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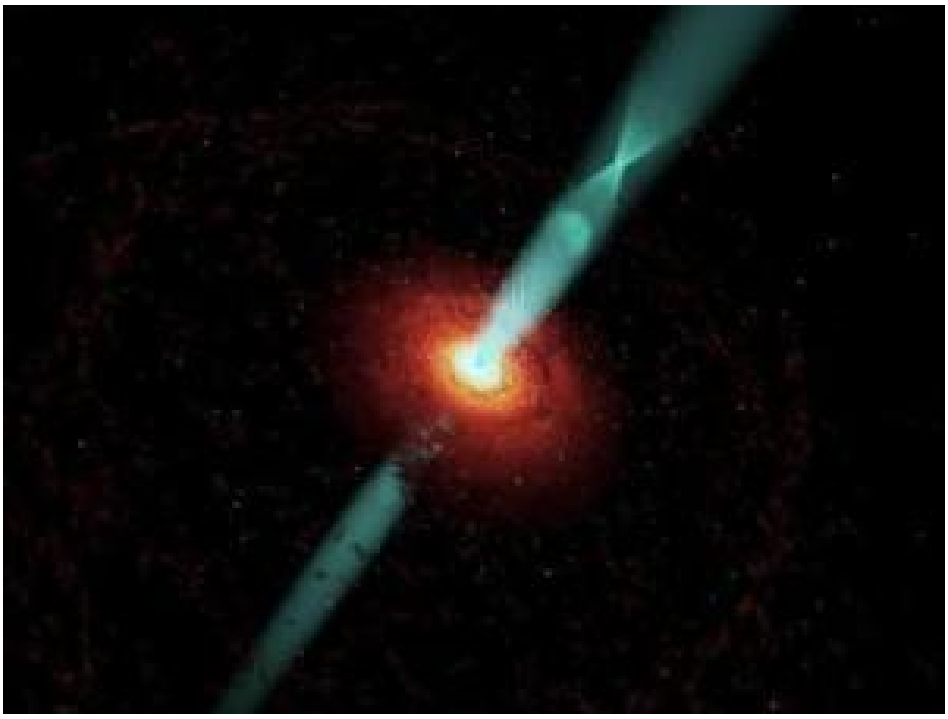
Secrets Of Massive Black Hole Unveiled: Workings Of Giant Galactic Particle Accelerators Discovered



Artist's conception of region near supermassive black hole where twisted magnetic fields propel and shape jet of particles. (Credit: Marscher et al., Wolfgang Steffen, Cosmovision, NRAO/AUI/NSF)

ScienceDaily (Apr. 24, 2008) — At the cores of many galaxies, supermassive black holes expel powerful jets of particles at nearly the speed of light. Just how they perform this feat has long been one of the mysteries of astrophysics. The leading theory says the particles are accelerated by tightly-twisted magnetic fields close to the black hole, but confirming that idea required an elusive close-up view of the jet's inner throat. Now, using the unrivaled resolution of the National Radio Astronomy Observatory's Very Long Baseline Array (VLBA), astronomers have watched material winding a corkscrew outward path and behaving exactly as predicted by the theory.

"We have gotten the clearest look yet at the innermost portion of the jet, where the particles actually are accelerated, and everything we see supports the idea that twisted, coiled magnetic fields are propelling the material outward," said Alan Marscher, of Boston University, leader of an international research team. "This is a major advance in our understanding of a remarkable process that occurs throughout the Universe," he added.

Marscher's team studied a galaxy called BL Lacertae (BL Lac), some 950 million light-years from Earth. BL Lac is a blazar, the most energetic type of black-hole-powered galactic core. A black hole is a concentration of mass so dense that not even light can escape its gravitational pull. Supermassive black holes in galaxies' cores power jets of particles and intense radiation in similar objects including quasars and Seyfert galaxies.

Material pulled inward toward the black hole forms a flattened, rotating disk, called an accretion disk. As the material moves from the outer edge of the disk inward, magnetic field lines perpendicular to the disk are twisted, forming a tightly-coiled bundle that, astronomers believe, propels and confines the ejected particles. Closer to the black hole, space itself, including the magnetic fields, is twisted by the strong gravitational pull and rotation of the black hole.

