) the percentage of that time it spends in REM sleep, and (c) the percentage of its total body mass taken up by its brain (Images: Wikimedia Commons)



When rodents (circles) are compared with primates (triangles), it seems that animals with bigger brains need less REM sleep. But when evolutionary links are controlled for this relationship disappears (Image: John A. Lesku/Sleep Medicine Reviews)

Why do donkeys snooze for just three hours a day, while hairy armadillos are knocked out for more than 20? Biologists have struggled to find any satisfactory explanation for the bewildering variation in how much different mammals sleep.

However, new studies that take evolutionary relatedness into account promise to revolutionise the field. In particular, one large study suggests that REM (rapid eye movement) sleep – during which the brain is highly active – may play a key role in intelligence.

Lab studies in humans already suggest that REM sleep is important for cognitive abilities such as consolidating memories – a good night's sleep – with plenty in the REM phase – can improve people's ability to remember what they have learned in the day by about 15%.

In other species, the evidence is less clear cut. If REM sleep helps learning, then mammals with more developed brains should presumably need more of it, but in the past no such relationship has been found.

Fatal flaw

One of the few biological functions that has been found to correlate with sleep patterns is metabolic rate. Animals with a relatively high metabolic rate for their body size seem to need more non-REM sleep, suggesting that catching extra Zs simply helps them conserve precious energy.

But John Lesku of the Max Planck Institute for Ornithology in Starnberg, Germany, believes these studies had a fatal flaw – researchers were comparing species without taking their evolutionary relationships into account.

He says that big differences in sleep patterns between evolutionary groups can swamp relationships found within those groups (see graph, below right).

So Lesku and his colleagues compiled studies looking at sleep patterns in 83 species of mammals – from opossums and sloths, to cows, beavers, macaques and people – and reanalysed the data using statistical techniques to account for their position on the evolutionary tree.

"These techniques are standard throughout biology," he says, "but for some reason they never permeated sleep research."

'Call to arms'

The results contradict previous work. Once evolutionary relationships were factored in, the data showed that animals with big brains for their body size need a significantly higher percentage of REM sleep – supporting a role in intelligence and cognitive function.

And species with high metabolic rates for their size needed less non-REM sleep, not more. This suggests that they don't sleep to conserve energy. Instead, animals with high metabolic rates may sleep less because they burn more calories, so have to spend more time foraging for food.

Lesku's results first appeared in *American Naturalist* in 2006 (vol 168, p 441). But since then support has been growing for the idea that sleep simply keeps animals immobile and out of harm's way.

So this month he will publish a broader discussion of his results in *Sleep Medicine Reviews*, as a "call to arms" for the field. "It's to emphasise the necessity for these kinds of research," he told **New Scientist**. "Evolution does matter."

'Strongest signal'

Lesku's point of view is supported by another study by Isabella Capellini of Durham University, UK, and colleagues, who tested the strength of the influence that evolutionary relatedness has on sleep patterns – and found it to be highly significant.

"Sleep scientists have ignored the fact that sleep could be affected by evolutionary relationships," says Capellini. "But it's the strongest possible signal."

After taking evolution into account, Capellini's team found that ecological factors are more important than previously acknowledged. For example, species at risk of predation tend to sleep less. "Prey can't afford to sleep for longer," she says. "This indicates that if they still sleep at all, it must do something important."

Journal references: *Sleep Medicine Reviews* (DOI: 10.1016/j.smrv.2007.10.003)

Related Articles

- Wild sloths are no sleepyheads after all
- http://www.newscientist.com/article.ns?id=dn13891
- 14 May 2008
- Do we read too much into our need for sleep?
- http://www.newscientist.com/article.ns?id=mg19726471.400
- 15 March 2008
- Are catnaps as beneficial as actual sleep?
- http://www.newscientist.com/article.ns?id=mg19726444.600

- 21 February 2008
- While you slumber, your brain puts the world in order
- http://www.newscientist.com/article.ns?id=mg19325924.700
- 22 February 2007
- To sleep, perchance to dream
- http://www.newscientist.com/article.ns?id=mg17824015.200
- 28 June 2003

Weblinks

- John Lesku, Max Planck Institute for Ornithology
- http://www.orn.mpg.de/mitarbeiter/lesku.html
- Isabella Capellini of Durham University
- http://www.dur.ac.uk/isabella.capellini/

http://www.newscientist.com:80/channel/life/dn14164-why-brainy-animals-need-more-rem-sleep-after-all.html?feedId=online-news_rss20

Harvard's Three Art Museums Will Share One Name and One Roof

By KATE TAYLOR
June 20, 2008
http://www.nysun.com/arts/harvards-three-art-museums-will-share-one-name/80353/

The students have packed up and left for the summer, and pretty soon Harvard's art museums will go on an extended hiatus, as well.

After many years and many false starts, Harvard is finally launching a major expansion of its art museums. In the process, what have been three separate institutions — the Fogg Art Museum, the Busch-Reisinger Museum, and the Arthur M. Sackler Museum — will be consolidated under one roof, and one name: the Harvard Art Museum.

The Fogg and the Busch-Reisinger will close on June 30, in order for the curators to begin packing up the art. Construction is expected to begin in the fall of 2009 and to be completed in 2013. Until then, a selection of the three museums' collections will be on display in the Sackler, which is located a block away from the other two.

The expansion will preserve the Fogg's landmarked 1927 building, at 32 Quincy St. Previous additions to the building — including Werner Otto Hall, which was built in 1991 to house the Fine Arts Library and the Busch-Reisinger — will be torn down and replaced with a new addition, designed by Renzo Piano. The addition will flow seamlessly into the 1927 building. Perched on top of both will be a glassy penthouse, which will contain three object study centers and a new home for the Straus Center for Conservation. The 1927 building will also be restored, and its systems updated.

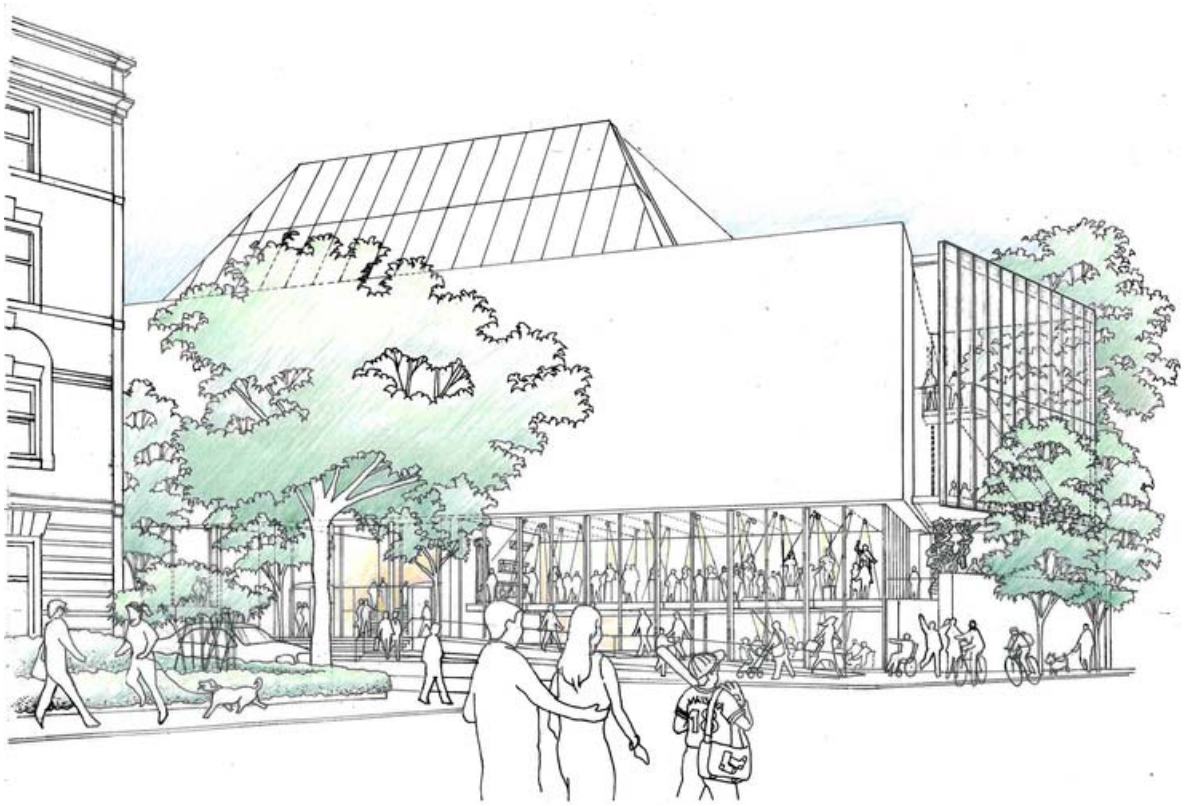
The primary purpose of the expansion is to make the collections more accessible, the director of the Harvard Art Museum, Thomas Lentz, said in an interview. Right now, only 1% of the museums' collections are on display. The expansion will double that amount, while the study centers will offer students, researchers, and members of the public an opportunity to view any work in the collection upon request.

While many major museums have such facilities, Mr. Lentz said that Harvard's new study centers will be unusual in offering access to all objects in the collection, not just works on paper, and in being given such a prime location within the building.

"In terms of prominence and centrality, we're putting the study centers on an equal level with the exhibition galleries," Mr. Lentz said.

By putting the three collections in one building, the expansion is also intended to encourage interdisciplinary research by the museum's curators and Harvard faculty and students. The Busch-Reisinger emphasizes Central and Northern European, and particularly German, art; the Sackler emphasizes ancient, Asian, Islamic, and Indian art, and the Fogg emphasizes Western art, from the medieval period to the present.

Beyond that, the ultimate goal is to make the museum play a bigger role within the life of the university and of undergraduate education, in particular. "Especially at the beginning of the 21st century, where the visual is so privileged, and seems to be the primary vehicle through which people take in information, we're going to have to put in place different mechanisms to better inform students and faculty about the resources we have," Mr. Lentz said.



Mr. Piano was first hired to design a new building for Harvard's art museums in the late 1990s. At that point, the plan was to build a contemporary art museum on a site along the Charles River, about 15 minutes from the other museums. After that idea was scuttled by neighborhood opposition, the next was to build a new museum, with room for storage and conservation, as part of Harvard's new campus in Allston. That plan also drew local opposition, and for now, it has been put on hold in favor of renovating the museums in Harvard Square.

"We're still hoping to build another facility for modern and contemporary art," Mr. Lentz said. "Modern and contemporary art is still a structural gap that we have here in terms of our programming and collection; for us not to have an increased capacity [in that area] is a threat not only to us as an art museum but to Harvard as a teaching institution. There's a huge demand for that material."

Harvard has long had an ambivalent relationship to the arts, confining them either to the realm of scholarship or to extracurricular practice. Harvard doesn't, for example, have a theater major, as Yale does. It has a visual arts major, but it is called "Visual and Environmental Studies," to suggest that the proper course of study includes a strong theoretical and critical component.

"When I arrived [in 2003], the curators were very fond of talking about the alphanumeric bias embedded in academia," Mr. Lentz said. "If it's not a text or a chain of numbers, people don't know how to deal with it."

The new president, Drew Gilpin Faust, has indicated a desire to challenge this ambivalence and integrate art more into the university's academic life. Last fall, she appointed a task force, led by the Shakespeare scholar Stephen Greenblatt, to look into the role of the arts at Harvard.

As Ms. Faust noted in announcing the appointment of the task force, many of Harvard's "peer institutions" have expanded their arts programming and facilities in recent years. Yale, in particular, is in the midst of a large-scale expansion of its arts facilities, which includes the already completed renovation of the Yale University Art Gallery, designed by Louis Kahn; the currently underway restoration of the Art & Architecture building (now called the Rudolph Building, after its architect Paul Rudolph), and the addition of a new building designed by Charles Gwathmey (who is also in charge of the restoration of the Rudolph Building), intended to house the art history department.

It will be some years before Harvard can compete with Yale's strength in the arts. The refined master plan for the Allston campus, which is due in December, will likely include an arts and cultural center, with both an art museum and performing arts facilities. In 2013, the new Piano art museum will open on Quincy Street. (The Sackler, down the block on the corner of Quincy and Broadway, will close at that point. The Fine Arts Library, which is moving now to a temporary location, may ultimately relocate in that building.)

Mr. Lentz declined to say what the budget for the expansion would be. He said that Harvard would be a "generous donor" to the project, but that the museum will also have to do its own significant fund-raising. (The Harvard Art Museum does not have a board of trustees, though it does have a "visiting committee," which includes collectors such as Patricia Phelps de Cisneros and Emily Rauh Pulitzer, as well as institutional leaders such as the president of the J. Paul Getty Trust, James Wood, and the director of the Museum of Fine Arts in Boston, Malcolm Rogers.)

"We're pleased with our success [so far] in terms of fund-raising, but we have a steep hill to climb," Mr. Lentz said. "We hope that with our mission, we can make a good argument for why people should support what we're doing here."

http://www.nysun.com/arts/harvards-three-art-museums-will-share-one-name/80353/

Why the Guggenheim won't open a branch in Guadalajara

By Jason Edward Kaufman | From Museums | Posted: 19.6.08

NEW YORK. The Guggenheim Foundation's proposal to build a museum in Guadalajara has failed because the foundation's director Thomas Krens refused to scale down the project to fit Mexico's art budgets, says Guadalajara businessman and art collector Jorge Vergara.

Mr Krens says that Mr Vergara has "absolutely nothing to do with our project in Guadalajara". However as a powerful figure in the region—Mr Vergara owns the nutrition and cosmetics company Omnilife, four football clubs, and produces films—he is in a position to offer an insight into the processes that have resulted in the impasse.

He says that Mr Krens insisted on a project comparable to the Guggenheim Bilbao, with a $170m construction budget and a $20m fee to the Guggenheim, both of which are far more than the government and private backers in Mexico could afford.

The project began in 2004 when a private consortium in Guadalajara hired the Guggenheim to undertake a $2m feasibility study for a branch, which was envisioned as a tourist destination that would transform the capital of the state of Jalisco. Mexican architect Enrique Norten won a competition to design a 24-storey tower. When the City approved donation of the land in 2007, officials predicted the museum could be completed in time for the Pan-American Games scheduled for Guadalajara in 2011.

As recently as March of this year, the director of the Guadalajara Capital Cultural consortium, Fernando Fernandez, told a local newspaper that he remained optimistic—however the project has now stalled. "We finished the feasibility study three years ago and have had no contact with the client for more than 18 months," says a Guggenheim spokeswoman.

Guadalajara officials estimate the total costs for the proposed museum could top $300m, but according to news reports the consortium had lined up only $4m in pledges by spring of last year. Mr Vergara says a building of no more than $30m might be possible, and that the fee would have to be reduced if the project were to move forward.

The Guggenheim Foundation has always sought to construct architecturally significant satellites with the capacity to host the foundation's large-scale travelling exhibitions. It proceeds with projects only when there is secure and ample funding to complete and operate them.

Meanwhile, the Guggenheim recently announced that Mr Krens would step down as head of the foundation as soon as a successor is named, and he would consult on international projects, most notably the Guggenheim's Abu Dhabi outpost, designed by Frank Gehry and scheduled to open in 2012.

http://www.theartnewspaper.com/article.asp?id=8018

An Elite Law Degree — in 2 Years

Northwestern University is today announcing a new choice for those applying to its law school: a degree in just two years.

Such an option would have been impossible until 2004, when the American Bar Association lifted a requirement that law degrees follow six semesters of instruction. In 2005, the University of Dayton introduced a two-year option that officials there say has been a success. Northwestern is among the bigger names in legal education, however, so its move may have more of an impact.

The Northwestern program, like Dayton's, is one of five semesters. Starting next year, some Northwestern law students will begin their courses the summer immediately after they are admitted, rather than in the fall. Then students would enroll in the regular fall and spring semesters for the next two academic years, leaving time for the traditional law internship between the two full years. Students would complete the same number of courses and credits in the two- and three-year programs, with accelerated students simply taking an extra course most semesters.

David Van Zandt, dean of the law school, said in an interview Thursday that no decision had been made about whether tuition would differ for the program. While Northwestern currently charges tuition of $42,672 for a year of law school, Van Zandt said that the decision may be to charge by the program and not the semester. The financial attraction to the program, he said, is much more likely to be the ability to be earning a salary a year earlier — not an insignificant matter when many Northwestern law grads pull in $150,000 to $200,000 in their first jobs.

The two-year option is part of a broader reform of the law school curriculum, including the addition of new courses to be required of both two-year and three-year students. The curriculum was designed based on focus groups with many law firms and other entities that employ lawyers. Van Zandt said that Northwestern specifically asked the employers whether they would have any hesitations about hiring law grads who complete the program at a speedier pace, and that the employers didn't care at all — and some said that they were excited about hiring such graduates.

While the two-year option will have the same curriculum as the traditional program, Van Zandt said that to be admitted to it, applicants will be required to have two or three years of "substantive work experience" after college. While this is typical of Northwestern law admissions, it is not a requirement for the three-year program. People with work experience are likely to have "the good time management" necessary, he said.

Northwestern hopes to admit 25-40 students into a two-year program next year. Van Zandt said he expected the program to be popular and that students would not be put off by the need to finish requirements on a schedule that will be compressed. Northwestern has a joint J.D.-M.B.A. program that used to be four years and when it switched to three, forcing students to do more work each semester, applications skyrocketed, he said.

Lori Shaw, dean of students at Dayton's law school, said that the first graduates of the two-year program have just completed their degrees. While she said several years of data should be analyzed before drawing firm conclusions, all the early results are positive, she said. Academically, the students perform as well as those taking three years to graduate. The average age is about three years older.

Shaw said she was particularly pleased to see that about 20 percent of the first cohort received honors for volunteer work they did while in law school, while others worked on the *Dayton Law Review.* There was no evidence that the two-year students were unable to participate in the full law school experience, she said. "They find the time to do things," she said. "It's fascinating to see how much they can do."

While Northwestern's two-year option is the most dramatic reform being announced today, there are other curricular changes as well. Northwestern is adding three new required courses (to the nine currently required, largely following a traditional law curriculum), starting with the two-year program and eventually being required of everyone. The new requirements are:

Quantitative analysis (accounting, finance and statistics).

Dynamics of legal behavior (teamwork, leadership and project management).

Strategic decision making.

These topic areas were grouped by faculty members based on the focus groups of what legal employers need, Van Zandt said. He said that there were some surprises in that the strongest push for more quantitative analysis among graduates came from nonprofit groups that hire lawyers, not from corporate law firms.

A theme behind the new courses and plans to revamp existing courses is an emphasis on communication skills, Van Zandt said. In addition to traditional legal writing (a memo, a brief), he said employers urged the law school to stress such skills as the ability to deliver advice to a client in a one-page memo. A common complaint was that lawyers appear to have been taught to "waffle," Van Zandt said. He hopes that Northwestern will be training lawyers who will when appropriate "make a firm recommendation" and know how to communicate that — either to fellow lawyers or people who aren't lawyers.

For students in the traditional three-year program, Northwestern is also introducing new options, especially in the third year. Several programs will allow students to spend up to a semester in full-time "experiential" programs, such as working in a legal clinic, working as an apprentice in a law firm outside the United States, or for those considering academic careers, various research options.

The emphasis on expanded practical education mirrors recommendations issued last year by the Carnegie Foundation for the Advancement of Teaching. In March, the law school at Washington and Lee University announced a plan to replace the entire third-year curriculum with experiential courses and programs.

Van Zandt said that the changes at Northwestern and elsewhere suggested to him that more law schools would soon be creating options to overhaul or eliminate year three. "Legal education is extremely conservative," he said, "but long term this is inevitable."

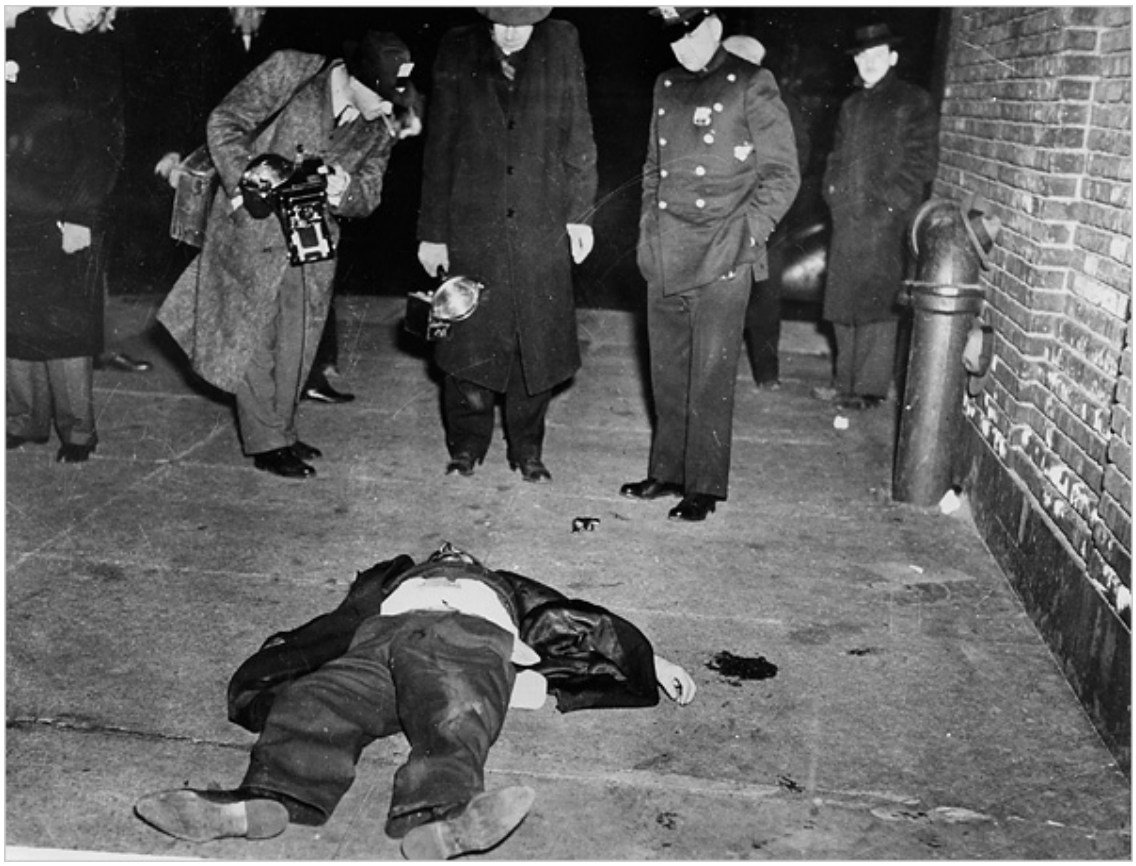
— Scott Jaschik

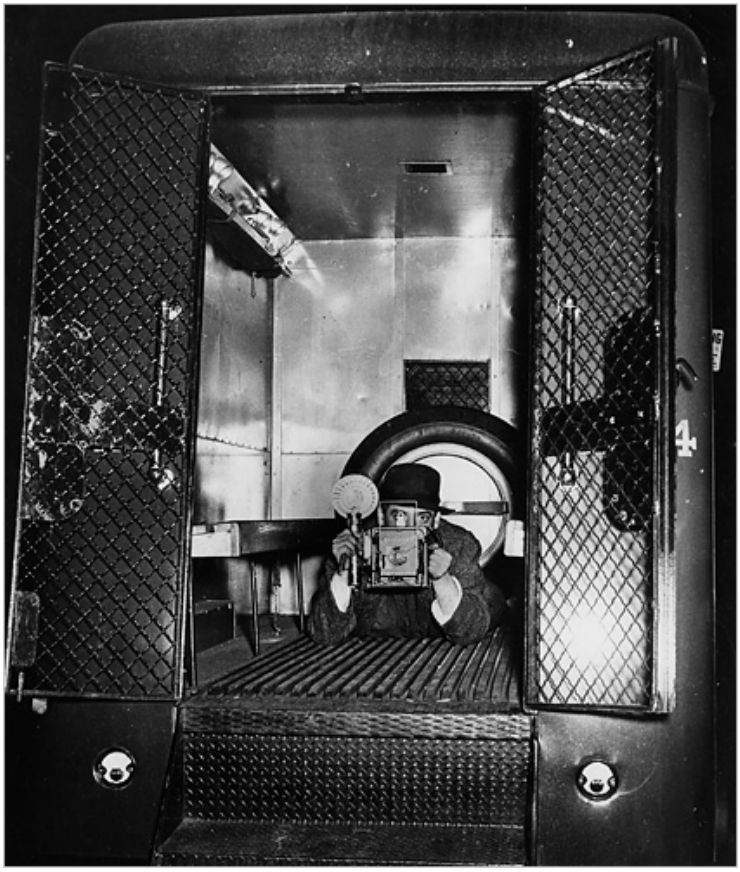
The original story and user comments can be viewed online at http://insidehighered.com/news/2008/06/20/northwestern.

Crime Was Weegee's Oyster

By JOHN STRAUSBAUGH

ON the north side of Broome Street, between the Bowery and Elizabeth Street, you can stand where a dead guy once lay. Of course in New York City you can stand on lots of spots where dead people once lay. There are, after all, "eight million stories in the naked city," as the narrator of "The Naked City," the





1948 film noir classic, intoned. But as Andrew Izzo sprawled on this sidewalk on the Lower East Side in 1942, Arthur Fellig, one of the city's most famous photographers, took his picture.

Late on the night of Feb. 2, 1942, Izzo and accomplices tried to hold up the Spring Arrow Social & Athletic Club, near the Bowery. Shot by an off-duty cop, Izzo staggered toward Elizabeth Street and fell dead on his face, his gun skittering across the sidewalk.

The first photographer on the scene was Fellig, better known as Weegee. He was almost always the first photographer on the scene.

Born Usher Fellig in 1899, in an eastern province of Austria, he came with his family through Ellis Island (where his name was Americanized to Arthur) to the Lower East Side in 1910. He left home as a teenager and began

working as an assistant to a street photographer who shot tintypes of children on a pony. Through the 1920s he worked as a darkroom assistant at The New York Times and Acme Newspictures, which was later absorbed by U.P.I. Photos.

Weegee's peak period as a freelance crime and street photographer was a whirl of perpetual motion running from the mid-1930s into the postwar years. Ceaselessly prowling the streets during the graveyard shift, he took thousands of photographs that defined Manhattan as a film noir nightscape of hoodlums and gangsters, Bowery bums and slumming swells, tenement dwellers and victims of domestic brawls, fires and car crashes. He gave it its enduring nickname, the Naked City.

"Weegee captured night in New York back when it was lonely and desolate and scary," said Tim McLoughlin, editor of the "Brooklyn Noir" anthology series, the third volume of which has just been published by Akashic Books. "He once said he wanted to show that in New York 10 ½ million people lived together in a state of total loneliness."

Manhattan has changed a lot since Weegee's heyday. Now the Naked City is probably best preserved in the archives of the International Center of Photography, which houses some 20,000 of Weegee's photographs, along with hundreds of his filmstrips, the newspapers and magazines where his work originally appeared, and two of his hats.

Christopher George, an archivist at the center, has created online maps of many Manhattan sites associated with Weegee. He led me to Centre Market Place, between Broome and Grand Streets. It's now a quiet row of renovated town houses in the shadow of the former Police Headquarters building, itself converted to luxury apartments.

But when Weegee lived in a single room at 5 Centre Market Place from the mid-1930s to 1947, the street was a drab block of tenements inhabited by reporters and photographers who worked the crime beat. No. 4, known as "the shack," was their

main hangout. Frank Lava's gunsmith shop, with its wooden revolver sign, was at No. 6. Weegee lived over the John Jovino Gun Shop at 5. (It has since moved, with its own revolver sign, around the corner to Grand Street.) You can still see over the door at No. 7 the gold-lettered sign for Sile Inc., purveyor of "Humane Police Equipment."

Every morning the narrow block was crowded with paddy wagons (Weegee called them "pie wagons"), bringing in the night's arrests from various precincts for booking and processing. The newshounds crowded the sidewalk for the morning "perp walk," when cops paraded their handcuffed catch.

"The perp walk is a combination of courtesy and hubris on the part of the police department," said Mr. McLoughlin, a former court officer who bought his first service revolver at Jovino's shop in 1983. "The press wants the photos, and the police want the credit. So the perp walk could be rather elaborately planned."

Weegee sometimes bribed the police to bring a perp in a different entrance, "so he'd be the only guy standing there with his camera, while everybody else was waiting around the corner," Mr. McLoughlin said. One of his most striking perp-walk shots was of Norma Parker, a pretty young woman who in 1936 held up a number of restaurants on lower Broadway using a cap pistol, for which The Daily Mirror nicknamed her the Broadway Gun Girl.

"Crime was my oyster," Weegee wrote in his 1961 memoir, "Weegee by Weegee." "I was friend and confidant to them all. The bookies, madams, gamblers, call girls, pimps, con men, burglars and jewel fencers." For his behind-bars portraits of famous gangsters like Dutch Schultz, Legs Diamond, Waxey Gordon and Mad Dog Coll, colleagues called him "the official photographer for Murder, Inc."

An enthusiastic promoter of his own legend (he billed himself as “Weegee the Famous” and “the World’s Greatest Photographer”), Weegee claimed that his elbow itched when news was about to happen. “Somehow, the word spread that I was psychic because I always managed to have my pictures in the hands of the paper before any news of the event was generally known,” he wrote in “Weegee by Weegee.” Co-workers gave him his nickname after the rage of the time, the Ouija board, and he phoneticized it as Weegee.

His prescience was aided by the police and fire department short-wave radios he installed near his bed (though he had no telephone, claiming he was “allergic” to it) and in his ’38 Chevy. In the car’s trunk he carried photo equipment, a typewriter for photo captions, clothes, salamis and cigars.

From Centre Market Place, Weegee often strolled over to the Bowery for both work and relaxation. Walking the Bowery today, you encounter striking juxtapositions, like homeless men from the Bowery Residents’ Committee shelter cadging smokes outside the former CBGB next door, now a John Varvatos store selling $500 sweaters. In Weegee’s day similar culture clashes happened at Sammy’s Bowery Follies (267 Bowery, between East Houston and Stanton Streets), which from 1934 to 1970 attracted what The New York Times once described as a mixed crowd of “drunks and swells, drifters and celebrities, the rich and the forgotten.”

Weegee (who disparaged The Times as a paper for the “well-off Manhattan establishment”) called Sammy’s “the poor man’s Stork Club” and wrote in the newspaper PM in 1944: “There’s no cigaret girl — a vending machine puts out cigarets for a penny apiece. There’s no hatcheck girl — patrons prefer to dance with their hats and coats on. But there is a lulu of a floor show.”

Among the regulars, he wrote in his 1945 book, “Naked City,” was a woman they called Pruneface and a midget who walked the streets dressed as a penguin to promote cigarettes. When the midget got drunk, Weegee wrote, he “offered to fight any man his size in the house.”

Weegee held two book parties there. At the photography center Mr. George showed me silent-film footage taken in 1946 at the party for Weegee’s second book, “Weegee’s People.” Pretty uptown blondes and dowagers in pearls mingle with toothless crones and panhandlers, as models parade in their foundation garments, and a man with a flea circus puts his tiny performers through their paces.

Next door in front of No. 269 (now the Bowery & Vine liquor store), Weegee performed one of his “psychic” feats. Late on Christmas Eve 1942, he snapped a shot of a local inebriate collapsed on the sidewalk. As Weegee continued on he heard a commotion behind him. The man had stumbled into the street and been struck down by a taxi. Weegee labeled his photographs of the incident “Before and After.”

Around the corner, the proprietor of a cafe at 10 Prince Street, where a coffee shop is today, was smoking a cigarette outside on the evening of Nov. 16, 1939, when an unknown gunman shot him dead. When Weegee arrived moments later, the body was still lying in the doorway, and the fire escapes of all the tenements on the block, which remain largely unchanged today, were crowded with gawkers. He captioned the photograph “Balcony Seats at a Murder.”

Sixty years later history sadly repeated itself at this address when robbers shot and killed the owner and the manager of the Connecticut Muffin Company.

By the end of the war, Weegee was in fact “Weegee the Famous.” Short and pug-ugly, with a boxy Speed Graphic camera always in hand and a cigar permanently in his teeth, he was recognized throughout the city and, increasingly, the country.

His book inspired “The Naked City,” a film in which Weegee makes a fleeting, Hitchcock-like appearance. That prompted a move to Hollywood, where Weegee hobnobbed with stars and got tiny acting parts in a few more films. But he never really fit into what he called “the Land of the Zombies” and moved back to Manhattan in 1951.

His crime photography days were over. Until his death in 1968 he experimented with film and trick photography and toured the United States and Europe, giving lectures and enjoying his fame. In his travels he met Peter Sellers on the “Dr. Strangelove” movie set; an excerpt from an audiotaped conversation is on YouTube.

In 1968 the theater and film director Syeus Mottel, who was experimenting with still photography, was walking in Washington Square Park with a girlfriend. “I see Weegee sitting on a bench looking very forlorn, with an old camera, really a piece of junk, hanging from his neck,” Mr. Mottel recently recalled. “When I asked if he had any advice for a young photographer, he said, ‘Yeah, sharp elbows.’ ” While the young woman charmed Weegee, Mr. Mottel took photographs. When it came time for dinner, Weegee suggested Bernstein-on-Essex, a kosher Chinese restaurant.

In 1957, suffering from diabetes, Weegee took a small apartment at 451 West 47th Street in Hell’s Kitchen, a town house owned by his friend Wilma Wilcox, an amateur photographer. When he died he left the place crowded with equipment “and stacks and stacks of thousands of photos and negatives strewn about,” Mr. George said. “His philosophy of archiving was to keep everything in a barrel, so if anyone wanted anything, they’d come over and fish.” Much of that material came in the early 1990s to the International Center of Photography, which has mounted several exhibitions.

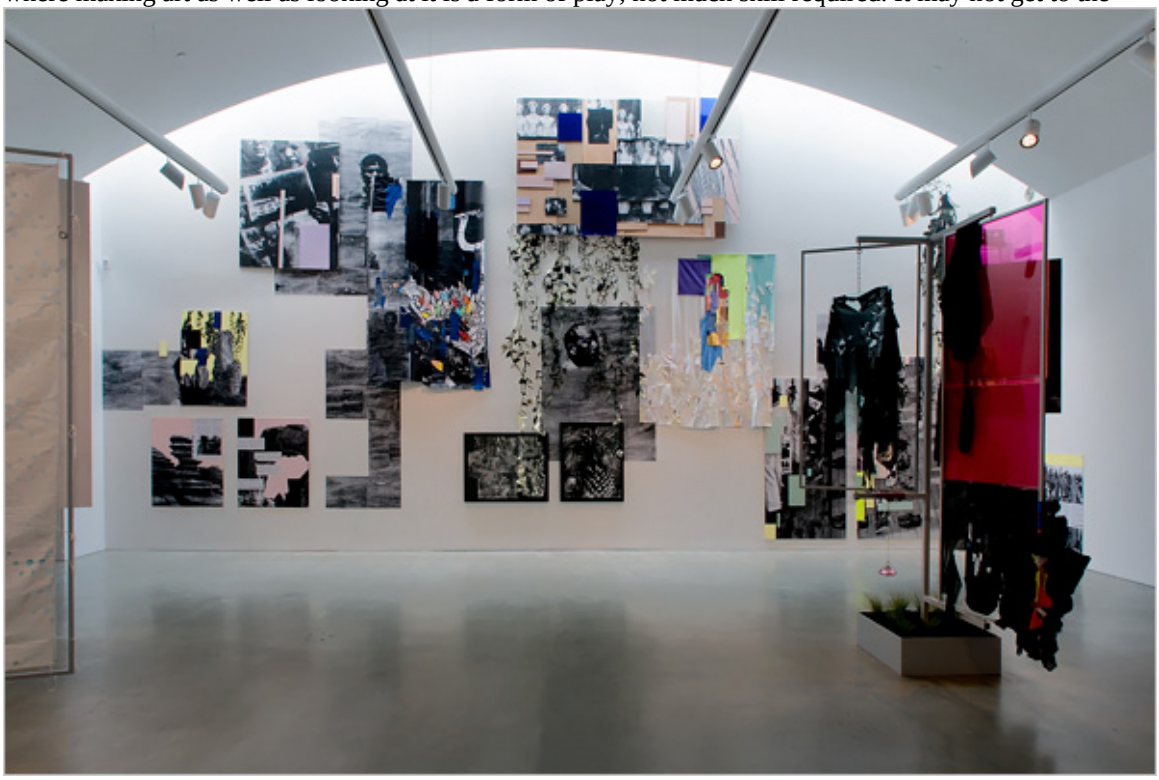
“Along with everything else there was a cardboard box labeled ‘Weegee,’ ” Mr. George said. “It was opened several months after it arrived. Weegee was really in there.” It was his cremated remains. “Apparently some staffers got the heebie-jeebies from having the ashes around,” he said, “so I.C.P. arranged to have them dispersed at sea.”

http://www.nytimes.com/2008/06/20/arts/design/20expl.html?_r=1&ref=design&oref=slogin

Just Enough Seriousness to Go Around

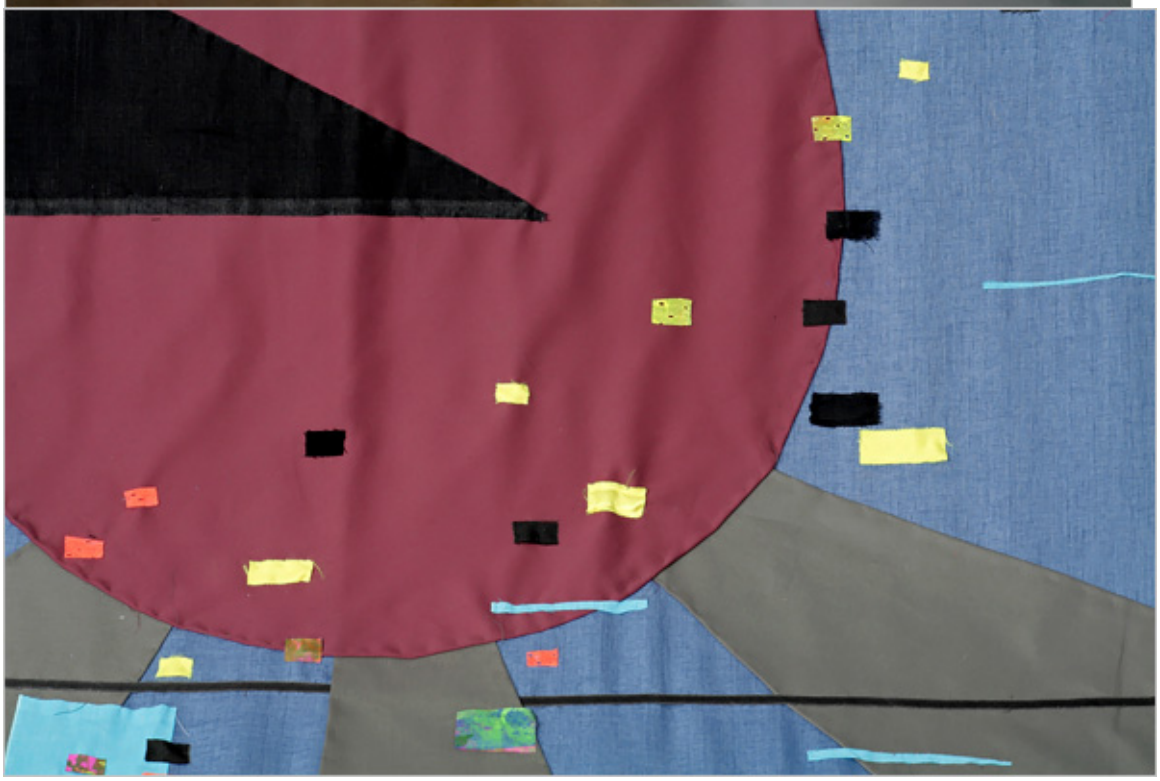
By ROBERTA SMITH

ANNANDALE-ON-HUDSON, N.Y. — Forget about Hans Haacke revealing the list of industrial magnates in the provenance of a famous masterpiece, or documenting the neglected tenements owned by museum trustees. The latest form of artists' scrutiny of museums — widely known as institutional critique — seems to be congenial entertainment. Turn museums into places where fun happens, and where making art as well as looking at it is a form of play, not much skill required. It may not get to the



roots of things, but it undermines art's pretensions to seriousness, personal expression and permanence. Sort of.

There's quite a bit of fun to be had in the two summer shows at Bard College's Center for Curatorial Studies and the center's Hessel Museum of Art, both overseen by Maria Lind, the new director of the center's two-year master's program, who has had a peripatetic career as a curator in Europe. Her debut shows at Bard present the viewer with monumental walls of bright paper to confront, newly built stairs to



climb, unusual seating to try and art jokes to get. The two exhibitions feature five little-known, often interesting artists from Europe and deftly float some ideas about collaboration, irreverence and artists as curators. Luckily there is just enough seriousness to go around.

The main show is the languidly titled “Personal Protocols and Other Preferences: A Collective Exhibition With Works by Michael Beutler, Esra Ersen and Kirstine Roepstorff” at the center. The show’s contents and installation have been largely determined by its three young participants, all working in Berlin. They have also made loose attempts at collaborating on artworks, but their effort still reads as a series of slightly overlapping solo exhibitions.

The most noticeable disruptions of museum business as usual are long, high walls built of big blocks of brightly colored paper, made on the spot by Michael Beutler, as indicated by rolls of paper, thin sticks of bamboo and two large work tables seen in one gallery. The walls contradict the chilly white bareness of the center’s galleries with a blast of festive dishevelment — suggesting the handiwork of an extra-large child — but they also rather quickly start to look bulky and poorly made.

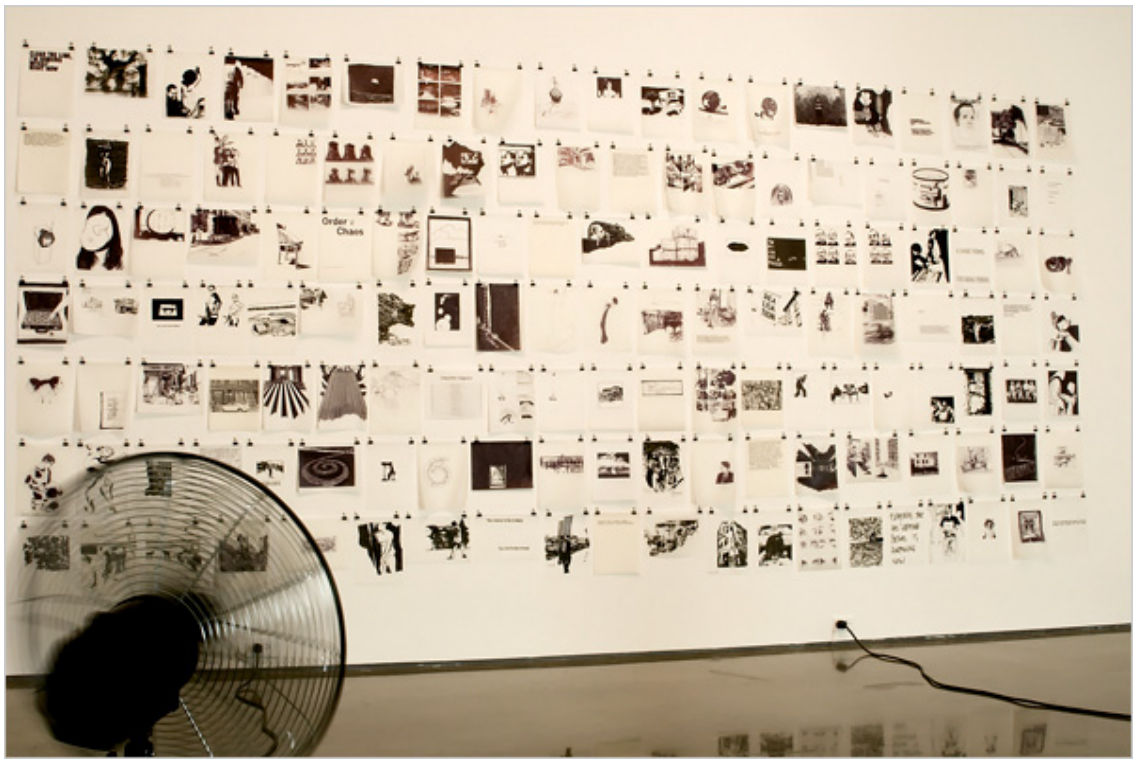
Mr. Beutler’s other contributions to the show work better because they have jobs to do. Kirstine Roepstorff has hung some of her large, obstreperous paper and fabric collaged wall hangings at the very top of the center’s tall walls, and Mr. Beutler has

built a staircase and walkway (across one of his own walls) to afford a better view of her efforts. Built from fresh-smelling two-by-fours and planks, the structure has a sturdiness that contrasts strikingly with Mr. Beutler's slovenly paper walls.

Ms. Roepstorff, who had her first solo show in this country at the Drawing Center in Manhattan last year, seems to have her own issues with slovenliness. Her barely assembled pieces can be either large or quite large. Punctuated by grainy appropriated photographs, like a recurring image of women reading newspapers on a subway, they veer between colorful quiltlike patchworks of fabric scraps and painted wood or Goth-style compositions of black, white and silver Mylar, and occasionally venture into three dimensions with mobilelike standing structures. Messy and scattershot, these works hit all kinds of social and aesthetic issues and evoke an enervating laundry list of other artists' work.

There is plenty of ambition here, and there is nothing wrong with Ms. Roepstorff's evident disdain for traditional crafts (artistic and otherwise). But excepting a large fabric collage titled "The Self" and a series of large black-and-silver collages, too much of this work simply drowns itself out. Mr. Roepstorff is an artist to watch, but her work would benefit from more hard looking on her part.

Mr. Beutler also built a large, high platform for Esra Ersen, the artist in this show who is most likely to hold your attention and even take a little piece of your heart. Ms. Ersen specializes in poetic yet socially probing documentaries, which she usually presents in modest settings of her own design. For example, for the showing of the tapes "Brothers and Sisters" and "This Is the Disney World," Ms. Ersen designed stools and simple easel-like structures to hold the thin screens and arranged it all on a painted plywood floor that by coincidence echoes Mr. Beutler's walls. You might almost be watching the tapes from the security of a well-maintained day care center, yet they are all about insecurity. "Brothers and Sisters" surveys the hard lives of illegal immigrants from Africa in Turkey. "This Is the Disney World" interviews young Turkish boys abandoned by their destitute parents who live by begging in the streets of Istanbul. As you watch, the innocence implicit in Ms. Ersen's setting may begin to feel uncomfortably removed from reality, all the more so because of Mr. Beutler's elevated platform.



Ms. Ersen's two other pieces are more recent and even better. "Parachutist in Third Floor, Birds in Laundry" is a three-channel piece centering on interviews with people who have immigrated to Sweden, mostly from Turkey (where Ms. Ersen was born) but also from South America. As the immigrants talk

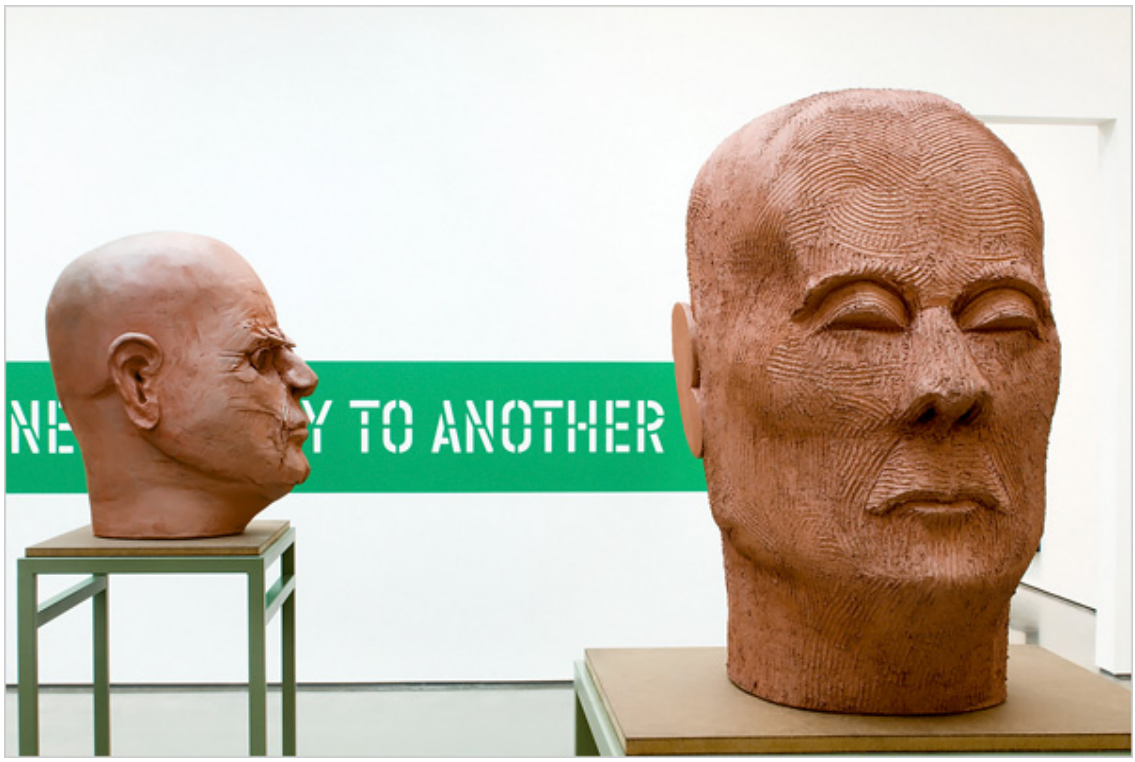
wistfully about their lives, a second screen shows close-ups of a woman painting little scenes in the stairwell of a down-at-the-heels apartment building; as it is finished, each scene turns out to depict something from the interview. On a third screen two ebullient immigrant girls race giddily through the hallways of another building, pausing to give rapid-fire interpretations of the little landscapes painted on its walls. You end up hoping that their energy and sharpness will never be thwarted, and also a bit stunned by the collaborative intricacies Ms. Ersren has orchestrated. The work's floor-level screens can be viewed from two tiny bleachers that resemble stairs.

And don't miss "Growing Older (Dis) gracefully," which centers on a lovely British widow in her late 70s, who submits at Ms. Ersen's behest to a horrible makeover that includes very high heels. It speaks to some of the central neuroses of our time.

The second exhibition, "I've Got Something in My Eye," in the Hessel Museum, has been orchestrated by Liesbeth Bik and Jos van der Pol, two humorously inclined Dutch Conceptualists who have worked together since 1995 as Bik van der Pol. As required, most of the works are from the Hessel collection, with the artists adding some of their own pieces and a few loans from the Van Abbemuseum in Eindhoven, the Netherlands.

Bik van der Pol's own works are negligible, excepting a homage to Yves Klein involving live canaries. But the par has put together a marvelous show. There are revealing, often humorous juxtapositions — like training the disapproving eyes of the big, threatening terra-cotta busts that are Thomas Schütte's "Dirty Dictators" on other art — and some corners of pure poetry. And on view from the Van Abbemuseum is Artur Zmijewski's "Them," a video in which several groups of people with stridently opposed beliefs (patriotic Catholics, leftists and so on) are set up in a studio. They are given art supplies and asked to make emblems of their beliefs and then to "correct" the emblems made by the other groups. No one dies, but things get very heated.

Turning a museum's collection over to artists almost always has interesting results.



"Personal Protocols and Other Preferences: A Collective Exhibition With Works by Michael Beutler, Esra Ersen and Kirstine Roepstorff" and "I've Got Something in My Eye" continue through Sept. 7 at the

Center for Curatorial Studies/Hessel Museum of Art at Bard College, Annandale-on- Hudson, N.Y.; (845) 758-7958, bard.edu/ccs.

http://www.nytimes.com/2008/06/20/arts/design/20bard.html?ref=arts

In Egypt at Crossroads, a Faustian Arrangement

By DINITIA SMITH

CAIRO MODERN

By Naguib Mahfouz

Translated by William M. Hutchins. 242 pages. The American University in Cairo Press. $19.95.

The Nobel Prize-winning author Naguib Mahfouz, who died in 2006, was Egypt's Balzac. In his 33 novels, including his masterpiece, "The Cairo Trilogy"; his 16 short story collections; 30 screenplays; and several plays he invented a vast human comedy populated by the inhabitants of Cairo's sprawling metropolis whose lives embodied the history of his country: wily shopkeepers and heartless bureaucrats, wheedling beggars, voluptuous women, whores and holy men, desperate parents and starving students.

Mahfouz's early novels are about Egypt's Pharaonic past: Khufu (Cheops), builder of the Great Pyramid; the Hyksos invaders. But in the 1940s he began to confront what could only be called the country's crisis of modernity. From that period came "Cairo Modern," originally published in 1945 (a little before his better-known work, "Midaq Alley"), now translated into English for the first time.

The novel takes place in the 1930s, with Egypt at a crossroads. Its traditional mores are being increasingly undermined by European influences. It is a period when cloistered women still peer down from latticed balconies into Cairo's alleyways, while others stroll the city's wide boulevards dressed in the latest Parisian couture. For the first time Egyptian universities are open to women. The country is still under British influence and ruled by the corrupt and gluttonous King Farouk, along with a degenerate bureaucracy of Turks and Circassians, while unemployment is rampant and students go hungry.

At the novel's heart is an intriguing premise. The central character Mahgub, 24, is, as Mahfouz was, a philosophy student at King Fuad University (now Cairo University). Mahgub is a lean and literally

hungry man from a peasant background. To assuage his grinding hunger and to help his ailing father, Mahgub enters into a devil's bargain. He agrees to marry, sight unseen, the mistress of a prominent — and married — government official in return for a good job that will enable him to send money home to his pious family in the dusty provincial town of al-Quanatir. But lo, on their betrothal day he discovers that the woman, Ihsan, is not only the former girlfriend of his own good friend, but a high school student who, with "her jet black hair, her pure, ivory complexion and her rosy lips," he has long desired.

Mahfouz's portraits of Ihsan and other women are especially compassionate and complex. Ihsan is Egypt's new woman, a lover of Goethe and Italian painting who planned to go to the university and have a career. But the threat of hunger is there for her too, and it will destroy her youthful radiance.

She has entered into this arrangement through the connivance of her greedy father, who has lost his money on drugs and gambling and wants her to marry a rich man for his own gain. Ihsan will be Mahgub's wife, but she will also allow her husband's employer, Qasim, to visit her on certain nights while Mahgub makes himself conveniently scarce, wandering the bars and cafes of the city.

Needless to say, things do not turn out as expected. Mahfouz's brilliance lies in portraying the mixture of good and evil in human character. Mahgub and Ihsan develop a tenderness toward each other and, it seems, a passionate sex life, while sustaining their Faustian agreement with the wealthy Qasim. They become enamored of the comforts this arrangement brings — a good apartment, a big office and a telephone for him — and of having enough to eat.

The book contains vivid descriptions of the social life of the city's young set, a riverboat party on the Nile, the yacht progressing "through the waves as if swimming through the resplendent light," a society benefit featuring a performance of Molière in a mansion surrounded by luxuriant gardens.

Yet Mahgub is a Dostoyevskyan character and moral nihilist, and caught up in his new comforts, he neglects to send money to his parents. The novel's climax, when all the characters come together at once, takes on the feeling of a French farce, and Mahgub is left with a horrifying realization about himself.

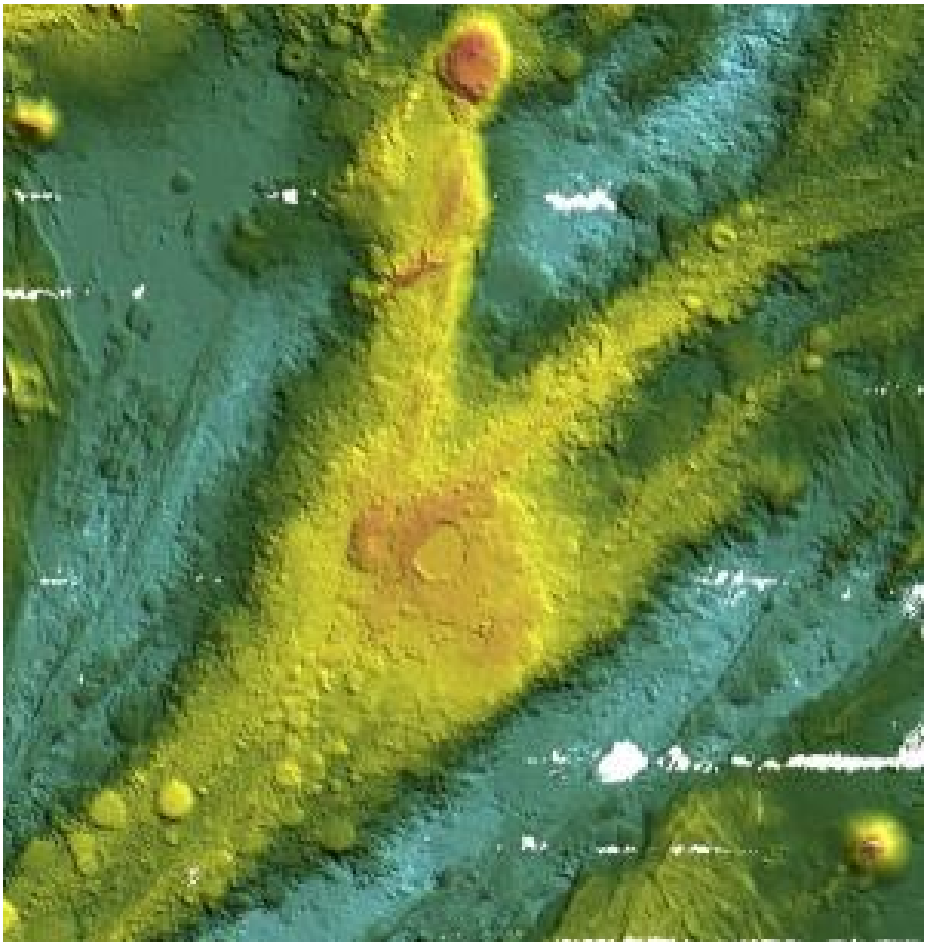
Unfortunately this central story is book-ended by schematized philosophical discussions between the characters, who are made to represent different positions: Mahgub the nihilist of course, and three others who practically disappear after the first five chapters: Ali Taha, a Comtean and socialist; Ahmad Badir, a journalist and a member of the nationalist Wafd party; and Ma'mun Radwan, an Islamic fundamentalist. (In 1994 Mahfouz survived an attack by a knife-wielding fundamentalist after renewed controversy over his portrayal of the Prophet Muhammad as a womanizer in his 1959 novel "Children of the Alley.")

Mahfouz wrote in a classical Arabic, which is comparable to Shakespearean English and doesn't lend itself easily to translation, especially in the dialogue. Yet the sometimes stilted, decorous language in "Cairo Modern," punctuated by its moments of sensuality and vibrant description, takes on a kind of pleasing rhythm of its own.

Despite its flaws the novel is a singular look at a historical moment in the lives of Egyptians raised in traditional households whose existences were rocked by modernity. If you want to understand the hunger, the corruption, the bitterness that led to Gamal Abdel Nasser's 1952 coup against Farouk, the rise of fundamentalism and the intense Arab nationalism that accompanied it, you will find it played out here in this book.

http://www.nytimes.com/2008/06/19/books/19smith.html?ref=books

Active Submarine Volcanoes Found Near Fiji



A multibeam sonar three-dimensional image of the recently discovered volcano named Lobster. (Credit: Richard Arculus, Australian National University)

ScienceDaily (June 20, 2008) — Several huge active submarine volcanoes, spreading ridges and rift zones have been discovered northeast of Fiji by a team of Australian and American scientists aboard the Marine National Facility Research Vessel, Southern Surveyor.

On the hunt for subsea volcanic and hot-spring activity, the team of geologists located the volcanoes while mapping previously uncharted areas. Using high-tech multi-beam sonar mapping equipment, digital images of the seafloor revealed the formerly unknown features.

The summits of two of the volcanoes, named 'Dugong', and 'Lobster', are dominated by large calderas at depths of 1100 and 1500 metres.

During the six-week research expedition in the Pacific Ocean, scientists from The Australian National University (ANU), CSIRO Exploration & Mining and the USA, collaborated to survey the topography of the seafloor, analysing rock types and formation, and monitoring deep-sea hot spring activity around an area known as the North Lau Basin, 400 kilometres northeast of Fiji.

The voyage's Chief Scientist, ANU Professor Richard Arculus describes the terrain – the result of extreme volcanic and tectonic activity – as spectacular. "Some of the features look like the volcanic blisters seen on the surface of Venus," he says.

"These active volcanoes are modern day evidence of mineral deposition such as copper, zinc, and lead and give an insight into the geological make-up of Australia," he says.

"It provides a model of what happened millions of years ago to explain the formation of the deposits of precious minerals that are currently exploited at places like Broken Hill and Mt Isa. It may also provide exploration geologists with clues about new undiscovered mineral deposits in Australia.

"These deep-sea features are important in understanding the influences that have shaped not only our unique continent but indeed the whole planet," Professor Arculus says.

Such discoveries highlighted man's lack of knowledge about the world's oceans. "We know more about the surface of Mars than we know about the ocean seafloor," Professor Arculus says.

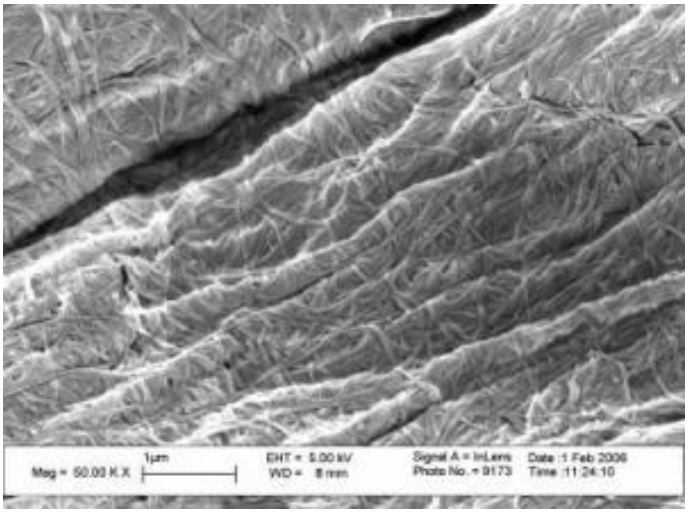
CSIRO's Director of Research Vessels, Captain Fred Stein, says the expedition was a humbling experience. "It was a reminder that at the beginning of the 21st century it is still possible – on what is often regarded as a thoroughly explored planet – to discover a previously unknown massif larger than Mt Kosciuszko," he says.

"We are fortunate that we can offer the scientific capability of the Southern Surveyor to Australian scientists. It's the only Australian research vessel that can provide the opportunity to conduct such valuable research to make these kinds of discoveries possible."

Adapted from materials provided by CSIRO Australia.

http://www.sciencedaily.com:80/releases/2008/06/080619093259.htm

Coats Of Cellulose From Bacteria Yield Greener, Stronger Natural Composites



Researchers report a new method of depositing bacterial cellulose on plant fibers to enhance durability and strength of composite materials. (Credit: Courtesy of American Chemical Society)

ScienceDaily (June 20, 2008) — Researchers in the United Kingdom report the first use of bacteria to deposit sticky coatings of cellulose on the surfaces of plant fibers, a process that may expand the use of natural fibers in renewable plastic composites used as strong, lightweight materials for cars, airplanes, and other products.The coated fibers provide strength and will make composites more durable without affecting their biodegradability. They are more suitable for recycling (or compositing) than commonly used petroleum-based composites, the researchers say.

In the new study, Alexander Bismarck and colleagues point out that synthetic composite materials now in use are made from nonrenewable, petroleum sources which are becoming more expensive. These materials not only are difficult to break down, they also create environmental hazards when disposed. Existing composites made from natural fibers show poor adhesion qualities and must be strengthened by using other synthetic coupling agents, some of which are toxic, the researchers note.

The researchers coated hemp and sisal fibers with nano-sized particles of bacterial cellulose through a special fermentation process. The coated sisal fibers showed much better adhesion properties than the original fibers without losing their mechanical properties, ideal properties for their use in composites, the researchers say. The modified hemp fibers also had improved adhesion properties but showed a loss of strength, they note.

Journal reference:

1. Alexander Bismarck et al. **Surface Modification of Natural Fibers Using Bacteria: Depositing Bacterial Cellulose onto Natural Fibers To Create Hierarchical Fiber Reinforced Nanocomposites**. *Biomacromolecules*, June, 2008 DOI: 10.1021/bm800169g

Adapted from materials provided by American Chemical Society.

http://www.sciencedaily.com/releases/2008/06/080616091602.htm

New Method Drastically Reduces Wait Time For New Teeth Implant

ScienceDaily (June 20, 2008) — The use of the growth hormone in oral implantology implantología has managed to regenerate the bone and hasten the integration between the bone base and the dental implant. The process allows to reduce from six months to two weeks the wait time to place the crown which replaces the lost tooth on the oral implant.

This advance has been the result of the research of the doctoral thesis "Growth hormone and osteointegration in the oral cavity" by Cecilia Vander Worf Úbeda, supervised by Professors Antonio Cutando Soriano and Gerardo Gómez Moreno (School of Odontology of the University of Granada, Spain).

"We must consider --says Cutando- that a dental impant is successful when it is possible to get a firm, stable and lasting joint between the bone substratum and the crown constructed on it, in which we call prosthetic restoration. That was the goal of this research work, which has also managed to improve the patients' quality of life reducing the wait period to receive a new tooth".

The Works were developed all through three years with a methodology applied to 13 dogs, with the authorization of the Ethical Committee of the University of Granada.

Hastened biointegration

The research carried out by Cecilia Vander Worf obtained a good and fast biointegration, which consists of "the direct biochemical joint between the raw bone and the surface of the implant, demonstrable through electronic microscopy, irrespective of any mechanical joint mechanism".

Osteointegration requires the formation of new bone around the implant, a process resulting from remodelling the interior of the bone tissue. "The process --says Vander Worf- starts with the osteoclasts, the cells responsible for reabsorbing the necrotic area originated by bone milling during the preparation of the bone recipient bed. Together with them, vascular neoformation will provide the cell elements, the osteoblasts, which will create new bone able to interact with the titanium oxide layer f the implant for the biological integration of it".

The doctoral thesis has been carried out in the Framework of the Research Project "tudy of the synergism between Melatonin and Growth Hormone (GH) on the processes of osteointegration in dental implants and bone regeneration in the oral cavity", financed by the Spanish Ministry of Health and Consumptiom, the Spanish Ministry of Education and Science, the Carlos III Health Institute and the Andalusian Council.

Journal references:

1. Cutando et al. **Melatonin stimulates osteointegration of dental implants**. *Journal of Pineal Research*, 2008; 0 (0): 080219193035321 DOI: 10.1111/j.1600-079X.2008.00573.x
2. Cutando et al. **Melatonin reduces oxidative stress because of tooth removal**. *Journal of Pineal Research*, 2007; 42 (4): 419 DOI: 10.1111/j.1600-079X.2007.00425.x

Adapted from materials provided by Universidad de Granada, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080617105005.htm

It's All In Your Head - The Effect Of Metaphor On Web Navigation

ScienceDaily (June 19, 2008) — In the internet world of sites, pages, lounges and whatever else is out there, most of us have found ourselves 'lost in hyperspace', a frustrating experience of having lost track of where we are, where we're going, or where to find what we're looking for.

However, hope is at hand, through a recent study by a PhD Student at the University of Leicester, Kine Dorum,

Based on the notion that people create images or maps in their heads to represent the world around them, designers and developers often attempt to help people find their way by working on the principle that virtual environments should be made to look and feel as similar to the real world as possible. One example is the computer desktop with its files, folders, and 'trash can'.

Kine Dorum's work suggests that how things look may not necessarily be an all-important factor when designing information spaces.

Comparing three identical-looking websites based on different real-world scenarios, the study shows that people tend to rely on prior knowledge of a space when moving around, rather than how realistic the spatial layout is.

Kine explained: "In other words, we don't need an image of a door presented on the screen in order to see a door in our mind, and a button on a website does not necessarily need to look like a real button.

"The effect of familiarity is so strong that it can have a greater impact than other factors that have previously been found to affect people's ability to use computer environments, such as individual thinking styles and a person's ability to orient themselves in space."

So, while tapping into people's knowledge about the real world, these findings could indicate that there should be fewer constraints on the visual design of computer environments than are currently applied.

Through her work as a graphic and web designer Kine came to the field of cognitive psychology with experience of and interest in people's differing ability to use computer based material. In her PhD project she is making use of psychological theory to test and gain insight into what happens at the interface between people and computers. The goal is to identify a set of key characteristics of both the user and the computer environment, which can be used to predict behaviour and performance, and inform design decisions.

The research is being presented to the public at the University of Leicester on Thursday 26th June. The Festival of Postgraduate Research introduces employers and the public to the next generation of innovators and cutting-edge researchers, and gives postgraduate researchers the opportunity to explain the real world implications of their research to a wide ranging audience.

Adapted from materials provided by University of Leicester, via AlphaGalileo.

http://www.sciencedaily.com/releases/2008/06/080619105140.htm

Gesture Computer Interface Device Developed For Surgeons

Two surgeons manipulate brain images using a hand gesture recognition system developed by researchers at Ben-Gurion University of the Negev. This was the first time, the authors believe that such a system was successfully implemented in an actual "in vivo" neurosurgical brain biopsy. It was tested at the Washington Hospital Center in Washington, D.C. The system is trained to read specific movements so a sterile environment can be maintained without touching a screen, keyboard or mouse while reading digital images during a medical proceedure. (Credit: Ben-Gurion University of the Negev, Israel)

ScienceDaily (June 19, 2008) — Researchers at Ben-Gurion University of the Negev (BGU) in Israel have developed a new hand gesture recognition system, tested at a Washington, D.C. hospital, that enables doctors to manipulate digital images during medical procedures by motioning instead of touching a screen, keyboard or mouse which compromises sterility and could spread infection, according to a just released article.

The new article reports on what the authors believe is the first time a hand gesture recognition system was successfully implemented in an actual "in vivo" neurosurgical brain biopsy. It was tested at the Washington Hospital Center in Washington, D.C.

According to lead researcher Juan P. Wachs, a recent Ph.D. recipient from the Department of Industrial Engineering and Management at BGU, "A sterile human-machine interface is of supreme importance because it is the means by which the surgeon controls medical information, avoiding patient contamination, the operating room (OR) and the other surgeons." This could replace touch screens now used in many hospital operating rooms which must be sealed to prevent accumulation or spreading of contaminants and requires smooth surfaces that must be thoroughly cleaned after each procedure -- but sometimes aren't. With infection rates at U.S. hospitals now at unacceptably high rates, our system offers a possible alternative."

Helman Stern, a principal investigator on the project and a professor in the Department of Industrial Engineering and Management, explains how Gestix functions in two stages: "[There is] an initial calibration stage where the machine recognizes the surgeons' hand gestures, and a second stage where surgeons must learn and implement eight navigation gestures, rapidly moving the hand away from a "neutral area" and back again. Gestix users even have the option of zooming in and out by moving the hand clockwise or counterclockwise."

To avoid sending unintended signals, users may enter a "sleep" mode by dropping the hand. The gestures for sterile gesture interface are captured by a Canon VC-C4 camera, positioned above a large flat screen monitor, using an Intel Pentium and a Matrox Standard II video-capturing device.

The project lasted for two years; in the first year Juan Wachs spent a year working at IMI (Washington D.C.) as an informatics fellow on the development of the system. During the second year, there was a contract which ended between BGU and WHC (Washington Hospital Center) where Wachs continued working at BGU with Professors Helman Stern and Yael Edan, the project's principle investigators.

At BGU, several M.Sc theses, supervised by Prof. Helman Stern and Yael Edan, have used hand gesture recognition as part of an interface to evaluate different aspects of interface design on performance in a variety of tele-robotic and tele-operated systems. Ongoing research is aiming at expanding this work to include additional control modes (e.g., voice) so as to create a multimodal telerobotic control system.

In addition, Dr. Tal Oron and her students are currently using the gesture system to evaluate human performance measures. Further research, based on video motion capture, is being conducted by Prof. Helman Stern and Dr. Tal Oren of the Dept. of Industrial Engineering and Management and Dr. Amir Shapiro of the Dept. of Mechanical Engineering. This system, combined with a tactile body display, is intended to help the vision impaired sense their surroundings.

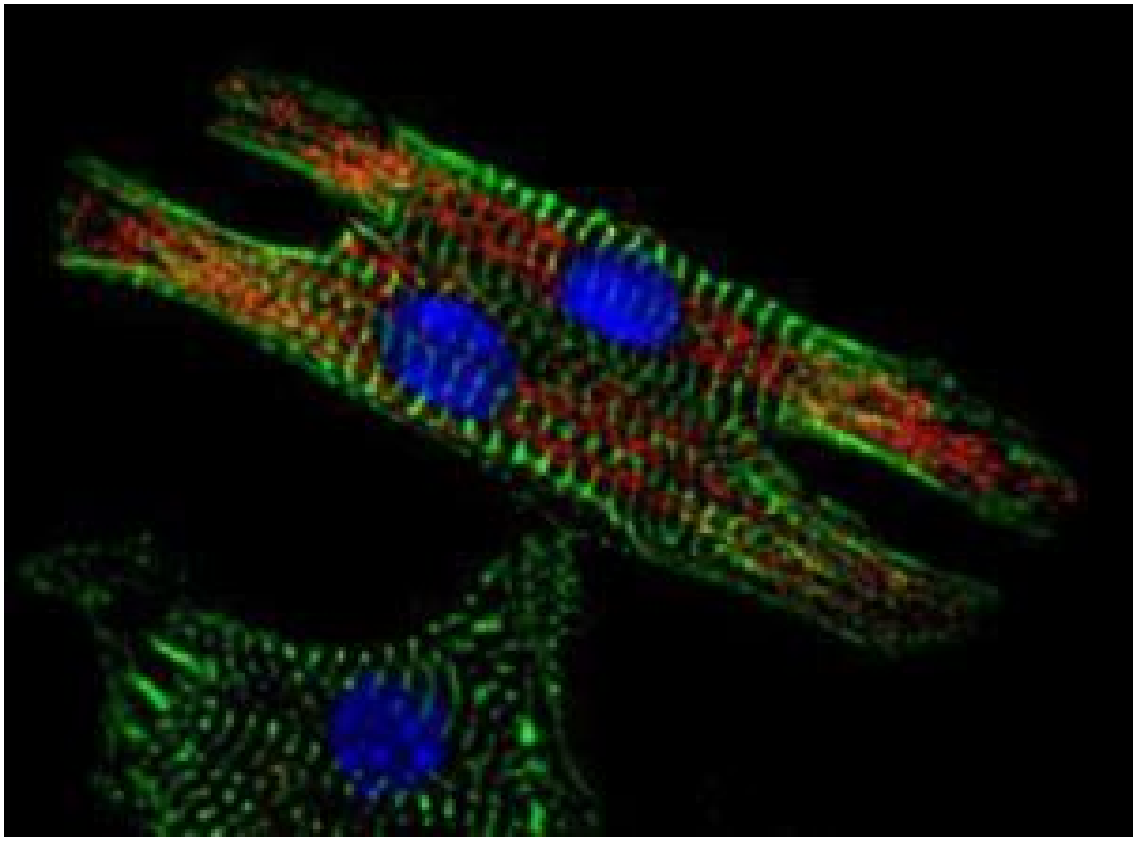
Journal reference:

1. Wachs et al. **A Gesture-based Tool for Sterile Browsing of Radiology Images**. *Journal of the American Medical Informatics Association*, 2008; 15 (3): 321 DOI: 10.1197/jamia.M241

Adapted from materials provided by Ben-Gurion University of the Negev, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080616101137.htm

Tissue Regeneration: New Source Of Heart Stem Cells Discovered



Pu and Zhou tagged the Wt-1 expressing epicardial cells with a fluorescent red protein, then allowed the cells to differentiate. The image shows a descendent cardiomyocyte (green) that carries the same red marker, and another cell that arose from different origins. (The blue stain indicates cell nuclei). (Credit: Bin Zhou, MD (Children's Hospital Boston))

ScienceDaily (June 23, 2008) — Researchers at Children's Hospital Boston are continuing to document the heart's earliest origins. Now, they have pinpointed a new, previously unrecognized group of stem cells that give rise to cardiomyocytes, or heart muscle cells. These stem cells, located in the surface of the heart, or epicardium, advance the hope of being able to regenerate injured heart tissue.

This finding, published online by the journal Nature on June 22, comes on the heels of parallel cardiac stem cell discoveries in 2006, at both Children's and Massachusetts General Hospital. Then, the Children's team found that a specific stem cell or progenitor, marked by expression of a gene called Nkx2-5, forms many components of the heart: heart muscle cells, vascular smooth muscle cells, and the endothelial cells lining blood vessels in the heart's left-sided chambers. The team at MGH found a related progenitor, marked by expression of the Isl1 gene, that produces these same cell-types in the right-sided heart chambers.

Now, researchers at Children's have shown that heart muscle cells can also be derived from a third type of cardiac progenitor, located within the epicardium and identifiable through its expression of a gene called Wt1.

"There's a lot of interest in finding places to obtain new cardiomyocytes, because in heart failure, you lose cardiomyocytes, so the only way to reverse heart failure is to make more of these cells," said William Pu, MD, a pediatric cardiologist at Children's who was the study's senior investigator.

Although epicardial cells are known to give rise to smooth muscle and endothelial cells during coronary vessel formation, nobody previously thought that epicardial cells might turn into cardiomyocytes. "I couldn't believe it at first, myself," said Bin Zhou, MD, a research fellow in Pu's laboratory and the study's first author.

The results were independently corroborated by researchers from the University of California, San Diego. Using a different genetic marker, Tbx18, the UCSD team also showed that cardiomyocytes can be derived from the epicardium, and their study will be published in the same issue of Nature.

Pu and Zhou showed that a specific population of cells in the epicardium, marked by Wt1 expression, not only differentiated into cardiomyocytes, but also smooth muscle cells, endothelial cells and fibroblasts (found in connective tissue).

"If you're going to regenerate a tissue, you need to regenerate the whole tissue, not just the cardiomyocytes," said Pu. "This progenitor population contains all the potential to regenerate multiple tissue types within the heart."

In recent years, the scientific literature has described many progenitors for cardiomyocytes, Pu added, but the markers used frequently did not play a direct role in heart development. For example, Sca-1 and c-Kit are markers that most stem cells express throughout the body, with no cardiac or developmental specificity.

"I think our best chance of getting a cell to do what we want is to modify what it was designed to do," Pu elaborated. "Some of these other progenitors were isolated in the adult heart, but we don't know what they do in the normal heart, and what they're related to in the embryo. However, we clearly know what progenitors expressing Wt1, Nkx2-5, and Isl1 do in the fetus: they can make fibroblasts, blood vessels, and cardiomyocytes. Therefore we think we have a good shot, in the adult heart, of recapitulating these events."

Pu considers his and Zhou's discovery to be a fortunate accident. They were trying, instead, to study a different gene, GATA4, by deleting it in the epicardium. "The tool we created for that experiment irreversibly marks the cells involved, so you can see where their descendants are headed in normal development," Pu explained. "Unexpectedly, we saw that these epicardial cells were becoming cardiomyocytes--it was a lucky observation."

Using an enzyme called Cre recombinase, Pu and Zhou labeled epicardial cells in live mouse embryos with red fluorescent protein (RFP). Each time the Wt1 gene in these cells was activated, RFP lit up. Since the marker is inherited by descendants of the Wt1-expressing cell, the researchers could identify these descendants by looking for RFP.

"If the marker shows up in a cardiomyocyte, then I know that cardiomyocyte came from the Cre-expressing progenitor," said Pu.

At the moment, scientists are still trying to figure out whether and how the Wt1-expressing progenitors relate to the progenitors reported in 2006.

"What we think is that very early on, our particular progenitor expresses Nkx2-5 and Isl1, but quickly loses expression of both and starts expressing Wt1," said Pu. "Think of a lineage hierarchy with Nkx2-5 and Isl1 at the top, and Wt1 as a branch. These two lineages separate pretty early, before the heart is present in the embryo. However, the Wt1-expressing progenitor may retain some of the developmental capabilities of the progenitors expressing Nkx2-5 and Isl1."

Pu and Zhou now want to know whether the epicardium in an adult mouse could be induced to make cardiomyocytes. "If so, obviously this would be much more translatable to human studies," Pu said. Other ongoing questions are whether this newly-discovered progenitor is truly multipotent (able to turn into all

other cell types), how multipotency is controlled, and whether this can be used therapeutically to benefit adults with heart failure.

The fact that the Wt1-expressing progenitors can also differentiate into fibroblasts in the developing heart suggests that they can contribute to scar formation in the adult heart after injury, Pu added. "But if we can turn the progenitors away from making scars, and instead turn them towards making cardiomyocytes, that would be pretty exciting."

Put another way, Pu and Zhou would love to learn what controls a progenitor's choice--to become a fibroblast, a smooth muscle cell, or a cardiomyocyte--and develop ways of "biasing progenitors to make the choice or choices we want," says Pu. "We still don't know how we can manipulate these progenitors, and there's no way to predict which ones will be useful. But I think having more choices is good, because then hopefully one of them will work."

The study was funded by the National Heart, Lung and Blood Institute of the National Institutes of Health, USA, and by a charitable donation from E.P. Marram and K.K. Carpenter.

Journal reference:

1. Zhou et al. **Epicardial progenitors contribute to the cardiomyocyte lineage in the developing heart**. *Nature,* Published online 22 June 2008 DOI: 10.1038/nature07060

Adapted from materials provided by Children's Hospital Boston, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com:80/releases/2008/06/080622224433.htm

Urologists Identify Seven Biomarkers That May Help Pinpoint Prostate Cancer Recurrence

Drs. Claus Roehrborn (right), chairman of urology, and Shahrokh Shariat have identified seven biomarkers that may help pinpoint prostate cancer recurrence. (Credit: Image courtesy of UT Southwestern Medical Center)

ScienceDaily (June 23, 2008) — A simple blood test may help doctors better predict whether prostate cancer will recur or spread in patients who have undergone surgery for the disease, UT Southwestern Medical Center researchers have found.

In a study published in the June 15 issue of Clinical Cancer Research, UT Southwestern scientists identified a panel of seven biomarkers that can predict with 86 percent accuracy which prostate cancer patients will experience a recurrence and progression of the disease. Biomarkers are proteins circulating in a patient's blood that are specific to a disease.

Current risk assessment methods, which include stage and grade of cancer and the level of prostate-specific antigen, can predict prostate cancer recurrence with about 70 percent accuracy.

"There are several unresolved issues in the clinical and surgical management of prostate cancer, one of them being the identification of men who have insignificant cancers and can be followed, and another being the identification of men most likely to have spread of disease and early or late recurrence," said Dr. Claus Roehrborn, chairman of urology at UT Southwestern and one of the study's authors. "In the future, once we can reliably identify those patients, we may be able to offer additional treatment to counteract that risk and give those men a better chance for a permanent cure. The panel of biomarkers is an important step in this direction."

For nine years, Dr. Shahrokh Shariat, who is now a resident in urology at UT Southwestern and the study's lead author, has been collaborating with basic-science researchers and clinicians to find a comprehensive group of biomarkers associated with prostate cancer that could more accurately predict the biological behavior of the disease.

Using commonly available blood testing methods, Dr. Shariat and his team measured the levels of seven biomarkers in 423 patients who were subsequently surgically treated with a radical prostatectomy and bilateral lymphadenectomy.

Of the study participants, 75 had a recurrence of their cancer. All 75 had elevated levels of at least several of the seven biomarkers. Dr. Shariat's seven-biomarker model was able to accurately predict the risk for recurrence 86.6 percent of the time.

"We found that a combination of independent yet complementary markers may provide a more accurate prediction outcome compared to single markers," Dr. Shariat said. "This could help physicians provide individualized care and targeted therapy for patients. It will also allow us to design clinical trials to target these individual biomarkers."

Prostate cancer is the most commonly diagnosed cancer and the second leading cause of cancer death in men in the United States. Although prostate-removal surgery and radiation therapy have been successful in controlling the disease, up to 40 percent of patients experience a relapse.

"A prediction tool based on the biomarkers we tested could improve the accuracy of standard models and help doctors counsel patients better about their risk for prostate cancer recurrence and help to determine the course of treatment," Dr. Shariat said. "There is no doubt that we are approaching a time when use of proper biomarkers will help detect, monitor and manage the progression of this disease, as well as assist with therapeutic decisions."

The next step is to explore the role of these biomarkers in patients treated with other therapies, such as radiation, and patients with a different range of disease severity.

Currently, the seven-biomarker panel is being externally validated in a clinical trial at two medical institutions, one in the United States and the other in Europe.

Dr. Jose Karam, a resident in urology at UT Southwestern, was also involved in the study.

An international team of researchers from the University of Montreal; Vita-Salute University in Milan, Italy; and Baylor College of Medicine contributed to the research.

Adapted from materials provided by UT Southwestern Medical Center.

http://www.sciencedaily.com/releases/2008/06/080617142857.htm

Testosterone Replacement Benefits Older Men With Low Testosterone, Studies Suggest

ScienceDaily (June 23, 2008) — In older men with low testosterone levels, testosterone replacement therapy improves their risk factors for cardiovascular disease and diabetes, according to two new studies.

Testosterone deficiency becomes more common with age, occurring in 18 percent of 70-year-olds, said a coauthor of both studies, Farid Saad, PhD, of Berlin-headquartered Bayer Schering Pharma. Low testosterone levels are linked to the metabolic syndrome--a cluster of metabolic risk factors that increase the chances of developing heart disease, stroke, and type 2 diabetes--and other health problems, including loss of bone and muscle mass, depression, and decreased libido.

Yet the risks and benefits of hormone replacement therapy are unclear in older men, he said.

Saad's research showed that restoring testosterone to normal levels in hypogonadal, or testosterone-deficient, men led to major and progressive improvements in features of the metabolic syndrome. Furthermore, men older than 63 benefited as much as younger men, they found. Treatment lasted a year and used a slow-release, injectable form of the hormone (testosterone undecanoate) that is not yet available in the United States.

All 95 men in the studies (ages 34 to 69 years) had the metabolic syndrome. To receive this diagnosis, patients must have three of the following five risk factors: increased waist circumference (abdominal fat), low HDL ("good") cholesterol, high triglycerides (fats in the blood), high blood pressure, and high blood sugar.The first study showed that testosterone treatment significantly reduced waist circumference, total cholesterol, LDL ("bad") cholesterol, triglycerides, and body mass index (a measure of body fat). Treatment also increased "good" cholesterol. Improvements were progressive over 12 months, indicating that benefits may continue past a year, Saad said.

In the second study, the researchers divided the patient population into three groups by age: less than 57 years, 57 to 63 years, and more than 63 years. They found that the oldest men had similar improvements in metabolic risk factors to the youngest men.Additionally, the investigators looked at the degree of testosterone deficiency before treatment. This beginning level of testosterone deficiency did not predict the beneficial outcome, they found. Men whose subnormal testosterone levels were not as low as the others had similar improvements in metabolic risk factors to men with the lowest levels, according to Saad.

"We conclude that if elderly men have a deficiency of testosterone, it is worthwhile to treat them with testosterone," he said.

The results will be presented at The Endocrine Society's 90th Annual Meeting in San Francisco.

Researchers from The Netherlands and Germany collaborated on these studies. Study participants received treatment in a hospital clinic in Bremerhaven, Germany, which provided free care and testosterone through the German social health care system.

Disclosure: Bayer Schering makes a brand of testosterone undecanoate. Saad is an employee of Bayer Schering and contributed to the study design, he reported.

Adapted from materials provided by The Endocrine Society, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080617124016.htm

'Feeling Fat' Is Worse Than Being It, German Study Finds

ScienceDaily (June 23, 2008) — The quality of life of adolescents who think they are too fat is worse than for adolescents who really are obese. This was a result of the all Germany Health Interview and Examination Survey for Children and Adolescents (KiGGS) of the Robert Koch Institute, as presented by Bärbel-Maria Kurth and Ute Ellert in the current edition of Deutsches Ärzteblatt International.

In the course of the KiGGS study, almost 7000 boys and girls aged between 11 and 17 years were weighed and asked about their self-assessment, ranging from "far too thin" to "far too fat." In addition, they all completed a questionnaire about quality of life. As a result of their analysis, the scientists established that about three quarters of adolescents are of normal weight. Almost 55% of the girls, but just under 36% of the boys thought that they were "too fat," although only about 18% of the adolescents were actually overweight. 7% to 8% of the adolescents were underweight.

The quality of life is lower in obese adolescents. However, this correlates to a large extent with self-evaluation. If adolescents think they are "far too fat," they forfeit a lot of their quality of life, whatever their actual weight. This is particularly marked with girls. On the other hand, if they consider their weight "just right," their quality of life is the same as if they were of normal weight, even if this is not true. The proportion of adolescents who think they are overweight has been increasing more rapidly in recent years than the proportion of those who really are overweight.

In an accompanying editorial, Johannes Hebebrand points out that adolescents are exposed to considerable social pressure to be thin. He thinks that it is remarkable that as many as 40% of the subjects thought that their weight was right, in spite of the ideal of slimness and the stigma of being overweight.

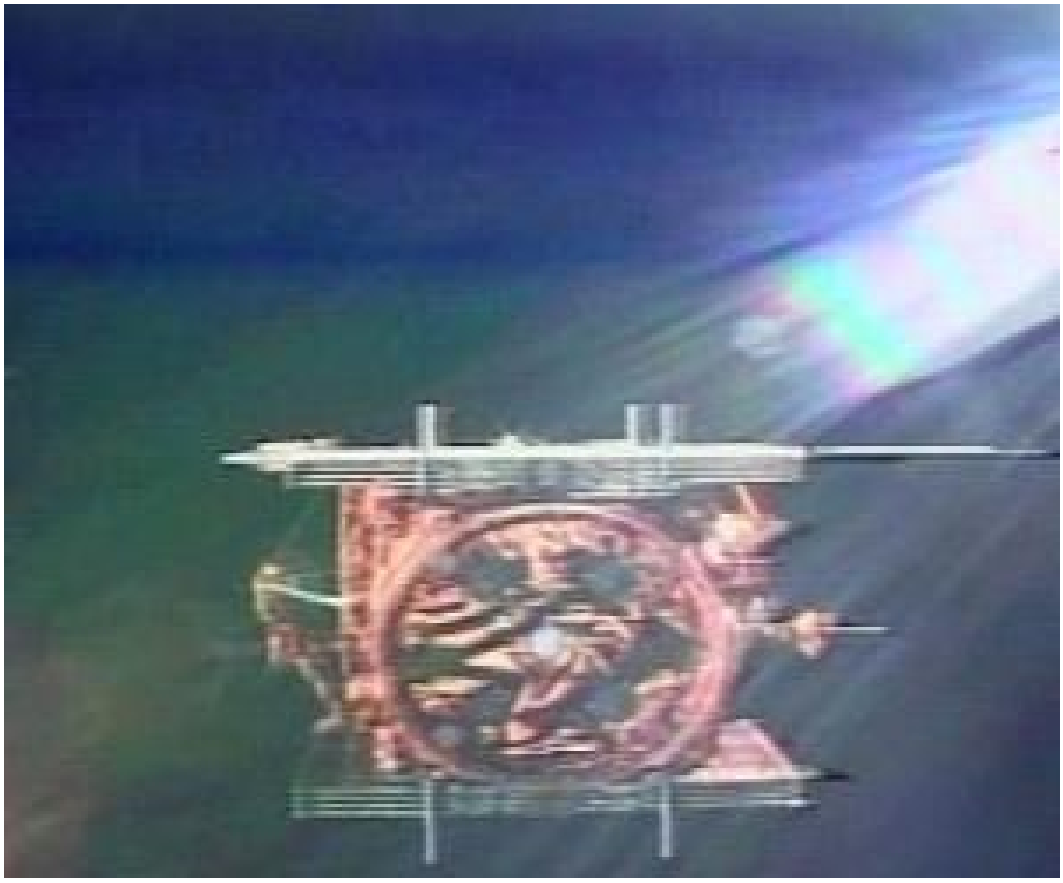
Journal reference:

1. Bärbel-Maria Kurth and Ute Ellert. **Perceived or True Obesity: Which Causes Min Adolescents?** *Deutsches Ärzteblatt International*, 2008, 105[23]: 406-12 [link]

Adapted from materials provided by Deutsches Aerzteblatt International, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080620120006.htm

NASA Launches Ocean Satellite To Keep A Weather, Climate Eye Open



The OSTM/Jason-2 spacecraft separates from the Delta II rocket's second stage, as seen on NASA TV. (Credit: NASA)

ScienceDaily (June 23, 2008) — A new NASA-French space agency oceanography satellite launched June 20 from Vandenberg Air Force Base, Calif., on a globe-circling voyage to continue charting sea level, a vital indicator of global climate change. The mission will return a vast amount of new data that will improve weather, climate and ocean forecasts.

With a thunderous roar and fiery glow, the Ocean Surface Topography Mission/Jason 2 satellite arced through the blackness of an early central coastal California morning at 12:46 a.m. PDT, climbing into space atop a Delta II rocket. Fifty-five minutes later, OSTM/Jason 2 separated from the rocket's second stage, and then unfurled its twin sets of solar arrays. Ground controllers successfully acquired the spacecraft's signals. Initial telemetry reports show it to be in excellent health.

"Sea-level measurements from space have come of age," said Michael Freilich, director of the Earth Science Division in NASA's Science Mission Directorate, Washington. "Precision measurements from this mission will improve our knowledge of global and regional sea-level changes and enable more accurate weather, ocean and climate forecasts."

Measurements of sea-surface height, or ocean surface topography, reveal the speed and direction of ocean currents and tell scientists how much of the sun's energy is stored by the ocean. Combining ocean current and heat storage data is key to understanding global climate variations. OSTM/Jason 2's expected lifetime of at least three years will extend into the next decade the continuous record of these data started in 1992

by NASA and the French space agency Centre National d'Etudes Spatiales, or CNES, with the TOPEX/Poseidon mission. The data collection was continued by the two agencies on Jason 1 in 2001.

The mission culminates more than three decades of research by NASA and CNES in this field. This expertise will be passed on to the world's weather and environmental forecasting agencies, which will be responsible for collecting the data. The involvement of the National Oceanic and Atmospheric Administration (NOAA) and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) as mission partners on OSTM/Jason 2 helps establish this proven research capability as a valuable tool for use in everyday applications.

OSTM/Jason 2's five primary instruments are improved versions of those flying on Jason 1. These technological advances will allow scientists to monitor conditions in ocean coastal regions -- home to about half of Earth's population. Compared with Jason 1 measurements, OSTM/Jason 2 will have substantially increased accuracy and provide data to within 25 kilometers (15 miles) of coastlines, nearly 50 percent closer to shore than in the past. Such improvements will be welcome news for all those making their living on the sea, from sailors and fishermen to workers in offshore industries. NOAA will use the improved data to better predict hurricane intensity, which is directly affected by the amount of heat stored in the upper ocean.

OSTM/Jason 2 entered orbit about 10 to 15 kilometers (6 to 9 miles) below Jason 1. The new spacecraft will gradually use its thrusters to raise itself into the same 1,336-kilometer (830-mile) orbital altitude as Jason 1 and position itself to follow Jason 1's ground track, orbiting about 60 seconds behind Jason 1. The two spacecraft will fly in formation, making nearly simultaneous measurements for about six months to allow scientists to precisely calibrate OSTM/Jason 2's instruments.

Once cross-calibration is complete, Jason 1 will alter course, adjusting its orbit so that its ground tracks fall midway between those of OSTM/Jason 2. Together, the two spacecraft will double global data coverage. This tandem mission will improve our knowledge of tides in coastal and shallow seas and internal tides in the open ocean, while improving our understanding of ocean currents and eddies.

CNES is providing the OSTM/Jason 2 spacecraft. NASA and CNES jointly are providing the primary payload instruments. NASA's Launch Services Program at the Kennedy Space Center in Florida was responsible for launch management and countdown operations for the Delta II. NASA's Jet Propulsion Laboratory in Pasadena, Calif., manages the mission for NASA's Science Mission Directorate, Washington.

To learn more about OSTM/Jason 2, visit: http://www.nasa.gov/ostm .

JPL is managed for NASA by the California Institute of Technology in Pasadena.

Adapted from materials provided by NASA/Jet Propulsion Laboratory.
http://www.sciencedaily.com/releases/2008/06/080622001251.htm

New Web Resource To Improve Crop Engineering

ScienceDaily (June 23, 2008) — The Carnegie Institution's Department of Plant Biology has announced the launch of a new web-based resource that promises to help researchers around the world meet increasing demands for food production, animal feed, biofuels, industrial materials, and new medicines.

It is the Plant Metabolic Network (PMN) at http://www.plantcyc.org/

"To use plants to their full potential, it is crucial to understand the chemical reactions that happen in metabolic processes, such as converting carbon dioxide to biomolecules, transporting nutrients, responding to the environment, and otherwise maintaining life," commented principal investigator Sue Rhee.

"This collection of databases is the first of its kind to be dedicated exclusively to plant metabolism. Researchers will have, right at their fingertips, what they need to understand and engineer a variety of different plants," remarked Eva Huala, co-principal investigator.

The project is a collaboration among varied databases and biochemists to create a broad network of information about plant metabolic pathways. A central feature is PlantCyc, a comprehensive plant biochemical pathway database with information from the literature and about the genes, enzymes, chemical reactions, and pathways involved in plant metabolism. The database currently contains over 500 biochemical pathways consolidated from over 290 plant species, including more than 2,000 reactions, 3,000 enzymes, and 4,000 literature citations.

"Plants are the ultimate source of nearly all human food, either directly or as food for the animals we eat, and they also produce a large fraction of our medicines, fragrances, spices, and other useful products," said Peifen Zhang, director of the project. "They are far better biochemists than humans are or possibly will ever be. Now we have a reference database that brings all this essential information together in one place."

Wolf B. Frommer, interim director of the Department for Plant Biology, said, "We expect that this new resource will help improve crops for food and biofuels and it is very timely given the importance of metabolic engineering of crop plants in a world with increasing needs for these products."

In addition to PlantCyc, PMN will develop and host a collection of single-species databases such as AraCyc (Arabidopsis). These single-species pathway databases place the sequenced and annotated plant genomes in a biochemical context to facilitate the discovery of enzymes and the engineering metabolic pathways. The databases provide access to functional genomics data, such as those generated from microarray and metabolomic experiments. PMN is currently developing similar databases for important crop plants including poplar, soybean, wheat, and maize.

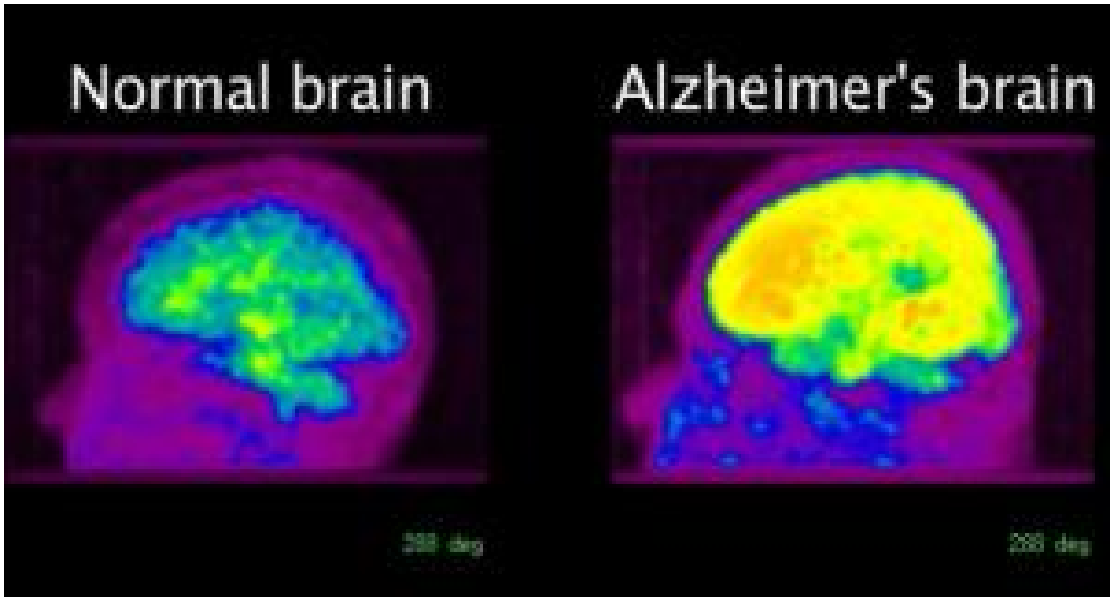
The network draws from many individuals with expertise in annotating genomes, generating metabolic pathway databases, curating biochemical information from the literature, and forming extensive networks with biological databases and biochemistry researchers.