Theorists predicted that material moving outward in this close-in acceleration region would follow a corkscrew-shaped path inside the bundle of twisted magnetic fields. They also predicted that light and

other radiation emitted by the moving material would brighten when its rotating path was aimed most directly toward Earth.

Marscher and his colleagues predicted there would also be a flare later when the material hits a stationary shock wave called the "core" some time after it has emerged from the acceleration region.

"That behavior is exactly what we saw," Marscher said, when his team followed an outburst from BL Lac. In late 2005 and early 2006, the astronomers watched BL Lac with an international collection of telescopes as a knot of material was ejected outward through the jet. As the material sped out from the neighborhood of the black hole, the VLBA could pinpoint its location, while other telescopes measured the properties of the radiation emitted from the knot.

Bright bursts of light, X-rays, and gamma rays came when the knot was precisely at locations where the theories said such bursts would be seen. In addition, the alignment of the radio and light waves -- a property called polarization -- rotated as the knot wound its corkscrew path inside the tight throat of twisted magnetic fields.

"We got an unprecedented view of the inner portion of one of these jets and gained information that's very important to understanding how these tremendous particle accelerators work," Marscher said.

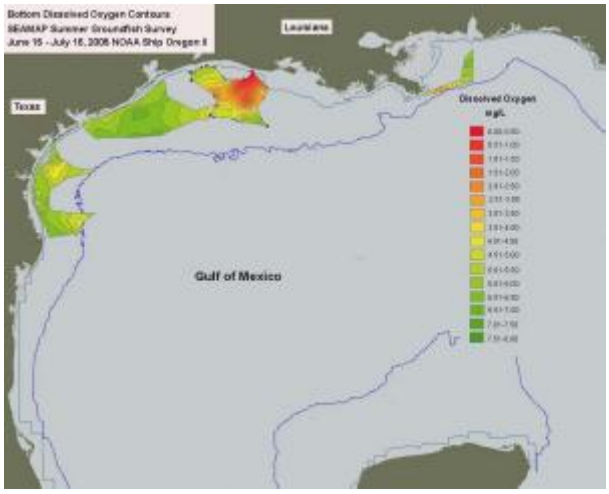
In addition to the continent-wide VLBA, an array of 10 radio telescopes spread from Hawaii to the Virgin Islands, the team used telescopes at the Steward Observatory, the Crimean Astrophysical Observatory, Lowell Observatory, Perugia University Astronomical Observatory, Abastumani Astrophysical Observatory, NASA's Rossi X-Ray Timing Explorer, the University of Michigan Radio Astronomy Observatory, and the Metsahovi Radio Observatory. The astronomers reported their findings in the April 24 issue of the journal Nature.

The National Radio Astronomy Observatory is a facility of the National Science Foundation, operated under cooperative agreement by Associated Universities, Inc.

Adapted from materials provided by National Radio Astronomy Observatory, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com:80 /releases/2008/04/080423131621.htm

Fertilizer Run-off From Agricultural Activities Blamed For Gulf Dead Zone In Gulf Of Mexico



Gulf dead zone, June 15 - July 16, 2005. Dark red areas have the lowest oxygen content (0-.5 mg/l). (Credit: NOAA)

ScienceDaily (Apr. 24, 2008) — Improved management of crops and perennials could go a long way toward alleviating the problem of hypoxia, which claims thousands of fish, shrimp and shellfish in the Gulf of Mexico each spring.

An assessment by a team led by Virginia Dale of Oak Ridge National Laboratory's Environmental Sciences Division concludes that low oxygen levels in water, or hypoxia, causes problems throughout the ecosystem. The death zone, scientifically documented in the Gulf since 1985, has consistently covered about 6,000 square miles, usually off the coast of Louisiana west of the Mississippi River's mouth.

The problem is caused in part by fertilizer run-off from agricultural activities in the Mississippi basin, which drains about 48 percent of the U.S. land. These nutrients combined with stratification caused by warm freshwater from the Mississippi and Atchafalaya rivers running into the colder saltwater of the Gulf sets up the deadly process. Algae grows, then dies and sinks to the bottom, where it decomposes, using up oxygen in the process.

"The oxygen-depleted water at the bottom is not replenished because of the lack of circulation," Dale said. "The more water that flows into the Gulf and the more nutrients in the water, the worse the hypoxia becomes."