PMN is expected to grow quickly as more plant genomes are sequenced and annotated and new biochemical data are published. Semi-annual releases will be used to incorporate the most up-to-date information.

Adapted from materials provided by Carnegie Institution.

http://www.sciencedaily.com/releases/2008/06/080619151106.htm

Advance Towards Early Alzheimer's Diagnosis



PiB PET scan comparing brains of people with and without Alzheimer's disease. (Credit: CSIRO)

ScienceDaily (June 22, 2008) — An Australian research project has found a way to bring forward the detection of early stage Alzheimer's disease by up to 18 months.

The leader of the team that made the discovery, Professor Christopher Rowe of the Austin Hospital in Melbourne, says early diagnosis and treatment presents medical practitioners with the best opportunity to delay the onset of Alzheimer's.

A 2004 Access Economics report calculated that if the average age of onset of Alzheimer's was raised by just five months, cumulative savings of A$1.3 billion would be realised by 2020 rising to A$6.6 billion by 2040.

Alzheimer's disease is characterised by very high levels of a molecule called beta-amyloid in the brain. The project has demonstrated that a neuro-imaging scan called PiB PET can be used to identify individuals who will develop Alzheimer's disease up to 18 months earlier than all currently available diagnostics.

PiB PET can show the beta-amyloid in the brain which potentially allows clinicians to distinguish patients with early Alzheimer's disease from others without the disease, even before clear signs of memory loss are present.

"Early presymptomatic diagnosis is an essential development which will allow us to test new disease modifying therapies with the aim of delaying the onset of Alzheimer's disease in susceptible individuals," Professor Ames says.

The research was undertaken as part of the Australian Imaging, Biomarkers and Lifestyle (AIBL) Flagship Study of Ageing.

The leader of the AIBL study, Professor David Ames, says the study has the potential to markedly reduce the burden this disabling illness places on both individuals and society.

"Early presymptomatic diagnosis is an essential development which will allow us to test new disease modifying therapies with the aim of delaying the onset of Alzheimer's disease in susceptible individuals," Professor Ames says.

The Director of CSIRO's Preventative Health National Research Flagship, Dr Richard Head, says the result highlights the value of a national collaborative team working together on one of Australia's biggest challenges.

The findings were presented at international meetings in the USA on June 16 and will be presented in July at the International Conference on Alzheimer's disease in Chicago.

Adapted from materials provided by CSIRO Australia.

http://www.sciencedaily.com/releases/2008/06/080618091703.htm

New Discovery Proves 'Selfish Gene' Exists

In a honey bee colony, a complex social breeding system described as a 'super-organism,' female worker bees are sterile. (Credit: iStockphoto/Florin Tirlea)

ScienceDaily (June 22, 2008) — A new discovery by a scientist from The University of Western Ontario provides conclusive evidence which supports decades-old evolutionary doctrines long accepted as fact.

Since renowned British biologist Richard Dawkins ("The God Delusion") introduced the concept of the 'selfish gene' in 1976, scientists the world over have hailed the theory as a natural extension to the work of Charles Darwin.

In studying genomes, the word 'selfish' does not refer to the human-describing adjective of self-centered behavior but rather to the blind tendency of genes wanting to continue their existence into the next generation. Ironically, this 'selfish' tendency can appear anything but selfish when the gene does move ahead for selfless and even self-sacrificing reasons.

For instance, in the honey bee colony, a complex social breeding system described as a 'super-organism,' the female worker bees are sterile. The adult queen bee, selected and developed by the worker bees, is left to mate with the male drones.

Because the 'selfish' gene controlling worker sterility has never been isolated by scientists, the understanding of how reproductive altruism can evolve has been entirely theoretical -- until now.

Working with Peter Oxley of the University of Sydney in Australia, Western biology professor Graham Thompson has, for the first time-ever, isolated a region on the honey bee genome that houses this 'selfish' gene in female workers bees.

This means that the 'selfish' gene does exist, not just in theory but in reality. "We don't know exactly which gene it is, but we're getting close."

"This basically provides a validation for a huge body of socio-biology," says Thompson, who adds the completion of Honey Bee Genome Project in 2006 was crucial to this discovery.

The research will be published in the July issue of Genetics.

Adapted from materials provided by University of Western Ontario.

http://www.sciencedaily.com/releases/2008/06/080620115905.htm

Addicted To Grief? Chronic Grief Activates Pleasure Areas Of The Brain

ScienceDaily (June 22, 2008) — Grief is universal, and most of us will probably experience the pain grief brings at some point in our lives, usually with the death of a loved one. In time, we move on, accepting the loss.But for a substantial minority, it's impossible to let go, and even years later, any reminder of their loss -- a picture, a memory -- brings on a fresh wave of grief and yearning. The question is, why? Why do some grieve and ultimately adapt, while others can't get over the loss of someone held dear?

Reporting in the journal NeuroImage, scientists at UCLA suggest that such long-term or "complicated" grief activates neurons in the reward centers of the brain, possibly giving these memories addiction-like properties. Their research is currently available in the journal's online edition.This study is the first to compare those with complicated and noncomplicated grief, and future research in this area may help psychologists do a better job of treating those with complicated grief, according to Mary-Frances O'Connor, UCLA assistant professor of psychiatry and lead author of the study.

"The idea is that when our loved ones are alive, we get a rewarding cue from seeing them or things that remind us of them," O'Connor said. "After the loved one dies, those who adapt to the loss stop getting this neural reward. But those who don't adapt continue to crave it, because each time they do see a cue, they still get that neural reward."Of course, all of this is outside of conscious thought, so there isn't an intention about it," she said.

The study analyzed whether those with complicated grief had greater activity occurring in either the brain's reward network or pain network than those with noncomplicated grief. The researchers looked at 23 women who had lost a mother or a sister to breast cancer. (Grief is very problematic among survivors of breast cancer patients, particularly among female family members who have increased risk based on their family history). They found that, of that number, 11 had complicated grief, and 12 had the more normal, noncomplicated grief.Each of the study participants brought a photograph of their deceased loved one and were shown this picture while undergoing brain scanning by functional magnetic resonance imaging (fMRI). Next, they were scanned while looking at a photograph of a female stranger.

The authors looked for activity in the nucleus accumbens, a region of the brain most commonly associated with reward and one that has also been shown to play a role in social attachment, such as sibling and maternal affiliation. They also examined activity in the pain network of the brain, including the dorsal anterior cingulate cortex and the insula, which has been implicated in both physical and social pain. They found that while both groups had activation in the pain network of the brain after viewing a picture of their loved one, only individuals with complicated grief showed significant nucleus accumbens activations.Complicated grief can be debilitating, involving recurrent pangs of painful emotions, including intense yearning, longing and searching for the deceased, and a preoccupation with thoughts of the loved one. This syndrome has now been defined by an empirically derived set of criteria and is being considered for inclusion in the DSM-V, the psychiatric manual for diagnosing mental disorders.

O'Connor, who is a member of UCLA's Cousins Center for Psychoneuroimmunology, cautions that she is not suggesting that such reveries about the deceased are emotionally satisfying but rather that they may serve in some people as a type of craving for the reward response that may make adapting to the reality of the loss more difficult.The study was funded by the California Breast Cancer Research Program. Other authors included David K. Wellisch, Annette L. Stanton, Naomi I. Eisenberger, Michael R. Irwin and Matthew D. Lieberman, all of UCLA.

Adapted from materials provided by University of California - Los Angeles.

http://www.sciencedaily.com/releases/2008/06/080620195446.htm

Harnessing The Tibetan Sun

Tao Laoban works at cleaning one of the concrete solar cookers used in Tibet. A team of students, including some from MIT, has developed a more portable solar cooker. (Credit: Photo / Scot Frank)

ScienceDaily (June 22, 2008) — In many villages throughout Tibet, there are two ways to cook a meal. There's the traditional open fire, fueled by yak dung or the region's increasingly scarce wood. And then there are solar cookers, concentrating mirrors made of two-inch-thick concrete and covered with a mosaic of small glass mirrors.

The fires produce a lot of smoke, which, especially in the confined quarters of a kitchen, can lead to lung disease. The solar cookers are clean, but so heavy that it takes four people to move one, and they have a poorly engineered focus that sometimes lights fires, cooks food unevenly or even damages metal pots.

When MIT student Scot Frank and Catlin Powers of Wellesley College visited Tibet two years ago, one thing they kept hearing from the villagers was that it would make a big difference to their lives if there was a solar cooker that was lightweight enough to be carried with them when they went off to spend the day tending their fields or their flocks, yet strong enough to stand up to the strong winds that howl across the Tibetan plateau.

A team of students from MIT and from Qinghai Normal University in Tibet's Amdo region ended up producing exactly that. The lightweight dish they produced, inspired by Tibetan nomadic tents, is made of yak-wool canvas panels, supported by bamboo ribs, and faced with reflective mylar. Easily disassembled and transported by one person, the cooker can then be quickly reassembled in the field and staked down solidly on the ground to resist the wind. In the fall, the students will begin testing their prototype in several villages, and make the design available to local factories for manufacture.

The team, called SolSource Tibet, entered MIT's annual IDEAS competition for technologies that have the potential to make significant improvements in the lives of people in developing countries, and won one of two Yunus Innovation Challenge awards, winning $3,000 to help develop the project.

Frank, a senior with a double major in biology and electrical engineering and computer science, has spent about a year and a half in the Tibet region over the last four years, and plans for the new solar cooker emerged from discussions he and Powers had with villagers there about how to improve their situations.

They then teamed up with MIT students Orian Welling, who had previously taught design fundamentals in Qinghai, was familiar with the area and has a background in photovoltaic solar design, and Brad Simpson, who has worked on research in clean-energy generation and had an interest in high-altitude problems, to work on the prototyping and actual construction of the test models. The goal was to find "improved designs and incorporate alternative materials for a more effective device, while still using local materials and production centers," Frank says.

The new cooker could find widespread application, he says, not only in Tibet but in surrounding areas in China, India, Nepal, Bhutan and Pakistan, and potentially in similar high-altitude regions in South America as well.

The solar cooker can be made for a cost of about $17, Frank says -- about the same price as the current heavy concrete model. In addition, the cookers can be fitted with an extra attachment and used to heat homes, for an additional $26 -- comparable to the cost of the non-renewable-fuel stoves they presently use for heating.

"After initial field testing this fall, we expect artisan training of the existing solar cooker factory workers to begin in January 2009 when Catlin, Brad and I will be onsite to assist in training and technology transfer," says Frank. "Our discussions with the solar cooker factory owners indicate that full-scale production could begin in summer 2009," although that may depend on the results of the field testing and any modifications that result.

And beyond that, he says, "we will be continuing with our other projects in the area: water and air-quality analysis, bilingual science book publications, and testing novel locally appropriate renewable electricity generation techniques, for which we are currently applying for patents."

Adapted from materials provided by Massachusetts Institute of Technology. Original article written by David Chandler.

http://www.sciencedaily.com/releases/2008/06/080617115524.htm

The Economics Of Nice Folks

ScienceDaily (June 22, 2008) — A basic tenet of economics is that people always behave selfishly, or as the 18th century philosopher economist David Hume put it, "every man ought to be supposed to be a knave."

But what if some people aren't always knaves?

Sam Bowles argues in Science June 20 that economics will get it wrong then, sometimes badly so. He points to new experimental evidence that people do often act against their own personal self-interest in favor of the common good, and they do so in predictable, understandable ways. Poorly-designed economic institutions fail to take advantage of intrinsic moral behavior and often undermine it.

Take this example: Six day care centers imposed a fine on parents who picked their children up late. The effect? Tardiness doubled, and it stayed high even when the fine was removed. Parents, it seems, stopped seeing lateness as an imposition on teachers, and instead saw it as something that could be purchased with no moral failing.

Another example is a study this year which showed that women donated blood less frequently when they were paid for it than when it was an act of charity.

These examples show that economists ignore human altruism at their peril. Standard economic theory assumes that incentives that appeal to self-interest won't affect any natural altruism that may exist, but that assumption is clearly wrong. Bowles discusses the research to date that helps to explain when and why that assumption breaks down.

As the world becomes more interconnected and the resulting challenges to humanity increase, learning to harness these altruistic impulses becomes even more important, Bowles says. So the economists' "holy grail," to learn to design institutions and policies to direct the selfish impulses of individuals to public ends, "will be necessary but insufficient," Bowles says. "The moral nature of humans must also be recognized, cultivated, and empowered."

Adapted from materials provided by Santa Fe Institute, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080619142115.htm

Saturn's Secondary Aurora Is Much More Like Jupiter's In Origin Than It Is The Earth's

Saturn's ultraviolet aurora. (Credit: J.T. Trauger (Jet Propulsion Laboratory) and NASA)

ScienceDaily (June 21, 2008) — A UK team of researchers have discovered a secondary aurora sparkling on Saturn and also started to unravel the mechanisms that drive the process. Their results, recently published in Nature, show that Saturn's secondary aurora is much more like Jupiter's in origin than it is the Earth's.

Aurorae are caused when charged particles stream along the magnetic field of a planet and into its atmosphere. On Earth these charged particles come from the solar wind – a stream of particles that emanates from the Sun. Variations in the Sun control the frequency and intensity of these beautiful displays that can also herald problems – such as interference with satellite communications and power distribution.

On Jupiter however, the dominant source of particles is its own moons, particularly Io which throws out roughly one tonne of volcanic material every second. Some of this becomes ionised (plasma) and is pulled in Jupiter's magnetic field. It co-rotates in a plasma sheet around the planet, but as the particles spread out the magnetic field weakens and this breaks down causing the particles to crash into Jupiter's atmosphere creating an aurora.

On Saturn, whilst one aurora had been observed, the primary source of the particles was unclear. RCUK Academic Fellow Tom Stallard, of the University of Leicester explains "At Saturn, scientists were unsure

whether the aurora was caused by the solar wind or by particles from its own system. When we discovered the second zone of aurorae on Saturn, we realised this aurora, unlike the one already seen on Saturn, was behaving in the same way as Jupiter's, largely unaffected by the solar wind, dominated by the rotation of the planet."

Modelling the aurorae on Jupiter and Saturn shows that both exhibit aurora in the positions where the co-rotation between the planet and its plasma sheet breaks down.

Stan Cowley of the University of Leicester said, "We can now say that some of Saturn's aurorae are like Jupiter's and they have a common formation process. Further, our discovery of the secondary aurora on Saturn suggests that we shall also find one on Jupiter within its polar region."

This research is drawn from data collected by NASA's InfraRed Telescope Facility. Saturn's main aurora has been studied using the NASA/ESA Hubble Space Telescope.

The UK researchers have been funded by the Science and Technology Facilities Council, the Engineering & Physical Sciences Research Council and Research Councils UK.

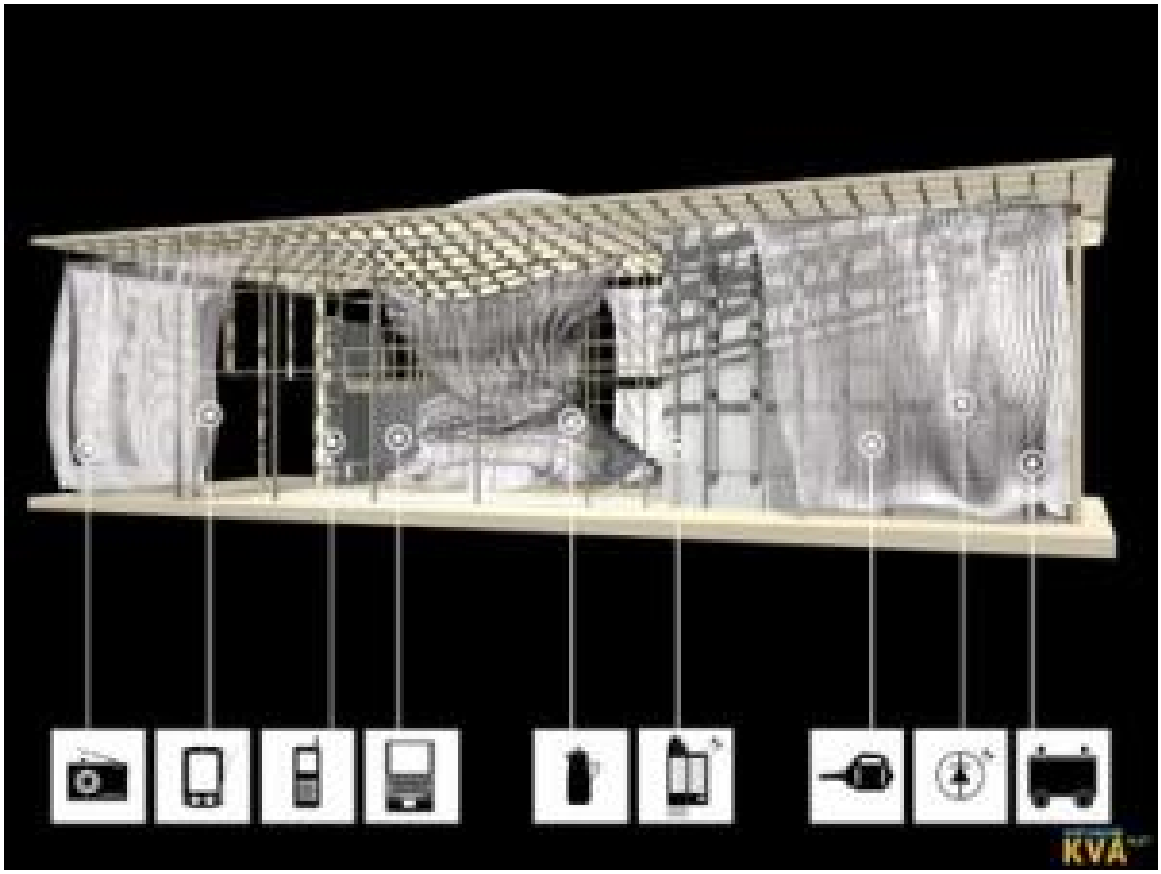
Journal reference:

1. Stallard et al. **Jovian-like aurorae on Saturn**. *Nature*, 2008; 453 (7198): 1083 DOI: 10.1038/nature07077

Adapted from materials provided by University of Leicester.

http://www.sciencedaily.com/releases/2008/06/080619105513.htm

Getting Wrapped Up In Solar Textiles



A 3-D rendering of "Soft House", which uses household curtains to collect solar energy and provide lighting. (Credit: Image courtesy of Massachusetts Institute Of Technology)

ScienceDaily (June 21, 2008) — Sheila Kennedy, an expert in the integration of solar cell technology in architecture who is now at MIT, creates designs for flexible photovoltaic materials that may change the way buildings receive and distribute energy.

These new materials, known as solar textiles, work like the now-familiar photovoltaic cells in solar panels. Made of semiconductor materials, they absorb sunlight and convert it into electricity.

Kennedy uses 3-D modeling software to design with solar textiles, generating membrane-like surfaces that can become energy-efficient cladding for roofs or walls. Solar textiles may also be draped like curtains.

"Surfaces that define space can also be producers of energy," says Kennedy, a visiting lecturer in architecture. "The boundaries between traditional walls and utilities are shifting."

Principal architect in the Boston firm, Kennedy & Violich Architecture, Ltd., and design director of its materials research group, KVA Matx, Kennedy came to MIT this year. She was inspired, she says, by President Susan Hockfield's plan to make MIT the "energy university" and by MIT's interdisciplinary energy curriculum that integrates research and practice.

This spring, Kennedy taught a new MIT architecture course, Soft Space: Sustainable Strategies for Textile Construction. She challenged the students to design architectural proposals for a new fast train station and public market in Porto, Portugal.

For Mary Hale, graduate student in architecture, Kennedy's Soft Space course was an inspiration to pursue photovoltaic technology in her master's thesis.

"I have always been interested in photovoltaics, but before this studio, I am not sure that I would have felt empowered to integrate them into a personal, self-propelled, project," she says.

Kennedy, for her part, will pursue her research in pushing the envelope of energy-efficiency and architecture. A recent project, "Soft House," exhibited at the Vitra Design Museum in Essen, Germany, illustrates what Kennedy means when she says the boundaries between walls and utilities are changing.

For Soft House, Kennedy transformed household curtains into mobile, flexible energy-harvesting surfaces with integrated solid-state lighting. Soft House curtains move to follow the sun and can generate up to 16,000 watt-hours of electricity--more than half the daily power needs of an average American household.

Although full-scale Soft House prototypes were successfully developed, the project points to a challenge energy innovators and other inventors face, Kennedy says. "Emerging technologies tend to under-perform compared with dominant mainstream technologies."

For example, organic photovoltaics (OPV), an emergent solar nano-technology used by the Soft House design team, are currently less efficient than glass-based solar technologies, Kennedy says.

But that lower efficiency needn't be an insurmountable roadblock to the marketplace, Kennedy says, because Soft House provides an actual application of the unique material advantages of solar nano-technologies without having to compete with the centralized grid.

Which brings her back to the hands-on, prototype-building approach Kennedy hopes to draw from in her teaching and work at MIT.

"Working prototypes are a very important demonstration tool for showing people that there are whole new ways to think about energy," she says.

Adapted from materials provided by Massachusetts Institute Of Technology. Original article written by Sarah H. Wright.

http://www.sciencedaily.com/releases/2008/06/080617114723.htm

Digital Water Pavilion Makes A Splash In Spain

The MIT-designed Digital Water Pavillion, featuring water walls that can be programmed to display patterns and images, was unveiled June 12 at the opening of the Zaragoza World Expo in Spain. (Credit: Photo / Carlos Muntadas)

ScienceDaily (June 21, 2008) — An MIT-designed building with walls made entirely of water is being unveiled Thursday at the opening of the Zaragoza World Expo in Spain.

The Digital Water Pavilion, selected as Time magazine's "Best invention of the Year" in the field of architecture when its plans were unveiled in 2007, is the first of its kind and illustrates the potential of digital architecture to create spaces that dynamically adjust to people and conditions.

An interactive structure that can be programmed to take on varying shapes and to display patterns and images, the building is located at the entrance to the Expo and will contain an exhibition area, an information point and various public spaces.

"The design for the water pavilion grew out of a central challenge: How to make fluid, reconfigurable architecture?" said Carlo Ratti, head of MIT's SENSEable City Laboratory. "Our building aims to stand as a possible answer to this endeavor."

"Water has long been recognized as one of the most dynamic and engaging elements of urban public space," commented William J. Mitchell, head of MIT's Design Laboratory and former dean of architecture at MIT. "For centuries, architects have shaped and directed it by means of channels and pipes, nozzles, valves, and pumps."

"The technology of digital water walls, and its pioneering application in Zaragoza's Digital Water Pavilion, update this tradition for the digital era. Going forward, new combinations of sensor technology, embedded intelligence, networking, computer-controlled pumps and valves and other new technologies open up the exciting possibility of urban-scale, precisely controlled, highly interactive water."

The "water walls" that make up the structure are generated by high-speed computer controlled solenoid valves. They can be programmed to take varying shapes, to display patterns, images and text, and to respond dynamically to input from sensors.

"This capability enables architects to challenge many traditional ideas about architectural form," says Mitchell."Doors, for example, need not have fixed locations. When you walk up to them, water walls can open like the Red Sea for Moses, and then seamlessly close behind you."

Ratti likens the concept of digital water to a large scale inkjet printer: "The opening and closing of valves, at high frequency, produces a curtain of falling water -- a pattern of pixels created from air and water instead of illuminated points on a screen. The entire surface becomes a one-bit deep digital display that continuously scrolls downward."

All of the walls of the pavilion are made of digital water, along with vertical partitions on the edge of the roof and inside it. The only solid element of the pavilion is the roof -- a high-tech, 400 mm thick moveable structure covered by water, engineered by Arup and built by Siemens. The roof rests on moveable pistons and moves up and down depending on wind conditions. It can also be flattened into the ground, at which point the building disappears altogether.

The building contains 3,000 digitally controlled solenoid valves, several dozen pumps, 12 hydraulic stainless steel piston and a digital control system based on open source software. The water used is fully recycled; some of it is lost because of evaporation, but it is supplemented by rainfall at the pavilion's site.

The Digital Water Pavilion is the latest in a long line of new and innovative architecture to be unveiled at world expos, from the London Crystal Palace (1851) to the Eiffel Tower (1889) to the Mies van der Rohe-designed Barcelona Pavilion (1929). The theme of the Zaragoza Expo is water and sustainable development, and the fair is part of the city's broader effort to reinvent itself as a 21st century hub of knowledge, innovation and creativity.

"The Digital Water Pavilion illustrates how buildings of the future may change their appearance and form from moment to moment, based on necessity and use," says Ratti. "It is not easy to achieve such effects when dealing with concrete, bricks and mortar. But this becomes possible with digital water, which can appear and disappear."

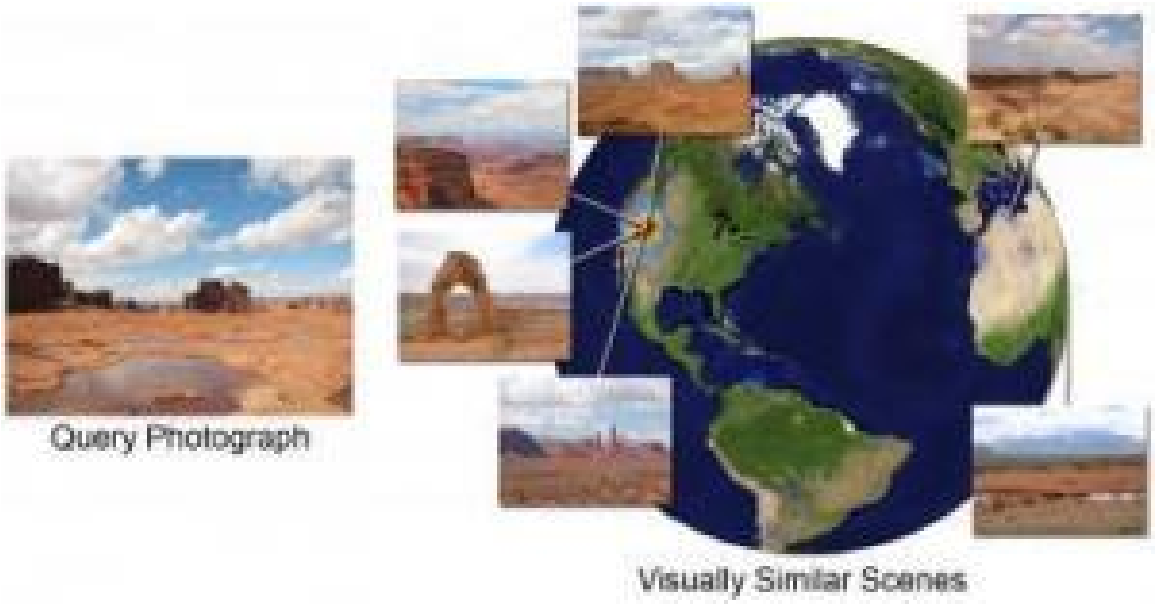
"In the nineties, digital technology led us to fantasize about distant virtual worlds. Today we have moved on: The future of architecture might deal with digitally augmented environments, where bits and atoms seamlessly merge."

The design and execution of the Digital Water Wall project was a multidisciplinary collaboration between MIT, industry, and the city of Zaragoza. The concept of the digital water wall was initially developed and prototyped in the Smart Cities group at the MIT Media Lab, headed up by Mitchell. Its application in Zaragoza was explored in an MIT design studio under the direction of Dennis Frenchman, Mitchell and Ratti. The building itself was designed by Ratti's firm carlorattiassociati - walter nicolino & carlo ratti (Turin, Italy), the engineering company Arup (London, UK and Madrid, Spain), and landscape architects Agence Ter (Paris, France).

Adapted from materials provided by Massachusetts Institute of Technology. Original article written by Patti Richards.

http://www.sciencedaily.com/releases/2008/06/080617115237.htm

New Computerized System Estimates Geographic Location Of Photos



A method developed by Carnegie Mellon University researchers can estimate where a photo was taken by matching it to similar, GPS-tagged photos in the Flickr online photo collection (Credit: James Hays/Carnegie Mellon University)

ScienceDaily (June 21, 2008) — Researchers at Carnegie Mellon University have devised the first computerized method that can analyze a single photograph and determine where in the world the image likely was taken. It's a feat made possible by searching through millions of GPS-tagged images in the Flickr online photo collection.

The IM2GPS algorithm developed by computer science graduate student James Hays and Alexei A. Efros, assistant professor of computer science and robotics, doesn't attempt to scan a photo for location clues, such as types of clothing, the language on street signs, or specific types of vegetation, as a person might do. Rather, it analyzes the composition of the photo, notes how textures and colors are distributed and records the number and orientation of lines in the photo. It then searches Flickr for photos that are similar in appearance.

"We're not asking the computer to tell us what is depicted in the photo but to find other photos that look like it," Efros said. "It was surprising to us how effective this approach proved to be. Who would have guessed that similarity in overall image appearance would correlate to geographic proximity so well?"

Hays and Efros found they could accurately geolocate the images within 200 kilometers for 16 percent of more than 200 photos in their test set -- up to 30 times better than chance. And even if their algorithm failed to identify the specific location, they often found that it could narrow the possibilities, such as by identifying the locale as a beach or a desert.

"It seems there's not as much ambiguity in the visual world as you might guess," said Hays, who will present the research at the IEEE Computer Society Conference on Computer Vision and Pattern Recognition June 24-26 in Anchorage, Alaska. "Estimating geographic information from images is a difficult, but very much a doable, computer vision problem."

Identifying the locale of a photo could enhance image search techniques, making them less dependent on captions or associated text. A computer system for geolocating photos could be useful in finding family

photos from a specific trip and in some forensic applications. Determining the location of photos also makes it possible to combine them with geographic data bases related to climate, population density, vegetation, topography and land use.

Knowing the locale also can aid in such computer vision tasks as object identification, Hays said. If a computer recognizes that a photo likely was taken in Japan, for instance, the computer will have a better idea of what a taxicab should look like.

Hays said many online photos have some sort of geographic label, but these human descriptions can often be incorrect, or overly broad, such as a photo of the Grand Canyon labeled "U.S." The growing number of online photos that have GPS tags, by contrast, are unambiguous regarding their location, even though many are photos of rooms, people or events such as birthday parties that are useless for geolocation tasks. By using photos with both geographic keywords and GPS coordinates, Hays and Efros were able to find more than six million photos that were useful and accurately geolocated.

The IM2GPS algorithm readily located photographs of such landmarks as the Cathedral of Notre Dame in Paris. More surprisingly, it was able to recognize that a narrow street in Barcelona was typical of Mediterranean villages, rather than an American alleyway.

But some odd matches also occurred. The architecturally unique Sydney Opera House seemed to the computer to be similar to a hotel in Mississippi as well as a bridge in London. A shot of the Eiffel Tower at dusk was matched to other Eiffel Tower shots, but also to San Francisco's Coit Tower and New York's Statue of Liberty, both shot at dusk.

One reason for this confusion, Hays explained, is that the algorithm is not designed to recognize specific objects so much as it is to recognize geographic areas. For instance, an image of Utah's Monument Valley caused the IM2GPS algorithm to successfully retrieve a number of other images from Monument Valley and the American Southwest, rather than images of a specific rock formation.

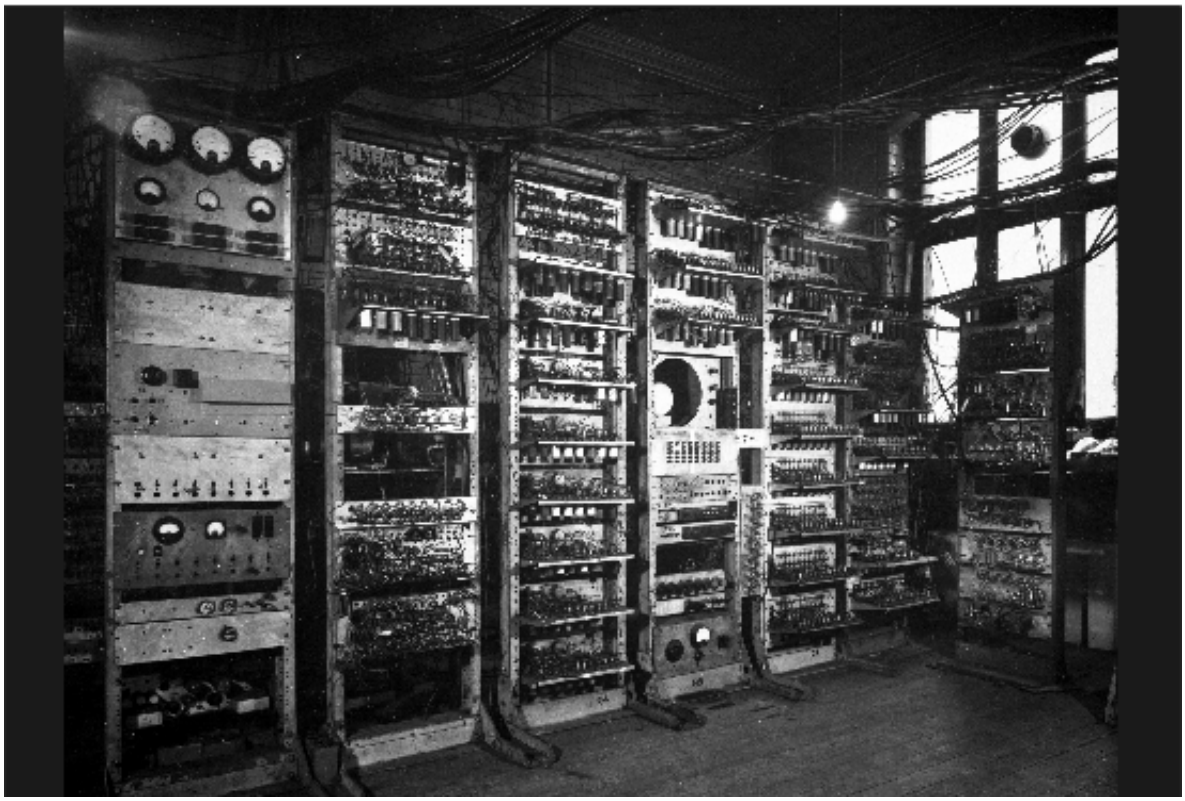
For more information, see the IM2GPS project Web site: http://graphics.cs.cmu.edu/projects/im2gps/

Adapted from materials provided by Carnegie Mellon University.

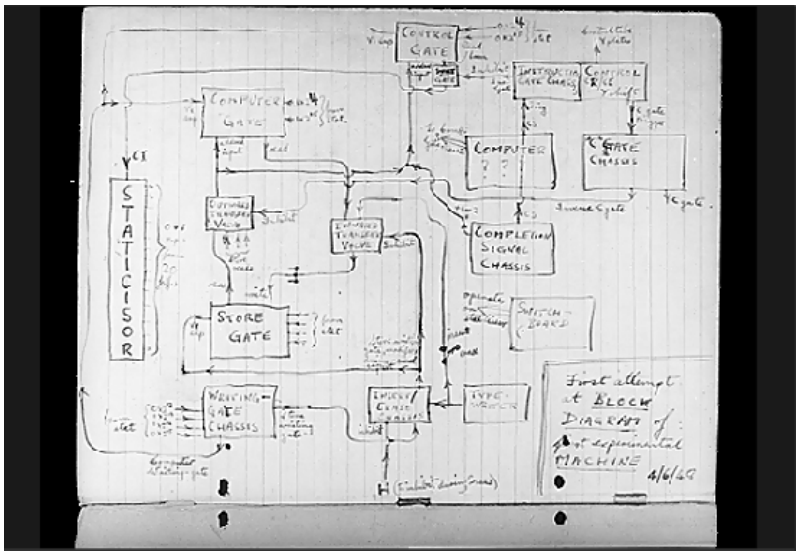
http://www.sciencedaily.com/releases/2008/06/080618114700.htm

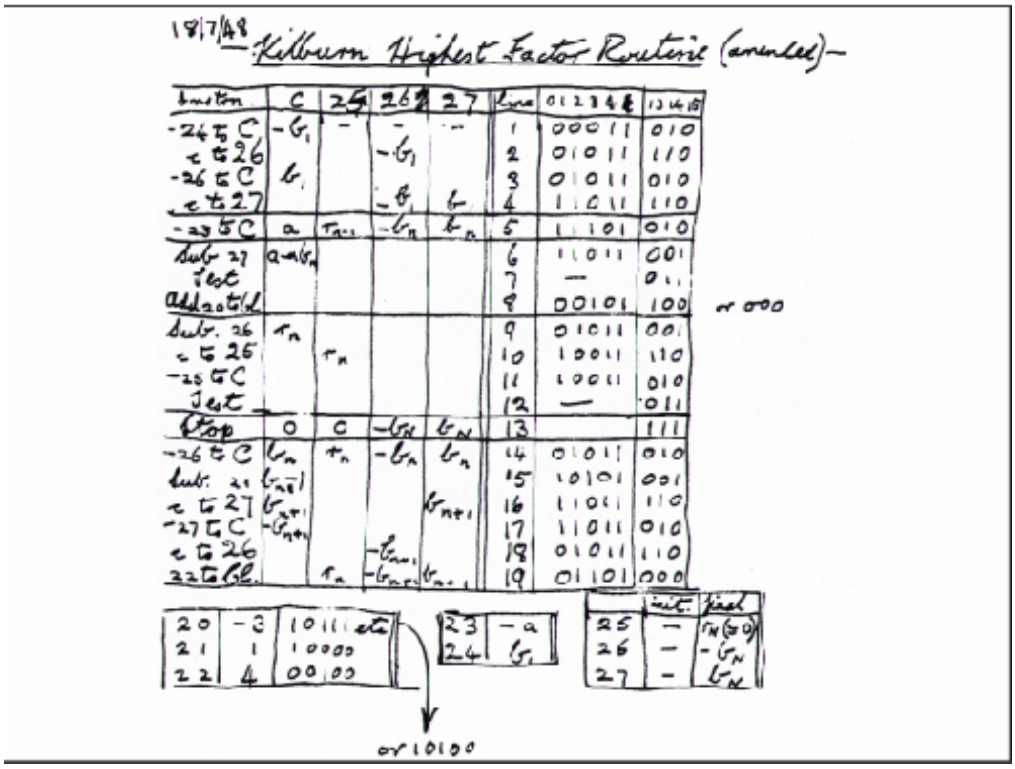
Ancestor of modern computers turns 60

- 14:29 20 June 2008
- NewScientist.com news service
- Tom Simonite



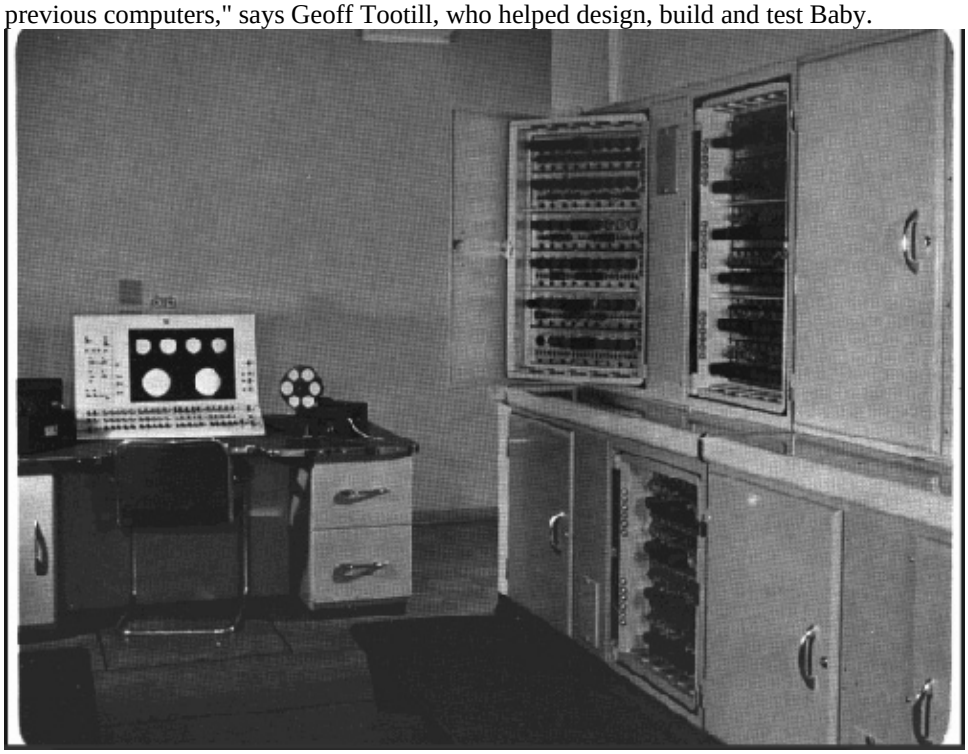
The first computer to be built using the same fundamental plans that underpin modern PCs has reached its 60th anniversary. The Small Scale Experimental Machine, better known as "Baby", ran its first program at 11 am, 21 June 1948, at Manchester University in the UK.





Baby was the first "stored program computer", meaning it ran programs by loading them into a temporary memory store, or random-access memory (RAM), just as computers do today.

“That approach, and the fact the Baby was fully electronic, made it much easier to reprogram than previous computers," says Geoff Tootill, who helped design, build and test Baby.



Reprogramming earlier computers typically required physical changes to be made to a computer, he told **New Scientist**.

Memory lane

"We didn't set out to change the future of computing, only to demonstrate that the new storage system worked," Tootill adds. "Building a small computer was the best way to do that."

Baby's RAM was based on cathode ray tubes similar to those used in radar screens. A single tube could store 2048 bits of digital information, or 256 bytes. However, Baby only had a total of 1024 bits (128 bytes) of functional memory.

That new approach to computer memory was developed by Frederic Williams, who led Tootill and Tom Kilburn on the project.

"The only mathematical operator the Baby could do was subtraction," says Tootill. But it was possible to carry out an addition using two subtractions and later on they later enabled Baby to perform multiplication.

Baby steps

The first program Baby ran successfully – after several failed attempts – could find the highest factor of any given number. Initially only tested on small numbers, the machine was soon tackling more difficult calculations.

Running the program on the number 2^{18} took about 2.1 million steps and 52 minutes. Reading the results required the decoding of digital output shown on another CRT tube.

To commemorate the historic day, several events will take place in Manchester today. There was no party 60 years ago, though. "When it first worked, Tom Kilburn and I demonstrated it to professor Williams, and then we went for lunch in the refectory with the students," he says.

"There was no opening of a bottle or anything like that," he adds. "As experienced electrical engineers, this was an occasion for quiet satisfaction."

Related Articles

- First known digital music recording surfaces
- http://technology.newscientist.com/article/dn14160
- 18 June 2008
- Histories: When the internet was made of paper
- http://technology.newscientist.com/article/mg19726482.100
- 22 March 2008

Weblinks

- 60th anniversary website
- http://www.digital60.org/
- Small Scale Experimental Machine manual
- http://www.cs.man.ac.uk/CCS/ssem/progref1.html
- Random-access memory, Wikipedia
- http://en.wikipedia.org/wiki/RAM

http://technology.newscientist.com:80/channel/tech/dn14171-ancestor-of-modern-computers-turns-60.html?feedId=online-news_rss20

Parents 'ignorant' on five-a-day

One in three parents say their children know more about healthy eating campaigns than they do, a poll shows.

And most told the Department of Health survey that rising food prices put five portions of fruit and vegetables a day out of their reach.

The survey of 1,000 parents in England also revealed three-quarters of them were unaware that frozen and canned varieties counted towards the total.

Food experts said school campaigns were improving children's knowledge.

> **We welcome the fact that children are absorbing our five-a-day messages and can teach their parents - and peers - to eat more healthily too**
> Dawn Primarolo
> Health Minister

The five-a-day figure is recommended to people across the UK, but research suggests that only just over half of the population eat this amount

There is evidence that sticking to a five-a-day diet can reduce the risk of cancer, heart disease and stroke.

School campaigns mean that many children are aware of what they can and cannot eat, but the surveyed suggests that many parents are not.

One mother, Debbie Hussey, told the survey that she had to be told by her daughter to swap baked potato for broccoli to reach the target.

Half of those polled did not know that vegetables in cooked food - such as a can of tomatoes in spaghetti bolognese - also counted towards the total.

Others wrongly thought that baked potatoes could be one of the five, or mistakenly discounted dried, or even fresh fruit.

Potatoes and other starchy foods do not count towards the recommended target.

School message

While children often knew more, half of those surveyed tricked their parents into thinking they had consumed a full portion after eating only a tiny amount of things they did not like.

However, health minister Dawn Primarolo said the survey provided evidence that health teaching in schools and elsewhere was reaching children.

"We welcome the fact that children are absorbing our five-a-day messages and can teach their parents - and peers - to eat more healthily too."

Azmina Govindji, from the British Dietetic Association, said that getting children involved in shopping or cooking made them more likely to eat healthier food.

She added: "If healthy eating messages can get through to children, then they have a lot of power in the home, and can ask their parents for the kind of food they need to be eating."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7466382.stm

Published: 2008/06/23 00:52:17 GMT

Students: Customers or learners?

By Mike Baker

Should university students be seen as learners or customers?

While you might argue they are both, the dividing line between the two has become dangerously blurred. This was underlined by two news stories this week.

First there was the allegation from a senior academic that league tables have put universities under pressure to mark too leniently and to overlook plagiarism.

Second there was the whistleblower who claimed that degrees are being awarded to overseas students who lacked basic English language skills because of the lucrative nature of the foreign student market.

There was a third story, a few weeks back, on a related issue. This was the discovery that two university lecturers had urged students to exaggerate the scores they gave to their institution in the National Student Survey because, they claimed, everyone else was doing so.

There is a common theme to each of these stories: the pressures on academics to make sure that their universities are marketable to current and potential customers.

These pressures are understandable but must be resisted. They are understandable because it is bums-on-seats that determines the bulk of university funding, particularly at universities which receive little research funding.

Wall of silence

The notion of undergraduate and postgraduate students as customers is still relatively new. Its effect has been ratcheted up by the introduction of variable or top-up fees and the increasing reliance on fees from overseas students.

A common response is that the whistleblowers are letting the side down and are damaging the reputation of British universities
Mike Baker

However we have got to the point now where we really must decide whether a university is just another service provider or a community of scholars.

I believe many university leaders are, at least in public, complacent about this.

I was at a public debate on education this week when the two news stories about lenient marking were raised. None of the educationalists that spoke were willing to acknowledge that these pressures even existed.

Indeed the one vice-chancellor present felt there was simply no case to answer.

There is still an official wall of silence about such allegations. A common response is that the whistleblowers are letting the side down and are damaging the reputation of British universities.

Yet you only have to read the large number of responses to the BBC News website to see that the allegations chime with many academics. It is a sad state of affairs that many clearly felt they had to remain anonymous.

Whatever happened to academic freedom?

The spread of the consumer model of university education is not just a result of the actions of competitive and cash-strapped vice-chancellors.

Consumerism

The policies of successive governments have encouraged this model through the squeeze on per student funding, the imperative to expand, and the attempt to introduce a market in fees and bursaries.

Students, and increasingly parents, have also stressed the consumerist aspect of their role. They are now more directly aware of a cash relationship with universities.

Nor is this just about money. The concept of the "helicopter parent" (that is the parent who continues to hover over their offspring even after they have left home for university) owes much to a generation of mothers and fathers who have been encouraged to be active consumers as their children have gone through the school system.

University league tables and the National Student Survey are of a piece with school performance tables and Ofsted reports. They encourage a shopping around approach.

One result has been that universities now face more complaints from students. Last year, the Office of the Independent Adjudicator for Higher Education in England and Wales received 734 complaints.

That was a 25% increase on the previous year. Remember too that these are only the tip of the iceberg since most complaints are settled within institutions.

Complaints culture

Interestingly 26% of complaints came from international students and 36% were from postgraduates. Almost two-thirds of the complaints related to academic results.

But universities must bear much of the blame for this rise in the complaints culture.

The glossy brochures and the expensive advertising campaigns that are offered by many universities often exceed the reality that greets students when they arrive. As one admirably straight-talking vice-chancellor, Eric Thomas from Bristol University, told a conference recently: "the hyperbole" many universities use to describe themselves is "quite eye-watering". He added that the picture painted by many prospectuses was as real as "la-la land".

Higher Education Minister Bill Rammell has acknowledged that students are less deferential than in the past. He told a recent conference on "Student Satisfaction" that "students are becoming more demanding partly because they want value for money but also as we see more older and articulate students".

It is probably also true to say that students are more concerned now about their degree level than they were in the past. Twenty to thirty years ago simply having a degree made you marketable to employers. Now there is great pressure to get at least a 2:1.

Pressure

All of this has made it inevitable that students will be more demanding about the quality of their courses, teaching, assessment and facilities.

It is right that they should know how many hours of teaching they will receive and how often they will meet their tutors. It may even be that we need better, and more specific, contacts between universities and students. So long as the focus is on delivering good quality teaching and research facilities this element of consumer satisfaction is a good thing.

But we must not lose sight of what a university is fundamentally about: it is a place of learning where students and teachers should be part of a learning community not just providers and customers. The responsibility to ensure that we do not succumb to a purely customer model falls squarely on university leaders. It cannot be on the government since, quite rightly, universities insist they are independent bodies.

As such they must regulate themselves. Vice-chancellors must put competition for students and markets in second place behind the need to preserve academic standards and independence.

The only pressure academics should be under when marking students' work is the pressure of their peers to maintain standards and the pressure from students for fair and equal treatment.

If vice-chancellors are unable to resist these pressures individually then they must, collectively through organisations such as Universities UK, take a stand against those who put marketing and consumerism above academic integrity.

Please send your comments

Name
Your E-mail address
Town & Country
Comments
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/7466279.stm

Published: 2008/06/21 00:13:14 GMT

Treat knee pain with creams call

Gels or creams containing painkillers are better than tablets for chronic knee pain, NHS research suggests.

A study of almost 600 patients aged over 50 found the anti-inflammatory creams worked as well as the oral versions and had fewer side-effects.

And although they cost more initially, topical treatments may save the NHS money in the long run, the Queen Mary University of London researchers said.

It is estimated that a third of over 50s suffer from knee pain.

In half of those the problem is classed as severe.

The most common cause of pain in the knee is osteoarthritis - a condition caused by abnormal wearing of the cartilage.

> **This is an important message for GPs and patients - that they should consider topical treatments to avoid side effects**
> Professor Steve Field, Royal College of GPs

A total of 585 patients from 26 general practices around the UK took part in the study which looked specifically at non-steroidal anti-inflammatories (NSAIDs) - a class of drugs which includes ibuprofen.

Both tablets and creams containing the drugs had the same effect on knee pain, the study showed.

But those treated with oral medication had more minor adverse effects such as indigestion, increased blood pressure, or worsening asthma.

Uncertainty

NSAIDs are well-known to be associated with sometimes serious side effects but the topical preparations deliver a smaller dose directly to the affected area and so are less likely to cause such problems.

Patients also preferred the gels and creams, the study which is published on the National Institute for Health Research website.

Study leader Professor Martin Underwood, who has since moved to Warwick University, said there had been uncertainty about which to use.

"There has been quite a lot of discouragement about using topical NSAIDs because it was thought they were more expensive and there was not good evidence they were beneficial."

He added that patients with more widespread pain may find tablets are better and should discuss the choice with their GP.

Royal College of GPs chairman Professor Steve Field said he had always been of the view that oral NSAIDs worked better.

"This is an important message for GPs and patients - that they should consider topical treatments to avoid side effects."

An Arthritis Research Campaign spokeswoman said GPs had probably under-prescribed topical creams in the past because they did not believe they were as effective.

"But this new research appears to show they both as effective and safer, with fewer of the side affects associated with NSAID tablets," she added.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7466359.stm

Published: 2008/06/21 01:21:35 GMT

Chickens 'unlock allergy secrets'

Scientists have turned to chickens to help them understand why some people are struck down by severe allergies.

The birds have a "fossilised" version of the key molecule responsible for severe allergic reactions in humans.

King's College London researchers say their findings, published in the Journal of Biological Chemistry, could guide the hunt for future treatments.

Experts said the work offered "exciting new avenues" for research into preventing allergies developing.

This molecule is like a living fossil - finding out that it has an ancient past is like turning up a coelacanth in your garden pond
Dr Alex Taylor
King's College London

The molecule in birds, called IgY, appears to be an ancient forerunner of a similar human molecule called IgE - one of the culprits when the immune system goes into overdrive during asthma attacks or anaphylactic shock.

The King's team are trying to find out why IgE causes a problem, while IgY does not.

Dr Alex Taylor, one of the researchers, said: "This molecule is like a living fossil - finding out that it has an ancient past is like turning up a coelacanth in your garden pond.

"By studying it, we can track the evolution of allergic reactions back to at least 160m years ago."

His colleague Dr Rosy Calvert said: "We know that part of the problem with IgE in humans is that it binds extremely tightly to white blood cells causing an over-reaction of the immune system and so we wanted to find out whether IgY does the same thing."

Their lab tests revealed that it did not bind in the same way, and a more detailed comparison could reveal subtle differences which explain why, and perhaps provide targets for new drugs or treatments.

'Stopped before they start'

Dr Brian Sutton, who runs the laboratory where the work is being completed, suggested that IgE evolved specifically in mammals perhaps to counter a particular bacterial threat in the past.

"The problem is that now we've ended up with an antibody that can tend to be a little over enthusiastic and causes us problems with apparently innocuous substances like pollen and peanuts, which can cause life-threatening allergic conditions."

John Collard, Allergy UK's clinical director, said that the find opened "exciting new avenues" of possible treatments, even though they would not be available within the next few years.

He said: "If we could find a way to unbind IgE from white blood cells, then a lot of these allergic reactions could be stopped before they start.

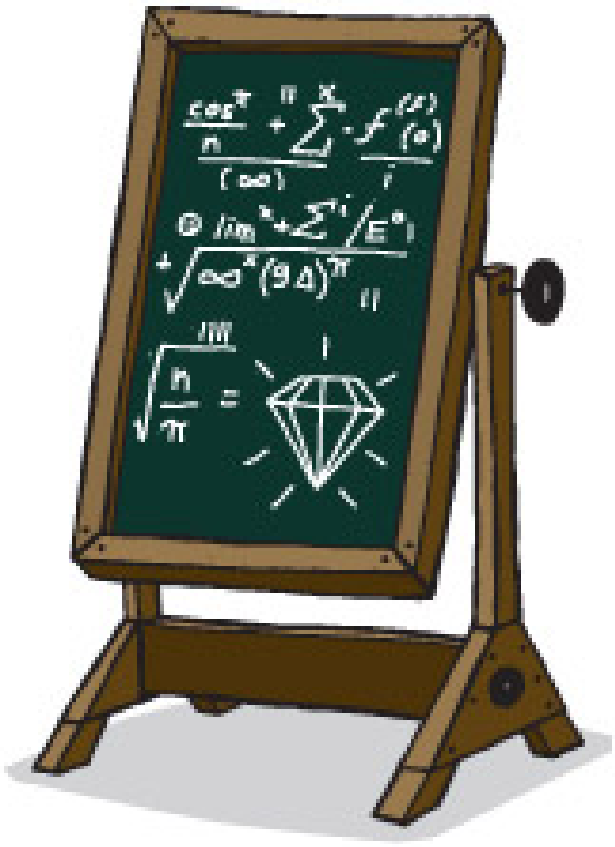
"Current treatments are aimed at dealing with something that has already happened, which means they tend to be less effective than if you could stop something at an earlier stage."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7451452.stm

Published: 2008/06/21 23:05:13 GMT

Fake Gems, Genuine Appeal

By DAN MITCHELL



MANUFACTURED diamonds have become “as pure and nearly as big as the finest specimens hauled out of the ground,” Ulrich Boser reports in Smithsonian magazine (smithsonianmag.com). This has profound implications for a number of industries, but producers of “natural diamonds,” the magazine reports, “are less enthusiastic.”

To visit the headquarters of Apollo Diamond, Mr. Boser had to meet his ride at a fast-food restaurant outside Boston that he was not allowed to name in his article. Apollo “is about as secretive as a Soviet-era spy agency,” he wrote. “Its address isn’t published.” he added. “The public relations staff wouldn’t give me directions. Instead, an Apollo representative picks me up at this exurban strip mall and drives me in her black luxury car whose make I am not allowed to name along roads that I am not allowed to describe as twisty, not that they necessarily were.”

The security is understandable. Bryant Linares, Apollo’s chief executive, told Mr. Boser that a man had approached him from behind at a conference a few years ago and warned him that, as Mr. Boser put it, “someone from a natural diamond company just might put a bullet in his head.”

The problem for the producers is that even though diamonds are not all that rare, people believe they are, so their price is substantially inflated.

Once people realize that manufactured diamonds are indistinguishable from the real thing, he said, that could change.

But it is their very ordinariness that could make either natural or manufactured diamonds highly valuable to industry. Diamonds "have the potential to dramatically change technology, perhaps becoming as significant as steel or silicon in electronics and computing," Mr. Boser writes.

That might make them less appealing for engagement rings. But for those who believe that there is something about the beauty of diamonds that gives them appeal, the factory-made stones could fit the bill.

Mr. Boser said he took a sample from Apollo to Virgil Ghita, a jeweler in downtown Boston, who peered at the stone through his loupe.

"He lowers the loupe and looks at me for a moment," Mr. Boser writes. "Then he studies the stone again, pursing his brow. He sighs. 'There's no way to tell that it's lab-created,' " he said.

OIL SPECULATION Are speculators to blame for the spike in oil prices? The question has been under debate for months. Andrew Leonard writes at Salon's How the World Works blog that the answer is yes and no (salon.com).

Speculators are surely behind short-term moves in oil prices, both up and down. "But," Mr. Leonard writes, "behind that backdrop of speculative froth" the real numbers "aren't encouraging."

Demand is falling in the United States and Europe, but rising elsewhere, particularly in China and India. And although supplies are rising, that is only because of OPEC. Non-OPEC production is actually down.

What is unknown, Mr. Leonard writes, is how much power OPEC can wield. It could be that OPEC is "facing the same cold realities of depleting resources that the non-OPEC world is slamming into."

If so, regulating the speculators might not help in the long run.

HEALTHY SMOKES "We asked sports champions," declared a magazine ad for Camel cigarettes in 1935. Camels, the sports champions responded, not only give you energy, but also "healthy nerves," as the Olympic swimmer Stubby Kruger put it. "I smoke a great deal," he said, "and Camels don't ever ruffle my nerves."

That and dozens of other cigarette ads making equally absurd claims can be found in all their vintage glory at the Gallery of Graphic Design (graphic-design.tjs-labs.com). DAN MITCHELL

E-mail: whatsonline@nytimes.com

http://www.nytimes.com/2008/06/21/technology/21online.html?_r=1&th&emc=th&oref=slogin

I'm the Designer. My Client's the Autocrat.

By ROBIN POGREBIN

FOUR months ago the architect Daniel Libeskind declared publicly that architects should think long and hard before working in China, adding, "I won't work for totalitarian regimes." His remarks raised hackles in his profession, with some architects accusing him of hypocrisy because his own firm had recently broken ground on a project in Hong Kong.

Since then, however, Mr. Libeskind's speech, delivered at a real estate and planning event in Belfast, Northern Ireland, has reanimated a decades-old debate among architects over the ethics of working in countries with repressive leaders or shaky records on human rights.

With a growing number of prominent architects designing buildings in places like China, Iran, Abu Dhabi and Dubai, where development has exploded as civic freedoms or exploitation of migrant labor have come under greater scrutiny, the issue has inched back into the spotlight.

Debate abounds on architecture blogs, and human rights groups are pressing architects to be mindful of a government's politics and labor conditions in accepting commissions.

The ideological issue is as old as architecture itself. By designing high-profile buildings that bolster the profile of a powerful client, do architects implicitly sanction the client's actions or collaborate in symbolic mythmaking?

Or in the long run does architecture transcend politics and ideology? If the architect's own vision is progressive, can architecture be a vehicle for positive change?

For the most part, the issue is not a concrete one for the field's top practitioners; no architect interviewed for this article except Mr. Libeskind has publicly rejected the notion of working for hot-button countries. Yet the debate underscores the complex decisions that go into designing architecture — from the basic financial imperatives, to public access, to the larger message that a building sends — and is prodding architects to reflect on their priorities.

"It's complicated," said Thom Mayne, the Los Angeles architect, whose projects include a corporate headquarters in Shanghai. "Architecture is a negotiated art and it's highly political, and if you want to make buildings there is diplomacy required."

"I've always been interested in an architecture of resistance — architecture that has some power over the way we live," added Mr. Mayne, who said he had recently been interviewed for projects in Abu Dhabi, Kazakhstan, Russia, the Middle East and Indonesia. "Working under adversarial conditions could be seen as a plus because you're offering alternatives. Still there are situations that make you ask the questions: 'Do I want to be a part of this?' "

There is little question that this is a highly charged global moment for the profession: a building boom in Asia and the Middle East, combined with a hunger for designs by name brands, has created unparalleled opportunities for architects to make their mark. Every city wants its own Bilbao, the saying goes, a reference to the explosion of excitement over Frank Gehry's 1997 Guggenheim museum there, and every architect craves the recognition that comes with a high-profile commission.

One lightning rod in the debate is Rem Koolhaas's mammoth headquarters for China's state broadcast authority, CCTV, a minicity in itself in a capital where cranes dot the skylines and nearly every famous foreign architect has a project on the boards. Mr. Koolhaas suggested at the outset of the project, which he was assigned in 2002, that by the time his tower — a hulking hollowed-out trapezoid — was completed, China's censorship of the airwaves might well have changed. (The building is almost finished.)

Mr. Koolhaas is known for arguing that market forces have in any case supplanted ideology. Some interpret that stance as a way of avoiding the harder questions and a not-so-subtle reminder that money drives the most ambitious projects in the West.

"I have often found Rem Koolhaas's provocatively ideological neutral stance problematic," said Barry Bergdoll, the chief curator of architecture and design at the Museum of Modern Art. "I want to hear architects try to think that through. I want to know that they've grappled with it."

Mr. Koolhaas declined to be interviewed for this article.

Architects face ethical dilemmas in the West too. Some refuse to design prisons; others eschew churches. Robert A. M. Stern, who is also Yale's architecture dean, drew some criticism last year when he accepted an assignment to design a planned George W. Bush Library in Dallas.

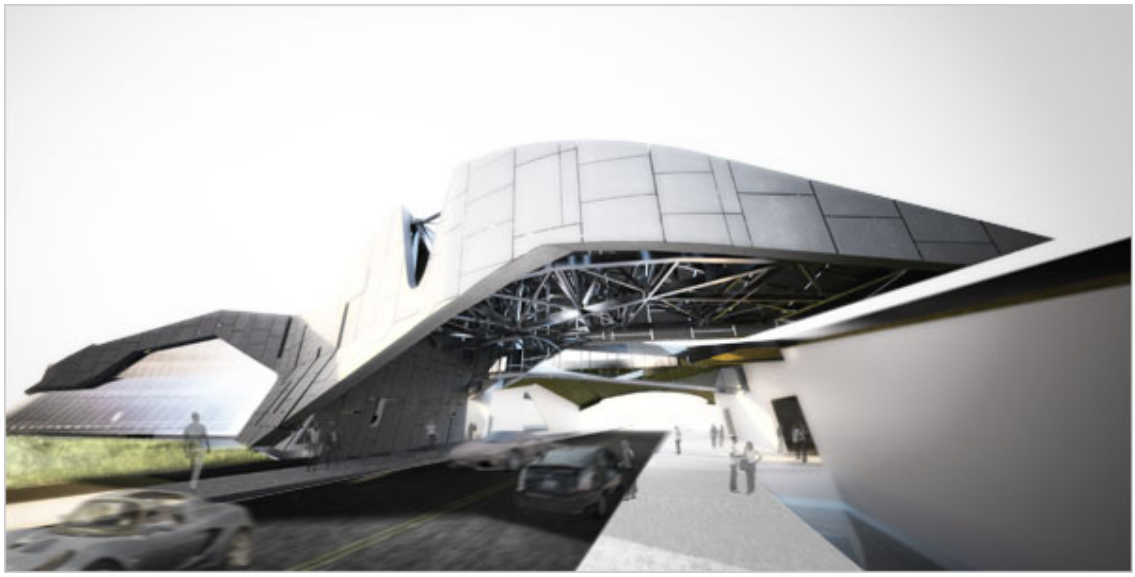
Mr. Stern shrugged off the sniping. "I'm an architect," he said. "I'm not a politician."

Some architects argue that architecture is more important to them than politics. "I'm a guy who has on my wall a picture of the guy in front of the tank," said Eric Owen Moss, a Los Angeles architect, referring to the famous photograph from the Tiananmen Square protests of 1989. "But I've never turned down a project in Russia and China."

Mr. Moss has designed the Guangdong Museum and Opera House in China as well as a ceremonial plaza, Republic Square, in Almaty, Kazakhstan, which has been ruled by the same autocratic leader, Nursultan Nazarbayev, since the 1980s.

Architects like Steven Holl cast their decision to build in China as a way of promoting a connection between East and West. "Certainly I question working anywhere," Mr. Holl said. "But my position as an architect is to work in the spirit of international civilization and cooperation. You have to make a contribution."

He cited his two-million-square-foot Linked Hybrid housing complex in Beijing, which will be heated and cooled by a 660-well geothermal energy system. "We are making the largest green total community in the history of Beijing," Mr. Holl said. "This is an example for many kinds of urban work."



Others go even further, arguing that their projects will be an emphatic force for social change. The Swiss architect Jacques Herzog has asserted that by supplying acres of public park space to city dwellers in the long term, his Olympic stadium in Beijing, designed with his partner, Pierre de Meuron, "will change radically — transform — the society."

"Engagement is the best way of moving in the right direction," he said.

Deyan Sudjic, director of the Design Museum in London and the author of "The Edifice Complex: How the Rich and Powerful Shape the World" (Penguin, 2005), agreed that Herzog & de Meuron's Olympic stadium sent a signal of openness. "In that stadium people see each other, rather than being looked down upon by a leader," he said. "It is a space which people can use in a way which is a shared democratic experience."

He contrasted its visual message with that of a new opera house in Beijing designed by Paul Andreu. "The opera house sits in a lake like a fortified moat — an enclosed frame — which says, 'Keep out,' " he said.

Mr. Andreu said in an interview that he intended the opera house to be inviting, not intimidating. "I wanted the building not to be just an imposing building, showing its face like a castle or an official building, behind the trees, beyond the water," he said. "It's a promise. It's something you will get."

"This is a building built at a certain moment in the history of China," he added. "It has been ordered by the power and paid for by the government, but it's made for the people of China, and I was never asked to compromise on that thinking."

Some architects argue that it is unrealistic and self-serving for them to presume that they can transform a society or distance themselves from a patron's conduct.

"Sometimes architects like to think they're above the political fray," said Frederic M. Bell, the executive director of the New York chapter of the American Institute of Architects. "I think that's a little bit disingenuous. Sometimes it's very difficult to take commissions from countries with positions with which one disagrees."

William Menking, the founder and editor of Architect's Newspaper, wrote recently, "To suggest that providing high-quality design justifies working" in China "is slippery ethics."

"Albert Speer designing for Hitler might have said the same thing. His building itself is not political, but the act of building it, for a regime like that, is a political act."

Examples abound of clients whose political ideology was considered inseparable from the buildings they commissioned, from Louis Le Vau's palace at Versailles (Louis XIV: "L'état, c'est moi") to Speer's Nuremburg parade grounds, based on ancient Greek architecture but magnified to colossal scale for Hitler's Nazi Party rallies.

Mies van der Rohe designed a competition entry for the German pavilion at the Brussels Expo of 1934 that included swastika flags and Nazi eagles. Le Corbusier aggressively courted Mussolini and the Vichy administration in France to try to get their business. Apart from his notorious Nazi sympathies, the architect Philip Johnson was known for boasting that he would readily design for Stalin if the price were right. Some 600 architects from around the world — including Peter and Alison Smithson — vied for the commission to build the Pahlavi state library for the shah of Iran in the late 1970s; architects including Robert Venturi and Denise Scott Brown entered Saddam Hussein's competition in the 1980s to design a mosque in Baghdad.

"It's a problem as old as architecture and empire," said Mr. Bergdoll of MoMA. "Architects in the end are selling design services."

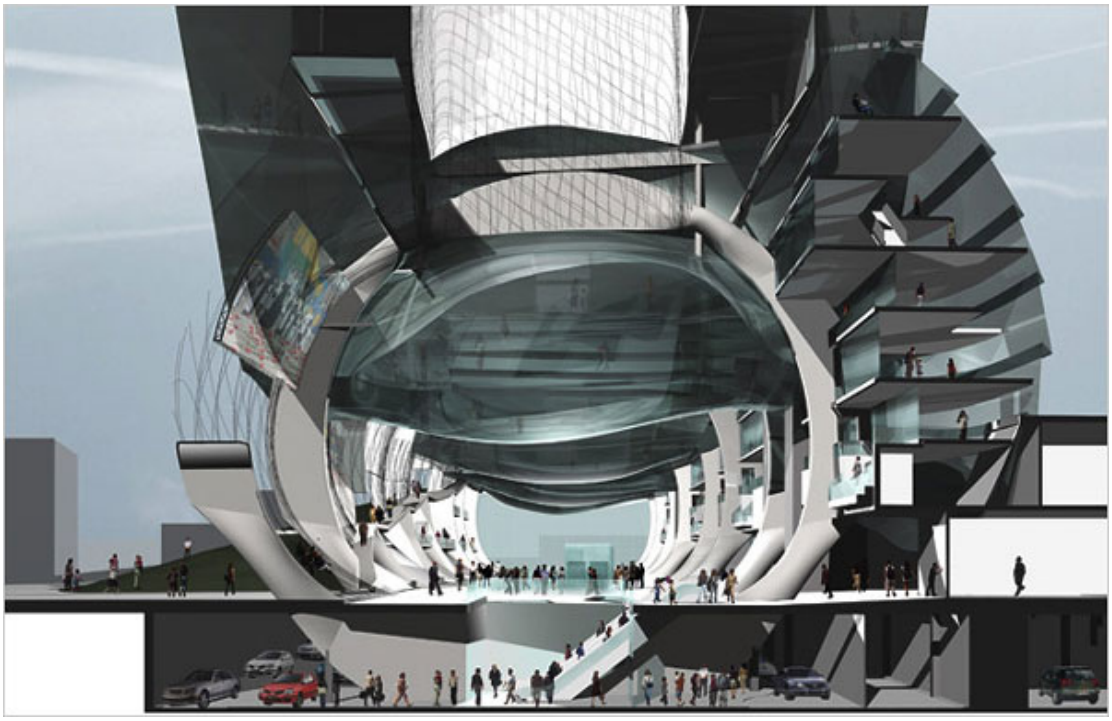
Architects readily point out that dictators — or powerful central governments like China's — can be among the most efficient in getting architecture built, as the boom in China attests. "The more centralized the power, the less compromises need to be made in architecture," said the architect Peter Eisenman. "The directions are clearer."

Bernard Tschumi, former dean of Columbia's architecture school, said, "Some of the most amazing places were built because of dictators."

"Architecture is always related to power and related to large interests, whether financial or political," he said.

Yet "there is a moment when the buildings are conceived as an expression of a political regime, he added. "Then it becomes a problem. You have to believe in it."

Still, the distinction between political and nonpolitical architecture can be hard to draw, whether the focus is ground zero in Manhattan (think of the "Freedom Tower") or China's new buildings for the Olympic Games, which are a source of deep nationalist pride.



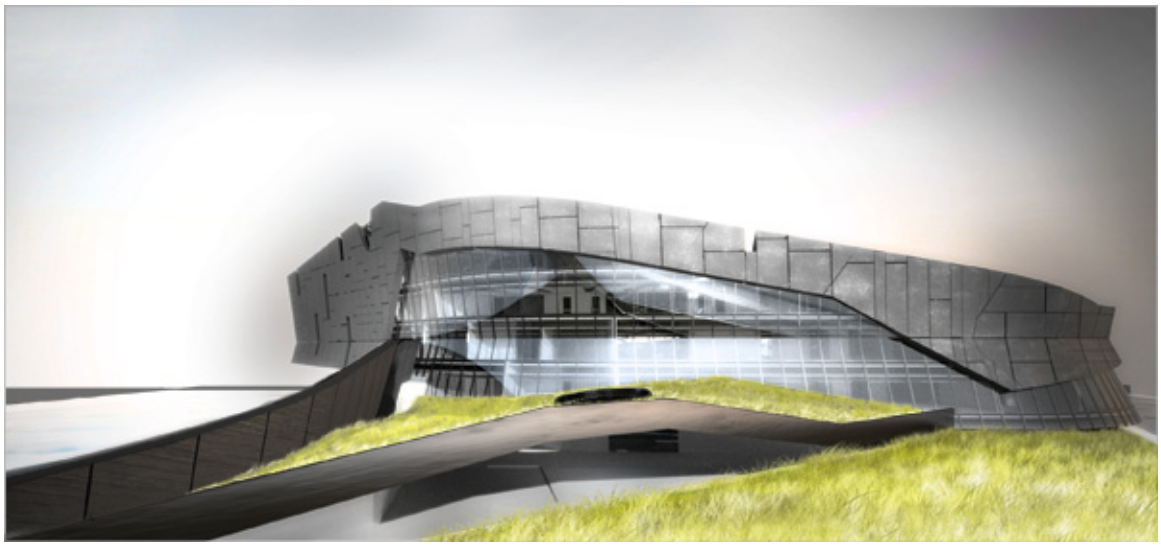
Abu Dhabi hopes to position itself as a cultural destination for the Middle East and Asia with a Guggenheim satellite designed by Frank Gehry, a classical museum by Jean Nouvel that would house visiting exhibitions from the Louvre in Paris, a performing arts center by Zaha Hadid and a maritime museum by Tadao Ando. Human rights groups have warned that these architects risk being linked to what they contend is the United Arab Emirates' chronic exploitation of construction workers from poor nations.

"We're urging them to take steps to make sure they or their contractors are complying with best practices," said Joe Stork, deputy director of Human Rights Watch's Middle East and North Africa division. "Typically their response is, 'We comply with national laws,' and our response to that is, national laws don't cut the mustard."

The architect Tod Williams, who with his wife and partner, Billie Tsien, is working on an Asia Society branch in Hong Kong, said, "We could not work in Abu Dhabi unless we were clearly helping the people."

Mr. Sudjic of the Design Museum in London suggested that the ambitions of architecture have changed significantly over the last century. In the early Modernist movement, he said, architects were encouraged to embrace utopian goals like social housing, but the promise ultimately proved hollow.

"I suppose there was a kind of sense of disillusionment that architecture was about building better societies," Mr. Sudjic said.



"Now architects are careful about making emotional political stands about anything. That can seem like sophistication, or it can seem like evasion."

Rather than come down on one side or the other of the broad ethical issue, some architects make their own case-by-case peace with it. "In France I refuse to work for the extreme-right party," Mr. Nouvel said. "But all around the world you have good reasons to say yes, because you don't build only for a client. You build for a city."

As for Mr. Libeskind, whose remarks rekindled the wide debate last winter, he said he had not sought any projects in mainland China but had designed a multimedia building for the City University of Hong Kong, because Hong Kong has a firmer rule of law. "There's a public process my building had to go through," he said.

He added that he had not closed the door to working for the Beijing government, however.

"If they said, 'Can you build us a center for democracy?' " he said, "I'd be the first to line up."

http://www.nytimes.com/2008/06/22/arts/design/22pogr.html?ref=design

The Avant Gardener

By ARMAND LIMNANDER

For a first-time visitor, Brussels can be a dreary city. Follow the old town's meanderings past Gothic squares and gargoyle-laden monuments, and you will invariably come to rows of unyielding, unapologetically functional buildings that house much of Europe's bureaucracy. Add to that gray skies and frequent drizzle, and the picture can become less than cheery. No wonder that passers-by often stop in their tracks when they come across Daniel Ost's Art Nouveau storefront on the Rue Royale: his floral emporium feels like a breath of fresh — and beautifully perfumed — air.

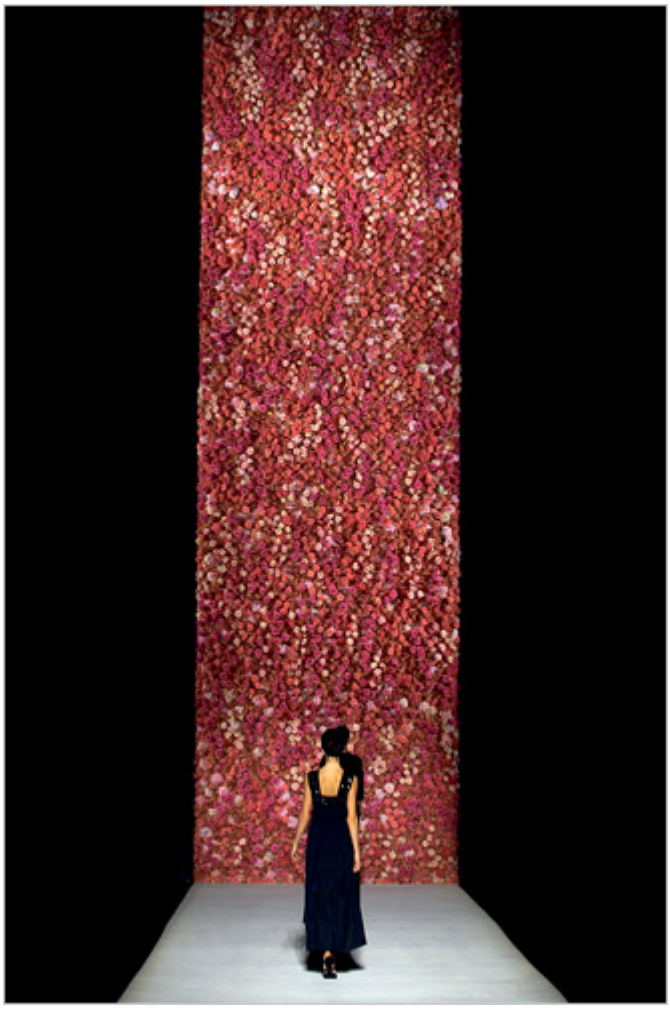
Ost is pretty much unknown in America, but in his native Belgium — and in Japan, where floral design is a vital part of that country's cultural heritage — he is something of a celebrity. Recently the art and fashion worlds have also become acquainted with the 53-year-old floral designer: he created the arrangements for the opening of the Palazzo Grassi museum in Venice two years ago and erected a wall of pink dahlias, gerberas, hydrangeas and lisianthuses as the backdrop to Dries Van Noten's spring 2007 collection. A couple of seasons later, flowers of all shapes and colors bloomed in almost every major collection. (After inspecting a slew of runway images, Ost declared Balenciaga's summer prints, which he suspects are of poppies and ranunculuses, to be "very refined.")

While bouquets and centerpieces are the core of his repertory, Ost is also known for his exuberant installations that venture into the realm of sculpture. Massive rings of rhododendrons displayed in a field look like supernatural, organic wheels, while a meticulous construction of dogwood and bright eucalyptus

leaves resembles the stained-glass windows of a Gothic cathedral. Ost is just as likely to work with branches, seaweed and fruit as he is with fresh blossoms.

As a child, Ost sensed that flowers would play an important part in his life. Until he was 6, he lived with his grandparents in the Belgian countryside — “a very natural place, where my grandfather cultivated flowers for me.” At age 3, he was picking wild roses in the fields when he fell into a well of manure. “I passed out, and my grandfather had to pull me out by the hair because he couldn’t reach my body anymore. So even then they knew that I had something with flowers.”

His father was less enthusiastic, preferring that he work in “a bank company or something like that,” and became hostile to Ost’s budding



sensibilities. “When I was young, many people thought that floral design was gay, so to ‘cure’ me, he sent me for a while to military school.” (Ost is happily married and the father of two.) Soon after, he left home to apprentice with Peter Curfs, a highly respected Dutch floral designer living in Ost’s native town of Sint Niklaas. “When I made my first bridal bouquet for him, and one wire a 10th of a millimeter thick was not straight, he had me put my hands on the table and hit me with a bamboo stick.” After a brief stint in the Netherlands, Ost opened his own shop in Sint Niklaas in 1981. (He started the Brussels store in 2003.) Within the floral industry he quickly became known for his technical rigor and intellectual adventurousness, despite some early naysayers. “When I won my first competition in Antwerp, the headline in the florist magazine was ‘Flower Art Without Flowers Is Nothing,’ ” he says, laughing. Since he was struggling financially, his arrangement consisted of tree trunks and other remnants he found on a ramble in the Ardennes.

Ost persevered with his avant-garde experiments involving reeds, grasses and other unconventional materials, and in 1985 he was invited to work in Japan. “There, flowers are connected with spirituality,” says Ost, who has been nicknamed The Bridge for his ability to blend Eastern and Western influences. “In the West we use them in a purely decorative way, but in Japan they work with the flower’s soul to express not just beauty but ideas like death.” The process of decay interests Ost. “I’ve always wanted to show flowers in their optimum moment, but now that I’m older, I also want to explore the beauty of dying,” he says. As if to balance this somber impulse, Ost occasionally designs lush landscapes. “I like gardens because they’re about growing rather than cutting.” His wormlike rows of bushes, winding pathways and large branch configurations that sprout from ponds are as dramatic as his more intimate pieces, but Ost insists that they are merely a side interest. “I only do them in places I like and for people I like.”

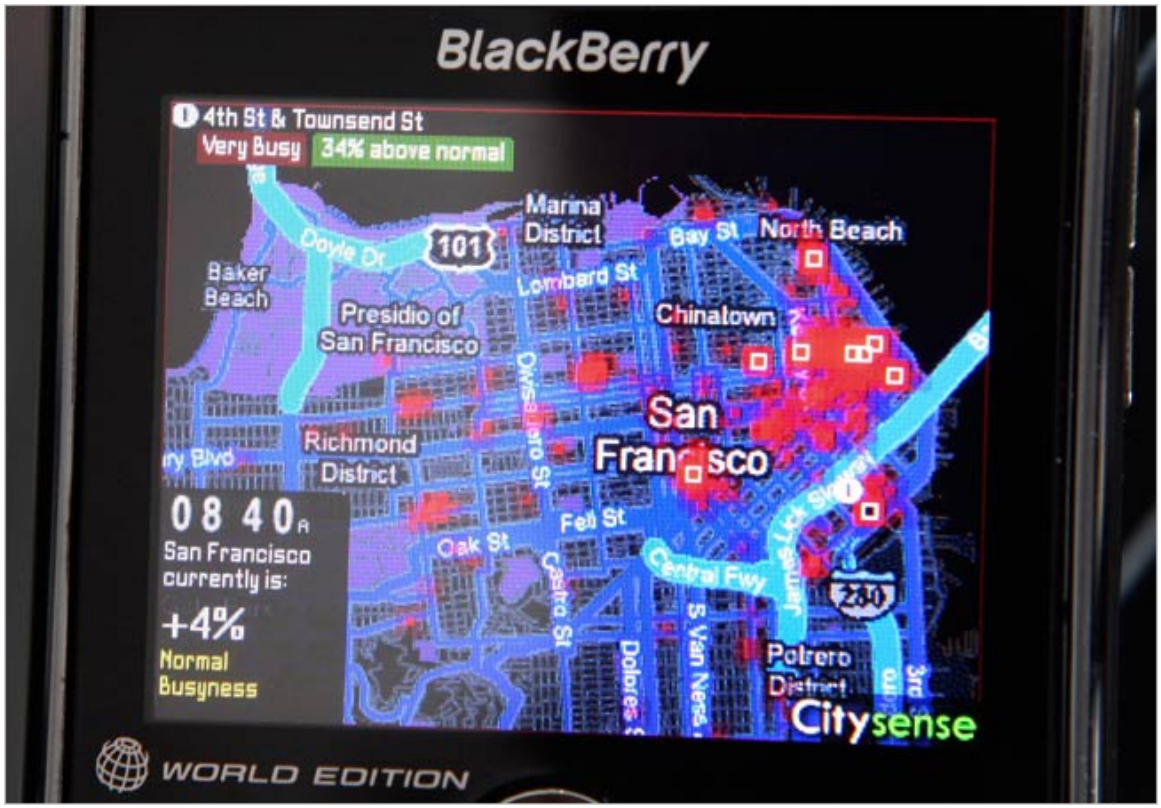
Besides, with two shops to run and exhibitions around the globe, he doesn’t have a lot of time for landscaping. “I make things very hard for myself because everything I do must be professionally perfect,” says Ost, who has been known to travel 900 kilometers to collect the materials for one bouquet. Considering that his creations involve an ephemeral balance of beauty, spirituality and ingenuity, should one think of Ost as an artist? “I get lots of e-mails and letters from people saying that my work makes them emotional,” he says. “They’re nice, but I’m also afraid of reading them because I always want to keep my feet on the ground, like a child who is playing. The title on my card is *bloembinder*. It’s an old Flemish word that’s hard to translate. It refers to what you do to bind flowers together, but it’s not like ‘florist’ in English or ‘*fleuriste*’ in French. It’s much more beautiful than that.”

No argument there.

http://www.nytimes.com/2008/06/22/magazine/22Style-t.html?ref=design

Predicting Where You'll Go and What You'll Like

By MICHAEL FITZGERALD



THAT hoariest of real estate truisms — location, location, location — may soon be a clarion call for all sorts of businesses.

We're in the midst of a boom in devices that show where people are at any point in time. Global positioning systems are among the hottest consumer electronics devices ever, says Clint Wheelock, chief research officer at ABI Research, a technology market follower. And cellphones increasingly come with G.P.S. chips. All of these devices churn out data that says something about how people live.

Such data could redefine what we know about consumer behavior, giving businesses early insight into economic trends, better ways to determine sites for offices and retail stores, and more effective ways to advertise.

Just this month, the journal Nature published a paper that looked at cellphone data from 100,000 people in an unnamed European country over six months and found that most follow very predictable routines. Knowing those routines means that you can set probabilities for them, and track how they change.

"What we do is really not random, even though it may appear random," says Albert-László Barabási, a physicist at Northeastern University who is one of the paper's authors.

It's hard to make sense of such data, but Sense Networks, a software analytics company in New York, earlier this month released Macrosense, a tool that aims to do just that. Macrosense applies complex statistical algorithms to sift through the growing heaps of data about location and to make predictions or recommendations on various questions — where a company should put its next store, for example.

Gregory Skibiski, 34, the chief executive and a co-founder of Sense, says the company has been testing its software with a major retailer, a major financial services firm and a large hedge fund.

Tony Jebara, also 34, the chief scientist and another co-founder of Sense, said, “We can predict tourism, we can tell you how confident consumers are, we can tell retailers about, say, their competitors, who’s coming in from particular neighborhoods.”

Mr. Jebara, who is also an associate professor of computer science at Columbia University, says the key to drawing such conclusions starts with having very large sets of data that go back several years. Sense’s models were developed initially from sources like taxicab companies that let it look at location data over such a period. Sense also uses publicly available data, like weather information, and other nonpublic sources that it would not disclose. “We had three-quarters of a billion data points from just one city,” Mr. Skibiski says.

Mr. Jebara’s statistical models interpret those patterns and look at whether they correlate with things in the real world, like tourism levels or retail sales. The algorithms are complex. Even so, the model doesn’t work for everything Sense tries it on, often because more data is needed. But Mr. Jebara says that when it has the data, the model works well. Several hedge funds made an investment in Sense earlier this year.

The Macrosense tool lets companies engage in “reality mining,” a phrase coined by Sandy Pentland, an M.I.T. researcher who was also a co-founder of Sense and now advises it on privacy issues.

Sense is not the only company engaged in reality mining. Inrix, a Microsoft spin-off, uses traffic data to predict traffic patterns. Path Intelligence of Britain monitors traffic flow in shopping centers by tracking cellphones.

Reality mining raises instant questions about privacy, especially when cellphone data is involved. In the United States, it is illegal in many cases for cellphone companies to share customers’ location data without their consent.

Mr. Skibiski says that Sense is interested only in aggregate data and that it’s looking for broad patterns, not the specific behavior of individuals. But he recognizes the privacy issue. He says he believes that people should own their own data, control when it is disclosed and receive some remuneration for it. His original idea in 2002 was to pay people for their data, but a formula for doing so proved too complicated.

Instead, Sense decided to trade services for data. On the same day it released Macrosense, it announced a new software package called Citysense, which uses location data to show where people are going, say, for nightlife, and maps their activity. Consumers who have iPhones or BlackBerrys can sign up for the service, which does not ask for personal information. Over time, the software will learn their patterns and recommend places they might like to go, or show them where other people with similar patterns are going. If they want to purge their data, they can do so at any time.

There's little doubt that products we use everyday, like our cellphones or cars, will increasingly allow for us to be tracked. And after years of hype, there also seems to be demand for services built around location. Gartner, a technology researcher and consulting firm, says that the market — which includes various navigation and search devices and subscriptions and services — will nearly triple in revenue this year, to $1.3 billion from $485 million in 2007, and will reach $8 billion in 2011.

Annette Zimmermann, a Gartner analyst, says Macrosense seems to have a novel offering, one with a potentially large market.

"So many companies are just sitting on data" that they can't do much with, she says. That could make Macrosense a powerful tool.

Still, Sense's model is not a sure thing.

"The reality is that location data is new, and we don't have 10 years of history to work from," says Ted Morgan, the chief executive and founder of Skyhook Wireless, which sells a service that lets people use WiFi network access points to get information about their location.

"But if their algorithms can do the things they say, we'd probably do a lot with them," Mr. Morgan says.

Michael Fitzgerald writes about business, technology and culture. E-mail: mfitz@nytimes.com.

http://www.nytimes.com/2008/06/22/technology/22proto.html?th&emc=th

In Search of Perfect Harmony, Through Software

By ANNE EISENBERG

MUSICIANS who want to create note-perfect digital recordings of their performances may soon have a powerful tool to help them: a computer program designed to correct mistakes in their piano riffs or guitar accompaniments as easily as software now fixes the red eyes in digital photographs.

The new software is precise enough, for instance, to reach into an audio file and change any one of the six notes in a guitar chord without changing the sound of the other notes, said Peter Neubäcker, inventor of the program and founder of Celemony Software, the Munich company that will sell it.

The software, called Direct Note Access, will be released in the fall and cost $399.

Software can already perform its share of musical Botox with digital recordings, smoothing and correcting performances. If a vocalist recording in the studio sings off key, for example, programs from Celemony and others can nudge a note up or down digitally to get it on pitch.

But that manipulation works only with music that has a single line of notes — for instance, a solo vocal performance. The problem of editing mistakes within polyphonic music — in which more than one note sounds simultaneously, as it does in a fugue, or in songs by a barbershop quartet or a rock band — is much trickier.

Software like Direct Note Access that can edit single pitches in polyphonic music may become popular, said Brian Majeski of The Music Trades, a magazine in Englewood, N.J. Last year, consumers spent $150 million on software for computer-based recording systems, he said. Many of these customers work in professional recording studios, but a growing number edit their music on computers at home, as much recording activity during the past decade has switched from studios to living rooms.

“Recording studios have millions of dollars’ worth of equipment that people once rented and used,” he said. “Now you can buy a computer and software like this and for a few thousand dollars have more capability than the Beatles had when they did their stuff.”

Direct Note Access is designed for music recorded on many tracks, with the bass guitar on one track, for instance, and the vocalist on another. Pitch corrections can be made for all tracks, one by one.

The software may also have applications for music of the past. “If you recorded a piece with a guitar that was out of tune,” Mr. Neubäcker said, “you could now go back and fix the tuning on the recording.”

Mr. Neubäcker’s program received a round of appreciative applause when it was demonstrated for professionals at a trade show in Frankfurt this spring. People outside the world of recorded music, however, may not immediately grasp its ingenuity, said Julius O. Smith III, a professor of music and associate professor of electrical engineering at the Center for Computer Research in Music and Acoustics at Stanford.

“It’s difficult to separate simultaneous sounds in a recording,” he said. “Since our brains do this all the time, it can be hard to appreciate the magnitude of the task” when it is done by computer.

The difficulty is inherent in the sounds themselves. Notes have a basic tone, or fundamental, but they can also have many overtones that intermix in polyphonic music.

Mr. Neubäcker’s program is designed to tease out this musical mix of simultaneous sound and sort it into separate sonic envelopes that can then be manipulated.

Mr. Neubäcker learned his technique of sonic sorting in part by ear, in part by algorithms. “I listened carefully,” he said, “and I also used spectrum analysis,” graphical displays of the complex blends of frequencies in each tone he analyzed.

Professor Smith said that the demonstration of the program he saw on the Internet “looked superb, truly groundbreaking.”

John Gibson, an assistant professor of composition at Indiana University in Bloomington, has also seen a demonstration on the Internet but remains skeptical.

“Sound is complicated,” he said, and devising a program that corrects pitches of single notes within polyphonic music is a daunting task. “Many people think that this is not possible. I’ll believe it once I’ve tried it out myself.”

EVEN if the program works well, its abilities may leave many professionals cold, including Adrian Carr, a Grammy-nominated recording engineer and composer in Montreal. “More and more in our recorded sound, we have an obsession with perfection,” he said. “No artist, especially classical, wants to release a recording with a wrong note. People edit so much it takes out some of the spontaneity.”

Mark Schubin of Manhattan, too, showed no interest. Mr. Schubin is the engineer in charge of live high-definition transmissions to movie theaters of Metropolitan Opera performances; in those transmissions, he said, “never, absolutely never” is a singer’s voice corrected by software.

“I just wonder how close to perfection is really desirable,” he said.

E-mail: novelties@nytimes.com.

http://www.nytimes.com/2008/06/22/technology/22novel.html?th&emc=th

Sea of Trash

By DONOVAN HOHN

Off Gore Point, where tide rips collide, the rolling swells rear up and steepen into whitecaps. Quiet with concentration, Chris Pallister decelerates from 15 knots to 8, strains to peer through a windshield blurry with spray, tightens his grip on the wheel and, like a skier negotiating moguls, coaxes his home-built boat, the Opus — aptly named for a comic-strip penguin — through the chaos of waves. Our progress becomes a series of concussions punctuated by troughs of anxious calm. In this it resembles the rest of Pallister's life.

A 55-year-old lawyer with a monkish haircut, glasses that look difficult to break, an allergy of the eyes that makes him squint and a private law practice in Anchorage, Pallister spends most of his time directing a nonprofit group called the Gulf of Alaska Keeper, or GoAK (pronounced GO-ay-kay). According to its mission statement, GoAK's lofty purpose is to "protect, preserve, enhance and restore the ecological integrity, wilderness quality and productivity of Prince William Sound and the North Gulf Coast of Alaska." In practice, the group has, since Pallister and a few like-minded buddies founded it in 2005, done little else besides clean trash from beaches. All along Alaska's outer coast, Chris Pallister will tell you, there are shores strewn with marine debris, as man-made flotsam and jetsam is officially known. Most of that debris is plastic, and much of it crosses the Gulf of Alaska or even the Pacific Ocean to arrive there.

The tide of plastic isn't rising only on Alaskan shores. In 2004 two oceanographers from the British Antarctic Survey completed a study of plastic dispersal in the Atlantic that spanned both hemispheres. "Remote oceanic islands," the study showed, "may have similar levels of debris to those adjacent to heavily industrialized coasts." Even on the shores of Spitsbergen Island in the Arctic, the survey found on average a plastic item every five meters.

Back in the 1980s, the specter of fouled beaches was a recurring collective nightmare. The Jersey Shore was awash in used syringes. New York's garbage barge wandered the seas. On the approach to Kennedy Airport, the protagonist of "Paradise," a late Donald Barthelme novel, looked out his airplane window and saw "a hundred miles of garbage in the water, from the air white floating scruff." We tend to tire of new variations on the apocalypse, however, the same way we tire of celebrities and pop songs. Eventually all those syringes, no longer delivering a jolt of guilt or dread, receded from the national consciousness.

Who could worry about seabirds garotted by six-pack rings when Alaska's shores were awash in Exxon's crude? Who could worry about turtles tangled in derelict fishing nets when the ice caps were melting and the terrorists were coming?

Then, too, for a while it seemed as if we might succeed in laying this particular ecological nightmare to rest. In the mid-1980s, New York's sanitation department began deploying vessels called TrashCats to hoover up scruff from the waterways around the Fresh Kills landfill. Elsewhere beach-sweeping machines did the same for the sand. In 1987 the federal government ratified Marpol Annex V, an international treaty that made it illegal to throw nonbiodegradable trash — that is, plastic — overboard from ships in the waters of signatory countries. The good news for the ocean kept coming: in 1988, Congress passed the Ocean Dumping Reform Act, which forbade cities to decant their untreated sewage into the sea. In 1989 the Ocean Conservancy staged its first annual International Coastal Cleanup (I.C.C.), which has since grown into the largest such event in the world. But beautification can be deceiving. Although many American beaches — especially those that generate tourism revenues — are much cleaner these days than they used to be, the oceans, it seems, are another matter.

Not even oceanographers can tell us exactly how much floating scruff is out there; oceanographic research is simply too expensive and the ocean too varied and vast. In 2002, Nature magazine reported that during the 1990s, debris in the waters near Britain doubled; in the Southern Ocean encircling Antarctica the increase was a hundredfold. And depending on where they sample, oceanographers have found that between 60 and 95 percent of today's marine debris is made of plastic.

Plastic gets into the ocean when people throw it from ships or leave it in the path of an incoming tide, but also when rivers carry it there, or when sewage systems and storm drains overflow. Despite the Ocean Dumping Reform Act, the U.S. still releases more than 850 billion gallons of untreated sewage and storm runoff every year, according to a 2004 E.P.A. report. Comb the Manhattan waterfront and you will find, along with the usual windrows of cups, bottles and plastic bags, what the E.P.A. calls "floatables," those "visible buoyant or semibuoyant solids" that people flush into the waste stream like cotton swabs, condoms, tampon applicators and dental floss.

The Encyclopedia of Coastal Processes, about as somniferously clinical a scientific source on the subject as one can find, predicts that plastic pollution "will incrementally increase through the 21st century,"

because “the problems created are chronic and potentially global, rather than acute and local or regional as many would contemplate.” The problems are chronic because, unlike the marine debris of centuries past, commercial plastics do not biodegrade in seawater. Instead, they persist, accumulating over time, much as certain emissions accumulate in the atmosphere. The problems are global because the sources of plastic pollution are far-flung but also because, like emissions riding the winds, pollutants at sea can travel.

And so, year after year, equipped with garbage bags and good intentions, the volunteers in the International Coastal Cleanup fan out, and year after year, in many places the tonnage of debris is greater than before. Seba Sheavly, a marine-debris researcher who ran the I.C.C. until 2005, says the Ocean Conservancy’s cleanup “has never been about curing the problem of marine debris.” It has always been, she told me, “a public awareness campaign.” Now a private consultant to the plastics industry and the United Nations Environment Program, among other clients, Sheavly says she believes that the primary value of coastal cleanups lies in the lesson they teach volunteers — “that what they’re picking up comes from them.” On Alaska’s outer coast, however, only a fraction of the debris washing in comes from local litterbugs. On much of Alaska’s 33,000-mile shoreline, in fact, there are no local litterbugs. On much of Alaska’s shoreline there are no people at all.

When Pallister took me there last July, a GoAK crew had been at work for two weeks cleaning up Gore Point (population: 0), part of a 400,000-acre maritime wilderness at the heart of the Kenai Fjords. Despite the pretty scenery, few nature lovers bother to visit. You can travel to Gore Point only by helicopter, seaplane or boat, and then only when weather permits, which it often does not. In the lower 48, beach cleanups tend to involve schoolchildren gleaning food wrappers and cigarette butts left by recreational beachgoers. GoAK’s cleanups, by contrast, are costly expeditions into the wild. The group’s volunteers must be 18 or older, and all must sign a frightening waiver in which they agree not to hold the organization liable for perils like “dangerous storms; hypothermia; sun or heat exposure; drowning; vehicle transportation and transfer; rocky, slippery and dangerous shorelines; tool and trash related injuries; bears; and” — in case that list left anything out — “other unforeseen events.”