While scientists initially believed nitrogen was the major culprit, the assessment team for the Science Advisory Board of the Environmental Protection Agency realized that phosphorus also plays a significant role. The team is recommending a 45 percent reduction in phosphorus and nitrogen from the 1980-1996 average flux during the spring (April, May and June) on a five-year running average.

The assessment team found that the most significant opportunities for nitrogen and phosphorus reduction in the Mississippi Basin are promotion of the production of environmentally sustainable biofuel and other perennial crops, improved infield management of nutrients, construction and restoration of wetlands, tighter nitrogen and phosphorus limits on municipal and industrial sources and improved targeting of riparian buffers.

Other recommendations include using cellulosic biofuels such as switchgrass and poplar hybrids, but the assessment team acknowledged that field implementation of cellulosic biofuel crops is under development. In the meantime, cellulosic ethanol is being produced from corn stover -- the cobs, leaves and stalks left in a field after harvest.

Dale is proposing research to establish landscape design that will help farmers and land management agencies determine where and how biofuel feedstocks can be grown with minimal environmental impacts.

"In our report to the EPA, we're recommending planting perennials, promoting environmentally sustainable biofuel production and using no-till farming as key land management strategies," Dale said. "Reducing the amount of nutrients on fields and restoring wetlands are other important parts of the panel's land management recommendations."

At a recent Department of Energy conference, "Biomass 2008: Fueling our Future," researchers discussed multiple aspects of bioenergy crops.

"Choices about what crops are grown and how they are planted, fertilized and harvested influence the effects of biofuels on native plant diversity, competition with food crops and effects on water and air quality," Dale said.

Decisions in this area also affect economic viability because the distance that biofuels must be transported has a large effect on the market cost of biofuels as well as the quality of life for those who live in communities through which the bulky fuel is transported, Dale said.

Dale and colleagues at ORNL are now focusing on watershed studies to determine what is happening between fields and the Gulf using models at different scales to interpret the data.

"Understanding these intermediate layers is crucial to filtering out the noise and figuring out how to shrink the hypoxic zone," Dale said. "The approach we're developing considers aspects of the landscape, including environmental and socioeconomic conditions, the bioenergy features and ecological and biological feedbacks."

While water availability and quality emerges as one of the most limiting factors, the linkage between water and bioenergy choices on medium and large scales is poorly qualified, according to Dale. An approach that considers environmental and socioeconomic changes in land use and landscape dynamics provides a way to quantify the influence of alternative bioenergy choices on water quality and other components of the environment.

This assessment was supported by EPA while the landscape research was funded by ORNL's Laboratory Directed Research and Development program. UT-Battelle manages Oak Ridge National Laboratory for the Department of Energy.

Adapted from materials provided by DOE/Oak Ridge National Laboratory.

http://www.sciencedaily.com:80 /releases/2008/04/080421143836.htm

Human line 'nearly split in two'

By Paul Rincon
Science reporter, BBC News

Ancient humans started down the path of evolving into two separate species before merging back into a single population, a genetic study suggests.

The genetic split in Africa resulted in distinct populations that lived in isolation for as much as 100,000 years, the scientists say.

This could have been caused by arid conditions driving a wedge between humans in eastern and southern Africa.

Details have been published in the American Journal of Human Genetics.

It would be the longest period for which modern human populations have been isolated from one another.

But other scientists said it was still too early to reconstruct a meaningful picture of humankind's early history in Africa. They argue that other scenarios could also account for the data.

At the time of the split - some 150,000 years ago - our species, *Homo sapiens* , was still confined to the African continent.

> **We don't know how long it takes for hominids to fission off into separate species, but clearly they were separated for a very long time**
> Dr Spencer Wells, Genographic Project

The results have come from the Genographic Project, a major effort to track human migrations through DNA.

The latest conclusions are based on analysis of mitochondrial DNA in present-day African populations. This type of DNA is the genetic material stored in mitochondria - the "powerhouses" of cells.

It is passed down from a mother to her offspring, providing a unique record of maternal inheritance.

"We don't know how long it takes for hominids to fission off into separate species, but clearly they were separated for a very long time," said Dr Spencer Wells, director of the Genographic Project.

"They came back together again during the Late Stone Age - driven by population expansion."