The windward shore of Gore Point is what’s known among beachcombers and oceanographers as “a collector beach.” In 1989, according to The Anchorage Daily News, more of Exxon’s spilled oil ended up there than on any other beach on Alaska’s outer coast, but unlike the oil, the incoming debris never ended. Every tide brings more. Over the course of several decades, ever since the dawn of the plastics era, a kind of postmodern midden heap accumulated behind the driftwood berm. To beachcombers in the know, Gore Point was a happy hunting ground, one of the best places in Alaska to find exotic oddities. To Pallister, it was a paradise lost. Now, subsidized by a $115,000 matching grant from the National Oceanic and Atmospheric Administration (N.O.A.A.), he had embarked upon a possibly quixotic mission to regain it.

Pallister refuses to accept that beach cleanups are merely public awareness campaigns. And so, it seems, does the federal government. In 2006, in part thanks to lobbying by the Ocean Conservancy, Congress passed the Marine Debris Research, Prevention and Reduction Act. Last winter, Pallister applied for one of the grants authorized by the bill. By then GoAK certainly had acquired the requisite expertise. Before founding GoAK, Pallister and his field manager, Ted Raynor, helped organize an annual volunteer beach cleanup in Prince William Sound. Over the course of four summers, working their way eastward from Whittier, the volunteers scoured approximately 70 miles of rugged shoreline. At that rate, Pallister and Raynor calculated, it would take 200 years to clean Prince William Sound just once. Rather than abandon all hope — perhaps the most rational response — they chartered GoAK and started raising money.

In its first summer in action, GoAK managed to clean 350 miles of rugged shoreline, picking up enough trash to fill 46 trash-hauling bins. Pallister wasn’t satisfied. It wasn’t enough to clean beaches near coastal communities. And so, last summer, Gore Point became a front line in the federal government’s campaign against debris. What would it take, Pallister hoped to learn, to clean up one wild beach?

To me, Gore Point seemed like the scene of an unsolved environmental mystery — unsolved and possibly unsolvable. Who, if anyone, can be held accountable for all that plastic trash? What, if anything, does it forebode for us and for the sea?

By the time we reach GoAK's base camp on Gore Point's leeward shore, Alaska's long midsummer twilight has begun. Pallister is anxious to have a look at the cleanup site before dinner. Raynor leads the way, his brindled pit bull Bryn racing ahead, sniffing the ground for marmots and bears. The narrow trail dips and meanders eastward across an isthmus, following the edge of a meadow where wildflowers are in bloom before veering into the forest, the floor of which is overgrown with devil's club, an aptly named shrub whose thorns, Pallister warns me, can be fiendishly difficult to get out. In the distance, trash bags, some yellow, others white, flash between the spruce trunks. By Raynor's estimate, in the last two weeks, he and nine other workers the crew manager Doug Leiser, Leiser's two sons, Pallister's three sons and three volunteers from Homer filled around 1,200 garbage bags weighing, on average, 50 pounds each. That's 60,000 pounds, or 30 tons, of debris. All along the length of the beach, a dozen yards apart, are heaps of bags, great colorful cairns, and here and there, clustered in the grass, are loose objects too big or heavy for bags the wheel of a car, a microwave oven, a television screen that, shorn of its cabinet, looks naked, like a brain without a skull.

There's one acre of forest left to be cleaned up. As we approach, the mossy earth begins to crackle and crunch underfoot. I recognize the sound: we're walking over buried plastic. Behind the moldering trunk of a fallen spruce, a deep drift of trash has collected, like water behind a dam. This is what the entire shore looked like two weeks ago, Raynor says. Gill-net floats appear to be the most abundant item, polyethylene water bottles the second-most abundant. Many of the floats and nearly all of the bottles are inscribed with Asian characters. I unearth a flip-flop, and then, a few moments later, an empty container of Downy, the fabric softener.

Pallister has a theory about where all this trash comes from. "There's a weather phenomenon we have here," he told me in Anchorage. "A winter low sets this prevailing wind pattern that will just funnel this way for days on end if not weeks on end. That wind is blowing right across that bunch of plastic out there." The "bunch of plastic" he was talking about is the flotilla of trash, purportedly at least as big as Texas, that has accumulated at the becalmed heart of the North Pacific Subtropical Gyre, a giant clockwise circuit of currents that revolves between East Asia and North America.

High-pressure systems like the one that predominates over the North Pacific Subtropical Gyre force currents to spiral inward. Oceanographers call these spirals "convergence zones." Low atmospheric pressure systems like the one that predominates over the Gulf of Alaska have the opposite effect, creating "divergence zones" where the surface currents move outward toward shore. Divergence zones tend to expel debris. Convergence zones collect it.

In 2001 a peer-reviewed scientific journal called The Marine Pollution Bulletin published a study, whose undramatic title, "A Comparison of Plastic and Plankton in the North Pacific Central Gyre," belied its dramatic findings. The lead author — a sailor, environmentalist, organic farmer, self-trained oceanographer and onetime furniture repairman named Charles Moore — went trawling in the North Pacific convergence zone about 800 miles west of San Francisco and found seven times as much plastic per square kilometer as any previous study.

"As I gazed from the deck at the surface of what ought to have been a pristine ocean," Moore later wrote in an essay for Natural History, "I was confronted, as far as the eye could see, with the sight of plastic. It seemed unbelievable, but I never found a clear spot. In the week it took to cross the subtropical high, no matter what time of day I looked, plastic debris was floating everywhere: bottles, bottle caps, wrappers, fragments." An oceanographic colleague of Moore's dubbed this floating junk yard "the Great Pacific Garbage Patch," and despite Moore's efforts to suggest different metaphors — "a swirling sewer," "a superhighway of trash" connecting two "trash cemeteries" — "Garbage Patch" appears to have stuck.

The Garbage Patch wasn't merely a cosmetic problem, nor merely a symbolic one, Moore contended. For one thing, it was a threat to wildlife. Scientists estimate that every year at least a million seabirds and 100,000 marine mammals and sea turtles die when they entangle themselves in debris or ingest it. "Entanglement and ingestion, however, are not the worst problems caused by the ubiquitous plastic pollution," Moore wrote. Plastic polymers, as has long been known, absorb hydrophobic chemicals, including persistent organic pollutants, or POPS, like dioxin, P.C.B.'s and D.D.T. Highly controlled in

the U.S. but less so elsewhere, such substances are surprisingly abundant at the ocean's surface. By concentrating these free-floating contaminants, Moore worried, particles of plastic could become "poison pills." He also worried about toxins in the plastic itself — phthalates, organotins — that have been known to leach out over time. Once fish or plankton ingest these pills, Moore speculated, poisons both in and on the plastic would enter the food web. And since such toxins concentrate, or "bioaccumulate," in fatty tissues as they move up the chain of predation — so that the "contaminant burden" of a swordfish is greater than a mackerel's and a mackerel's greater than a shrimp's — this plastic could be poisoning people too.

In the scientific community, Moore's work is somewhat controversial. Even marine biologists who share his alarm have misgivings about the sensationalism with which the Garbage Patch is sometimes described. Since the plastic debris in the North Pacific convergence zone is spread out unevenly across millions of miles of ocean, and since most of it is fragmentary, flowing through the water column like dust through air, the Garbage Patch bears little resemblance to a floating junkyard. But it is, numerous scientists assured me, very much for real.

Beth Flint's nuanced testimony was typical. Flint is a wildlife biologist with the U. S. Fish and Wildlife Service. One seabird she studies is the Laysan albatross, which, thanks to a recent Greenpeace ad campaign, has become plastic pollution's most famous victim — its poster bird, if you will. The ad shows a photograph in which a slimy casserole of bottle caps, cigarette lighters and unidentifiable plastic shards spills from the downy belly of a necropsied Laysan albatross chick. "How to starve to death on a full stomach," the caption reads. The image is not merely powerful, or shocking; it's persuasively accusatory. Look, dear consumer, it seems to say; look at what you've done, look where what you throw away ends up.

There's only one problem, Flint says. No one knows for certain whether plastic killed the albatross. Do plastic shards perforate the intestines of chicks? Sometimes. Does plastic obstruct the digestive tract or make a bird "starve to death with a full stomach"? Probably, in some cases. Then again albatrosses eat squid, and chitonous squid beaks are also indigestible. Are the toxins in and on plastics poisoning the birds, as Moore has proposed? It wouldn't be surprising. According to Flint, long-lived seabirds like albatrosses do indeed have alarmingly high contaminant burdens. But research into the pathology of plastic poisoning is ongoing, and in the meantime, "it's still all sort of circumstantial."

Despite these caveats, Flint has little doubt that plastic is "clearly not good" for seabirds, and her praise for Moore is unequivocal. "I think that he's done a tremendously valuable service to humanity by pursuing this when none of the big oceanographic or academic institutions or government institutions did," Flint said. She predicts that other researchers will soon "get on his bandwagon." Already her prediction seems to be coming true. In the last few years several studies of plastic poisoning appeared in prominent journals, including Science.

The hardest question to answer about the Garbage Patch, it turns out, isn't whether plastic threatens animals and ecosystems, but what, if anything, can be done about it. "We haven't been able to hatch up any good ideas," Flint admitted. Albatross chicks don't forage on land, she said. In fact they don't forage at all. Their parents do, flying far and wide across the Pacific, swooping down to snatch morsels off the surface, which they bring back home and regurgitate into a hungry chick's mouth. That's where all the detritus in that Greenpeace ad came from. Even if we were to clean every beach in the world, it wouldn't keep albatrosses from stuffing their offspring full of plastic. "You'd have to clean the entire ocean," Flint said.

During the few days I spent helping out at Gore Point, GoAK's labors came to seem all the more Herculean. Cleaning up debris turns out to be slow, mind-numbing, back-straining work. We crouched amid the devil's club, a few feet apart, like gleaners harvesting surreal produce — plastic gourds, fungi of foam. Every now and then someone would find something remarkable — a bottle with Arabic writing on it, a toy, a shoe, a Russian vacuum tube — and would hold it up for the rest of us to see, before pocketing it or, more often, dropping it into a bag with the other trash. When you stepped back to examine your

progress, the difference would hardly be noticeable. But the hours and bags added up, and finally there was nothing left on that forest floor but a sprinkling of plastic foam.

Pallister wasn't ready to celebrate. Even now, the success of GoAK's rescue mission remained in doubt. He still didn't know how he was going to remove all that trash from that windward shore, where the waters were rocky and the surf could be dangerously rough. The original plan was to load the bags onto six-wheelers, drive them across the isthmus to the protected leeward shore and transfer the bags onto a bow-loading amphibious barge, which would ferry them 80 miles to the landfill in Homer. But archaeologists with the Alaska parks department recently told Pallister, no six-wheelers. So now what? Sweat equity? Helicopters?

The week before, he spoke to a helicopter pilot who assured him that timber companies regularly airlifted logs out of forests as dense as this one. If GoAK loaded the debris into bulk bags, and if the weather wasn't too foul, it wouldn't be a problem. (A bulk bag is a giant, white, rip-proof plastic sack, the size and shape of a balloonist's gondola, that the shipping and construction industries use to sling cargo — more than 4,000 pounds of it — through the air.) The pilot would snake a hook down through the trees on a 125-foot cable, a man on the ground would catch it, snap on a load of bulk bags, and up through the branches they would go, three or four at a time. But standing in the forest, peering up through the dense canopy, Pallister was having a hard time imagining it, despite the pilot's assurances. "We're going to have to find some clearings for the helicopter," he said to Raynor.

Even if he could make the airlift work, it wasn't clear how he was going to pay for it. A chartered helicopter would run him approximately $2,000 an hour, the barge $4,000 a day. Already Pallister, who keeps a well-thumbed copy of Edward Abbey's "Monkey Wrench Gang" on his coffee table, had hit up dozens of corporate sponsors — Princess Cruises, REI, Alyeska Pipeline, BP, whose sunflower logo decorates most of GoAK's garbage bags. Then there was the weather to worry about. Autumn comes early to the Kenai Peninsula's outer coast. The barge and helicopter wouldn't be available until mid-August. By then, summer would be ending, the purple fireweed would have finished blooming and on the upper slopes of the Kenai Mountains the tundra would be tingeing red. By then the weather could turn. The southeasters could start howling in off the Pacific, buffeting the windward shore, making waves surge up into driftwood, stripping branches, scattering debris 400 feet into the trees. If that happened, you could forget about an airlift. If that happened, the crew would have to lash down the heaped bags with cargo nets and pray they survived the winter.

"**That's not unusual**," Charles Moore told me, when I described the midden at Gore Point. "Any windward side of an island's going to have situations like that. The question is, how much can we take? We're burying ourselves in this stuff." Moore sympathized with Pallister's motives, and said that GoAK's efforts could help "raise awareness." But if Pallister thought he was saving Gore Point from plastic pollution, he was fooling himself. "It's just going to come back," Moore said.

This, in Moore's opinion, is why the 2006 Marine Debris, Research, Prevention and Reduction Act is likewise doomed to fail. "It's all been focused on cleanups," he says of federal policy. "They think if they take tonnage out of the water, the problem will go away."

In the Northwestern Hawaiian Islands, whose shores are washed by the southern edge of the Garbage Patch, federal agencies are staging one of the biggest marine-debris projects in history. Since 1996, using computer models, satellite data and aerial surveys, they have located and removed more than 500 metric tons of derelict fishing gear in hopes of saving endangered Hawaiian monk seals from entanglement. The results have been mixed at best. Biologists are now finding fewer monk seals entangled in debris; but they are also finding fewer monk seals, period. Meanwhile, an estimated 52 tons of fresh debris inundates the Northwestern Hawaiian Islands every year.

Along with financing and volunteers, corporate sponsors of the International Coastal Cleanup contribute homilies about saving the planet. "Working together we help keep our coasts clean," ran Coca-Cola's contribution to the I.C.C.'s 2006 report. Marine debris, declared Dow Chemical, is a "people problem that

we, the citizens of the world, have the power to stop." Is it? Yes, says Moore, but "there is no magic bullet," and the solutions may require sacrifices that the citizens, governments and corporations of the world are reluctant to make. Eventually we will have to abandon planned obsolescence, and instead manufacture products that are durable, easily recyclable or both, Moore said. And we will have to overcome our addiction to conspicuous consumption.

In the meantime, other smaller, more practical actions could be taken. In 1999, the National Resources Defense Council successfully sued the U.S. Environmental Protection Agency for permitting municipalities to pollute watersheds around Los Angeles. As a result of the lawsuit, Los Angeles County had to comply with stricter total maximum daily loads, or T.M.D.L.'s, the local pollution limits that the E.P.A. places on a region's waterways under the Clean Water Act. The new T.M.D.L.'s, the first in the country to treat trash as a pollutant, will require the county to reduce the amount of solid waste escaping its rivers and creeks from 4.5 million pounds a year to zero by 2016. To meet that target, cities will have to invest in "full-capture systems," filters that strain out everything larger than 5 millimeters in diameter. In theory, every region in the country could follow suit, but already cash-strapped governments in Southern California are complaining that these "zero-trash T.M.D.L.'s" are too costly and ambitious to implement. Moore, meanwhile, has collected data showing that even full-capture systems would allow tens of thousands of plastic particles to escape the Los Angeles River every day.

As nearly everyone I spoke to about marine debris agrees, the best way to get trash out of our waterways is, of course, to keep it from entering them in the first place. But experts disagree about what that will take. The argument, like so many in American politics, pits individual freedom against the common good. "Don't you tell me I can't have a plastic bag," Seba Sheavly, the marine-debris researcher, says, alluding to plastic-bag bans like the one San Francisco enacted last year. "I know how to dispose of it responsibly." But proponents of bag bans insist that there is no way to use a plastic bag responsibly. Lorena Rios, an environmental chemist at the University of the Pacific, says: "If you go to Subway, and they give you the plastic bag, how long do you use the plastic bag? One minute. And how long will the polymers in that bag last? Hundreds of years."

"The time for voluntary measures has long since passed," says Steve Fleischli, president of Waterkeeper Alliance, a network of environmental watchdogs to which, it should be noted, the Gulf of Alaska Keeper does not belong. (Waterkeeper officials have objected to GoAK's use of their brand, but Pallister insists that their objections are without legal merit. "They've trademarked 'Riverkeeeper,' 'Soundkeeper,' 'Baykeeper,' " he told me, "but not 'Alaska keeper.' ") Fleischli would have us tax the most pervasive and noxious plastic pollutants — shopping bags, plastic-foam containers, cigarette butts, plastic utensils — and put the proceeds toward cleanup and prevention measures. "We already use a portion of the gasoline tax to pay for oil spills," Fleischli says. Such levies shouldn't be seen as criminalizing the makers and sellers of plastic disposables, he argues; they merely force those businesses to "internalize" previously hidden costs, what economists call "externalities." This market-based approach to environmental regulation, known as extended producer responsibility, is increasingly popular with environmental groups. By sticking others with the ecological cleaning bill, the thinking goes, businesses have been able to keep the price of disposable plastics artificially low. And as Pallister learned at Gore Point, the cleaning bill may be greater than we can afford.

We still have limited tax dollars to spend and scarier nightmares to fear. No one — not Pallister, not Moore — will tell you that plastic pollution is the greatest man-made threat our oceans face. Depending whom you ask, that honor goes to global warming, agricultural runoff or overfishing. But unlike many pollutants, plastic has no natural source and therefore there is no doubt that we are to blame. Because we can see it, plastic is a powerful bellwether of our impact upon the earth. Where plastics travel, invisible pollutants — pesticides and fertilizers from lawns and farms, petrochemicals from roads, sewage tainted with pharmaceuticals — often follow. Last June, shortly before my voyage in the Opus began, Sylvia Earle, formerly N.O.A.A.'s chief scientist, delivered an impassioned speech on marine debris at the World Bank in Washington. "Trash is clogging the arteries of the planet," Earle said. "We're beginning to wake up to the fact that the planet is not infinitely resilient." For ages humanity saw in the ocean a sublime grandeur suggestive of eternity. No longer. Surveying the debris on remote beaches like Gore

Point, we see that the ocean is more finite than we'd thought. Now it is the sublime grandeur of our civilization but also of our waste that inspires awe.

One evening in mid-August, despite N.O.A.A. forecasts calling for gale-force winds, a rusty 100-foot barge called the Constructor plowed its way in darkness from Homer to Gore Point, reaching the leeward anchorage just before dawn. Day broke to mild breezes and blue skies, which showed how much you could trust N.O.A.A. forecasts out here on the unpredictable coast. The helicopter was supposed to arrive by 10, bringing a local television news crew with it. Shortly before the appointed hour, Raynor, Leiser and Pallister's elder sons assembled on Gore Point's leeward shore. Dressed in fleece jackets and rubber boots, reclining on overstuffed bulk bags as if they were Barcaloungers, they gazed west, beyond the barge, to the Kenai Mountains, above which, any moment now, they expected the helicopter to appear. "God's smiling," Raynor remarked of the weather. "God's saying: 'Thank you. Thank you for cleaning up Gore Point.' "

A half-hour later, when the helicopter had not arrived, Raynor wasn't so sure what God was saying. Had something gone wrong? Was Homer weathered in? The Pallister boys rose from their bulk bags, walked down to the surf and began amusing themselves with strands of bull kelp, whipping the slick green ropes toward the water as if casting lines.

At last, from the opposite direction than expected, the unmistakable throb of a rotor could be heard, growing louder. The four men turned almost in unison and shaded their eyes with their hands. But then the noise faded. The treetops tossed around in the wind. The men continued to stare. "They must be doing a flyover of east beach," Leiser said. "Probably the TV crew wants an aerial shot." The treetops kept tossing. At this distance the helicopter sounded like a neighbor's lawn mower. Then, thundering, it appeared, swooping past, dark blue, alive with gleams, flying low enough that it was easy to read the words "Maritime Helicopter" on its side. Here in the wilderness it seemed angelic. The pilot banked over the inlet, over the Constructor, where Chris Pallister stood on the deck looking up.

Donovan Hohn, a contributing editor of Harper's Magazine, is at work on a book about a shipment of bath toys lost at sea.

http://www.nytimes.com/2008/06/22/magazine/22Plastics-t.html?th&emc=th

12 Innocent Men

By JAY JENNINGS

ON THE LAPS OF GODS

The Red Summer of 1919 and the Struggle for Justice That Remade a Nation.

By Robert Whitaker.

Illustrated. 386 pp. Crown Publishers. $24.95.

My grandfather lived in West Helena, Ark., in 1919, in Phillips County, the place of the race massacre chronicled in “On the Laps of Gods.” A box of his papers that I recently uncovered shows evidence of that Jim Crow era in action — a receipt for his poll taxes from 1917, identifying him as white and stamped with the name of the sheriff, Frank Kitchens. Robert Whitaker’s book quotes a letter in which Kitchens is described as wanting a “free hand to hunt Mr. Nigger in his lair.” Despite my family connections to Phillips County, I hadn’t heard about the “Elaine Riot” (named for a nearby town), until I happened upon a description of it a decade ago in a reissue of the W.P.A. Guide to 1930s Arkansas. Most other Americans have never heard of it either. Whitaker explains why: “As with many racial histories of this kind,” he says, it was “one of those shameful events best not talked about.” Many in Little Rock, where I grew up, also felt that way for decades about the 1957 integration crisis at Central High.

Richard Wright also lived in West Helena in 1919 (he was 11), but he doesn’t mention the massacre in his autobiography, “Black Boy” — even though, as Whitaker notes, “a very conservative estimate today would put the number of blacks killed at well over 100, and perhaps the real toll was two or three times that many.” For Wright, the threat of death from the “invisible whites” was merely part of the Delta landscape, as omnipresent as the cotton fields and canebrakes, the tension so palpable that when Wright questioned his mother about why their people didn’t fight back, “the fear that was in her made her slap me into silence.” The silence of these hidden stories is beginning to be broken, and though academic specialists have known about them for years, skillful popular historians like Robert Whitaker are now bringing them to a wider public. The first half of Whitaker’s book documents the moment-by-moment progress of the Elaine conflict, which capped a season of racial and labor upheaval known as the Red Summer of 1919. It began at a church where black sharecroppers were meeting to discuss unionizing. A shootout left one white man dead; three others were killed later. Unfounded rumors of insurrection had already been coursing through the county seat of Helena (the anxiety heightened by the fact that blacks outnumbered whites in the county nearly three to one), and the area soon found itself overrun with vigilante groups and outside posses roaming the woods and gunning down blacks. Federal troops came from Little Rock to quell the violence (but actually may have contributed to it), and eventually more than

300 black suspects were jailed, 12 of whom would be convicted of murder — in trials lasting as little as an hour — and sentenced to die in the electric chair. Throughout this part of the story, Whitaker interposes clear, succinct background material on sharecropping, the history of Helena and the gradual undermining of the 14th Amendment by the courts. Though it's been amply documented in books like the collaboration "Without Sanctuary: Lynching Photography in America" and Philip Dray's "At the Hands of Persons Unknown," the sheer scale, brazenness and inhumanity of lynchings recounted here is horrifying, especially descriptions of victims being "roasted" alive. Threats of this kind sustained a peonage system in the fields and factories that mimicked slavery more than 50 years after Emancipation. Douglas A. Blackmon, in his recently published "Slavery by Another Name," another attempt to bring the shameful practices of the era to light, argues that the term "Jim Crow segregation" trivializes that time: "Imagine if the first years of the Holocaust were known by the name of Germany's most famous anti-Semitic comedian of the 1930s."

But if the first half of "On the Laps of Gods" (an awful title, by the way) provokes open-mouthed horror at the injustices, the second half, in which Whitaker follows the court cases, provides salutary redemption, mainly in the person of Scipio Africanus Jones, one of the great forgotten heroes of American history. Born a slave, whose father was very likely his mother's owner, Jones became the most prominent black lawyer in Little Rock. He was so successful representing black businesses that he could afford a chauffeur-driven Cadillac, and so popular among the city's white power structure that the all-white school board named the black high school in North Little Rock for him while he was still living. (One irony is that integration closed the school and Jones's name drifted into obscurity.) Representing the 12 condemned men on appeal, Jones demonstrated both legal shrewdness and uncompromising moral courage. He was battling not only a system rigged against black defendants but also the doubts of the fledgling N.A.A.C.P., which supported the appeals financially even if it sometimes treated Jones, the backwater Arkansas lawyer, with New York City high-handedness. In the end, he fought all the way to the United States Supreme Court, where his formidable skills helped win a groundbreaking decision, Moore v. Dempsey, that set the stage for his clients' eventual release. But perhaps this is where Whitaker's background as a science writer (he is the author of "Mad in America," a highly praised history of the treatment of mental illness) works against him. Judicious almost to a fault, Whitaker seems determined to underplay the drama of the tortuous progress of the cases through the courts. All the elements of a legal thriller are here — coerced confessions, recanting witnesses, 11th-hour reprieves, death threats — but Whitaker seems hesitant to step out of his role as arbiter of facts and embrace a more imaginative approach. He spends a mere paragraph on what is probably the book's most cinematic moment, when on the third day of the trials in Phillips County, George Murphy, a white, 79-year-old ex-Confederate soldier hired by the N.A.A.C.P. to act as the lead attorney while Jones labored on the details, "clutched his chest and collapsed to the floor." That left Jones on his own to try the cases in a hostile courtroom. He performed unflappably in the face of real danger.

Elsewhere, Whitaker declares that Jones's habeas corpus petition to the Supreme Court (which the N.A.A.C.P. esteemed so highly that it reprinted the document as a pamphlet) is "the most eloquent and convincing argument that could possibly be made, and it consisted, ultimately, of a powerful narrative that left no question about what the nation's highest court, if it was concerned about justice, should do." Unfortunately, he doesn't provide any extended examples of Jones's soaring rhetoric. Still, the turns the cases take are riveting, and the portraits of the condemned, together with their words, are as raw and heartbreaking as the blues.

Whitaker's facts don't differ fundamentally from those in Grif Stockley's 2001 account, "Blood in Their Eyes," a work of dogged and indispensable research, but that book became bogged down by the weight of its details. Whitaker has pared extraneous material and placed the massacre and the Supreme Court decision in their full legal and historical context. At the same time, he has revived the story of a great African-American lawyer, Scipio Africanus Jones.

Jay Jennings, a frequent contributor to the Book Review, is writing a book about Little Rock, Ark., and the 2007 Central High football team.

http://www.nytimes.com/2008/06/22/books/review/Jennings-t.html?8bu&emc=bua2

Sick Days

By EMILY MITCHELL

THE TWO KINDS OF DECAY

By Sarah Manguso.

184 pp. Farrar, Straus & Giroux. $22.

In her second year of college, the poet Sarah Manguso developed a blood disease so uncommon it doesn't even have a real name. The autoimmune condition, a rarer form of the already rare Guillain-Barré syndrome, is known as chronic idiopathic demyelinating polyradiculoneuropathy, and it took more than four years to run its course. For several of them, Manguso had to undergo periodic treatments in which her plasma was completely removed and replaced. The treatments worked, but sometimes only for a few days. Later, she moved to steroid treatments, which restored a degree of physical well-being but created complicated side effects.

In her sharp, affecting new memoir, "The Two Kinds of Decay," Manguso writes from the far side of a long period of remission. "For seven years I tried not to remember much because there was too much to remember," she writes. From an original welter of experience, she has carefully culled details that remain vivid. Filtered through memory, events during her illness seem like "heavenly bodies" that "fly until they change into new forms, simpler forms, with ever fewer qualities and increasingly beautiful names." Manguso is acutely interested in these processes of renaming and remembering, the way time changes what we say about the past. Her book is not only about illness but also about the ways we use language to describe it and cope with it.

The author of two books of poetry, Manguso brings the virtues of that form to the task of writing memoir. Her book is divided mostly into one- and two-page chapters titled like poems. She mixes high and low language, the crass and the scientific, with a lyric poet's sure-handedness. The chapters themselves — among them "The Hematologist," "The Forgetful Nurse," "Corroboration" — resemble her own poetry, broken into aphoristic, discrete sections on the page. This disjointedness gives the prose a rhythm that mirrors the confusion and fragmentation of illness.

It also clears space for one of the book's most remarkable aspects: its dark humor. What makes this account both bearable and moving is Manguso's keen sense of the absurdities that accompany severe illness. Often these come from its odd proximity to ordinary life. In the hospital, one of her nurses turns

out to be a former cheerleader from her own high school. Manguso remembers how the woman and her squad "cartwheeled in their red and white and black regulation skintight uniforms in rows across the gym, then danced like strippers to bass-pumping music." Now this woman is a caregiver, helping with some of the less pleasant aspects of Manguso's illness.

There is something surreal about Manguso's protracted alienation from her own body. In the chapter "The Wrong Symptom," she describes how, after having her nervous responses tested by "a metal tool resembling a pizza cutter," she reports a numb area on her stomach "coincidentally, about the size of a slice of pizza." Because there is no diagnostic explanation for her symptom, her doctors conclude she is reporting the wrong symptom. In fact, what she is feeling is not numbness but indigestion. Later, at a rehabilitation facility, a nurse takes her temperature. "She reported my body temperature as 82 degrees Fahrenheit," Manguso writes. "I suggested that that was not possible since I was still living." Elsewhere, she considers the metaphorical dimensions of her condition. "All autoimmune diseases invoke the metaphor of suicide," she writes. "The body destroys itself from the inside."

Manguso was already a writer when she became ill, and her obsession with words, their capacities and limitations, permeates her book. The world of hospitals and doctors has its own language, which she translates for the uninitiated reader. Her plasma replacement treatment is called "apheresis," which she notes is "from the Greek aphairein, to take away." She is amused that hematologist-oncologists abbreviate their titles to "'hem-oncs' (pronounced almost like he-monks)." But her interest is more than literary curiosity. When she has a line implanted directly into her chest so her plasma can be replaced more easily, she parses her reaction: "I had read Freud in school. He distinguishes fear, a state of worrying anticipation, ... from fright, the momentary response of our mind to a danger that has caught us by surprise but is already over." For hours, she writes, "I lay there, weeping in fright. Not fear. Fright."

Manguso's desire for precision is urgent, even if it cannot always be fulfilled. "I need to describe that feeling," she says of the deep cold induced by apheresis. "Make a reader stop reading for a moment and think, Now I understand how cold it felt. But I'm just going to say it felt like liquid, 30 degrees colder than my body, being infused slowly but directly into my heart, for four hours."

As much as anything, this book is a search for adequate descriptions of things heretofore unnamed and unknown. Manguso concludes her account with questions — and an exhortation to the reader to pay attention. Through her own attentiveness, Manguso has produced a remarkable, cleareyed account that turns horror into something humane and beautiful.

Emily Mitchell's novel, "The Last Summer of the World," was a finalist for the New York Public Library's Young Lions fiction award.

http://www.nytimes.com/2008/06/22/books/review/Mitchell-t.html?8bu&emc=bua2

Talking with Peter Sís

The author of *The Wall* talks about the challenges of creating his autobiographical picture book.

By Cyndi Giorgis and Nancy J. Johnson

Upper elementary school through high school

It started with one question: "Are you a settler, Dad?" Peter Sís' response to his children became *The Wall: Growing Up behind the Iron Curtain*, an autobiographical picture book blending spare narrative, introductory and closing notes, journal entries, childhood drawings, photographs, and pen-and-ink illustrations. His efforts have earned him the 2008 Robert F. Sibert Informational Book Medal and a Caldecott Honor Book citation. Recently, we sat down with Sís and talked about *The Wall* and the story behind its creation.

CG & NJJ: *The Wall* is a powerful story of growing up in Czechoslovakia under Soviet rule. We know that your own children were the intended audience, but did you also envision this book as one for older readers?
SÍS: For a year my editor, Frances Foster, and I talked about the direction the book might take. There were a lot of stop-and-go moments when I didn't know how to move on. At one point someone asked me why anybody would want to buy a book like this because it's not about anything pleasant. That's when I tried to put in some humor to take away from it being serious, but all my stupid jokes were edited out. Frances made the right decisions. She gave it a certain seriousness, which now seems to be appreciated. It's interesting that in France the publisher who bought rights to the book reduced the size because they saw it for older kids. I would have fought it, but I know that France has a tradition of graphic novels.

CG & NJJ: As a child how did you negotiate between the creative license you were given at home and the restricted rules of not being able to draw and paint what you wanted at school?
SÍS: School was terrible. School was more about how not to do it. People were teaching art, but they weren't interested in art. At that time there were lots of teachers who were mostly into fulfilling the political agenda.

CG & NJJ: Did you attend art class when you were young?
SÍS: There was art class one hour a week, and my parents supported my drawing at home. But then at age 15 or 16, I had a teacher who was really bad. This was in the 1960s when there was a combination of everything happening—we started to grow long hair and use psychedelic colors, but he just wouldn't have it. He said I had no talent. And he was, I think, almost purposely destroying me. I was completely devastated. After I dragged myself home, my father got in the car and drove to the school, where he was behind those doors for half the day. After that, they left me alone.

CG & NJJ: Was it risky for your father to stand up for you?
SÍS: No, because he was a film director, he was loud, and he was bigger. He looked like Orson Welles. If he had not stood up for me I wouldn't have had a chance simply because this one grown-up idiot told me that I didn't have talent. It was a good lesson for me.

CG & NJJ: Are the journal entries that are interspersed in *The Wall* from your own childhood journals?
SÍS: They are more like memories from my childhood drawings. Frances decided that these sort of entries would make the book much more serious. They became the replacement for an earlier draft where I included humorous car trip illustrations running along the bottom of the pages showing a family traveling with the father (I'm the father), the wife, and the kids in the backseat. The kids are playing with a Game Boy, and the father becomes obsessed with trying to explain his past to his children, and

his family couldn't care less. They are sort of falling asleep, and the kids keep saying, "Oh, Dad." I was also fighting with telling the story in the third person, saying, "He, he, he…" but it was really about "me, me, me." The journal-like entries are all my stories as a child.

CG & NJJ: Why did you initially hesitate using a first-person voice to tell the story?
SÍS: It's the whole question of guilt. That's what I'm still dealing with today. If I go back to Prague now, they talk like they were all fighting. The president of the Czech Republic now says that the real heroes are the people who went through it every day, who didn't really do anything. It's not the ones who were in prison and who were really making waves, but people who were there every day for their children. They were sort of conformists. The people who were conformists wore that whole system down. So, that was my voice when I exhibited the brainwashing in the beginning, because I wanted to show how awful it was. I have discussions with people who ask, "Did you believe everything?" And I tell them, "Maybe I didn't, but I wanted to show how easy it is to take any child and convince him that this is how it is."

CG & NJJ: Did you think you were taking a risk in showing people what it was like?
SÍS: I thought, okay, I'm going to take this chance because I am educating people. But then you realize that the people you want to educate don't want to have it. They just ignore it. And there goes my theory with *The Wall* too—that it will be taken as one-sided. Some people will say, "This is how America is so great, and everything was so bad there in Czechoslovakia." There's lots of irony in that also, because the book is about the illusion of the place called America. I was trying to explain all the things I think are dangerous and can happen anyplace, anytime. Like with my own kids, they wouldn't even see it coming, and all of a sudden it would be here. What happens depends on the character of people. Would they fight back, or would they break? Would they play along? I still think that Americans wouldn't take it and that they would fight, but you don't really know until it happens. That's the problem.

CG & NJJ: Can you ever trust a government again?
SÍS: I really can't. I have a real distaste for any big group of people cheering for something. I feel like I want to walk away from every confrontation like that. Maybe there are moments in life when you have to take a stand. I know it's hard for me even if I really believe in it, just because of how I grew up. If someone asked me to sign a petition against the president I would think maybe that's going to mean trouble for my family. This feels really scary because somebody in America told me that the government can check on the e-mails or phone calls, and that brings back all these fears. I think, yeah, this is a free society, but . . . In the long run, I think it is important to think this way.

CG & NJJ: In the March 1965 journal entry in *The Wall,* you write about seeing a "black man with a smiley face" who you realize later is Louis Armstrong. What was that like when performers were allowed into your country after censorship was lifted?
SÍS: My father was making films with Louis Armstrong and I met his wife and him. We thought Armstrong must live in some castle, because he was in a dinner jacket with a bowtie. I remember how surprised I was to find out that he lived in Queens and how hard it was for musicians to earn just 60 dollars a night. We thought he must be bigger, because he was so famous. We felt the same about the Harlem Globetrotters. It's interesting how unrealistic our whole perception was.

CG & NJJ: And the Beach Boys also came to Czechoslovakia.
SÍS: We really hoped to have some heavier rock group, but the Beach Boys were the ones that came.

CG & NJJ: How did you create the illustrations for *The Wall*?
SÍS: I used very, very cheap industrial paper. I didn't want to be too fancy with color. I wanted to keep it very raw. Then I added red ink.

CG & NJJ: How about the double-page spread with that blast of color?
SÍS: That was purposely trying to be like my adolescence. It's also pen and ink with watercolors. I used to love all those colors coming together.

CG & NJJ: Last year you were honored at the Czech Embassy in Washington, D.C. Was that an emotional experience for you?
SÍS: The ambassador was nice, but it still felt like somebody said, "You know, you've got guts to write this book. If a Communist country comes to power again, you're going to be in big trouble, you know that." I never thought of it like that, but that's how it is. In a way it was very interesting, and was one of those things that comes back to you only later when other people relate their own stories of how they escaped.

CG & NJJ: What did you hope might be the response to *The Wall*?
SÍS: I didn't hope for much response. I really wanted my children to understand what I've been trying to tell them. I was pleasantly surprised that this book created very deep feelings in some people. So far the response has been more than I could have hoped.

Sampling Sís

***Tibet through the Red Box*. 1998. 64p. Farrar/Frances Foster, $25 (9780374375522).**
Gr. 7–12. Sís re-creates pages from his father's diary in this spellbinding portrait of Vladimir Sís' experiences in Tibet, where he was sent in the 1950s to instruct the Chinese in documentary filmmaking.

***The Tree of Life: Charles Darwin*. 2003. 44p. Farrar/Frances Foster, $18 (9780374456283).**
Gr. 4–12. This detailed and fascinating picture book chronicles the life of Charles Darwin.

***The Wall: Growing Up behind the Iron Curtain*. 2007. 56p. Farrar/Frances Foster, $18 (9780374347017).**
Gr. 7–12. Sís' autobiographical picture book follows his growing up in Czechoslovakia under Soviet rule.

Selected Picture Books for Older Readers

Picture books provide personal pleasure, aesthetic satisfaction, awareness of language, literary quality, and interesting content. The term picture book denotes a format rather than a grade level, and the content in many of the books below requires an emotional maturity or background knowledge of the audience. The following books will intrigue upper-elementary, middle- and high-school students and promote conversation about both text and illustration.

The Arrival. By Shaun Tan. 2007. 128p. Scholastic/Arthur A. Levine, $19.99 (9780439895293). Gr. 6–12.

Birmingham, 1963. By Carole Boston Weatherford. 2007. 40p. Boyds Mills/Wordsong, $17.95 (9781590784402). Gr. 4–12.

Hidden Child. By Isaac Millman. 2005. 80p. Farrar, $18 (9780374330712). Gr. 5–12.

Home of the Brave. By Allen Say. 2002. 32p. Houghton/Walter Lorraine, $17 (9780618212231). Gr. 5–12.

Jazz. By Walter Dean Myers. Illus. by Christopher Myers. 2006. 48p. Holiday, $18.95 (9780823415458). Also available in an audio edition from Live Oak. Gr. 5–12. Also see Myers' *Blues Journey* (Holiday, 2003).

John's Secret Dreams: The Life of John Lennon. By Doreen Rappaport. Illus. by Bryan Collier. 2004.

48p. Hyperion, $16.99 (9780786808175). Gr. 4–12.

The Legend of Lao Tzu and the Tao Te Ching. By Demi. 2007. 48p. Simon & Schuster/Margaret K. McElderry, $21.99 (9781416912064). Gr. 4–12.

Memories of Survival. By Bernice Steinhardt and Esther Nisenthal Krinitz. 2005. 64p. Hyperion, $15.99 (9780786851263). Gr. 6–12.

Michelangelo. By Diane Stanley. 2000. 48p. HarperCollins, $17.99 (9780688150853); HarperTrophy, paper, $6.99 (9780060521134). Gr. 5–12.

Miss Crandall's School for Young Ladies and Little Misses of Color. By Elizabeth Alexander and Marilyn Nelson. Illus. by Floyd Cooper. 2007. 48p. Boyds Mills/Wordsong, $17.95 (9781590784563). Gr. 6–12.

Muhammad Ali: Champion of the World. By Jonah Winter. Illus. by François Roca. 2008. 32p. Random/Schwartz & Wade, $16.99 (9780375836220). Gr. 4–12.

Patrol: An American Soldier in Vietnam. By Walter Dean Myers. Illus. by Ann Grifalconi. 2002. 40p. HarperTrophy, paper, $6.99 (9780060731595). Gr. 4–12.

Pink and Say. By Patricia Polacco. 1994. 48p. Philomel, $16.99 (9780399226717). Gr. 4–12.

Walt Whitman: Words for America. By Barbara Kerley. Illus. by Brian Selznick. 2004. 56p. Scholastic, $16.95 (9780439357913). Gr. 4–12.

Whale Port: A History of Tuckanucket. By Mark Foster. Illus. by Gerald Foster. 2007. 64p. Houghton/Walter Lorraine, $18 (9780618547227).
Gr. 4–12.

When Marian Sang: The True Recital of Marian Anderson. By Pam Muñoz Ryan. Illus. by Brian Selznick. 2002. 40p. Scholastic, $16.95 (9780439269674). Also available in an audio edition from Live Oak. Gr. 4–12.

William Shakespeare's Twelfth Night. Retold by Bruce Coville. Illus. by Tim Raglin. 2003. 48p. Dial, $16.99 (9780803723184). Gr. 4–12.

A Wreath for Emmett Till. By Marilyn Nelson. Illus. by Philippe Lardy. 2005. 48p. Houghton, $17 (9780618397525). Gr. 9–12.

Cyndi Giorgis is an associate professor of children's and young-adult literature at the University of Nevada–Las Vegas. **Nancy J. Johnson** is a professor of English education at Western Washington University. For a teacher's guide for *The Wall*, visit http://us.macmillan.com/thewall#guides.

back issues of Book Links
How to order back issues of Book Links magazine
http://www.ala.org/ala/booklinksbucket/talking_with_peter_sis.cfm

Zebra's Stripes, Butterfly's Wings: How Do Biological Patterns Emerge?

A zebra's stripes, a seashell's spirals, a butterfly's wings: these are all examples of patterns in nature. The formation of patterns is a puzzle for mathematicians and biologists alike. How does the delicate design of a butterfly's wings come from a single fertilized egg? How does pattern emerge out of no pattern? (Credit: iStockphoto/Ismael Montero Verdu)

ScienceDaily (June 20, 2008) — A zebra's stripes, a seashell's spirals, a butterfly's wings: these are all examples of patterns in nature. The formation of patterns is a puzzle for mathematicians and biologists alike. How does the delicate design of a butterfly's wings come from a single fertilized egg? How does pattern emerge out of no pattern?

Using computer models and live cells, researchers at Johns Hopkins have discovered a specific pattern that can direct cell movement and may help us understand how metastatic cancer cells move.

"Pattern formation is a classic problem in embryology," says Denise Montell, Ph.D., a professor of biological chemistry at Hopkins. "At some point, cells in an embryo must separate into those that will become heart cells, liver cells, blood cells and so on. Although this has been studied for years, there is still a lot we don't understand."

As an example of pattern formation, the researchers studied the process of how about six cells in the fruit fly distinguish themselves from neighboring cells and move from one location in the ovary to another during egg development. "In order for this cell migration to happen, you have to have cells that go and cells that stay," says Montell. "There must be a clear distinction — a separation between different types of cells, which on the surface look the same."

Previous work identified a specific signal necessary for getting these fly egg cells to move; the problem is that this signal is "graded." Like drops of ink spreading out on wet paper, this signal travels in between surrounding cells, gradually fading away as it moves outwards. But clear lines are required for pattern formation — there is no grey area between a zebra's black and white stripes, between heart and liver cells and, in this case, between migrating cells and those that stay put.

How are graded signals converted to a clear move or stay signal? By examining flies containing mutations in different genes, the researchers discovered that one gene in particular, called apontic, is important for converting a graded signal. "When apontic is mutated, the distinction between migrating and nonmigrating cells is fuzzy," says Michelle Starz-Gaiano, Ph.D., a postdoctoral fellow in biological chemistry. "In these mutants, we see a lot of cases where migrating cells do not properly detach from their neighbors but instead drag them along as they move away." This showed that the graded signal alone was not sufficient to kick-start the proper number of cells, but instead needed help from apontic.

Once the team discovered that apontic is important for getting these cells to move, they set out to figure out how apontic works. Collaborating with mathematician Hans Meinhardt, Ph.D., a professor emeritus at the Max Planck Institute in Germany, they designed a computer model that could simulate how graded signals are converted to commands that tell cells to move or to stay.

By making certain assumptions about each gene and assigning functions to each protein, the team built a simple circuit that can predict a cell's behavior using the graded signal, apontic, and another previously discovered protein called slbo (pronounced "slow-bo"). The computer model shows that in a cell, the graded signal turns on both apontic and slbo. But apontic and slbo work against and battle each other: when one gains a slight advantage, the other weakens, which in turn causes the first to gain an even bigger advantage. This continues until one dominates in each cell. If slbo wins, the cell moves but if apontic wins, the cell stays put; thus a clear separation between move or stay is achieved.

"Not only is this a new solution to the problem of how to create a pattern out of no pattern, but we have also discovered that apontic is a new regulator of cell migration," says Montell.

Cell migration likely underlies the spreading of cancer cells beyond an original tumor to other areas of the body. Understanding and therefore being able to manipulate the cell migration pathway could potentially prevent the development of these new tumors. At this stage, Montell says, "it's more about just understanding what the positive and negative regulators of cell migration are."

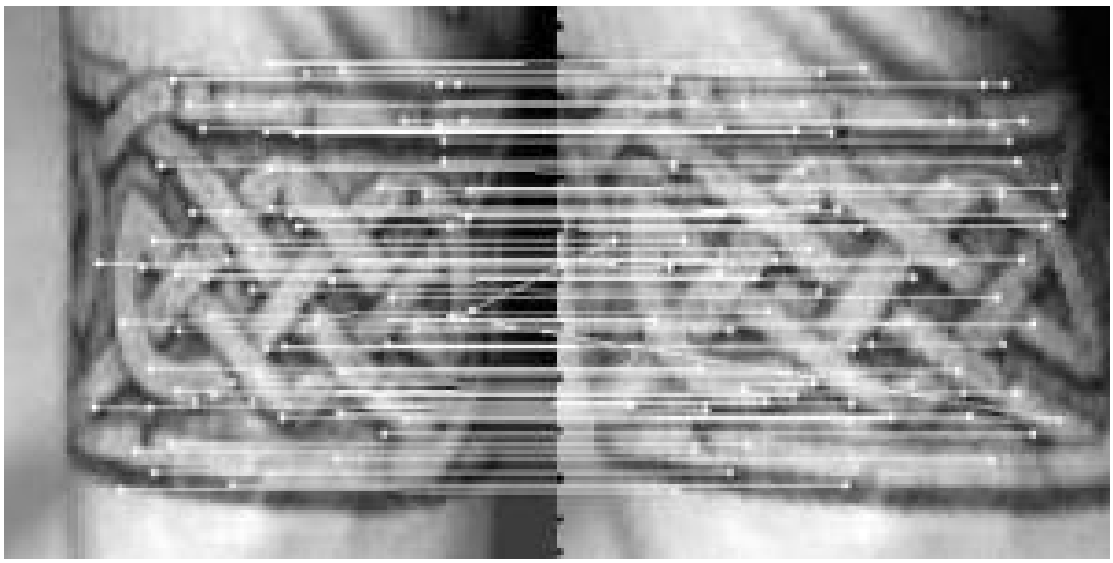
The research was funded by the American Cancer Society and the National Institutes of Health.

This study was published in the May 13 issue of Developmental Cell. Authors on the paper are Starz-Gaiano, Mariana Melani, Xiaobo Wang, and Montell, all of Hopkins; and Hans Meinhardt of the Max-Planck-Institut, Tübingen, Germany.

Adapted from materials provided by Johns Hopkins Medicine, via Newswise.

http://www.sciencedaily.com:80/releases/2008/06/080619111748.htm

New System Helps Police Match Tattoos To Suspects



An example of two similar tattoos that can be automatically retrieved by using a software program developed by an MSU researcher. (Credit: Image courtesy MSU College of Engineering)

ScienceDaily (June 20, 2008) — A Michigan State University researcher has created an automatic image retrieval system, whereby law enforcement agencies will be able to match scars, marks and tattoos to identify suspects and victims.

In a world filled with homeland security concerns, identity fraud and natural disasters, the need to establish the identity of an individual based on something other than a driver's license or demographic and personal data is vital, according to Anil Jain, MSU University Distinguished Professor of computer science and engineering. "Identity is usually established using passports, licenses or personal identification numbers, but these are easily forged, lost or stolen."

"There is a very real concern that these types of credentials for identity determination are neither sufficiently reliable nor secure," Jain said. "There is a need to recognize people based on physical characteristics like fingerprints, iris or face. This is the field of biometric recognition where we have been working for the past 15 years."

Biometrics refers to the automatic identification of an individual based on that individual's anatomical or behavioral characteristics. Jain is taking biometric recognition to the next step by adding scar, mark and tattoo recognition capability to the identification tools available to law enforcement, government and military agencies.

Called "Tattoo-ID," the system Jain has been working on is a software program, which includes an annotated database containing images of scars, marks and tattoos, provided by law enforcement agencies. Each tattoo image in the database is linked to the criminal history records of all the suspects and convicts who have a tattoo. If users, like police officers, provide a tattoo image query, the system automatically retrieves the most similar tattoo images from the database along with the linked criminal history records.

"The number of people getting tattoos is rapidly growing. About 20 percent of the population has at least one tattoo, and this percentage is even higher among delinquents," Jain said. "In fact, many gangs have a unique membership tattoo. So, with the rising popularity of tattoos, it makes sense to put these markers to good use."

"Presently, the only way to identify someone from his or her tattoo is to look through books the size of a phone book and try to visually match tattoos based on some keywords. This takes a lot of time, and the process is often inaccurate," Jain said.

The system matches a suspect or a victim's distinguishing marks against a database and determines the suspect's identity with very high accuracy. While a scar, mark or tattoo cannot uniquely identify a person, it can help the authorities narrow down the list of potential identities; it can indicate membership in a gang, social and religious group or military unit.

"This system has huge implications for helping law enforcement with suspect and victim identification," Jain said.

Jain said that if an officer arrests a person who does not have any identifying documents and uses an alias, but has a tattoo belonging to a known gang, the tattoo gives additional evidence to identify which group this person belongs to. The system will help law enforcement agencies to quickly identify and apprehend criminal suspects.

"A body can decompose quickly, particularly in adverse climate conditions, making it difficult to perform face or fingerprint identification," Jain said. "Because tattoo pigments are deeply embedded in the skin, even severe skin burns often do not destroy tattoos. If there are distinguishing tattoos, it can be crucial evidence in identifying a victim."

There is an increased awareness for using tattoos for suspect and victim identification among the law enforcement agencies. This is the reason FBI's Next Generation Identification system calls for an automatic image retrieval system for scars, marks and tattoos.

"Such a system will be of great societal value," Jain said.

Jain's team is continuing its research to improve the tattoo image matching performance in collaboration with the Michigan State Police Identification Section, which has provided him access to its large tattoo image database.

His research team consists of Rong Jin, an MSU assistant professor of computer science and engineering, and Jung-Eun Lee, an MSU doctoral student in computer science.

Adapted from materials provided by Michigan State University.

http://www.sciencedaily.com/releases/2008/06/080619133057.htm

Minimally-invasive Weight Loss Surgery Improves Health And Morbidly Obese Teens

ScienceDaily (June 20, 2008) — Teenagers' obesity-related medical complications improve just six months after laparoscopic gastric banding surgery, according to outcomes data presented this week. The preliminary results by physician-scientists from Morgan Stanley Children's Hospital of NewYork-Presbyterian and Columbia University Medical Center were presented on June 17 at The Endocrine Society's 90th Annual Meeting in San Francisco.

The study reports that the small group of extremely obese teenagers who received the minimally invasive surgery, also called the Lap-Band procedure, as part of a clinical trial lost an average of 20 pounds after six months and had significant improvements in abdominal fat, triglyceride measurements (levels of fat in the blood) and blood sugar levels as measured by hemoglobin A1c -- all risk factors for diabetes and heart disease. The patients' liver function and a measure of immune response also improved, according to the abstract.

"Extremely obese teenagers have obesity-related health problems, particularly diabetes and increased cardiovascular risk. Laparoscopic gastric banding, which has been shown to be a safe and effective way to lose weight, now offers the possibility of reducing obesity's medical complications," says lead author Dr. Ilene Fennoy, a pediatric endocrinologist at Morgan Stanley Children's Hospital of NewYork-Presbyterian and clinical professor of pediatrics at the Columbia University College of Physicians and Surgeons. "Until recently, these patients have had to rely primarily on non-surgical methods or higher-risk surgeries to lose weight, and few of these treatments have succeeded in achieving major weight loss or greatly improving their overall health."

The Lap-Band procedure, which is approved by the Food and Drug Administration (FDA) for adults but not yet in teenagers, involves making the stomach smaller without staples. Instead, a band is place around the upper part of the stomach, creating a small pouch that restricts food intake. The surgeon implants a small access port, and after the surgery the doctor periodically adjusts the gastric band by inflating or deflating a saline-filled balloon that lies inside the band. If desired, the procedure is reversible. Morgan Stanley Children's Hospital/Columbia University Medical Center is one of three sites in the nation approved to study this procedure in teens.

The study, which is part of the multidisciplinary FDA-approved Lap-Band Trial for Teens being performed at Morgan Stanley Children's Hospital and Columbia University Medical Center, followed 14 adolescents -- six boys and eight girls -- between the ages of 14 and 17 who were, on average, 174 pounds overweight. Patients received dietary counseling and encouragement to exercise, both before and after surgery.

Inamed of Irvine, Calif., the manufacturer of the Lap-Band, supplied the gastric bands for the study.

Adapted from materials provided by New York- Presbyterian Hospital/Columbia University Medical Center, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080617160810.htm

Toxic To Aliens -- But Key To Health Of Planet

ScienceDaily (June 20, 2008) — Scientists at the University of Leicester are using an ingredient found in common shampoos to investigate how the oxygen content of the oceans has changed over geologically recent time.

The same ingredient, which was also used to fight off alien invaders in the film "Evolution", is a widely available dietary supplement used by many people.

The ingredient, selenium, is an anti-oxidant and an essential trace nutrient in our diet. It belongs to a group of elements whose behaviour is controlled by the concentration of oxygen in the environment.

This study represents a first attempt by scientists to use selenium in this way and is part of research student, Andrew Shore's, PhD project. It involves measuring the isotopic ratios of selenium in sediments.

One possible outcome of the project is that the results could give scientists a global picture of the changing oxygen content of the oceans through time. Previous studies have tended to focus on local variations in ocean oxygen content.

The oxygen content of oceans can also be used as an indicator of the "overall health" of the oceans. The recent report from the Intergovernmental Panel on Climate Change (IPCC) states changes in fish populations are "associated with changes in oceanic oxygen levels." Therefore an understanding of oxygen in the oceans is not only important for the past but also for the future.

"We are using samples from an ocean basin off the Venezuelan coast which previous studies have shown to have changed its oxygen content over the last 500,000 years," explained Andrew.

Without oxygen living things suffocate. Six hundred million years ago, the only life that could survive was tiny single-celled organisms. Then suddenly 540 million years ago complex life began to thrive, possibly as the "miracle molecule", oxygen, became abundant on Earth.

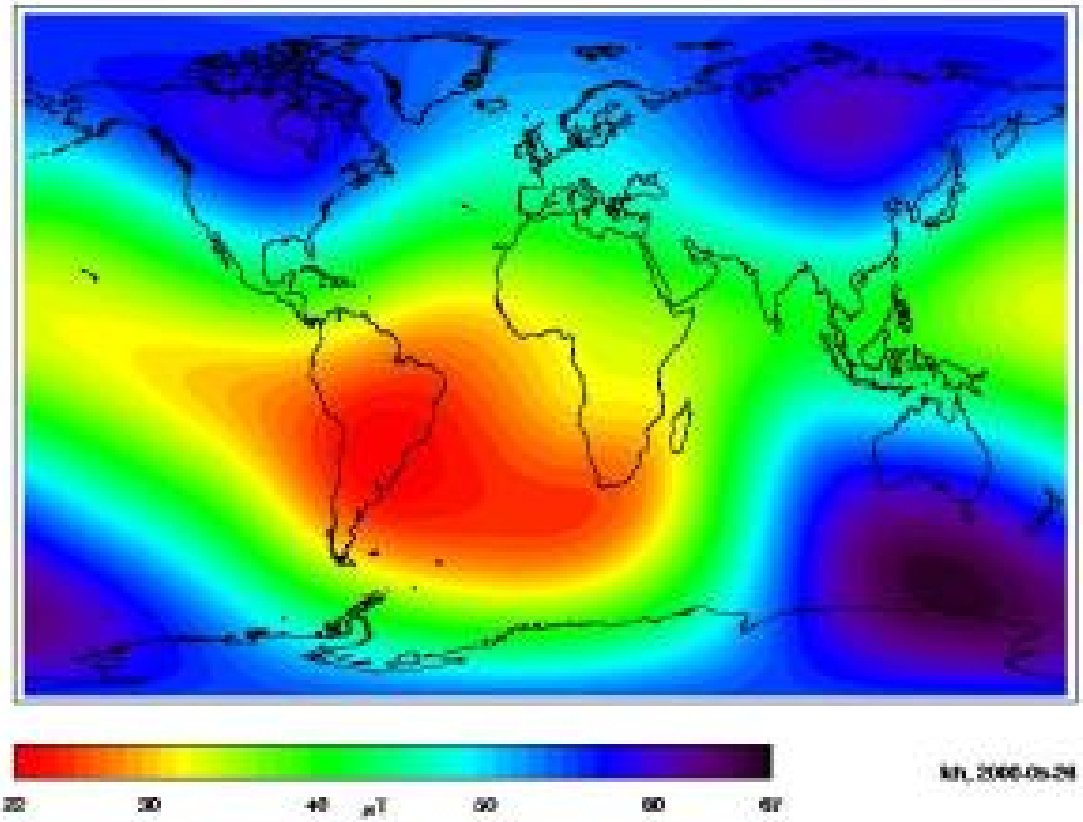
Andrew added: "Our understanding of the changes in atmospheric oxygen is good, but our planet is 70% covered by oceans. Determining the oceanic oxygen content is very difficult - it is linked to the atmosphere, plankton growth, and ocean circulation patterns."

This research is funded by the Petroleum Research Fund of the American Chemical Society and is in collaboration with Dr Gawen Jenkin, University of Leicester, and Dr Tom Johnson, University of Illinois at Urbana-Champaign.

Adapted from materials provided by University of Leicester.

http://www.sciencedaily.com/releases/2008/06/080618114713.htm

Surprisingly Rapid Changes In Earth's Core Discovered



Ørsted magnetometer measurements form the base for the latest International Geomagnetic Reference Field, the IGRF2000. A graphical representation of the total magnetic field strength at the Earth's surface inferred from the IGRF2000 is shown below. The blueish-black range of colors represents a field strength above the mean field at the surface and the reddish-yellow range a field strength below the mean field. (Credit: Image courtesy of Danish Meteorological Institute)

ScienceDaily (June 20, 2008) — The movements in the liquid part of the Earth's core are changing surprisingly quickly, and this affects the Earth's magnetic field, according to new research from DTU Space.

The Ørsted satellite's very precise measurements of the Earth's magnetic field over the past nine years have made it possible for Nils Olsen, Senior Scientist with DTU Space, and several German scientists, to map surprisingly rapid changes in the movements in the Earth's core. The results have just been published in the scientific journal Nature Geoscience.

"What is so surprising is that rapid, almost sudden, changes take place in the Earth's magnetic field. This suggests that similar sudden changes take place in the movement of the liquid metal deep inside the Earth which is the reason for the Earth's magnetic field," Nils Olsen explains.

The Earth's core consists of an inner solid core which is surrounded by an outer liquid core approx. 3,000 km below our feet. Both the liquid core and the solid core consist primarily of iron and nickel, and it is the movements in the outer liquid part of the Earth's core which create the Earth's magnetic field. Changes in these movements are seen as changes in the magnetic field, and scientists can therefore use satellite measurements of the magnetic field to find out what is going on in the liquid core deep inside the Earth.

Scientists from DTU Space and other institutions are currently preparing a joint European successor to the Ørsted satellite by the name of Swarm. The Swarm mission consists of three satellites, which will be measuring the Earth's magnetic field even more accurately than the Ørsted satellite.

"By combining the Swarm and Ørsted magnetic measurements we hope to find out the reason for the-se rapid movements in the core," Nils Olsen concludes.

Journal reference:

1. Olsen et al. **Rapidly changing flows in the Earth's core**. *Nature Geoscience*, 2008; 1 (6): 390 DOI: 10.1038/ngeo203

Adapted from materials provided by Technical University of Denmark, via AlphaGalileo.

http://www.sciencedaily.com/releases/2008/06/080619102553.htm

Should Doctors Be 'Selling' Drugs For The Pharmaceutical Industry?

ScienceDaily (June 20, 2008) — Are senior doctors who help drug companies sell their drugs independent experts or just drug representatives in disguise, asks Ray Moynihan from the University of Newcastle in Australia, in the British Medical Journal.

Moynihan exposes the reality behind the practice with some candid revelations from industry insiders.

Pharmaceutical companies regularly sponsor leading specialists with "generous fees to peddle influence" and promote drugs to the profession and the public, writes Moynihan.

Drug companies will pay influential doctors up to $400 an hour to act as key opinion leaders, and some doctors earn more than $25,000 a year in advisory fees.

Kimberly Elliot, a former award-winning drug company sales representative interviewed by Moynihan, reveals that drug companies desperately need key opinion leaders in order for doctors to believe what they are saying and prescribe their products, because drug representatives are often not believed. Essentially, she says, key opinion leaders are just salespeople.

So how independent are these doctors who have long term financial arrangements with drug companies?

According to Richard Tiner, medical director at the Association of the British Pharmaceutical Industry, although "the work might help to promote a particular medicine" it should be considered payment for work done, and not a bribe. The best antidote to concerns about independence would be more transparency--all company payments to speakers should be routinely disclosed at medical meetings, he adds.

But David Blumenthal, from Harvard University, believes that payments to key opinion leaders are not in the public interest or in the interests of the patients served by these doctors, and calls for a major cutback in industry influence over the medical profession and its education.

In an accompanying head to head, Charlie Buckwell, Chief Executive of the Complete Medical Group and Professor Giovannii Fava, from the University of Bologna, debate whether drug companies' use of medical experts is essential for medical advancement or whether it risks scientific integrity.

Adapted from materials provided by BMJ-British Medical Journal, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080619194134.htm

(Jude Buffum for the Boston Globe)

Stopping Google

With one company now the world's chief gateway to information, some critics are hatching ways to fight its influence

By Drake Bennett | June 22, 2008

GOOGLE MAY BE widely admired for its technical wizardry and its quick, accurate search engine, but one of the company's most impressive accomplishments has been its ability to grow as powerful as it is while still remaining, in the minds of most Americans, fundamentally likable.

The company today is a behemoth, with more than 15,000 employees and a market value as big as Coca-Cola and Boeing combined. Its search engine is the tool of first resort for expert researchers and schoolkids alike; for suspicious employers, first-daters, long-lost friends, blackmailers, reporters, and police investigators - in short, for seekers of any and all sorts of information. In April, the most recent month for which it compiled statistics, Nielsen Online found that 62 percent of all US Internet searches were done using Google. Yahoo, the next largest player, had only 17.5 percent of the market.

Despite its size and dominance, Google has avoided the public suspicion and vilification that have plagued powerful companies from Standard Oil to Microsoft. Instead, protected by its reputation for innovation, its famed "Don't Be Evil" mantra, and the ever-improving precision of its search engine, Google has remained for the most part a trusted, even a beloved, brand.

But as Google's influence grows, a number of scholars and programmers have begun to argue that the company is acquiring too much power over our lives - invading our privacy, shaping our preferences, and controlling how we learn about and understand the world around us. To counter its pervasive effects, they are developing strategies to push back against Google, dilute its growing dominance of the information sphere, and make it more publicly accountable. The solutions range from programs one can install on one's computer to proposed laws forcing Google to reveal parts of its proprietary search algorithm. A few

experts and privacy activists are pushing for public funding for alternative search technologies, and one legal scholar wants to give individuals and companies a "right of reply" when searches bring up sites that slander them or appropriate their intellectual property.

"Google knows more and more about us, but right now there's almost nothing we can do to find out exactly what it does with that information," says Frank Pasquale, an associate professor of law at Seton Hall and one of the leading proponents of reining in Google. "We want to make powerful entities on the Internet accountable."

Some of the suggestions for fighting back are more practical than others, but taken together they represent an argument that "searching" is no longer a neutral tool, but has become a social force in itself - Google's hidden algorithms have the power to make or break reputations and fortunes, to shape public debates, and to change our view of the world.

The challenge is how to do this without undermining an online application that, even its critics concede, is one of the greatest learning and labor-saving devices of our time.

The most commonly voiced fear about Google is its unique capacity to track what we're thinking based on what we're looking for. Like many websites, Google leaves identifying "cookies" on users' computers - but unlike, say, a shopping site, what Google can track is every name, place, and topic we search. The company can learn even more about people who use Gmail, the social networking site Orkut, or another of Google's popular personalized services.

"What worries me about Google is that they have access to an incredibly sensitive range of personal data, the depth and breadth of which is unlike anything we've ever seen before," says Kevin Bankston, a lawyer with the Electronic Frontier Foundation, an advocacy group. "A log of your search history is as close to a printout of your brain as we've ever had."

Concern about Web search records has already led to pressure from regulators in Europe, where privacy protections are generally stronger than in the United States. As a result, Google agreed last year to limit the amount of time it keeps personalized user information to 18 months and to cut the life span of its cookies from 30 years to two. Other major search engines have made similar concessions. This spring a major EU Internet privacy working group advocated reducing the personal data expiration period further, to six months, a recommendation Google has declined to follow.

For privacy advocates, however, the problem isn't simply how long information is kept but what it's used for, and several worry about how Google uses the personal information it collects.

Google's privacy policy, which is available on its website, promises that the company will ask for permission from users before using personal information for any purpose other than that for which it was collected - which, in most cases, is to improve the tailoring of search results, advertising, and the company's other personalized applications.

According to Mike Yang, a senior product counsel at Google, that privacy policy is legally binding, and any change to it would have to be announced beforehand. The company, he argues, would be loath to make changes that might offend users.

"Maintaining user trust is very important to us. If we lose our users' trust, we would lose those users very, very quickly," he said in a telephone interview.

But some experts worry that this promise provides only limited protection. They worry that even if Google has no plans to use the personal information it keeps, the government might compel it to turn over search information, as it tried to do in 2005 as part of an investigation into online pornography - though in that case Google, unlike the other major Internet companies subpoenaed by the Justice Department, fought the request in federal court and eventually won.

Privacy advocates worry, too, that Google might go ahead and amend its privacy policy. They point to Amazon, which in 2000 changed its policy from one that prohibited the selling or renting of customers' personal information to one that classified customer information as an asset that could be bought or sold in the event of a company takeover.

"What I want in the privacy policy is something that says we will use your information for x, y, and z and we will not use it for anything else, and we will never change this policy," says Helen Nissenbaum, a professor in the department of media, culture, and communication at New York University.

In the meantime, Nissenbaum and others are working on tools that help individual users protect their privacy while using Google. Nissenbaum, with Daniel Howe, a computer science graduate student at NYU, designed TrackMeNot, a program that runs with the Firefox Web browser. When the user does a Web search, the program also sends out randomly generated dummy queries, so that someone looking at a user's search records would be unable to tell which was the real search query. "It's like white noise," says Nissenbaum.

To a similar end, the online privacy activist and longtime Google critic Daniel Brandt set up an online service called Scroogle, a website that allows users to submit Google searches without leaving footprints with the company. Scroogle fields queries and then relays them, using its own servers, to Google, thereby screening users' IP addresses and intercepting any cookies. According to Brandt, his site now processes about 140,000 searches a day. Alongside these privacy concerns, which have grown hand-in-hand with the Web itself, a new worry is arising: What does it mean when a single company becomes our main doorway to the entire content of the Web? Internet search is now by far the most important public tool for finding information, and Google controls the largest share of the search market. As a result, the first few results that come up in a Google search carry outsized importance: People are much more likely to click on the first or second result than the 11th, and unlikely even to glance at the 34th. So the seemingly simple question of how Google decides to rank its findings has assumed immense importance, effectively deciding which sites get visited and which are passed over, what information gets read and what goes unnoticed.

As Greg Lastowka, an associate professor of law at Rutgers, wrote in a paper published last fall, Google "tells us what words mean, what things look like, where to buy things, and who or what is most important to us. Google's control over 'results' constitutes an awesome ability to set the course of human knowledge."

Seen this way, the concern is not with Google's access to our personal information, but in Google's power to order all information. Critics worry about the implications of a single company shaping public opinion, especially since - unlike the phone book's alphabetical order, or the library's Dewey Decimal system - there is little transparency in how Google orders the world for us. In the long run, scholars like Lastowka and Frank Pasquale argue, search engine algorithms could end up privileging sites full of erroneous or slanderous or heavily biased information, marginalizing opposing viewpoints. Search engine companies could manipulate rankings to maximize advertising revenue, targeting particular sites for favor or disfavor. Pasquale worries that, as Google makes deals with everyone from the Associated Press to Warner Music for content, the company has extra incentive to favor them over their competitors.

There is no evidence that Google systematically distorts its results. According to a Google spokesman, "It's in our best interest to act responsibly and be as transparent as possible." The problem, critics argue, is that the workings of Google's search algorithm are a closely guarded secret, so we have to take the company at its word.

In the United States, there have been two court cases dealing with this issue, lawsuits brought against Google by online companies that saw their rankings, and, as a result, their earnings, suddenly and precipitously drop, and that accused Google of having intentionally targeted them - one was a company that offered strategies to improve Google rankings, a practice Google has publicly condemned. In both

cases, the courts ruled for Google, arguing that whether or not it had manipulated its rankings, those rankings were "evaluative opinions" and therefore protected by the First Amendment.

One response, in light of the legal protection that Google enjoys, is to craft new laws around the use of search engines themselves. In Finland, for example, it is now illegal for companies to do Web searches on prospective hires, in much the same way it is illegal in America to use an employee's age or sexual preference in a hiring decision. Another is an idea put forward by Pasquale of Seton Hall. In a few recent papers, he has proposed what he calls a "right of reply" to search results. If, for example, the top results to a query about an individual are slanderous or otherwise damaging to his reputation, that person, Pasquale argues, should have the right to put an asterisk by the findings that links to a rebuttal.

Pasquale and others have also argued that it may be time to rethink the legal protection Google's rankings now enjoy. The company's secret page-ranking algorithm is at the heart of Google's success: It was the founding technology of the company, and has been modified over the years to produce more useful results and foil companies that try to manipulate it. But critics now suggest that Google's technology is now too influential to remain one company's black box. Google and its defenders argue that making the search algorithm public would be a disaster, not only for the company, which would lose much of its competitive advantage, but for Web searching itself, since everyone who wanted to game the rankings would have a road map for how to do it. In response, Oren Bracha, an assistant professor of law at the University of Texas, suggests that cases of potential search engine bias could be treated the way terrorism trials with classified information now are: in a sealed proceeding that prevented evidence from leaking out into the wider world.

Still, to other Google watchers, such measures would ultimately end up backfiring. A "right of reply" would be difficult to put into practice, and could end up being used by companies to ensure that their links show up on all Web searches that highlighted their competitors. And even privacy protections, points out John Palfrey, executive director of Harvard's Berkman Center for Internet & Society, can have their costs, making search engines themselves less efficient and making it harder to gather information about criminals and terrorists.

Even Google critics admit that the current set of responses is in many ways imperfect. But they are the start, they argue, of a broader discussion about how we fit Internet search into our current notions about freedom of speech, fairness, and access. In various ways, search engines fill the role of the newspaper, the phone book, the encyclopedia, and the public library, but they are different from each, and we're still figuring out how - and whether - to regulate them.

To Pasquale and others, search engines, like the railroads and the telephone, are technologies that, because of their great importance, demand a level of public control and accountability, Google most especially. Pasquale has gone so far as to advocate for a Federal Search Commission along the lines of today's Federal Communications Commission.

In a sense, Google is now grappling with the consequences of its runaway success. It has been so good at making so much information so readily available that its own search function has come to seem less like a private service and more like a right. In theory, of course, it is easy for a Google user to defect to another search engine. But there is a reason "Google" has become a verb: Google has so outpaced its rivals that it has begun to look like a monopoly, a necessity where users have only one real option. And the more we come to rely on Google, the more Google may have to listen to the rest of us.

Drake Bennett is the staff writer for Ideas. E-mail drbennett@globe.com. ■

http://www.boston.com/bostonglobe/ideas/articles/2008/06/22/stopping_google/

University Presses Start to Sell Via Kindle

Amazon's Kindle

The Subprime Solution: How Today's Global Financial Crisis Happened, and What to Do About It is a promising title for Princeton University Press. The topic couldn't be more timely and the author is Robert Shiller, a Yale University economist who has managed with works such as *Irrational Exuberance* to attract big audiences for complicated topics.

The Princeton press is planning something new for the release: Two weeks before print publication the book will be available as a Kindle e-book. Kindle is Amazon.com's portable reader that allows for downloading of complete books. Launched in November, and already attracting attention (and competition from other companies planning their versions), Kindle has been hailed as potentially opening up a new kind of reading experience. Of course, plenty of people have heard earlier such claims, but Kindle's Amazon backing has given it a market that is attractive to many publishers — including university presses.

By the beginning of the fall, Princeton plans to have several hundred books available for sale through Kindle. Yale University Press and Oxford University Press already have a similar presence there. The University of California Press recently had about 40 of its volumes placed on Kindle and is ramping up.

Press officials say that they are generally putting a wide selection of current and backlist volumes on Kindle, and aren't selecting any one particular kind of volume as more likely to sell in this format. However, you are unlikely to find on Kindle any books that benefit from illustrations. Permission is so difficult to obtain for online books that most presses aren't trying — and many believe that Kindle doesn't yet provide optimal viewing for all illustrations. Yale, for example, is known for its publishing of art books, but is not putting them on Kindle.

The university presses participating in Kindle were reluctant to describe the specific financial arrangements they have with Amazon (which also declined to discuss them), but said that they were revenue-sharing deals, and that preparing the books for release on Kindle was not particularly burdensome or expensive.

While it's too early to see if Kindle results in a significant sales boost, several press officials pointed to promising signs. Stephen Cebik, Internet accounts manager for the Yale press, said he has started to receive e-mail messages from Kindle fans who find a Yale book not available in that format who want to buy it that way. Erich van Rijn of the University of California Press said that one of its volumes was sold more than a dozen times in a month on Kindle.

"There is definitely an audience out there looking for content in this way," he said.

Priscilla Treadwell, marketing manager for electronic publications at Princeton, said that the current interest reflects a change in attitudes about electronic distribution of university press books. A few years ago, Princeton experimented with some book aggregation services, but stepped back when the market didn't build. The single book model, combined with improvements in technology may make this a better time to push this option for scholarly books, she said.

The experimentation with Kindle comes at a time that many experts are urging university presses to try new business models.

Readers would save some on Kindle books, but at least now modestly, and only after recouping the costs of the reader (currently at $359). The Kindle version of an Oxford book called *Punishment and Democracy: Three Strikes and You're Out in California* sells for $21.96, compared to $24.40 for the paperback through Amazon. The latter also takes two to four weeks to ship and requires shipping fees. A Yale book, *Churchill's Promised Land: Zionism and Statecraft,* is available for $25.20 via Kindle and $28 plus shipping in hardcover.

— Scott Jaschik

The original story and user comments can be viewed online at http://insidehighered.com/news/2008/06/24/kindle.

Reflections on 35 Years in International Education

ARCADIA UNIVERSITY

David Larsen

David Larsen retires this month after 20 years at the helm of Arcadia University Center for Education Abroad, a major third-party study abroad provider with about 100 program sites in 14 countries. Larsen, who got his start in international education as a high school English teacher — taking a group of students to Europe — subsequently won a Fulbright to Greece, where he eventually wound up as the Greek Fulbright Foundation's executive director. "I was supposed to go there for nine months and I stayed there for eight years," he says.

So it goes.

Larsen, a well-known figure in the international education world, will continue on at Arcadia in a part-time basis as an adviser to the president. The university plans to rename the Center for Education Abroad's home "Larsen Hall," and is also raising money for an endowed study abroad scholarship in his name.Larsen says he'll still be doing some international travel in retirement. "But I'll be doing it with my wife, who has not accompanied me on all these trips over the years."

He found time in between things — you know how it is, he says, "You're trying to get stuff done that you've put off 20 years" — to talk to *Inside Higher Ed* about trends and issues of concern in international education, including the growth of short-term programs, a need to increase access to study abroad, and increased scrutiny of the field. (Arcadia was one of a number of third-party study abroad providers to receive a subpoena last summer as part of New York Attorney General Andrew Cuomo's investigation into study abroad policies and practices.)

Q: What are some of the major changes you've seen in the field? Is it even recognizable now to what it was then?

A: The field of international education is very different now from what it was when I got involved about 35 years ago. On campus, international education has a much higher profile than it did then. The study abroad part that I've been involved with recently — but also the presence of international students and scholars on campus and changes to the curriculum — are things that are at the fronts of people's minds. Not just a few people working in quiet corners the way it used to be, but university leaders, and faculty as well as students. That's just a huge change. You can see the effects of it in many if not most facets of campus life.

Q: How so?

A: One thing is the recent [American Council on Education] report indicates that 50 percent of students come to college intending to study abroad. That certainly wasn't the case a couple of decades ago. It speaks I think very positively toward what we've been able to do, to open the possibility of study abroad up not just to the privileged but to a much broader spectrum of students.

Of course, it's still a very small percentage [about 1 percent] that actually do study abroad. But that's a growing percentage and it's one that people are paying attention to.

Q: Why is that drop-off [from 50 to 1 percent] so great?

A: It's college itself that gets in the way. Students come and discover fraternities and sorority life. They discover activities on campus. They discover they can make a varsity sports team, and these things interfere with plans to take a semester or year and go somewhere else.

It's still difficult to afford study abroad for some students, and some of them don't come across that reality until they've made the transition from high school to college.

Q: Your last year at Arcadia was a tumultuous one, with newfound scrutiny on the relationships between outside study abroad providers – like the Center for Education Abroad – and colleges. What are the roots of this scrutiny, do you think – and will it continue?

A: I don't really want to speculate on the motivations of something like the subpoenas last August.

Do I think it will continue? Probably. I think people are more skeptical these days. I think people want transparency, on the part of any institutions they're working with. And I think to the degree that transparency was absent, the scrutiny may have helped, along with the Forum on Education Abroad and its promotion of good, ethical practices, to move that forward.Our own experience with the subpoena is that we responded promptly and fully when it arrived, and we haven't heard anything since last September.
I can't really speak for others on this topic.

Q: So is the field better because of some of what happened in the last year?

A: I think the leadership that was shown by the Forum on Education Abroad in bringing members together and drafting a code of ethics for study abroad was a major step forward. Obviously it was stimulated by the events of last summer.

Q: As colleges pursue plans to "internationalize" their campuses, many have of late have been developing their own faculty-led programs. Do you think this trend will continue? How do you see the role of third-party providers — like Arcadia — evolving?

A: I can say with certainty that colleges and universities have always had their own programs for their own students. Outside providers, like Arcadia, fill the gaps really for colleges and universities. We make a number of overseas programs available, and we go around and talk with folks at colleges and universities about our programs and where they are and what they do. What we're trying to do is not supplant activities that are going on on campus but supplement them, by making different countries available as destinations in some cases or different institutions in different destination countries for students for whom they're appropriate. This has always been what we do, and is what I see continuing.

Q: Do you think the role of third-party providers will expand?

A: It's hard to predict what will happen to the role of providers. What we're seeing now is the growth of lots of new providers. That inevitably happens in a, well to use a business term, growing market. What we're also seeing or beginning to see are some providers that are trying to tailor programs to meet what they anticipate as a specific demand. You know, short-term programs with opportunities for home-school faculty to lead them. If that meets a need, that's fine. I don't think a provider like Arcadia is going to get into that area. We have built our history on enrolling students for at least a semester or an academic year, and sending them to programs that are run not by their own faculty but either by overseas institutions or by our staff and faculty hired abroad. It's just a different model.

Q: Do you worry about the oversight of these new providers? Is there sufficient oversight in place?

A: My experience is that there is. And the oversight actually comes from the home schools of the students that we serve. If those students are going abroad and coming back with credits that don't seem to represent any learning, home school faculties are pretty quick to respond to this.

We've established a long tradition of working with our faculty and our registrars, and we have our own quality assurance mechanisms internally. It's true that some of the new providers probably don't have some of the sophisticated mechanisms. But they are going to find out at the end of the day that students are subject to the scrutiny of faculty. And if they're going abroad and not learning, faculty aren't going to put up with that very long.

Q: What are the issues in study abroad you're most passionate about, going forward?

A: Things I'm passionate about would include the Paul Simon legislation. [Approved by the U.S. House of Representatives and pending in the Senate, it would authorize $80 million annually in federal funding for education abroad.]I may be beating a broken drum there. But I think we're at a point in the evolution of federal support for international education where we have an opportunity to take a major step forward. And I think it's a shame that the Congress isn't acting, or the Senate isn't acting, on this proposed bill.

I keep writing letters and making phone calls and talking to people whenever I can...It's not perfect but it's something and in this case something that's a whole lot better than nothing. The purpose of the Simon legislation is to make funding available so that a broader spectrum of students — again not just the privileged few — can have the opportunity to participate in study abroad. And I think that's right on the mark.

Q: What are some of the biggest challenges that you see ahead for education abroad?

A: I think challenges include the shift toward shorter-term programming… Faculty-led programs tend often to be short-term, and a shorter-term experience abroad is different than a longer-term experience. I think it's very hard to do anything effective in language learning in less than a semester, or probably longer.These are shifts that I see and I wonder what the effect is going to be. Students who are going on short-term programs — and there's a growing number of them — are having a different kind of experience than students who go for a semester or longer. Again, with the goal in mind of providing a global perspective to today's undergraduates, it remains to be seen how effective it is.

Q: The typical answer I often get when talking to your colleagues in the field about this is, 'A year abroad is great, a semester is great, but two weeks is better than nothing....'

A: It probably is better than nothing. I guess my question is how much better than nothing.I'm not saying all short-term programs are bad. I'm just saying they will probably have a different result.

Q: In May, I attended the NAFSA: Association of International Educators conference in Washington, alongside more than 9,000 other people. You joined NAFSA in 1974 – what were the annual conferences like then?

A: My first one in Phoenix in 1979 all took place in one medium-sized hotel. It was a whole lot smaller and much less structured, if you will.

The exhibits were — I guess I want to say — a *forgettable* part of the experience. I don't remember an exhibit hall. What we focused on were the conversations with people from throughout the country.

— Elizabeth Redden

The original story and user comments can be viewed online at http://insidehighered.com/news/2008/06/24/larsen.

Follow the Silt

By CORNELIA DEAN

LITITZ, Pa. — Dorothy J. Merritts, a geology professor at Franklin & Marshall College in Lancaster, Pa., was not looking to turn hydrology on its ear when she started scouting possible research sites for her students a few years ago.

But when she examined photographs of the steep, silty banks of the West Branch of Little Conestoga Creek, something did not look right. The silt was laminated, deposited in layers. She asked a colleague, Robert C. Walter, an expert on sediment, for his opinion.

“Those are not stream sediments,” he told her. “Those are pond sediments.” In short, the streamscape was not what she thought.

That observation led the two scientists to collaborate on a research project on the region’s waterways. As they reported this year in the journal Science, their work challenges much of the conventional wisdom about how streams in the region formed and evolved. The scientists say 18th- and 19th-century dams and millponds, built by the thousands, altered the water flow in the region in a way not previously understood.

They say that is why efforts to restore degraded streams there often fail. Not everyone agrees, but their findings contribute to a growing debate over river and stream restoration, a big business with increasing popularity but patchy success.

Many hydrologists and geologists say people embark on projects without fully understanding the waterways they want to restore and without paying enough attention to what happens after a project is finished.

In part because most projects are local and small scale, it is hard to say exactly how much Americans spend each year to restore rivers and streams. A group of academic researchers and government scientists,

writing in Science in 2005, put the figure at well over $1 billion, for thousands of projects. Efforts are under way to bring more academic rigor to the business.

For example, the National Science Foundation is supporting construction of a large model streambed in Minneapolis, where researchers will be able to test ideas. Meanwhile, though, "an awful lot of stream restoration, if not the vast majority of it, has no empirical basis," said William E. Dietrich, a geomorphologist at University of California, Berkeley, who studies rivers and streams. "It is being done intuitively, by looks, without strong evidence. The demand is in front of the knowledge."

Property owners and local and state agencies restore streams for many reasons, like repairing damage from bridge and dam construction or runoff from farms, subdivisions and parking lots. The damage is visible in reduced water quality, damage to habitats, declines in fish, reduced recreational and aesthetic value and other problems.

Some projects use bulldozers to reshape waterways. Others rely on boulders, rock-filled metal baskets called gabions or concrete and other armor to hold rivers in place. Unfortunately, "we have not done enough monitoring to know what works and what doesn't," said Chris Conrad, an environmental engineer for the United States Geological Survey, voicing a widely held view.

"Most agencies want to spend the money making things happen and not spend the money finding out if they work," Dr. Dietrich said.

David R. Montgomery, a geomorphologist at the University of Washington, agreed. Monitoring "involves a lot of people and thought and expertise," he said. "And you don't have any new projects to show for it."

As a result, the academic and government scientists said in their report, "Many opportunities to learn from successes and failures, and thus to improve future practice, are being lost."

Nowadays, Dr. Montgomery said, most people agree that the best approach is to create landforms and water flows that streams can maintain naturally. "But how you translate that into action and at this stream rather than that stream really requires a lot of work to figure out," he said. With an ailing waterway, he said, "sometimes there's a clear line between the symptoms and the cause, and sometimes there's not."

Project failure comes in many forms. Often, Dr. Dietrich said, people design projects in hopes of creating "a meandering channel with relatively low banks that look nice." Then, he said, "a large storm can come

through and completely wipe it out," leaving shallow channels traveling around sandbars in multiple threads, what geologists call a braided channel.

"In most of those cases," he added, "the restorer has taken a system that is naturally braided and forced it into a form. The channel simple defeated it by being its natural dynamic self."

At other failed sites, restorers install boulders or other stabilizing armor only to see the water shift around it, leaving piles of rubble midstream. In the Pacific Northwest, people tried to improve stream flow by removing bank side logs and branches only to realize that the debris provided important fish habitat. "We are now spending millions of dollars to compensate for all the wood we took out earlier," Dr. Dietrich said.

In Pennsylvania, Dr. Merritts and Dr. Walter say, efforts to restore stream flow by removing dams ignored not just the sediment piled up behind them, but also the original landscape, in many cases not meandering streambeds but swampy valleys over which shallow water flowed in sheets.

After dams were built — as many as 8,000 in Pennsylvania — water accumulated in millponds, and the sediment it carried settled to the bottom. When waterpower fell out of favor in the late 19th and early 20th centuries, the dams deteriorated until they failed or were removed.

Freed to flow more swiftly, streams began incising channels through the beds of silt. The fine material eroded rapidly, sending tons of sediment — much of it carrying agricultural chemicals like nitrogen and phosphorous — downstream to the Susquehanna River and, ultimately, Chesapeake Bay.

One day recently, Dr. Walter and Dr. Merritts visited restoration sites in the Lancaster region. On one stream, a property owner had planted trees to stabilize stream banks. But the trees had to send roots through almost five feet of accumulated sediment before reaching the water table, a feat most were unable to accomplish before dying of thirst.

Dr. Merritts and Dr. Walter recommend simply removing the sediment and exposing the valley floor, as was done in a restoration project near Lititz, Pa. The project, financed by the State of Pennsylvania, working with LandStudies Inc., a restoration concern, involved removing up to 25,000 to 30,000 cubic yards of silt, enough to fill thousands of dump trucks. Luckily, said Ward Oberholtzer, a partner in LandStudies, it was easy to dispose of because farmers love to spread it on their fields.

And because there are no boulders or other armor involved, he said, "cost-wise we compete pretty well."

When the work was done, a result was a shallow sheet of water moving over a graveled bed. The water was lined with native plants like sedges, vervain and verbena, sprouted from seeds buried under the silt for more than 100 years. One spot was deepened to create a cool refuge for fish, and nearby, dozens shimmered in the water.

But an approach that works in one place may fail in another. And some critics say restoration to some pristine ideal is simply impractical. Perhaps the most prominent is David L. Rosgen, a hydrologist who runs Wildland Hydrology, a consultancy in Fort Collins, Colo., that designs restoration projects and offers courses on his restoration theories.

"It is impossible to try to restore streams to some condition that is totally different, before we showed up, before we caused disequilibrium," he said in an interview. "You know how many valleys have aggraded because of those old mill dams? You are talking about hundreds of millions of cubic yards of sediment."

Dr. Rosgen devised a system that classifies rivers and streams, and prescribes restoration remedies according to several qualities, including water flow, channel characteristics and sediment load, and takes into account how human activity affects the landscape. By now, he said, more than 14,000 people from

state and federal agencies and conservation groups have taken his courses and many have used his ideas to good effect.

But he, too, has his critics. Dr. Montgomery called Dr. Rosgen's classification "a very clever system" but said it was wrong to think that "just by knowing what channel type you have you would know what to do."

But there is not a great deal of other guidance. Some geologists point to a 1992 report by the National Research Council, the research arm of the National Academy of Sciences, that emphasizes understanding underlying natural conditions and the importance of monitoring.

Among other agencies, the federal Fish and Wildlife Service cites the Rosgen system, as does the North Carolina State University Stream Restoration Program. Overall, though, "The strategy is still largely a 'kick it and see' approach," Dr. Dietrich of Berkeley said. "We don't know whether any of this stuff that's being done is worth it."

He said he hoped better answers would emerge from the National Center for Earth Surface Dynamics, a research center supported by the National Science Foundation and based at the St. Anthony Falls Laboratory, on the Mississippi River, in Minneapolis. Scientists and engineers at the lab, which is affiliated with the University of Minnesota, use computers to model stream and river behavior, including sediment movement, channel and floodplain dynamics and dam removal.

The lab is also working on what Dr. Dietrich described as "the first major, outdoor, to-scale experimental facility to do experiments on a large enough scale to figure out how to bring a scientific basis to stream restoration."

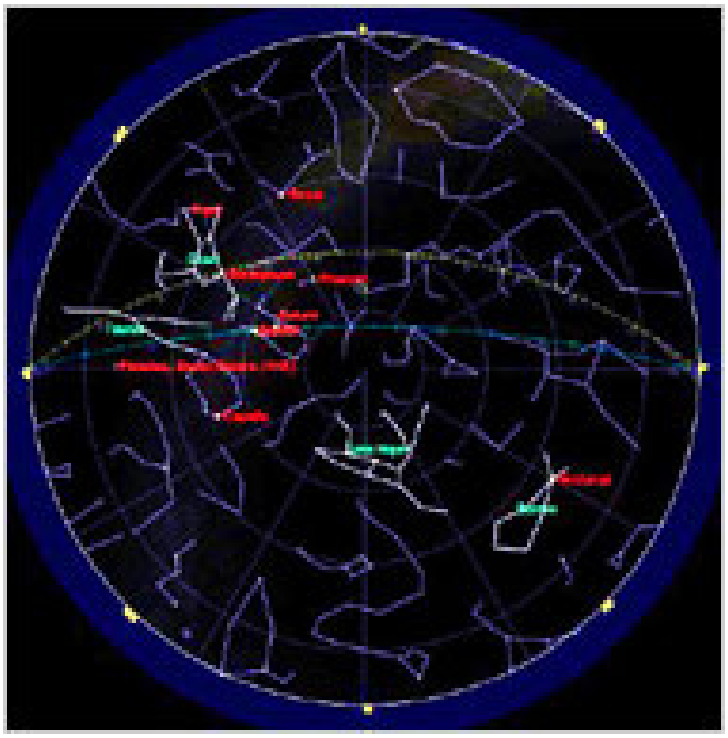
This "outdoor streamlab" relies on bypasses once used to send river water around falls, and researchers hope that it will let them try building restoration projects "to the scale of small, real channels" and test the results, Dr. Dietrich said . Researchers are lining up to use it. Dr. Dietrich said he hoped work at the lab and elsewhere would help make river and stream restoration "a predictive science — you do the following things, you get the following things."

The problem is complex, he said, but the demand for answers is increasing. For scientists who study waterways, he said, "these are exciting times."

http://www.nytimes.com/2008/06/24/science/24stream.html?th&emc=th

Homecoming of Odysseus May Have Been in Eclipse

By JOHN NOBLE WILFORD



That Odysseus took his time, 19 years, getting home to Ithaca from the Trojan War is the story Homer engraved in the "Odyssey." But exactly when did he rejoin his Penelope, who had been patient beyond belief?

Plutarch thought a crucial passage in the 20th book of the "Odyssey" to be a poetic description of a total solar eclipse at the time of Odysseus' return. A century ago, astronomers calculated that such an eclipse occurred over the Greek islands on April 16, 1178 B.C., the only one in the region around the estimated date of the sack of Troy. But nearly all classics scholars are highly skeptical of any connection.

An analysis of astronomical references in the epic has led two scientists to conclude that the homecoming of Odysseus, usually considered a fictional character set in the context of a real historical event, possibly coincided with the 1178 solar eclipse. If, that is, Homer indeed had in mind an eclipse when he wrote of a seer prophesying the death of Penelope's waiting suitors and their entrance into Hades.

The new interpretation of the eclipse hypothesis is reported in this week's issue of The Proceedings of the National Academy of Sciences by Constantino Baikouzis and Marcelo O. Magnasco, scientists at the Laboratory of Mathematical Physics at Rockefeller University in New York and at the Astronomical Observatory of La Plata, in Argentina.

They concede that scholars of Homer are still not likely to give much credence to the idea. But it makes for an intriguing story, one that the blind bard, a mystery himself, would have appreciated.

Although an eclipse is not mentioned anywhere in the story, there are omens and what Plutarch inferred was a poetic description of a total solar eclipse. Odysseus has arrived home, disguised in beggar's rags and in hiding before revealing himself. It happens that, when Penelope's persistent suitors sit down for a noontime meal, they start laughing uncontrollably and see their food spattered with blood.

At this strange moment, the seer Theoclymenus foretells their death, ending with the sentence, "The Sun has been obliterated from the sky, and an unlucky darkness invades the world."

There are reasons to think that the darkness of a total eclipse had just fallen on Ithaca. It was close to noon when the 1178 eclipse occurred over the Ionian Sea. It was, as mentioned several times in the story, at the time of a new moon, which the scientists point out is "a necessary condition for a solar eclipse." And what better atmospherics to accompany a prophecy of doom than a total eclipse, which was considered an ill omen?

Experts on Homer have previously discounted such conjecture. For one thing, the earliest verified eclipse records are in the eighth century B.C., about the time Homer was writing but long after the action in what is known as the Trojan War, around the early 12th century B.C. Scholars say there is no evidence supporting a view at the time, widely quoted, that "a solar eclipse may mark the return of Odysseus."

In their report, Dr. Baikouzis and Dr. Magnasco acknowledged the speculative nature of their study, several times throwing in their own caveats. "The notion that the passage could refer not just to an allegorical eclipse used by the poet for literary effect but actually to a specific historical one," they agreed, "seems unlikely because it would entail the transmission through oral tradition of information about an eclipse occurring maybe five centuries before the poem was cast in the form we know today."

The two scientists derived a possible chronology from astronomical references in the story, including the stars by which Odysseus navigated, the sighting of Venus just before dawn as he arrives at Ithaca, and the new moon on the night before the massacre of the suitors and the presumed eclipse.

On the basis of their analysis, the scientists said, these three "references 'cohere,' in the sense that the astronomical phenomena pinpoint the date of 16 April 1178 B.C.," adding, "The odds that purely fictional references to these phenomena (so hard to satisfy simultaneously) would coincide by accident with the only eclipse of the century are minute."

http://www.nytimes.com/2008/06/24/science/24home.html?th&emc=th

Doctors Say Medication Is Overused in Dementia

By LAURIE TARKAN

Ramona Lamascola thought she was losing her 88-year-old mother to dementia. Instead, she was losing her to overmedication.

Last fall her mother, Theresa Lamascola, of the Bronx, suffering from anxiety and confusion, was put on the antipsychotic drug Risperdal. When she had trouble walking, her daughter took her to another doctor — the younger Ms. Lamascola's own physician — who found that she had unrecognized hypothyroidism, a disorder that can contribute to dementia.

Theresa Lamascola was moved to a nursing home to get these problems under control. But things only got worse. "My mother was screaming and out of it, drooling on herself and twitching," said Ms. Lamascola, a pediatric nurse. The psychiatrist in the nursing home stopped the Risperdal, which can cause twitching and vocal tics, and prescribed a sedative and two other antipsychotics.

"I knew the drugs were doing this to her," her daughter said. "I told him to stop the medications and stay away from Mom."

Not until yet another doctor took Mrs. Lamascola off the drugs did she begin to improve.

The use of antipsychotic drugs to tamp down the agitation, combative behavior and outbursts of dementia patients has soared, especially in the elderly. Sales of newer antipsychotics like Risperdal, Seroquel and Zyprexa totaled $13.1 billion in 2007, up from $4 billion in 2000, according to IMS Health, a health care information company.

Part of this increase can be traced to prescriptions in nursing homes. Researchers estimate that about a third of all nursing home patients have been given antipsychotic drugs.

The increases continue despite a drumbeat of bad publicity. A 2006 study of Alzheimer's patients found that for most patients, antipsychotics provided no significant improvement over placebos in treating aggression and delusions.

In 2005, the Food and Drug Administration ordered that the newer drugs carry a "black box" label warning of an increased risk of death. Last week, the F.D.A. required a similar warning on the labels of older antipsychotics.

The agency has not approved marketing of these drugs for older people with dementia, but they are commonly prescribed to these patients "off label." Several states are suing the top sellers of antipsychotics on charges of false and misleading marketing.

Ambre Morley, a spokeswoman for Janssen, the division of Johnson & Johnson that manufactures Risperdal, would not comment on the suits, but said: "As with any medication, the prescribing of a medication is up to a physician. We only promote our products for F.D.A.-approved indications."

Nevertheless, many doctors say misuse of the drugs is widespread. "These antipsychotics can be overused and abused," said Dr. Johnny Matson, a professor of psychology at Louisiana State University. "And there's a lot of abuse going on in a lot of these places."

Dr. William D. Smucker, a member of the American Medical Directors Association, a group of health professionals who work in nursing homes, agreed. Though the group encourages doctors to conduct a thorough assessment and prescribe antipsychotics only as a last resort, he said, "Many physicians are absent without leave in the nursing home and don't take an active role in the assessment of the patient."

Some nursing homes are trying a different approach, so-called environmental intervention. The strategies include reducing boredom, providing intellectual and physical stimulation, exercise, calming music, bringing in pets for therapy and improving how the staff approaches and talks to dementia patients.

At the Margaret Teitz Nursing and Rehabilitation Center in Queens, social workers do life reviews of patients to understand their interests, lifestyle and former occupations.

"I had a patient who used to be in fashion," said Nancy Goldwasser, the director of social services. "So we got her fabric samples. And she'd sit and look through the books, touch the fabric, and it would calm her."

But such approaches are time consuming, they do not help all patients, they can be prohibitively expensive and they will be more difficult to provide as Alzheimer's continues to increase.

"Our health care system isn't set up to address the mental, emotional and behavioral problems of the elderly," said Dr. Gary S. Moak, president of the American Association for Geriatric Psychiatry.

Nursing homes are short staffed, and insurers do not generally pay for the attentive medical care and hands-on psychosocial therapy that advocates recommend. It is much easier to use sedatives and antipsychotics, despite their side effects.

The first generation of antipsychotics, like Haldol, carry a significant risk of repetitive movement disorders and sedation. Second-generation antipsychotics, also called atypicals, are more commonly prescribed because the risk of movement disorders is lower. But they, too, can cause sedation, and they contribute to weight gain and diabetes.

Used correctly, the drugs do have a role in treating some seriously demented patients, who may be incapacitated by paranoia or are self-destructive or violent. Taking the edge off the behavior can keep them safe and living at home, rather than in a nursing home.

If patients are prescribed an antipsychotic, it should be a very low dose for the shortest period necessary, said Dr. Dillip V. Jeste, a professor of psychiatry and neuroscience at the University of California, San Diego.

It may take a few weeks or months to control behavior. In many cases, the patient can then be weaned off of the drugs or kept at a very low dose.

Some experts say another group of medications — antidementia drugs like Aricept, Exelon and Namenda — are underused. Research shows that 10 to 20 percent of Alzheimer's patients had noticeable positive responses to the drugs, and 40 percent more showed some cognitive improvement, even if it was not noticeable to an observer.

"Sometimes, it's enough to take the edge off the behavioral problems, so the family and patient can live with it and you don't expose people to much risk," said Dr. Gary J. Kennedy, director of geriatric psychiatry at the Montefiore Medical Center in the Bronx.

Other experts cite a lack of research backing these drugs for behavioral problems.

If patients begin showing behavioral symptoms of dementia, doctors said, they should have complete medical and psychiatric workups first, especially if symptoms develop suddenly.

"Just because someone is 95 does not mean one should not do a workup, especially if she's been healthy," Dr. Kennedy said.

Common causes of the symptoms include ministrokes, reparable brain hemorrhage from a mild bump on the head, hypothyroidism, dehydration, malnourishment, depression and sleep disorders.

Some doctors point out that simply paying attention to a nursing home patient can ease dementia symptoms. They note that in randomized trials of antipsychotic drugs for dementia, 30 to 60 percent of patients in the placebo groups improved.

"That's mind boggling," Dr. Jeste said. "These severely demented patients are not responding to the power of suggestion. They're responding to the attention they get when they participate in a clinical trial.

"They receive both T.L.C. and good general medical and humane care, which they did not receive until now. That's a sad commentary on the way we treat dementia patients."

To family members looking at a nursing home for an aging parent, experts recommend seeking out homes with low staff turnover, a high ratio of staff members to patients, and programs with psychosocial components.

The Medicare Web site has basic information on individual homes at www.medicare.gov/NHcompare. The National Citizens' Coalition for Nursing Home Reform, at www.nccnhr.org, offers a consumer guide to choosing a nursing home.

If medications are necessary, a family member should communicate with the prescribing doctor, learn the goal of each medication and be involved in making the decision.

Dr. Moak, of the psychiatry association, emphasized seeking out the doctor. Family members, he said, "often speak through the nursing staff, and that's a huge mistake."

Family members who are not convinced that a relative is receiving the best care should get a second opinion, as Ramona Lamascola did.

The physician she consulted, Dr. Kennedy of Montefiore, stopped her mother's antipsychotics and sedatives and prescribed Aricept.

"It's not clear whether it was getting her hypothyroid and other medical issues finally under control or getting rid of the offending medications," he said. "But she had a miraculous turnaround."

Theresa Lamascola still has dementia, but she went from confinement in a wheelchair — unable to sit still and screaming out in fear — to being able to walk with help, sit peacefully, have some memory and ability to communicate, understand subtleties of conversations and even make jokes.

Or, as her daughter put it, "I got my mother back."

http://www.nytimes.com/2008/06/24/health/24deme.html?ref=science

Microbes Eating Away at Pieces of History

By BINA VENKATARAMAN

At Angkor Wat, the dancers' feet are crumbling.

The palatial 12th-century Hindu temple, shrouded in the jungles of Cambodia, has played host to a thriving community of cyanobacteria ever since unsightly lichens were cleaned off its walls nearly 20 years ago. The microbes have not been good guests.

These bacteria (Gloeocapsa) not only stain the stone black, they also increase the water absorbed by the shale in morning monsoon rains and the heat absorbed when the sun comes out. The result, says Thomas Warscheid, a geomicrobiologist based in Germany, is a daily expansion and contraction cycle that cracks the temple's facade and its internal structure. Dr. Warscheid, who has studied Angkor Wat for more than a decade, said in an interview that these pendulum swings had broken away parts of celestial dancer sculptures on the temple walls.

"It is getting worse — up to 60 or 70 percent of the temple is black," he added.

Once chalked up to weathering, the damage at Angkor Wat is now seen as the result of a much more complex dynamic: the interaction of micro-organisms with the chemical and physical properties of the temple.

In various places around the globe, from Easter Island to the Acropolis, microscopic organisms are accelerating the deterioration of monuments and historic landmarks. Scientists and conservators have only recently begun to understand the role that common bacteria and fungi play in destroying cultural sites and how — if at all — they can be stopped. This growing recognition is inspiring new techniques to combat microbial damage.

"Our heritage is disappearing," said Ralph Mitchell, a biology professor at Harvard. "Whether it's Angkor Wat or the Mayan sites in Mexico or the Native American archaeological sites in the West of this country, they are all under threat. And the question is, can we preserve them?"

From bacteria that feed on hydrocarbons to endolithic fungi that eke out an existence within porous rock, monument-damaging microbes thrive because they survive in environments inhospitable to other flora and fauna.

"One of the recent discoveries that is of concern is that increased air pollution can sometimes increase biodeterioration," said Eric Doehne, a scientist at the Getty Conservation Institute. Some bacteria feed on chemicals found in pollutants, excreting an acid that eats away at stone, metal and paint.

Microbes pose a serious risk to the monuments at the Acropolis in Athens, including the golden-proportioned Parthenon and the Temple of Athena Nike, said Sophia Papida, conservator for the Acropolis Restoration Service.

Bacteria penetrate the veins of the marble, attract water and expand, cracking the monuments' faces and pillars, Ms. Papida said. Lichens burrow circular holes in the marble, a phenomenon known as honeycomb weathering, and exfoliate sculptural friezes that tell the stories of gods and goddesses.

Microbes also thwart painstaking efforts to restore the monuments. Acropolis stones can crumble into thousands of pieces, leaving a near-inscrutable jigsaw puzzle. "Our work is attacked by micro-organisms and we have to go back, remove the micro-organisms and put it back together," Ms. Papida said. "The bacteria which are there, they are having a good time, actually."

For decades, researchers struggled to grow laboratory cultures of bacteria that thrive on monuments. Today, genetic techniques allow scientists to better identify micro-organisms, but that does not always mean they can reverse the damage.

"We can use DNA analysis to identify who's there, but it doesn't mean that they cause the problem," said Robert Koestler, director of the Museum Conservation Institute at the Smithsonian.

Some efforts to preserve monuments become the very cause of the problem. Biodegradable polymers used to consolidate the stones of Mayan ruins in Mexico, for example, created conditions ripe for damaging microbes .

An added complication is that the organisms sometimes protect monuments, such as the volcanic rock formations known as the Cappadocian "fairy chimneys" of southeastern Turkey. Just as lichens once kept Angkor Wat from absorbing too much water and heat, scientists discovered that lichens on the chimneys prevented them from taking in too much water, keeping them intact longer.

"It's not always a bad-news story," Dr. Doehne said. He is optimistic about scientists' ability to manage microbial attacks. "We are seeing a burst of knowledge coming to the fore, really in the last 20 years."

At Angkor Wat, Dr. Warscheid developed a biocide called “mélange d’Angkor” that will be used to whiten parts of the temple. The chemical solution changes the ability of the cyanobacteria to produce their black-staining byproduct. There is no point, he says, in applying the biocide to the whole temple. After 10 years, the bacteria will adapt to it. “In certain places,” he said, “where there are carved stone scriptures, you can provide the manpower to do this cleaning on a regular basis.”

At the Acropolis, University of Athens researchers are working with Ms. Papida to test a biocide, a quaternary ammonium compound that she hopes will get the restoration back on track.

Fighting off microbes is a matter of “vigilant and routine maintenance,” said Mark Weber of the World Monuments Fund. People often deal with “stone-eating organisms,” as if they are singular events, he added, rather than as adaptive beings.

Another emerging solution is to starve the microbes. Conservators did this to kill off cotton-candylike fungi on flooded African artifacts housed in a university building in New Orleans when Hurricane Katrina hit, Dr. Koestler said. The fungi thrive on oxygen; they created an anoxic environment by flushing the objects with argon.

The method is easier, of course, indoors. Outdoors, combating microbes can mean cutting off their water source. “You want to catch it early — just like you diagnose a disease,” said Dr. Mitchell of Harvard. Once a biofilm, a community of bacteria like the slimy coating that forms on your teeth, develops, any effort may be futile.

In Dr. Warscheid’s view, protecting monuments, while important, is delaying the inevitable. “We have to accept that at some moment they will disappear,” he said. “But we know a lot about how to conserve them for the next 20, 30 years.”

http://www.nytimes.com/2008/06/24/science/24micr.html?ref=science

From a Prominent Death, Some Painful Truths

By DENISE GRADY

Apart from its sadness, Tim Russert's death this month at 58 was deeply unsettling to many people who, like him, had been earnestly following their doctors' advice on drugs, diet and exercise in hopes of avoiding a heart attack.

Mr. Russert, the moderator of "Meet the Press" on NBC News, took blood pressure and cholesterol pills and aspirin, rode an exercise bike, had yearly stress tests and other exams and was dutifully trying to lose weight. But he died of a heart attack anyway.An article in The New York Times last week about his medical care led to e-mail from dozens of readers insisting that something must have been missed, that if only he had been given this test or that, his doctors would have realized how sick he was and prescribed more medicine or recommended bypass surgery.

Clearly, there was sorrow for Mr. Russert's passing, but also nervous indignation. Many people are in the same boat he was in, struggling with weight, blood pressure and other risk factors — 16 million Americans have coronary artery disease — and his death threatened the collective sense of well-being. People are not supposed to die this way anymore, especially not smart, well-educated professionals under the care of doctors. Mr. Russert's fate underlines some painful truths. A doctor's care is not a protective bubble, and cardiology is not the exact science that many people wish it to be. A person's risk of a heart attack can only be estimated, and although drugs, diet and exercise may lower that risk, they cannot eliminate it entirely. True, the death rate from heart disease has declined, but it is still the leading cause of death in the United States, killing 650,000 people a year. About 300,000 die suddenly, and about half, like Mr. Russert, have no symptoms.

Cardiologists say that although they can identify people who have heart disease or risk factors for it, they are not so good at figuring out which are in real danger of having an attack soon, say in the next year or so. If those patients could be pinpointed, doctors say, they would feel justified in treating them aggressively with drugs and, possibly, surgery.

"It's the real dilemma we have in cardiology today," said Dr. Sidney Smith, a professor of medicine at the University of North Carolina and a past president of the American Heart Association. "Is it possible to identify the group at higher short-term risk?"

What killed Mr. Russert was a plaque rupture. A fatty, pimplelike lesion in a coronary artery burst, and a blood clot formed that closed the vessel and cut off circulation to part of the heart muscle. It was a typical heart attack, or myocardial infarction, an event that occurs 1.2 million times a year in the United States, killing 456,000 people.

In Mr. Russert's case, the heart attack led to a second catastrophe, an abnormal heart rhythm that caused cardiac arrest and quickly killed him. An electric shock from a defibrillator might have restarted his heart if it had been given promptly when he collapsed at his desk. But it was apparently delayed.

Dr. Smith and other cardiologists say the main problem is that there is no way to figure out who has "vulnerable plaques," those prone to rupture. Researchers are trying to find biomarkers, substances in the blood that can show the presence of these dangerous, ticking time-bomb plaques. So far, no biomarker has proved very accurate. Mr. Russert's heart disease was a mixed picture. Some factors looked favorable. There was no family history of heart attacks. Though he had high blood pressure, drugs lowered it pretty well, said his internist, Dr. Michael A. Newman. His total cholesterol was not high, nor was his LDL, the bad type of cholesterol, or his C-reactive protein, a measure of inflammation that is thought to contribute to plaque rupture. He did not smoke. At his last physical, in April, he passed a stress test, and his heart function was good. Dr. Newman estimated his risk of a heart attack in the next 10 years at 5 percent, based on a widely used calculator.

On the negative side, Mr. Russert had low HDL, the protective cholesterol, and high triglycerides. He was quite overweight; a waist more than 40 inches in men increases heart risk. A CT scan of his coronary arteries in 1998 gave a calcium score of 210, indicating artery disease — healthy arteries do not have calcium deposits — and a moderate to high risk of a heart attack. An echocardiogram in April found that the main heart pumping chamber had thickened, his ability to exercise had decreased slightly, and his blood pressure had increased a bit. Dr. Newman and his cardiologist, Dr. George Bren, changed his blood pressure medicines, and the pressure lowered to 120/80, Dr. Newman said.

Another blood test, for a substance called apoB, might have been a better measure of risk than LDL, some doctors say. Others disagree. Some doctors say people like Mr. Russert, with no symptoms but risk factors like a thickened heart, should have angiograms, in which a catheter is threaded into the coronary arteries, dye is injected, and X-rays are taken to look for blockages. Some advocate less invasive CT angiograms. Both types of angiogram can identify plaque deposits, and if extensive disease or blockages at critical points are found, a bypass is usually recommended. But the tests still cannot tell if plaques are likely to rupture, Dr. Smith and other cardiologists say. And Mr. Russert's doctors did not think that an angiogram was needed.

An autopsy found, in addition to the plaque rupture, extensive disease in Mr. Russert's coronary arteries, enough to surprise his doctors, they said. Had they found it before, Dr Newman said, a bypass would have been recommended. Dr. Bren differed, saying many cardiologists would still not have advised surgery.

Given all the uncertainties, what's a patient to do?

"You want to be sure your blood pressure and lipids are controlled, that you're not smoking, and you have the right waist circumference," Dr. Smith said.

Statins can reduce the risk of dying from a heart attack by 30 percent, he said.

"But what about the other 70 percent?" Dr. Smith asked. "There are other things we need to understand. There's tremendous promise, but miles to go before we sleep."

http://www.nytimes.com/2008/06/24/health/24hear.html?nl=8hlth&emc=hltha1

JOHN KAO

Where the Whole Agenda Is Innovation

By CORNELIA DEAN

WASHINGTON — John Kao's "non-career career" began with the study of philosophy and social science at Yale and a summer as a keyboardist with Frank Zappa and the Mothers of Invention. Then there was Yale Medical School and a psychiatry residency at Harvard, interrupted by a fellowship at Harvard Business School that turned into 14 years of teaching about the integration of science, technology and entrepreneurship.

This too was interrupted, by stints as a producer (and Tony nominee) for "Golden Child," the David Henry Hwang play about tradition and change in China, and production work on films like "Mr. Baseball" and "Sex, Lies and Videotape."

In 1997, he moved to San Francisco where, from an office in the Presidio, he advises corporations and governments on the subject that he now believes ties his life together: innovation.

He spoke here last month at a forum organized by the American Association for the Advancement of Science, where he was described as "an evangelist for a national innovation agenda," the goal he advocates in a new book, "Innovation Nation" (Free Press, 2007). Reviewers have praised it as both insightful and "scary." His ideas are further summed up in what he calls his "little orange book," a pocket-size, 28-page manifesto he hands out freely to people who express an interest in his work.

He told attendees at the forum that innovation requires a rapprochement between science and policy, "impresarios" who can link scientific talent and capital, and an ability to integrate existing technologies so they can be used together in new and productive ways.

He is far from alone in calling for this kind of focus. In May the National Academy of Sciences issued a collection of studies, "Innovation in Global Industries," an analysis of innovation in several important industries. In April the Brookings Institution produced a report, "Boosting Productivity, Innovation and Growth Through an Innovation Foundation." And in March the British government issued its own assessment, also called "Innovation Nation."

"His theme resonates with what we are seeing in much of the rest of the scientific community," Alan I. Leshner, chief executive of the A.A.A.S., said in an e-mail message. "There is a lot of competition around the world as more and more countries realize that investing in science fuels innovation over the long term and leads to economic growth."

At the A.A.A.S. meeting, however, some people wondered what kind of links could be forged between formal research policies and an activity as chaotic as innovation. "Should it be let's see what bubbles up or do we need to have a more focused policy?" one questioner asked him. Dr. Kao replied that unfortunately, there is no "three-ring binder" with instructions for integrating research policy with innovation policy.

But, he added in an interview after his talk, "we have been under the impression that we could do pretty much anything or that we did not need a strategy or that our strategy was not to have a strategy. None of these approaches is particularly viable in the current era."

His book outlines several problems that hinder innovation in the United States, including immigration policies that restrict the entry of scientifically and technically adept foreigners, even as our home-grown science workforce ages; unhelpful restrictions on access to intellectual property; and an infrastructure that is decrepit, obsolete or, as with broadband, unavailable to many people.

Without action, he said, "we will have an elite class of educated, cosmopolitan, global citizens who have a ticket of entry to the major leagues," he said, "and a much larger group of marginally employable people who have been sold a bill of goods by a consumption economy."

Innovation is his key for understanding his own work, which he said he had long viewed as a series of disparate episodes, not a career arc. "It is only in the last 10 or 15 years that it's become clear to me that I was filling out a pattern," he said. "The pattern allows me to do what I am doing now."

Dr. Kao, who is 57, was born in Chicago to parents who came from China for graduate study at Northwestern. Growing up in Garden City, N.Y., "I'd wake up in a Confucian house and go to an American elementary school and play baseball and go back to the Chinese house," he recalled. "I had to figure out how to balance two very different cultural references."

A serious student of piano, he continued music studies at Yale, where a professor introduced him to Frank Zappa. Dr. Kao recalled telling Zappa he "revered" his work and wanted a spot in his band. After an audition ("He asked me to improvise a waltz, but in the style of late Stravinsky") and despite his parents' worries, the young keyboardist took to the road with the Mothers of Invention, until the Vietnam War and a low draft number sent him back to a sophomore year in New Haven.

Responding to "some family pressure," he entered Yale Medical School, but during his psychiatry residency at Harvard, he said, he realized that clinical or academic medicine held little appeal. So he obtained a fellowship to Harvard business school to study the industry of medicine.

"What I had learned about behavior and the cognitive realm was incredibly relevant," he said. Before long he had written dozens of the kinds of case studies that are the basis of the school's teaching and had organized a course on entrepreneurship, creativity and organizations.

Many of his cases were about failures — individuals under pressure, partnerships unraveling, learning through trial and error and so on. Today, Dr. Kao says failure's relative lack of stigma is "a unique aspect

of U.S. culture" that does not exist even in countries like Singapore or Finland, both clients and both, he said, "relatively hip."

"There's a saying in Silicon Valley," he said. "If you haven't gone bankrupt a couple of times you are not trying hard enough. It's part of our national advantage."

And though he abandoned psychiatry, its "mental framework" pervades his work today, he said, even if his clients do not realize it. "It goes into the way I think about things," he said. "It's a kind of environmental sense of what it is like when you go into a company and there are certain kinds of décor in the lobby or the receptionist treats you in a certain way. Everything becomes text."

He helped found BioSurface Technology, a company that commercialized technology for growing skin cells for use in treating burns and was bought by Genzyme Corporation. This project had obvious ties to his theorizing. "I got to practice a little of what I preach," he said. But he credits the theater and film ventures for offering useful insights into the management of creativity.

For example, he said, the head of a movie studio defines and defends standards of quality, chooses projects, draws talent to the enterprise, runs interference "and then gets out of the way" until it is time to count the profits. A successful manager of innovation does much the same.

Today, he and his wife, Lauren, live in San Francisco with their three young children, and he preaches his message of innovation to audiences like that at the A.A.A.S. forum. Often, he said, it is a hard sell. "Many people believe there is no problem because we are No. 1," he said. As long as there is "no current pain," he said, advocating for an innovation agenda is like advising patients to eat a healthier diet, exercise and stop smoking.

He said that might explain the inability of a group of eminent scientists to interest presidential candidates in a debate on science issues, "The conclusion I drew was it was not deemed important in drawing votes," Dr. Kao said. But, he said, he hoped the next presidential administration would draw together scientists, business leaders, designers and others and ask them to produce a practical agenda for improving innovation. "And I would lock the door and make them work on it," he said.

The United States is never going to lead in areas like low-cost production, he said, but it can be a dynamo for devising new technologies and combining existing technologies in new ways.

"The world needs us, even if it does not believe it," he said. "I don't believe in this 'post-America' world at all."

http://www.nytimes.com/2008/06/24/science/24prof.html?ref=science

Achieving Wellness, Whatever That Is

By ABIGAIL ZUGER, M.D.
Worried Sick
A Prescription for Health in an Overtreated America. By Nortin M. Hadler, M.D., University of North Carolina Press. 376 pages. $28.

Medical Myths That Can Kill You*And the 101 Truths That Will Save, Extend and Improve Your Life. By Nancy L. Snyderman. M.D. Crown Publishers. 273 Pages. $24.95.*

There are so few good belly laughs in health care these days. What a pity I am likely to be the only person on the planet to enjoy the guffaw-laden, if slightly unnerving, experience of reading Dr. Nancy Snyderman and Dr. Nortin Hadler's new books in tandem, taking careful notes.

Both are practicing physicians who have made second careers interpreting medical principles for a lay audience. Both consider themselves experts not only in illness but also in wellness, that shimmering grail of our time. Both have combed through all the latest studies and are now pleased to provide you, the average healthy adult, with guidelines for staying well.

Both muster science, statistics and a judicious smattering of personal experience to present, with no small fanfare, completely, utterly, diametrically opposite advice.

Dr. Snyderman, a surgeon and longtime broadcast journalist who is the chief medical editor of NBC News, delivers no surprises. Her mission is to assure readers that enough attention to the principles of modern medical science will bring you a longer, healthier life.

With chirpy, can-do optimism she recapitulates the standard wisdom. Watch your diet, exercise, lose weight, stop smoking, be screened regularly for a variety of dire illnesses, rein in cholesterol and blood sugar, stay in touch with your doctor and be sure to check out those aches and pains pronto, just in case. So speaks the medical establishment.

Everyone, perhaps, but Dr. Hadler, a rheumatologist and professor of medicine at the University of North Carolina who is a longtime debunker of much the establishment holds dear. Dr. Hadler may not actually keep a skull on his desk, but he might as well. We are all going to die, he reminds us. Holding every dire illness at bay forever is simply not an option. The real goal is to reach a venerable age — say 85 — more or less intact. And the statistics tell Dr. Hadler that ignoring most of the advice Dr. Snyderman offers is the way to do it.

The statistics are the key here, and readers will need stamina to traverse the thicket of numbers and analyses Dr. Hadler provides. Reviewing the data behind many of the widely endorsed medical truths of our day, he concludes that most come up too short on benefit and too high on risk to justify widespread credence.

Dr. Hadler sees no evidence that mild high blood pressure or mildly elevated blood sugar pose much of a risk to longevity — certainly not enough to warrant the aggressive drug treatment often offered for them. The same goes for the extra 20 pounds that make you overweight but not obese, and the modest elevations in serum cholesterol that, these days, spell a statin drug for life for many healthy people.

He deplores the careful attention we pay to the state of our coronary arteries. Angioplasties, stents, coronary artery bypass grafts — all these procedures, he writes, "should be consigned to the annals of good ideas that proved bad."

As for the screening that purportedly keeps us safe from cancer, mammography and the blood test for prostate cancer are, in his view, blunt cudgels that can harm as much as help. Nor does he want any part of routine colonoscopies: "Let my polyps go."

I had a good time imagining these two authorities chatting at a cocktail party. Dr. S. would be nibbling salmon, tuna or trout and sipping her single daily alcoholic beverage. Dr. H. would be eating and drinking whatever he pleased ("You are not what you eat") .

She would describe her daily multivitamin regimen. He would discuss the "enormous North American vitamin scam." She would declare that "having ourselves checked on a regular basis is a vital step we must take." He would reply that an annual physical exam is "entirely useless." She would tell the story of the time she felt "bone weary and pooped" for a few days and so had a C.T. angiogram of her coronary arteries. He would have an apoplectic fit.

Yet, these two books do raise serious questions. Dr. Hadler articulates one of them. What exactly does it mean to be well? Is it complete freedom from pain, creaky joints, dyspepsia and sleepless nights? Or is it instead, as he suggests, the ability to cope with all these common physical problems without transforming oneself from person to patient?

What are the cumulative psychic and economic tolls (on a person, and on a nation) of conflating discomfort and disease?

Hold on, Dr. Snyderman might counter. If even one life is saved by the standard medical rigmarole — and that life could be yours — is it not all worthwhile in the end?

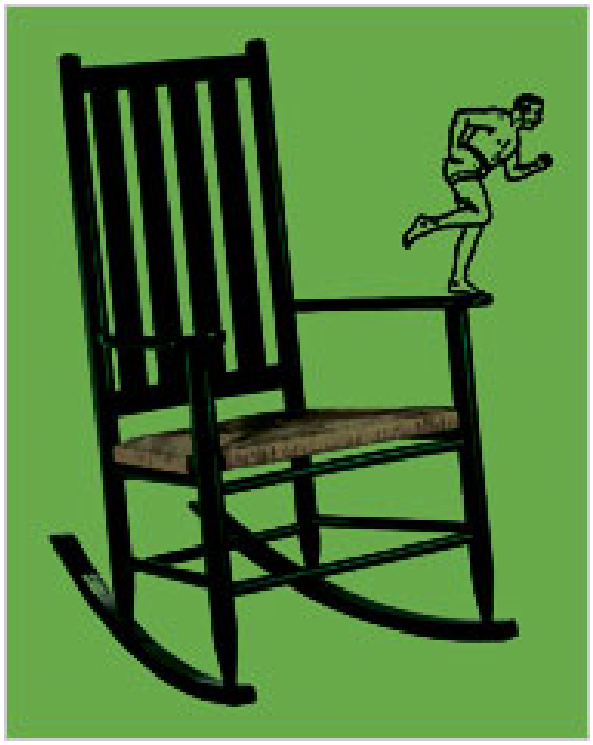
By now, it should be obvious why no one but me is likely to be reading both these books. You, reader, have undoubtedly already decided which author is a sage and which one a lunatic, which advice is sound, worthy of reading and re-reading, and which is simply misguided.

And that is the final thought-provoking lesson. Our health beliefs are so deeply ingrained that data, admonitions, guidelines and oceans of ink on reams of paper will seldom dissuade us from believing what we want to be true.

http://www.nytimes.com/2008/06/24/health/24book.html?ref=science

Fit, Not Frail: Exercise as a Tonic for Aging

By JANE E. BRODY



Fact: Every hour of every day, 330 Americans turn 60.

Fact: By 2030, one in five Americans will be older than 65.

Fact: The number of people over 100 doubles every decade.

Fact: As they age, people lose muscle mass and strength, flexibility and bone.

Fact: The resulting frailty leads to a loss of mobility and independence.

The last two facts may sound discouraging. But they can be countered by another. Regular participation in aerobics, strength training and balance and flexibility exercises can delay and may even prevent a life-limiting loss of physical abilities into one's 90s and beyond.

This last fact has given rise to a new group of professionals who specialize in what they call "active aging" and an updated series of physical activity recommendations for older adults from the American Heart Association and the American College of Sports Medicine. These recommendations are expected to match new federal activity guidelines due in October from the United States Health and Human Services Department.

But you need not — indeed should not — wait for the government. Even if you have a chronic health problem or physical limitation, there are safe ways to improve fitness and well-being. Any delay can increase the risk of injury and make it harder to recoup your losses.

Miriam E. Nelson, director of the John Hancock Center for Physical Activity and Nutrition at Tufts University in Boston and lead author of the new recommendations, observed last fall in The Journal on Active Aging that "with every increasing decade of age, people become less and less active."

"But," Dr. Nelson said, "the evidence shows that with every increasing decade, exercise becomes more important in terms of quality of life, independence and having a full life. So as of now, Americans are not on the right path."

Jim Concotelli of the Horizon Bay Senior Communities in Tampa, who oversees fitness and wellness program development for communities for the elderly in several states, noted this year in The Journal on Active Aging that many older Americans were unfamiliar with exercise activities and feared that they would cause injury and pain, especially if they have arthritis or other chronic problems. Yet by strengthening muscles, he said, they can improve joints and bones and function with less pain and less risk of injury.

The key is start slowly and build gradually as ability and strength improve. Most important is simply to start — now— perhaps under the guidance of a fitness professional or by creating a program based on the guidelines outlined here.

Although medical clearance may not be necessary for everyone for the moderate level of activity suggested, those with a known or possible problem would be wise to consult a doctor. And a few sessions with a trainer can help assure that the exercises are being done correctly and not likely to cause injury.

Until recently, physical activity recommendations for all ages have emphasized aerobics, or cardiovascular conditioning, through moderate to vigorous activities like brisk walking, cycling, lap swimming or jogging for half an hour a day five or more days a week. For those unable to do 30 minutes at a time, the activities can be broken up into three 10-minute intervals a day. If you have long been sedentary, start with even shorter intervals.

For people who prefer indoor workouts, a treadmill, cross-trainer, step machine or exercise bike can provide excellent aerobic training for the heart, lungs and circulation. Those unable to do weight-bearing exercise might try swimming or water aerobics. Keep in mind that 30 minutes a day of aerobic activity five days a week is the minimum recommendation. More is better and can reduce the risk of chronic disease related to inactivity.

Contrary to what many active adults seem to believe, physical fitness does not end with aerobics. Strength training has long been advocated by the National Institute on Aging, and the heart association has finally recognized the added value of muscle strength to reduce stress on joints, bones and soft tissues; enhance stability and reduce the risk of falls; and increase the ability to meet the demands of daily life, like rising from a chair, climbing stairs and opening jars.

Strength training can be done in a gym on a series of machines, each working a different set of major muscle groups: hips, legs, chest, back, shoulders, arms and abdomen. Or it can be done at home with resistance bands or tubes, hand-held barbells or dumbbells or even body weight. One program, the Key 3 program diagrammed here, was devised by Michael J. Hewitt, research director for exercise science at the Canyon Ranch Health Resort in Tucson. It can be completed in 10 minutes with practice.

As Dr. Hewitt explained in the International Longevity Center-USA newsletter, skeletal muscles can only contract and thus are always arranged in pairs. "One muscle of the pair pulls to bend the joint (flexion), and its antagonist pulls to straighten the joint (extension)." Thus, a strengthening program must be balanced, he said, "pairing every pulling lift with an opposite pushing action."

Dr. Hewitt emphasized that to reduce the risk of injury and premature muscle fatigue, the large muscles should be exercised first, followed by the smaller muscles, with the postural muscles exercised last. For

example, one would start with chest and upper back muscles, then the arms and shoulders and finally the lower back and abdomen.

Muscles have to be overworked to grow stronger. The goal for each exercise is three sets of 8 to 12 repetitions to muscle fatigue. Muscles also need time to recover. So strength training should be done two or three times a week on nonconsecutive days.

The new recommendations add flexibility and balance to the mix. Improving balance and reducing the risk of falls is critical as you age — if you fall, break your hip and die of pneumonia, aerobic capacity will not save you. Ten minutes a day stretching legs, arms, shoulders, hips and trunk can help assure continued mobility, and daily exercises like standing on one foot and then the other, walking heel to toe or practicing tai chi can improve balance.

The recommendations, issued last August, are geared to healthy adults 18 to 64, with a companion set for those 65 and older or those 50 to 64 who have chronic health problems or physical limitations. Details can be found at www.acsm.org. Under "Influence," click on Physical Activity Guidelines From ACSM and AHA.

The experts who made these recommendations urge all adults to adopt them now. As C. Jessie Jones, co-director of the Center for Successful Aging at California State University, Fullerton, said, "People can't wait until they're in residential or long-term care to get started."

http://www.nytimes.com/2008/06/24/health/24brod.html?nl=8hlth&emc=hlthb2

Arthur Galston, Agent Orange Researcher, Is Dead at 88

By JEREMY PEARCE

Arthur W. Galston, a Yale plant biologist who did early research that helped lead to the herbicide Agent Orange, then helped raise awareness of the military's use of it in Vietnam in the 1960s and its devastating effects on river ecosystems, died on June 15 in Hamden, Conn. He was 88.

The cause was congestive heart failure, his family said.

In letters, academic papers, broadcasts and seminars, Dr. Galston described the environmental damage wrought by Agent Orange and traveled to South Vietnam to monitor its impact. From 1962 to 1970, American troops released an estimated 20 million gallons of the chemical defoliant to destroy crops and expose Viet Cong positions and routes of movement.

Dr. Galston asserted that harm to trees and plant species could continue for an untold period, and perhaps for decades. He pointed out that spraying Agent Orange on riverbank mangroves in Vietnam was eliminating "one of the most important ecological niches for the completion of the life cycle of certain shellfish and migratory fish."

Then, in 1970, with Matthew S. Meselson of Harvard and others, he made a case that Agent Orange presented a potential risk to humans. The scientists lobbied the Department of Defense to conduct toxicological studies, which found that compounds in Agent Orange could be linked to birth defects in laboratory rats. The revelation led President Richard M. Nixon to order an immediate halt of spraying.

In later years, Dr. Galston tied his activism to his own early research. In the 1940s, at the University of Illinois, he had experimented with a plant growth regulator, triiodobenzoic acid, and found that it could induce soybeans to flower and grow more rapidly. But if applied in excess, he noted, the compound would cause the plant to catastrophically shed its leaves.

A colleague, Ian Sussex, a senior research scientist at Yale, said others used Dr. Galston's findings in the development of the more powerful defoliant, Agent Orange, named for the orange stripe painted around steel drums that contained it. The chemical, produced by Dow, Monsanto and other companies, is now known to have contained dioxins, long-lived compounds associated with cancers, birth defects and learning disabilities.

In the 1980s, Dr. Galston helped introduce popular courses in bioethics for undergraduates at Yale and in the 1990s was instrumental in founding the Interdisciplinary Center for Bioethics at the university. He explored the risks and rewards of genetically modified plants and crops, pesticides, stem-cell research, cloning and other issues as co-editor of two textbooks, "New Dimensions in Bioethics" (2000) and "Expanding Horizons in Bioethics" (2005).

In other important work in plant physiology, Dr. Galston experimented with the nutrient riboflavin and its role in enabling plants to absorb blue light, making a connection that he advanced and published in 1950 in the journal Science. He also wrote a book, "The Life of the Green Plant" (1961).

Arthur William Galston was born in Brooklyn. He graduated from Cornell and earned his doctorate in botany from Illinois in 1943.

After teaching at the California Institute of Technology, he moved to Yale in 1955 as a professor of plant physiology. At Yale, he was chairman of the department of botany in the 1960s and chairman of the department of biology in the 1980s. Dr. Galston was also a former director of the division of biological sciences at Yale. He retired in 1990 as a professor of botany emeritus.

Dr. Galston is survived by his wife of 66 years, Dale. He is also survived by a son, William, of Bethesda, Md.; a daughter, Beth, of Carlisle, Mass.; and a grandson.

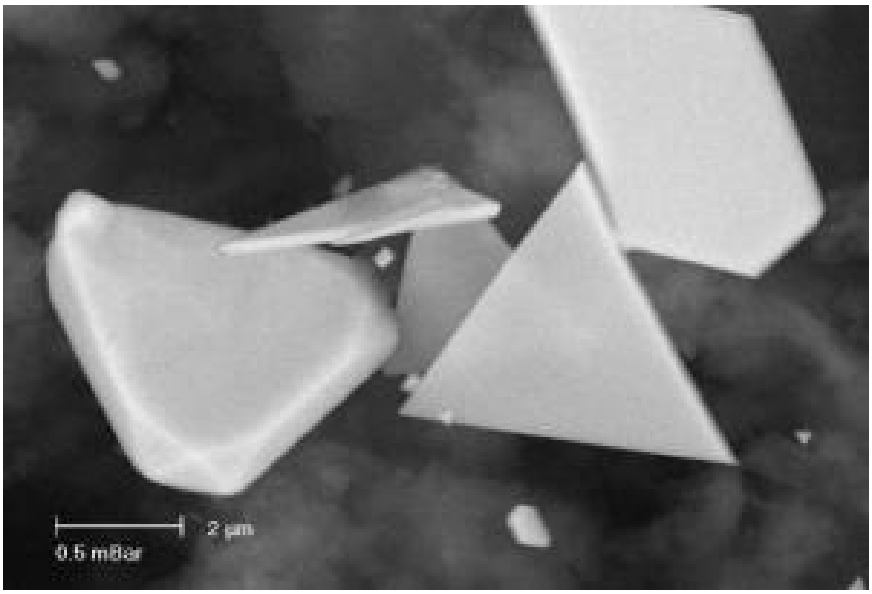
In 2003, Dr. Galston reconsidered the arc of his research.

"You know," he said, "nothing that you do in science is guaranteed to result in benefits for mankind. Any discovery, I believe, is morally neutral and it can be turned either to constructive ends or destructive ends."

He concluded: "That's not the fault of science."

http://www.nytimes.com/2008/06/23/us/23galston.html?ref=science

Natural 'Invisible' Gold Found In Nanoparticles



Scanning electron microscope image of the gold triangles showing their well defined crystal shape (Credit: CSIRO)

ScienceDaily (June 24, 2008) — Nanoparticles of gold too small to be seen with the naked eye have been created in laboratories, but up until now, have never been seen in nature.The search for these natural but 'invisible' nanoparticles is important. If they can be proved to exist, the knowledge will help give us a deeper understanding of how gold can be transported and deposited by geological processes, and therefore help explorers to find new gold deposits in Australia.

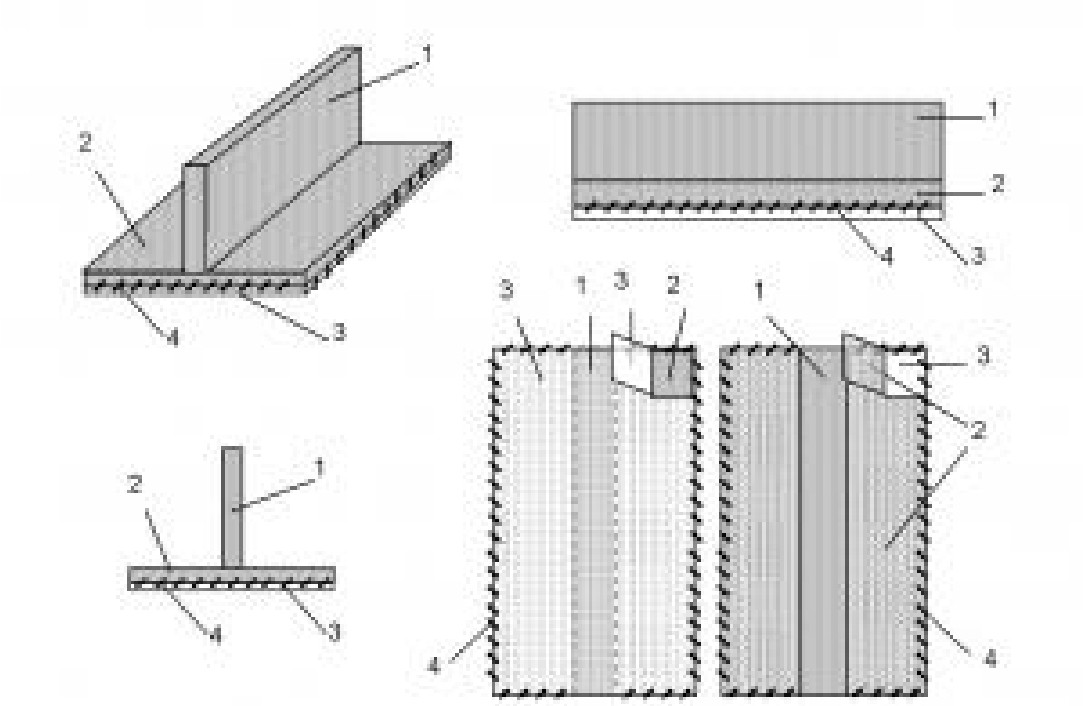
Now, hard evidence that gold nanoparticles have finally been seen in nature is presented in a paper published in GEOLOGY and authored by CSIRO Scientists from the Minerals Down Under National Research Flagship and CRC LEME, in collaboration with scientists from Curtin University and the University of Western Australia.Lead author, CSIRO's Dr Rob Hough, explains that the particles were discovered in Western Australia. "In the southern areas of the State, groundwater is very salty and acidic. This water dissolves primary gold and re-deposits it as pure gold crystals on fracture surfaces and in open pore spaces," he says.

"On investigation of these crystals, there appeared to be a dark band across them. However, high magnification imaging showed the band was in fact, a mass of gold nanoparticles and nanoplates. These are identical to those being manufactured in laboratories around the world for their unique properties."Clays from the fracture surface were then analysed. There was no gold visible, but analysis showed the clays contained up to 59 parts-per-million of gold. The research team concluded that the nanoparticles of gold they had imaged represented the 'invisible' gold in the clay, and that this nanosized gold was common in similar environments."The gold nanoparticles have not been identified earlier because they are transparent to electron beams and effectively invisible," Dr Hough says. "However, they are probably a common form of gold in this type of natural environment worldwide, where saline water interacts with gold deposits. They also provide the first direct observation of the nanoscale mobility of gold during weathering."With gold fetching around (AU) $950 an ounce and expected to rise, this research is good news for Australia's gold explorers.

Adapted from materials provided by CSIRO Australia.

http://www.sciencedaily.com/releases/2008/06/080623105020.htm

New Patented Prophylactic Mesh For The Repair Of Defects In The Abdominal Wall



T shaped prosthesis for the reinforcement of medium laparotomies 1. Vertical branch of the T. 2. Horizontal branch. 3 Silicon cover (peritoneum), 4. Union between polypropylene and the silicon (thermoseal or suture). (Credit: Image courtesy of University of Alcal)

ScienceDaily (June 24, 2008) — Scientists from the University of Alcalá (UAH) have designed a prosthesis made of silicon and polypropylene shaped like an "upside down T" that substantially reduces cases of incisional hernias.

A hernia is produced when the content of the abdominal cavity protrudes through a weakened natural orifice of the abdominal wall such as the inguinal canal, the umbilical area, the epigastrium or a previous incision in the abdomen such as from a surgical operation. The hernia manifests itself as a bulging lump since the internal lining of the abdomen protrudes in what is called a hernial sac that shrinks or grows depending on the effort exerted by the affected individual.

Hernias are more frequent in the groin or navel areas and in the area of an old surgical scar, and they never improve or disappear naturally; on the contrary, they tend to grow. Not only painful but unaesthetic too, hernias can produce complications such as bowel obstructions and strangulations.

Primary hernias are produced by structural defects in tissues, while the incisional hernias arise from a previous aperture in the abdominal wall, usually the scar of a previous surgery. Irrespective of the techniques used, different types of sutures or medical devices used to hold the abdominal wall, the number of incisional hernias has been constant over the last decade.

One of the most susceptible areas for their appearance is the linea alba, especially when oblique-transverse fibres are sectioned, which is what occurs in the longitudinal laparotomy procedures. The likelihood of a patient developing incisional hernias increases with associated risks, such as advanced age, neoplasia related surgery, obesity and related chronic pathologies.

Presented with these circumstances, a research group from the University of Alcalá managed by Professor Juan Manuel Bellón from the department of surgery of the UAH has developed and patented a new device to prevent the occurrence of incisional hernias. This prevention is carried out by the incorporation of prosthesis into the suture of the abdominal wall which is designed to increase the cohesive forces of the scar. The new design and concept of the prosthesis, named Laparomesh has the shape of a upside down T and is made with silicone and polypropylene, which are biomaterials that will not be absorbed by the body.

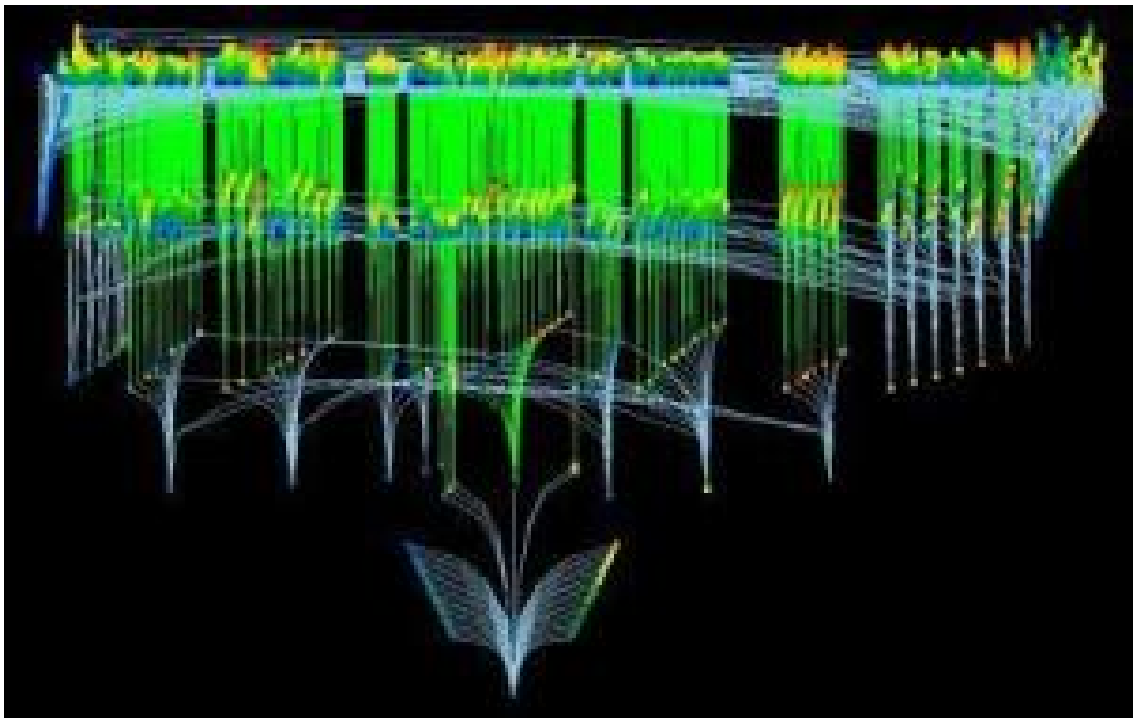
The goal of the Laparomesh is to create a reinforcement much like a tendon in the linea alba that would efficiently consolidate the suture of the laparotomy and significantly reduce the cases of incisional hernias. Different to the other prostheses of its type, the design by Professor Bellon and his team is placed neither above nor below, but it encloses both apertures of the abdominal wall, attaching itself to the different anatomical planes by means of a polypropylene suture.

Professor Bellón, stated that the current average number of cases of incisional hernias is around 15% to 20%, and it is estimated to reduce these numbers to 3%-4% using this newly patented mesh.

Adapted from materials provided by University of Alcal, via AlphaGalileo.

http://www.sciencedaily.com/releases/2008/06/080617125219.htm

Supercomputer Explores Biochemical Landscape To Find Memory Switches



A colorful "map" of switches within cells was created by Naren Ramakrishnan at Virginia Tech and Upinder S. Bhalla at the National Centre for Biological Sciences in India, using Virginia Tech's SystemX supercomputer. Every little square in the picture is a "switch." The lines indicate the relationship between the switches. (Credit: Created by Naren Ramakrishnan and Upinder S. Bhalla)

ScienceDaily (June 24, 2008) — Switches are a part of daily life, from snoozing your alarm, turning on the coffee maker, firing up your car engine, and so on until we turn off the lights at night. Researchers have now cataloged even more templates of possible switches within a living cell than we use throughout our day.

Naren Ramakrishnan, associate professor of computer science at Virginia Tech, USA, and Upinder S. Bhalla, at the National Centre for Biological Sciences (NCBS), part of the Tata Institute of Fundamental Research in India, found that cells can make use of thousands of switches to support important biological functions.

Cells use switches for determining what kind of cell to become -- skin or blood, for instance, in responding to stress, and in communication with other cells. "A switch is like a memory unit," said Bhalla. "The state of the switch -- whether it is on or off, is like a computer memory that can store a bit of 0 or 1. Although real biological switches are quite complex and regulated in many ways, we have shown the simplest possible ways in which switches could work", Bhalla said.

The researchers collaboration began during a sabbatical visit by Ramakrishnan to NCBS in Bangalore, India. Ramakrishnan is a computer scientist whose expertise is in numerical simulation and data mining. Bhalla is a computational neuroscientist with broad interests in biochemical network modeling and simulation. They decided to use Virginia Tech's System X supercomputer to search for the many ways in which cells can implement switches.

"Our exploration using System X is rather like how a tinkerer or a kid puts together things to see if they do something useful. We took a lot of 'spare parts', each spare part being one chemical reaction,

connected them together every which way, and we found that a surprising number of these artificially constructed networks actually were switches," said Ramakrishnan.

"Popular opinion used to be that there are a small number of ways in which switches can be realized by biology, but we found thousands of switches in our search," Ramakrishnan said.

The researchers report in PLoS Computational Biology, "We find nearly 4,500 reaction topologies, or about 10 percent of our tested configurations, that demonstrate switching behavior."

Their research also led to a comprehensive "map" of biochemical switches. The map further revealed that most of the switches form a "family" -- that is, the switches are all related to one another. "This has important implications since it suggests how evolution might stumble upon a switch rather easily." Ramakrishnan said.

"Of course, there is more to cells than switches," Bhalla said. "But switching and memory are the most basic behaviors possible. Armed with our catalog of switches, we can now proceed to investigate more interesting behaviors like complex information processing."

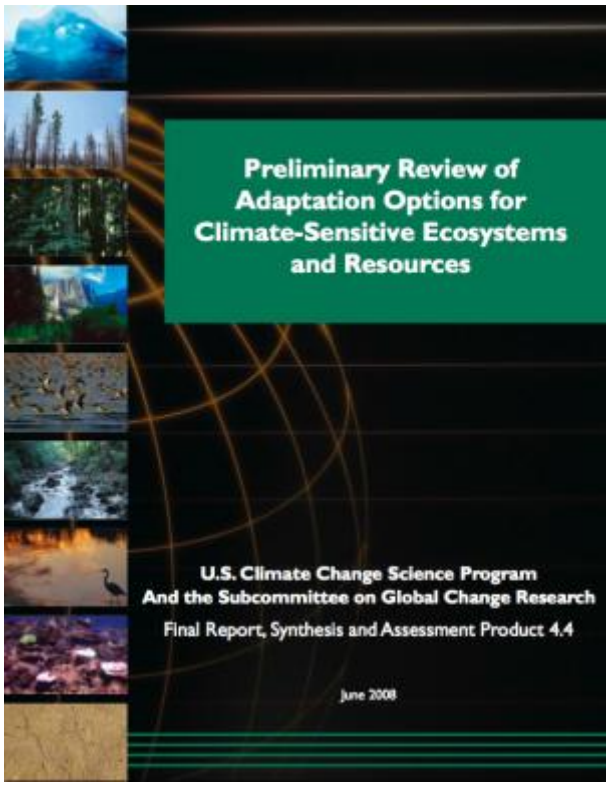
Journal reference:

1. . **Memory Switches in Chemical Reaction Space**. *PLoS Computational Biology*, June 20, 2008

Adapted from materials provided by Virginia Tech, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080619203302.htm

Reducing Impact Of Climate Change On Estuaries, Forests, Wetlands And Coral Reefs



The U.S. EPA is announcing the final report entitled, Synthesis and Assessment Product 4.4: Preliminary Review of Adaptation Options for Climate Sensitive Ecosystems and Resources. (Credit: Image courtesy of U.S. Environmental Protection Agency)

ScienceDaily (June 24, 2008) — The U.S. Environmental Protection Agency has released a report that can help reduce the potential impact of climate change on estuaries, forests, wetlands, coral reefs, and other sensitive ecosystems.

The report, entitled Preliminary Review of Adaptation Options for Climate-Sensitive Ecosystems and Resources, identifies strategies to protect the environment as these changes occur.

"People always say 'Don't just tell us what will happen – tell us what we can do about it,'" said Dr. George Gray, assistant administrator for EPA's Office of Research and Development. "By using the strategies outlined in this document, we can help managers protect our parks, rivers, and forests from possible future impacts of a changing climate."

To develop this assessment, scientists studied national parks, national forests, national wildlife refuges, wild and scenic rivers, national estuaries, and marine protected areas – all protected by the federal government. The report takes a unique approach by using the management goals set for each protected area to understand what strategies will increase the resilience of each ecosystem – in other words, increase the amount of change or disturbance that an ecosystem can absorb before it shifts to a different ecosystem.

Using these strategies, managers can maintain the original goals set for these ecosystems under changing climatic conditions. The strategies will be useful to federal agencies and can also be broadly applied to lands and waters managed by other government or nongovernmental organizations.

The report finds that climate change can increase the impact of traditional stressors (such as pollution or habitat destruction) on ecosystems, and that many existing best management practices to reduce these stressors can also be applied to reduce the impacts of climate change. For example, current efforts to reverse habitat destruction by restoring vegetation along streams also increase ecosystem resilience to climate change impacts, such as greater amounts of pollutants and sediments from more intense rainfall. Our country's ability to adapt to climate change will depend on a variety of factors including recognizing the barriers to implementing new strategies, expanding collaboration among ecosystem managers, creatively re-examining program goals and authorities, and being flexible in setting priorities and managing for change.

The peer-reviewed report provides the best-available science to date on management adaptations for ecosystems and resources. It was developed following the guidelines developed by the U.S. Climate Change Science Program.

The Global Change Research Program in EPA's Office of Research and Development led the development of the report. It is one of 21 synthesis and assessment products commissioned by the CCSP.

The CCSP was established in 2002 to provide the Nation with science-based knowledge to manage the risks and opportunities of changes in the climate and related environmental systems. The program is responsible for coordinating and integrating the research of 13 federal agencies on climate and global change.

PDF of the final report: SAP 4.4: Preliminary Review of Adaptation Options for Climate-Sensitive Ecosystems and Resources http://oaspub.epa.gov/eims/eimscomm.getfile?p_download_id=474224

Adapted from materials provided by U.S. Environmental Protection Agency.

http://www.sciencedaily.com/releases/2008/06/080620115843.htm

The Way Mothers Interact With Babies In First Year Predicts Child Behavior To Age 13

ScienceDaily (June 24, 2008) — The way mothers interact with their babies in the first year of life is strongly related to how children behave later on. Both a mother's parenting style and an infant's temperament reliably predict challenging behavior in later childhood, according to Benjamin Lahey and his team from the University of Chicago in the US.

The researchers looked at whether an infant's temperament and his mother's parenting skills during the first year of life might predict behavioral problems, in just over 1,800 children aged 4-13 years. Measures of infant temperament included activity levels, how fearful, predictable and fussy the babies were, as well as whether they had a generally happy disposition.

The researchers looked at how much mothers stimulated their baby intellectually, how responsive they were to the child's demands, and the use of spanking or physical restraint. Child conduct problems in later childhood included cheating, telling lies, trouble getting on with teachers, being disobedient at home and/or at school, bullying and showing no remorse after misbehaving.

The results indicate that both maternal ratings of their infants' temperament and parenting styles during the first year are surprisingly good predictors of maternal ratings of child conduct problems through age 13 years. Less fussy, more predictable infants, as well as those who were more intellectually stimulated by their mothers in their first year of life, were at low risk of later childhood conduct problems. Early spanking also predicted challenging behavior in Non-Hispanic European American families, but not in Hispanic families.

According to the authors, these findings support the hypothesis that "interventions focusing on parenting during the first year of life would be beneficial in preventing future child conduct problems…Greater emphasis should be placed on increasing maternal cognitive stimulation of infants in such early intervention programs, taking child temperament into consideration."

Journal reference:

1. Lahey et al. **Temperament and Parenting during the First Year of Life Predict Future Child Conduct Problems**. *Journal of Abnormal Child Psychology*, 2008; DOI: 10.1007/s10802-008-9247-3

Adapted from materials provided by Springer.

http://www.sciencedaily.com/releases/2008/06/080623102530.htm

Unlocking Genome Of World's Worst Insect Pest

A larva of Helicoverpa armigera, the world's worst insect pest. Scientists are working on the insect's genome. (Credit: Michael Ryan)

ScienceDaily (June 23, 2008) — Scientists from CSIRO and the University of Melbourne in Australia, and the Baylor College of Medicine in Houston, Texas, are on the brink of a discovery which will facilitate the development of new, safe, more sustainable ways of controlling the world's worst agricultural insect pest – the moth, Helicoverpa armigera.The Australian Minister for Innovation, Industry, Science and Research, Senator the Hon Kim Carr, said – at the BIO 2008 International Convention in San Diego, California – that the team was expected to sequence the moth's genome in about four months.

"This will allow the collaborating scientists and a worldwide consortium of specialists to work on new ways of controlling this pest," Senator Carr said.According to CSIRO's Group Executive for Agribusiness, Dr Joanne Daly, these include: the molecular basis of resistance to chemical and Bt insecticides and population genetics related to the refuge strategies in place to help prevent Helicoverpa from developing resistance to Bt transgenic cottons."This moth is resistant to nearly every class of chemical pesticide and threatens the long-term viability of transgenic crops which are reliant on the biological pesticide, Bt," Dr Daly said."The sequencing of the genome will greatly facilitate this research by improving the power, cost effectiveness and insights from the genetic work on this species and its American cousin H. zea," University of Melbourne Associate Professor Philip Batterham said."This moth is resistant to nearly every class of chemical pesticide and threatens the long-term viability of transgenic crops which are reliant on the biological pesticide, Bt," Dr Daly said.Senator Carr said that finding the moth's Achilles heel was critically important to agriculture worldwide.

"The moth causes $225 million of damage a year in Australia – $5 billion globally – to crops such as cotton, legumes and vegetables," he said.

Adapted from materials provided by CSIRO Australia.

http://www.sciencedaily.com/releases/2008/06/080618091707.htm

Protecting Yourself From Nasty Superbugs: Suggestions From Mayo Clinic

ScienceDaily (June 23, 2008) — Superbugs -- bacteria that are resistant to many commonly used antibiotics -- can seem scary. Antibiotic resistance means illnesses last longer, and the risk of complications and death increases.

Many factors have contributed to the emergence of superbugs, including overuse and misuse of antibiotics. One superbug, methicillin-resistant Staphylococcus aureus (MRSA), has been a problem in health care settings for years. In this environment, the bacteria is spread from one patient to another via the hands of care providers or by contaminated equipment.

Increasingly, MRSA is appearing outside of hospitals and is a growing threat. It can cause serious skin and soft tissue infections and a form of pneumonia. Clusters of MRSA skin infections have surfaced in certain groups of people, including athletes, children and members of the military. Risk factors in these groups include close contact, shared equipment that isn't cleaned, cuts on the skin, crowded living conditions, contaminated clothes or towels, and poor hygiene.

The June issue of Mayo Clinic Women's HealthSource offers tips to avoid superbugs:

- **Wash your hands:** This simple procedure, done properly, remains the best defense. Carry alcohol-based hand sanitizers for times when hand washing isn't possible.
- **Keep personal items personal**: Don't share towels, soap, sheets, razors, clothing or athletic equipment.
- **Sanitize linens**: If you have a cut or abrasion, wash towels and sheets with hot water and added bleach. Wash gym and athletic clothes after each use.
- **Get infections tested**: If an infection requires treatment, ask the care provider to take a culture to confirm what bacteria are present before you are given an antibiotic. If you test positive for a staphylococcus (staph) infection, ask that a culture be tested specifically for MRSA in case you need a special antibiotic.
- **Use antibiotics appropriately**: When you take antibiotics, take all doses even when you start feeling better. Don't demand antibiotics for viral illnesses; antibiotics don't work with viruses. Taking too many antibiotics over time could become a detriment because the medication's effectiveness can be compromised by overuse.
- **Use antibacterial products sparingly**: Antibacterial soaps and cleaning products probably don't prevent infections at home and may make these products less effective in hospitals.
- **Take precautions in the hospital**: Ask all hospital staff and visitors to wash their hands or use an alcohol-based hand sanitizer before touching you. Ask care providers to wipe stethoscopes and other equipment with alcohol. Don't set food or utensils directly on tables or beds. Make sure that intravenous tubes and catheters are inserted under sterile conditions.

Adapted from materials provided by Mayo Clinic, via Newswise.

http://www.sciencedaily.com/releases/2008/06/080617151357.htm

12 Million Molecules Share 143 Basic Shapes, Researchers Find

ScienceDaily (June 23, 2008) — Chemists in Ohio have discovered that half of all of the known chemical compounds in the world have an amazing similarity in sharing only 143 basic molecular shapes.

That sharply limits the number of molecular building blocks that chemists often deploy in efforts to develop new drugs and other products, the researchers say in a study scheduled for the June 20 issue of the bi-weekly ACS' Journal of Organic Chemistry.

Alan H. Lipkus and colleagues note that researchers have known for years that certain features of molecules, such as rings of atoms and the bonds than link them together, appear time after time in hundreds of life-saving medications, food additives, and other widely used products.

Scientists often tend to focus on these well-known types of molecular scaffolding in their quest to select the most promising rings, linkers, and other components for building new drugs while overlooking less familiar structures, the researchers say.

In the new study, they analyzed the chemical frameworks of more than 24 million organic substances found in the ACS' Chemical Abstracts Service (CAS) Registry, the world's most comprehensive database of disclosed molecules. They found that half of the substances could be described by only 143 basic framework shapes. By paying more attention to a multitude of other molecular shapes, chemists might discover an array of useful rings, linkers, and other building blocks for tomorrow's drugs and other medical, commercial, and industrial products, the study concluded.

Journal reference:

1. Lipkus, Alan H., Yuan, Qiong, Lucas, Karen A., Funk, Susan A., Bartelt, William F., Schenck, Roger J., and Trippe, Anthony J. **Structural Diversity of Organic Chemistry. A Scaffold Analysis of the CAS Registry**. *J. Org. Chem.*, 73, 12, 4443 - 4451, 2008 DOI: 10.1021/jo8001276

Adapted from materials provided by American Chemical Society, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080623093425.htm

Tartalo The Robot Is Knocking On Your Door

Tartalo the robot. (Credit: Alaitz Ochoa de Eribe)

ScienceDaily (June 23, 2008) — A research team from the University of the Basque Country, led by Basilio Sierra, is devising a robot that can get around by itself. Tartalo is able to identify different places and ask permission before going through a doorway.

We are accustomed to seeing robots programmed to carry out a concrete task such as the robotic arms well known in industry. What is surprising is to see a robot walking without help and making decisions for itself. This is precisely what the Autonomous Robotics and Systems Research Team at the University of the Basque Country (UPV/EHU) are involved in: increasing the autonomy of robots so that they are evermore capable of carrying out more tasks on their own. Some years ago they developed Marisorgin, the robot for distributing mail and now they have put Tartalo into operation.

Those working on the third floor of the Computer Science Faculty in the Basque city of Donostia-San Sebastián find it normal and everyday to meet Tartalo in the corridors- meet, not bump into! This 1.5-metre tall, intelligent machine side-steps any obstacle in its path, thanks to sensors that have been installed around its "body": sonars that emit and detect ultrasounds, infrared sensors and laser rays. The laser, for example, measures the distance of the robot from any object within a radius of 180 degrees. Mr Basilio Sierra's team, although it did not build the robot, having acquired it, but it is developing and enhancing its abilities.

With these sensors and the computer that is the robot's 'brain', Tartalo will have the wherewithal to move from one place to another without problems; in fact, to wander. What the research team at the Department of Computational Sciences and Artificial Intelligence want to achieve, however, is a robot capable of going anywhere it is told to.

Finding one's way inside buildings

The machines best known for guiding one from a starting point to a given goal are GPS navigation systems. However, these do not function inside buildings and neither would it be realistic to create a database with the plans for every building in the world. For this reason the UPV/EHU researchers use biomimetic systems as a basis for developing the robot, meaning that Tartalo does the same as a person or animal on entering a new place: explore the terrain and take in points of reference. But, for a machine to carry out what living creatures do by, as it were, instinct, the computer programmers have to nevertheless put in a huge quantity of data, programmes and calculations.

Buildings are semi-structured environments wherein determined common spaces are always found. Tartalo has been "taught" (programmed) to recognise four of these: room, corridor, front hall and "junction". Thus, if we were to take the robot to our home, the first thing it would have to do is to carry out a process of auto-location, going around the apartment in order to memorise the location of these four places. By this process the machine creates a species of topological map and the homeowner only has to teach it what each space is called. For this to be possible, UPV/EHU researchers are designing systems of interaction between machine and persons. For example, in order for the robot to understand instructions, they are perfecting a voice recognition system and touch screen.

Single eye, sharp vision

In order to identify what is in front, to distinguish between a room and a corridor, for example, Tartalo uses this single eye - which gives it its name – as a camera. It measures the images received through the eye-camera, compares them with its database and then evaluates probabilities to decide what the image that it has ahead looks like. The robot knows, for example, that if the space is long and narrow, it is a corridor.

The most important skill that Tartalo has been taught is to recognise doors. In fact, in order to access most of the places instructed to do so, the robot will have to pass through a doorway first. This is why the camera is located at the level of the doorknob or handle, which is what enables the identification of the door. When this happens, the system is programmed so that, when moving down a corridor, it seeks and negotiates doorways. If the door is closed, as it is not yet fitted with an arm to open it, it knocks two or three times on the door with its "feet".

The aim of the UPV/EHU research team is to develop the navigation system of the robot and the recognition of doors is fundamental to this end. From now on, Tartalo will have to learn to distinguish between many other things, such as faces, voices or any object that it is asked to fetch. But each one of these actions requires a specific programme and this, for the time being, is outside the remit of the research being undertaken by the UPV/EHU Autonomous Robotics and Systems Research Team. Nevertheless, little by little the skills developed by other teams will be incorporated into this robot.

Adapted from materials provided by Basque Research.

http://www.sciencedaily.com/releases/2008/06/080618114723.htm

Britain's Last Neanderthals Were More Sophisticated Than We Thought

A Neanderthal blade found at the Beedings site. (Credit: Image courtesy of University College London)

ScienceDaily (June 23, 2008) — An archaeological excavation at a site near Pulborough, West Sussex, has thrown remarkable new light on the life of northern Europe's last Neanderthals. It provides a snapshot of a thriving, developing population – rather than communities on the verge of extinction.

"The tools we've found at the site are technologically advanced and potentially older than tools in Britain belonging to our own species, Homo sapiens," says Dr Matthew Pope of Archaeology South East based at the UCL Institute of Archaeology. "It's exciting to think that there's a real possibility these were left by some of the last Neanderthal hunting groups to occupy northern Europe. The impression they give is of a population in complete command of both landscape and natural raw materials with a flourishing technology - not a people on the edge of extinction."

The team, led by Dr Pope and funded by English Heritage, is undertaking the first modern, scientific investigation of the site since its original discovery in 1900. During the construction of a monumental house known as 'Beedings' some 2,300 perfectly preserved stone tools were removed from fissures encountered in the foundation trenches.

Only recently were the tools recognised for their importance. Research by Roger Jacobi of the Leverhulme-funded Ancient Human Occupation of Britain (AHOB) Project showed conclusively that the Beedings material has strong affinities with other tools from northern Europe dating back to between 35,000 and 42,000 years ago. The collection of tools from Beedings is more diverse and extensive than any other found in the region and therefore offers the best insight into the technologically advanced cultures which occupied Northern Europe before the accepted appearance of our own species.

"Dr Jacobi's work showed the clear importance of the site," says Dr Pope. "The exceptional collection of tools appears to represent the sophisticated hunting kit of Neanderthal populations which were only a few

millennia from complete disappearance in the region. Unlike earlier, more typical Neanderthal tools these were made with long, straight blades - blades which were then turned into a variety of bone and hide processing implements, as well as lethal spear points.

"There were some questions about the validity of the earlier find, but our excavations have proved beyond doubt that the material discovered here was genuine and originated from fissures within the local sandstone. We also discovered older, more typical Neanderthal tools, deeper in the fissure. Clearly, Neanderthal hunters were drawn to the hill over a long period time, presumably for excellent views of the game-herds grazing on the plains below the ridge."

The excavations suggest the site may not be unique. Similar sites with comparable fissure systems are thought to exist across south east England. The project now aims to prospect more widely across the region for similar sites.

Barney Sloane, Head of Historic Environment Commissions at English Heritage, said: "Sites such as this are extremely rare and a relatively little considered archaeological resource. Their remains sit at a key watershed in the evolutionary history of northern Europe. The tools at Beedings could equally be the signature of pioneer populations of modern humans, or traces of the last Neanderthal hunting groups to occupy the region. This study offers a rare chance to answer some crucial questions about just how technologically advanced Neanderthals were, and how they compare with our own species."

The project, which has been running with the assistance of the landowners since February 2008, has been directed by Dr Matthew Pope of UCL and Caroline Wells of Sussex Archaeological Society, working closely with specialists from the Boxgrove Project and the Worthing Archaeological Society.

Adapted from materials provided by University College London.

http://www.sciencedaily.com/releases/2008/06/080623102544.htm

Alcohol Abuse Can Damage The Brain By Decreasing Insulin And Insulin-like Growth Factor Receptors

ScienceDaily (June 23, 2008) — Too much alcohol can cause permanent brain damage, such as Wernicke-Korsakoff syndrome, which is largely related to thiamine deficiency. Previous animal studies have shown that alcohol can also cause brain injury and degeneration by inhibiting insulin and insulin-like growth factor (IGF). A new study using postmortem human brain tissue has found that chronic alcohol abuse can decrease levels of genes needed for brain cells to respond to insulin/IGF, leading to neurodegeneration similar to that caused by Type 2 diabetes mellitus.

"Insulin is one of the most important hormones in the body," said Suzanne de la Monte, professor of pathology/ neuropathology and clinical neuroscience at Rhode Island Hospital and the Warren Alpert School of Medicine at Brown University. "It has many functions, including regulation of metabolism. Cells throughout the body depend upon insulin just to stay alive and carry out 'ordinary daily functions.' The best known diseases associated with abnormalities in insulin's availability or actions are Type 1 and Type 2 diabetes." De la Monte is also the study's corresponding author.

During the past several years, she added, there has been growing interest in insulin's effects on brain function. Scientists now believe that deficiencies in insulin, and the loss of brain cells' ability to respond to insulin, are critical factors leading to neurodegeneration, including Alzheimer's dementia. Alcohol may exacerbate the problem.

"Alcohol is a toxin that clearly can injure or kill brain cells," de la Monte said. "Fortunately, alcohol has to pass through the gastrointestinal tract and liver where enzymes detoxify alcohol, and consequently reduce the levels that reach the brain. However, in either high concentrations, or at lower levels over a longer period of time, alcohol will dissolve some of the lipid in the cell's membrane."

This is where insulin and IGF receptors normally sit, in the cell's membrane, waiting to initiate a signal that tells the cells to make more energy. Earlier animal and tissue research showed that alcohol-related damage causes insulin and IGF receptors to become less accommodating, and the signals needed for cells to increase energy production and stay alive instead become weak and ineffective.

For this study, researchers examined brain tissue from six male chronic alcoholics with a mean age of 57.7 years, and six male "controls" without alcoholism with a mean age of 57.5 years, provided through the New South Wales Tissue Resource Centre at The University of Sydney. Two brain regions were selected for study -- the cerebellar cortex in the anterior superior cerebellar vermis region, and the anterior cingulate gyrus in the frontal lobe -- as they represent major targets of alcohol's neurotoxicity.

"Our study of human alcoholic brains is really the first of its kind, where we were able to study the effects of chronic alcohol abuse on brain degeneration," said de la Monte. "The subjects had all signed up to donate their brains, and they were included only if alcohol was the only drug used in life."

The results showed that in chronic alcoholics' brains, there was significant insulin and IGF resistance in those regions known to be highly sensitive to alcohol's toxic effects.

"Insulin and IGF resistance in the cerebellum and frontal lobe was associated with loss of neurons and their connections, and decreased levels of neurotransmitters needed for learning, memory, and motor function," said de la Monte. "The damage that we saw in the cerebellum would account for the poor balance, and increased rates of falling and trauma we see in alcoholics. The insulin and IGF resistance in alcoholics' frontal lobes would account for their associated problems in memory."

De la Monte added that the insulin resistance their study found was quite similar to what happens in Type 2 diabetes, which means that alcoholic brain disease may be treatable in part by use of drugs that make brain cells more responsive to insulin and IGF.

"Public-health warnings about problems associated with alcohol abuse are fairly prevalent today, but the major emphasis seems to be on the short-term effects related to impairments that cause accidents and promote violence," said de la Monte. "Most people also seem to know that alcohol abuse damages the liver. What I believe is not well known to the public is that, over the long haul, heavy drinking will permanently damage the brain and cause dementia. Some of the dementia is certainly related to a lack of thiamine, also known as Vitamin B1, however, in the majority of cases, thiamine deficiency is not the principal problem. Our study indicates that chronic alcohol abuse causes a Type 2 diabetes effect in certain brain regions."

De la Monte recommended that readers who are concerned about family or friends having problems with memory or behavior, and are concerned about dementia, to consider prior drinking habits and report this to a professional if warranted. "All dementias are not caused by Alzheimer's disease," she said.

Co-authors of the paper were: Ming Tong, Ariel C. Cohen and Jack R. Wands of the Departments of Medicine and Pathology at Rhode Island Hospital, and Warren Alpert School of Medicine at Brown University; and Donna Sheedy and Clive Harper of The University of Sydney, Australia. The study was funded by the National Institute on Alcohol Abuse and Alcoholism, the New South Wales (Australia) Department of Health, and the National Health and Medical Research Council.

Journal reference:

1. . **Insulin and Insulin-like Growth Factor Resistance in Alcoholic Neurodegeneration**. *Alcoholism: Clinical & Experimental Research*, September 2008

Adapted from materials provided by Alcoholism: Clinical & Experimental Research, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/06/080617160819.htm

The Time Is Ripe For An Apple That Tastes Like Berries And One That Doesn't Brown

Susan Brown shows off one of her new columnar apple trees. (Credit: Joe Ogrodnick)

ScienceDaily (June 23, 2008) — Mention an apple and most people will immediately associate the word with a crisp, juicy, sweet-tart red fruit. But ask Cornell fruit geneticist Susan Brown about apples, and she'll share visions of deep red flesh or skin patterned like feathers on a bird's back, of flavors like anise, berries or roses. She'll talk of apples loaded with cancer-preventive antioxidants or as much vitamin C as an orange, that don't brown when cut or go soft in storage.

At the New York State Agricultural Experiment Station (NYSAES) in Geneva, N.Y., these apples already exist, and new possibilities -- whether exotic, delicious, kind of weird or just plain awful (think gasoline, nail-polish remover or soap) -- are literally endless.

Every seed holds a mystery

Apples are as infinitely variable as the number of seeds they produce the world over, and planting a seed will never produce a tree just like the one it came from. Though a tree confers the same qualities on all the apples it bears, the five to 10 seeds inside each apple are all unique offspring.The only way to replicate a desirable apple is to graft a cutting from the tree that produced it onto some sturdy rootstock, explains Brown, the Herman M. Cohn Professor of Horticultural Sciences. The trees that yield the varieties popular with consumers are all clones of solitary originals that, in the old days at least, probably grew by chance in a cider orchard or wilderness.

Though chance and intuition will always play a role in the birth of some great apples, creating superior new varieties that will catch on with consumers involves a heavy dose of science.

The apple-breeding program at NYSAES dates back 125 years and has reaped 63 cultivars, including the Empire, Macoun, Jonagold and Cortland.

"When I came into the program in 1990, I realized that a lot of our varieties were based on McIntosh or Empire because they are ideally suited to our location," Brown says. But she was concerned about the lack of genetic diversity in commercial apples. "I have really sought to save traits that I think will add to our knowledge of genes and how they can be deployed. The rootstock breeding program also does this."

Brown arrived at Cornell just as revolutionary advances in molecular genetic technology were sparking the College of Agriculture and Life Sciences-led Genomics Initiative, now known as the New Life Sciences Initiative."In 1990 there were probably only 28 families of genes," Brown recalls. "A family of genes would be, for example, several genes for scab resistance. We didn't have a lot that we could use to make more efficient what was admittedly a long, expensive process. But now we have genetic markers that we can use. I can show you a small seedling and tell you whether that little seedling, when it grows up, is going to have red or yellow fruit, or have a gene for disease resistance or not. I can get scab resistance without any problem at all."

Brown also hopes to make the apple business more profitable for the state's 674 growers. She works closely with New York stakeholders, both to find out what improvements they would like to see in apples and to have their help with grower trials of promising new varieties. "We have fruit in grower trials pretty much all throughout New York," she says.

Branching out

She also works to create trees that not only produce well but successfully resist multiple insect pests and pathogens, and do it all while beautifully enhancing a variety of landscapes.Apple trees, it turns out, don't have to look like a trunk with upward, out-spreading branches. Brown has fruit-bearing trees that are perfectly columnar, others that weep and some crosses of these types that are both columnar and weeping. Her favorite type looks like a bush, with dense, upward-thrusting branches of uniform length. "All the branches stop at almost the same point," she notes. "We spend a lot of time pruning trees, trying to bring them down so that growers can get in there with ladders." She even has one that is only a foot high and already bearing fruit.

With so much of the apple's enormous potential yet to explore, she and her colleagues are excited about beefing up Cornell's tree-fruit genomics program with three new genomicists, the first of which will be an expert in the genetics of tree architecture."Our goal is to establish a center in tree fruit genomics," she says. "We have the USDA germplasm repository, with more than 2,000 accessions of apple, my breeding program, the rootstock breeding program, and the USDA grape group in the next building is a center of excellence in grape genomics," she says. In addition, "Every year we harvest at least 10,000 seeds. We have 33 acres of seedlings, which is a huge amount, and we have to evaluate them for many characteristics. We're one of the largest programs in the world."

Another goal for Brown is to create an apple that can convert a new generation of children to eating fruit. She got an idea about what might work when she put crabapples in her kids' lunches as a joke and they came home raving about how good they were. "Kids like more fully flavored apples with higher acidity -- that's how Granny Smith became popular," she says. "My goal is not to get kids to eat crabapples but to develop large varieties that are really powerful. I want to make apples that are really desirable to the younger market, because if they don't eat them now, then they're never going to eat them."

And if they don't eat them, there's no end to what they'll be missing.

Adapted from materials provided by Cornell University. Original article written by Jeanne Griffith.

http://www.sciencedaily.com/releases/2008/06/080617115905.htm

Greater Than the Sum of Its Parts

It's been a bad year for German programs. The University of Southern California is eliminating its department. A graduate program at the University of Florida is alive, but facing an admissions freeze and future scrutiny.But in North Carolina, German professors are celebrating. After several years of planning and lobbying, the boards of Duke University and the University of North Carolina have approved the merger of the graduate programs at Duke and UNC's flagship campus at Chapel Hill. The result will be a single, larger department that will have the sort of scale that few universities could sustain these days in many humanities fields like German — intellectually important, but not in the nanotech way that attracts big bucks from legislatures and donors.

The Duke-UNC plan was drafted by professors, who then sold it to administrators (a contrast from many mergers that flow in the opposite direction). "This is a model that allows us to be important in our institutions and the field," said Ann Marie Rasmussen, a Duke professor who was German chair for many of the negotiations.With a combined 16 faculty members (not counting visitors and part timers), the joint program will offer a breadth of coverage few universities in the United States can match. "Most German departments have had to say, 'we're going to forget everything before 1750,' but we're going to have two medievalists,' " said the chair at Chapel Hill, Clayton Koelb. "Our students will be able to look at the whole range of German studies fields, not what happens to be available."

To do this, the two faculties have agreed to an unusual degree of collaboration across not only institutional, but public-private, lines. For instance, all future searches in German at the departments (which remain separate for undergraduate instruction) will feature a professor from the other university, with full voting rights equal to that of other professors on the committee. So when Chapel Hill had an opening this semester, the decision to search for an early modern specialist was based on an assessment of both departments, not just one."We have no interest in competing with one another, and we have every interest in making good, complementary hires," said Rasmussen.

Starting in the fall of 2009, graduate students will apply to and enter a single graduate program, taking courses at both institutions. They will be assured the minimum stipend levels Duke offers that year (likely to be higher than those at Carolina) and will have full rights at both institutions for access to fellowships, research support and so forth. Their eventual degrees will come from the joint department and will feature both universities' names.A key feature of the program is that its students will be able to serve as instructors or teaching assistants in both introductory German language courses and in literature or culture courses at both institutions, giving them experience teaching and working with students at a top public and a top private university.

Professors at both institutions said that a key to working out the merger was that there were years of less formal collaboration predating it. Professors have routinely served on doctoral committees at both institutions, and the departments have worked with acquisitions librarians at the two institutions to make complementary purchases. Koelb said that it became clear over the years that in German, "some programs were going to get cut but high quality programs could survive."

At USC, professors reported that the department elimination followed the gradual elimination of faculty slots, which created a vicious cycle. With staffing limited, it was difficult to create excitement about programs beyond introductory language instruction — and then the department was criticized for not having programs for which it didn't have professors.

Koelb said that he was never worried about a USC-type situation in North Carolina, but that a structure was needed to promote long-term growth. "This is about positioning ourselves not for the next 5 years, but for the next 20 years," he said.

— Scott Jaschik

The original story and user comments can be viewed online at
http://insidehighered.com/news/2008/06/25/german.

The (Future) Faculty Life, Here and There

Linsey Barker, a Ph.D. student in industrial and systems engineering at Virginia Tech, maintains a weekly lunch date with fellow grad students to talk about new topics in the field.

Not in engineering, that is, but higher education. And it all started in Switzerland, where in 2007 Barker researched how quality assurance and assessment mechanisms might change as Europe moves toward greater student mobility.

Virginia Tech's graduate dean, Karen P. DePauw, has for three years offered a short study abroad course intended to expose future professors to "global perspectives" on issues in higher education and faculty roles and responsibilities. "The future faculty will interact with colleagues around the world, and I think it's important that each of us understands that the university where we might have earned our degree, that's not the model for the world," she says.

Students in the program — all of whom can apply to participate only after completing two prerequisites in the university's "Future Professoriate" graduate certificate program — study a particular issue in higher education while traveling to six universities in Italy and Switzerland. Students, for instance, have examined academic freedom, interdisciplinary programs, research funding, tenure and promotion, and the roles of graduate students and women, respectively, in the university — all from a comparative perspective.

Students, who meet monthly with DePauw throughout the spring semester prior to the trip, have come from all eight of Virginia Tech's colleges. There's a mix of master's and Ph.D. students.

"One of the goals from my perspective — besides the students doing their own individual projects — is to look at the structure, the organization and structure of the university: the different disciplines, the student demographics, things like tuition (or not), the fees, how the graduate degrees or undergraduate degrees are put together. What are the requirements, whether or not tenure is a factor in universities, ... the way they run their courses, teaching loads for faculty. Do they have the graded course hours like we have, the lectures and labs? Do they have more of a seminar concept? What about examinations?" says DePauw, who teaches the course and largely funds it through the graduate school budget (which pays up to $800 toward each student's flight, travel and hotel costs, and most of the food expenses. Thirteen students went this year and last; 10 attended the first year.)

"It's a commitment that I make to part of their graduate education, which I happen to believe makes them well-prepared for working in universities," DePauw says. "If I can provide just a bit of an opportunity for our grad students, even if it's a limited number, if I can provide that opportunity for them, I thought, 'Let's do that.' "

This year, students met in Zurich on May 18, then spent 10 days visiting and meeting with officials (including presidents), faculty and students at six institutions: L'Accademia di Architettura di Mendrisio, Politecnico di Milano, Swiss Federal Institute of Technology Zurich, and the Universities of Basel, Lugano and Zurich. This year, they also discussed trends in European higher education with the secretary general of the European University Association.

"It really is a unique opportunity that I'm fortunate to have had," says Brennan Shepard, a newly minted M.B.A. who studied student services and student engagement at European universities on this year's Swiss trip.

"You know now when you come back that there's more than one way to do things," says Shepard, who hopes to work in higher education administration. "While it may not answer all of your questions, you know now that there are questions that are worth asking."

— Elizabeth Redden

The original story and user comments can be viewed online at http://insidehighered.com/news/2008/06/25/virginiatech.

Florida Buying Big Sugar Tract for Everglades

By DAMIEN CAVE

LOXAHATCHEE, Fla. — The dream of a restored Everglades, with water flowing from Lake Okeechobee to Florida Bay, moved a giant step closer to reality on Tuesday when the nation's largest sugarcane producer agreed to sell all of its assets to the state and go out of business.

Under the proposed deal, Florida will pay $1.75 billion for United States Sugar, which would have six years to continue farming before turning over 187,000 acres north of Everglades National Park, along with two sugar refineries, 200 miles of railroad and other assets.

It would be Florida's biggest land acquisition ever, and the magnitude and location of the purchase left environmentalists and state officials giddy.

Even before Gov. Charlie Crist arrived to make the announcement against a backdrop of water, grass and birds here, dozens of advocates gathered in small groups, gasping with awe, as if at a wedding for a couple they never thought would fall in love. After years of battling with United States Sugar over water and pollution, many of them said that the prospect of a partnership came as a shock.

"It's so exciting," said Margaret McPherson, vice president of the Everglades Foundation. "I'm going to do cartwheels."

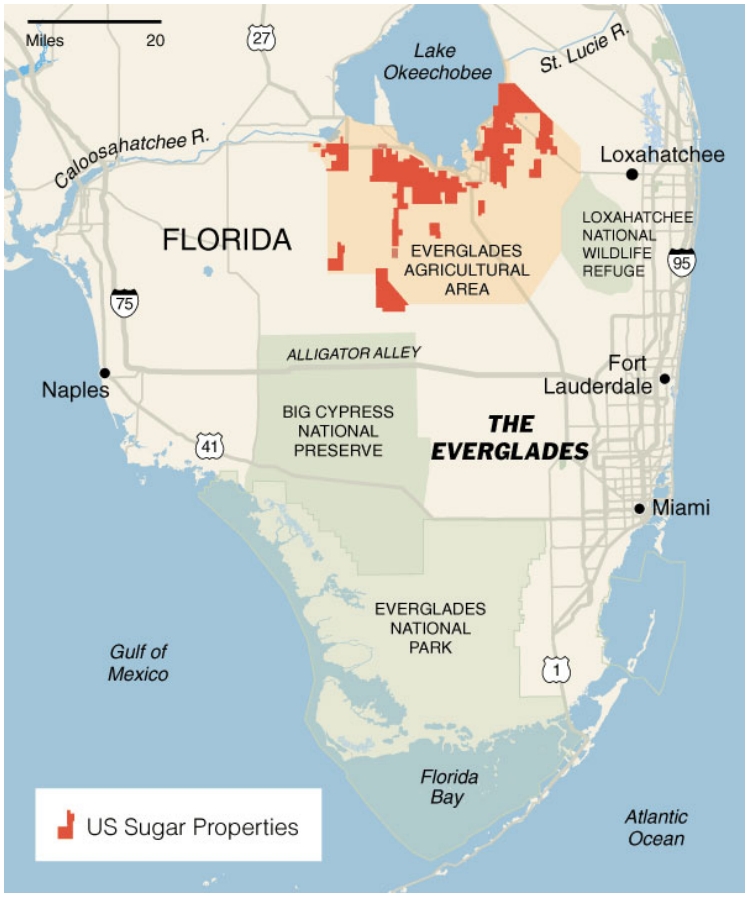
The details of the deal, which is scheduled to be completed over the next few months, and does not require legislative approval, may define how long the honeymoon lasts. Previous acquisitions took longer to integrate than initially expected and because United States Sugar's fields are not all contiguous, complicated land swaps with other businesses may be required.

The purchase will be paid for with bonds and from fees already added to water bills. But if the price goes up or environmental remediation enters the picture, the state could have to renegotiate or find other money.

The fate of the company's 1,900 workers also remains in question and some former company executives have suggested that the state is overpaying, bailing out a company burdened with debt, a troubled new sugar mill and a lawsuit from former employees who said they were bilked out of retirement money.

Company officials said the deal would amount to $350 a share, after taxes and other obligations were paid, a premium over two previous offers of $293 per share that the company had dismissed as inadequate.

The accusations and concerns, however, did not dampen the mood. Even as workers from the mill in Clewiston tried to get a handle on their futures, and some cried foul, Mr. Crist emphasized the land's environmental value.



He said the deal was "as monumental as the creation of the nation's first national park, Yellowstone." Declining to provide details of how the state arrived at the price of $1.7 billion, he said it was a terrific bargain.

"I can envision no better gift to the Everglades," he said, "the people of Florida and the people of America — as well as our planet — than to place in public ownership this missing link that represents the key to true restoration."

The impact on the Everglades could be substantial. The natural flow of water would be restored, and the expanse of about 292 square miles would add about a million acre-feet of water storage. That amount of water — enough to fill about 500,000 Olympic size swimming pools — could soak the southern Everglades during the dry season, protecting wildlife, preventing fires, and allowing for a redrawing of the $8 billion Everglades restoration plan approved in 2000.

It would essentially remove some of the proposed plumbing. Many of the complicated wells and pumps the plan relied on might never have to be built, water officials said, because the water could move naturally down the gradually sloping land.

Kenneth G. Ammon, deputy executive director of the South Florida Water Management District, which would assume control of the land, said it would be a "managed" flow-way, with reservoirs and other engineered mechanisms to control water flow. David G. Guest, a lawyer for Earthjustice Legal Defense Fund, joked that he might have to go to blows to keep the area all natural.

"This is about putting it back to the way it was in the 1890s," Mr. Guest said. "What will happen is that if you come back here in 20 years, it will look indistinguishable from the way it looked before the white man arrived."

The future challenges will probably intersect with the land's more recent history. Since 1931, United States Sugar has farmed the area, using fertilizers that have often released phosphorous into the water.

The legacy of its efforts could prove hidden at first, like pollution found during other environmental cleanup efforts.

The company has long denied that its efforts severely damaged the land, and executives said that the sale would benefit the Everglades, and shareholders.

"It's dollars and cents and the right thing to do," said Robert H. Buker Jr., the company's president, in an interview after the announcement. "If I had to go out I'd rather — all of us would rather it went out to make the state of Florida better."

The company will face some hurdles. The lawsuit involving former employees will not disappear but will probably include fewer plaintiffs, said Curtis Miner, one of the workers' lawyers. Some, like Randy Smith, 57, who cashed out last year at $194 a share after 25 years with the company, said Tuesday's deal only proved that he did not receive his fair share.

"I got ripped off pretty good," he said.

Those most affected though will be current workers, and they could decide whether the purchase goes through. United States Sugar took its stock off the public market in 1983 to create an employee stock ownership plan, so technically the company is owned by the workers.

Mr. Buker said he expected the workers would approve the deal because of the money they could make. But at a meeting with workers in Clewiston on Tuesday, opinions seemed mixed. Some workers said they were angry they were left out of the loop. As recently as Tuesday morning, bosses told them that rumors of a sale were not true.

They had a lot of questions: Why sell now? What would happen when the state took over? Would the mill still run? Would there be jobs? What would happen to Clewiston, the tiny town that has relied on United States Sugar since the 1930s?

Mr. Buker tried to respond. He said it was a good deal, that wage earners would receive a year's pay as severance; that salaried workers would get two years. And he said that the company had no choice but to sell because the state had the upper hand, and could have pushed them off the land with laws, rather than with $1.7 billion dollars.

For many — both workers and environmentalists — it was all still hard to believe. "You got to hear it three times," said Chris Harris, 36, a United States Sugar foreman, after the meeting. "It sinks in but..."

His voice trailed off and he looked away. The company had seemed to be growing, revamping its mill. A new tower went up just last week. At the time, Mr. Crist was being lambasted by environmentalists for abandoning his opposition to drilling offshore for oil and natural gas. At least for some on Tuesday, all was forgiven.

"Offshore drilling is a mouse," said Mr. Guest, of Earthjustice. "the Everglades is an elephant."

Reporting was contributed by Yolanne Almanzar from Clewiston, Fla., and Mary Williams Walsh.

http://www.nytimes.com/2008/06/25/us/25everglades.html?_r=1&th=&adxnnl=1&oref=slogin&emc=th&adxnnlx=1214409628-h1Smu6ltTwp68gEyDLBgQg

Uncomfortable in His Skin, Thriving in His Mind

By RICHARD EDER

NOTEBOOKS

1951-1958

By Albert Camus

Translated by Ryan Bloom. 264 pages. Ivan R. Dee. $27.50.

Albert Camus was one of the two pillars of postwar French literature. The other was Jean-Paul Sartre, his comrade in letters if not quite in arms (during the Resistance, Camus dangerously put out a clandestine newspaper, while Sartre stayed safely studying and writing). Then in the early 1950s, they bitterly split.

Camus's pillar stood in Paris, but in a sense it belonged elsewhere: perhaps among the Corinthian columns in North Africa's Hellenistic ruins. He was a French Algerian, of course, but the point isn't his provenance but his temperament. He was Mediterranean, a creature of sun and water, fierceness and the senses.

In Paris, with its cool symmetries, he was, to adapt a French saying, uncomfortable in his skin — the constricting ideological precision that Sartre and his fellow intellectuals fitted on him. They treated him as a marvel, and then when he rebelled against their leftist rigor, they condemned him.

This odd unsuitability, both of emotions and the mind, comes to life in the third and last volume of Camus's notebooks, appearing in an English translation (by Ryan Bloom) 19 years after they came out in French.

The split took place when Camus took issue with the absolutism of revolutions. Seeking to realize their ideals, he argued, they end up using violence and tyranny. It was an attack on Soviet Communism at a time when Sartre and his followers were becoming its increasingly rigid supporters.

They insisted that overt repression, however repellent, was the only way to fight the insidious structural tyranny of colonialist capitalism. One must choose, painfully. No we mustn't, Camus rejoined: neither be killers nor victims.

In his notebooks Camus excoriates “the newly achieved revolutionary spirit, nouveau riche, and Pharisees of justice.” He names Sartre and his followers, “who seem to make the taste for servitude a sort of ingredient of virtue.”

He mocks their conformism: cowardly, besides, he implies, citing the story of a child who announced her plan to join “the cruelest party.” Because: “If my party is in power, I’ll have nothing to fear, and if it is the other, I’ll suffer less since the party which will persecute me will be the less cruel one.”

Camus writes more generally: “Excess in love, indeed the only desirable, belongs to saints. Societies, they exude excess only in hatred. This is why one must preach to them an intransigent moderation.”

A convenient refusal to take sides, as Sartre and his circle insisted? There was nothing convenient in Camus. He was closer to Milovan Djilas, once a hard-line Communist, then jailed by Tito, and in the end proclaiming his battle-won political credo: “the unperfect society.”

The most interesting aspect of the “Notebooks” is not politics but its personal substratum. Beneath Camus’s ideological quarrels is a deeper unhappiness with the critical bent of the Paris intelligentsia. “Curious milieu,” he writes of La Nouvelle Revue Française, “whose function it is to create writers, and where, however, they lose the joy of writing and creating.”

It is, in part, the Southerner’s discomfort with the North, with the centralization dating back to the Capet dynasties that drew France’s energies up to Paris. On a trip to Italy Camus writes: “Already the Italians on the train, and soon those of the hotel as well, have warmed my heart. People whom I have always liked and who make me feel my exile in the French people’s perpetual bad mood.”

There is an exultant feel of liberation — and some of his most beautiful writing — as he evokes Italy’s cities and landscapes, and recites the place names of Greece as if they were incantations. Of Mycenae at sunset:

“The space is immense, the silence so absolute that the foot regrets having caused a stone to roll. A train chuffs in the distance, on the plain a donkey brays, and the sound rises up to us, the herds’ bells rush down the slopes like a whisper of water.”

He writes of his mix of happiness and depression after winning the Nobel Prize —“frightened by what happens to me, what I have not asked for” — and the angry attacks it provoked from the Paris left. He writes of his wife’s depression and his lovers (many). “I don’t seduce, I surrender.” Later he varies this to fit Don Juan, who, not surprisingly, fascinates him: “I don’t seduce, I adapt.”

He travels to his birthplace. “Honeysuckle — for me, its scent is tied to Algiers. It floated in the streets that led toward the high gardens where the girls awaited us. Vines, youth.” It was a memory that fought against politics. Camus could not put aside the reality of the French settlers. The vicious war between French forces and the F.L.N. — the Algerian nationalists — was his own civil war.

He writes to an Algerian friend, an F.L.N. supporter: “You should not ignore the shooting, nor justify that they shoot at the French-Algerians in general, and thus entangled, shoot at my family, who have always been poor and without hatred ... No cause, even if it had remained innocent and just, will ever tear me from my mother, who is the greatest cause that I know in the world.”

http://www.nytimes.com/2008/06/25/books/25eder.html?ref=books

A Love Without End in a World Beyond Time

By CLAUDIA LA ROCCO

American Ballet Theater's production of "La Bayadère," choreographed by Natalia Makarova, can leave you feeling as if you've stumbled, perhaps after a few drinks, onto a dusty old movie set. "Indiana Jones and the Temple of Doom" comes to mind, though no one in the ballet, alas, has his still-beating heart pulled from his chest.

The ballet's perfume of musty cinematic romance has its good elements, like Pier Luigi Samaritani's fantastically fake sets depicting lush vegetation, gilded palaces and sinister temples, and its bad — Orientalism is alive and well in this silly, exoticized vision of earthly intrigues and eternal love.

On Monday it fell to Marcelo Gomes, as the warrior Solor, and Veronika Part, as the temple dancer Nikiya, to deliver the love. The machinations came via Michelle Wiles, as the rajah's daughter, Gamzatti, plotting to thwart the union and snare Solor for herself. Ms. Wiles is a powerhouse, but not well suited to this role: she creates meaning through speed and technical ability, not acting, and wickedness is not her forte.

Offstage there were also intrigues. This has been a strange season for Ms. Part, a polarizing soloist who left the Kirov Ballet to join Ballet Theater in 2002. Chat rooms have been abuzz since a March article on Ballet.co.uk, a British Web site, reported that she had given notice. But according to a Ballet Theater spokesperson, she is signed on for next year. Depending on whom you ask, her staying is news for

rejoicing or eye-rolling. Ballet is full of camps, but the divide between those who find Ms. Part divine and ones who find her disastrous is particularly marked.

In truth, she is a bit of both, now flubbing point work in astonishing fashion (her turn as Aurora in "The Sleeping Beauty" premiere last season was especially nerve-racking to behold, and she was not given the role this year), now projecting a plush, old-fashioned grandeur. Nikiya is a good role for her, allowing her to capitalize on her long, sinuous extensions and sensual allure without demanding too many punishing technical feats.

And any dancer would feel safe in the arms of Mr. Gomes, a sure and generous partner who manages the rare trick of standing out while letting his ballerinas shine. Not many men can get away with turbans and lilac-colored tights (Theoni V. Aldredge designed the costumes) or delirious opium dreams, but he manages with an aplomb containing a delicious hint of camp. After dramatically arching his back while kneeling at the end of one passage of space-eating leaps and turns, Mr. Gomes presented to his cheering public an equally arch face. He is a delight.

Sarawanee Tanatanit was terrifically spooky as Gamzatti's servant, and Craig Salstein, resplendent in a ridiculous wig and loincloth, was an amusingly wild head fakir. Yet the heart of "La Bayadère" lies not in any individual performer but in the corps de ballet, which appears to Solor in an opium-fueled haze as an endless, winding line of ethereal Shades in white tutus and gauzy veils. Tortured by the death of Nikiya (Gamzatti gets her with the old serpent-in-a-flower-basket trick), Solor seeks refuge in oblivion. This being ballet, his oblivion takes the form of classical transcendence, with the slow, unison unfurling of arabesques meant to conjure a world beyond time.

Of course, the women offering this vision are very young, and it's difficult to imagine any of them having spent much time pondering immortality or its obverse. The juxtaposition between their reality as ambitious but vulnerable workhorses in an elite company and the hoped-for projection of effortless purity has a terrible beauty to it, one that exists, like the Kingdom of the Shades, outside the ballet itself. The eye travels again and again to the multiplied image of fragile supporting legs, shaking with the tremendous effort of maintaining that line. Night after night they hold it. The cost is glorious, and high.

American Ballet Theater performs through July 12 at the Metropolitan Opera House, Lincoln Center; (212) 362-6000.

http://www.nytimes.com/2008/06/25/arts/dance/25abt.html?ref=dance