Family tree

Although present-day people carry a signature of the ancient split in their DNA, today's Africans are part of a single population.

The researchers compiled a "family tree" of different mitochondrial DNA groupings found in Africa.

A major split occurred near the root of the tree as early as 150,000 years ago.

On one side of this divide are the mitochondrial lineages now found predominantly in East and West Africa, and all maternal lineages found outside Africa.

On the other side of the divide are lineages predominantly found in the Khoi and San (Khoisan) hunter-gatherer people of southern Africa.

Many African populations today harbour a mixture of both.

> **Although there is very deep divergence in the mitochondrial lineages, that can be different from inferring when the populations diverged from one another**
> Dr Sarah Tishkoff, University of Pennsylvania

The scientists say the most likely scenario is that two populations went their separate ways early in our evolutionary history.

This gave rise to separate human communities localised to eastern and southern Africa that evolved in isolation for between 50,000 and 100,000 years.

This divergence could have been related to climate change: recent studies of ancient climate data suggest that eastern Africa went through a series of massive droughts between 135,000-90,000 years ago.

Lead author Doron Behar, from the Rambam Medical Center in Israel commented: "It is possible the harsh environment and changing climate made populations migrate to other places in order to have a better chance of survival.

"Some of them found places where they could and - perhaps - some didn't. More than that we cannot say."

Back together

Dr Wells told BBC News: "Once this population reached southern Africa, it was cut off from the eastern African population by these drought events which were on the route between them."

Modern humans are often presumed to have originated in East Africa and then spread out to populate other areas. But the data could equally support an origin in southern Africa followed by a migration to East and West Africa.

The genetic data show that populations came back together as a single, pan-African population about 40,000 years ago.

This renewed contact appears to coincide with the development of more advanced stone tool technology and may have been helped by more favourable environmental conditions.

"[The mixing] was two-way to a certain extent, but the majority of mitochondrial lineages seem to have come from north-eastern Africa down to the south," said Spencer Wells.

But other scientists said different scenarios could explain the data.

Dr Sarah Tishkoff, an expert on African population genetics from the University of Pennsylvania, said the Khoisan might once have carried many more of the presumed "East African" lineages but that these could have been lost over time.

"Although there is very deep divergence in the mitochondrial lineages, that can be different from inferring when the populations diverged from one another and there can be many demographic scenarios to account for it," she told BBC News.

She added: "As a general rule of thumb, when mitochondrial genetic lineages split, it will usually precede the population split. It can often be difficult to infer from one to the other."

The University of Pennsylvania researcher stressed it was not possible to pinpoint where in Africa the populations had once lived - complicating the process of reconstructing scenarios from genetic data.

The Genographic Project's findings are also consistent with the idea - held for some years now - that modern humans had a close brush with extinction in the evolutionary past.

The number of early humans may have shrunk as low as 2,000 before numbers began to expand again in the Late Stone Age.

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Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7358868.stm

Published: 2008/04/24 17:32:42 GMT

Stem Rust Never Sleeps

By NORMAN E. BORLAUG

Dallas

WITH food prices soaring throughout Asia, Africa and Latin America, and shortages threatening hunger and political chaos, the time could not be worse for an epidemic of stem rust in the world's wheat crops. Yet millions of wheat farmers, small and large, face this spreading and deadly crop infection.

The looming catastrophe can be avoided if the world's wheat scientists pull together to develop a new generation of stem-rust-resistant varieties of wheat. But scientists must quickly turn their attention to replacing almost all of the commercial wheat grown in the world today. This will require a commitment from many nations, especially the United States, which has lately neglected its role as a leader in agricultural science.

Stem rust, the most feared of all wheat diseases, can turn a healthy crop of wheat into a tangled mass of stems that produce little or no grain. The fungus spores travel in the wind, causing the infection to spread quickly. It has caused major famines since the beginning of history. In North America, huge grain losses occurred in 1903 and 1905 and from 1950 to '54.

During the 1950s, I and other scientists, first in North America and later throughout the world, developed high-yielding wheat varieties that were resistant to stem rust and other diseases. These improved seeds not only enabled farmers around the world to hold stem rust at bay for more than 50 years but also allowed for greater and more dependable yields. Indeed, with this work, global food supplies rapidly increased and prices dropped.

From 1965 to 1985, the heyday of the Green Revolution, world production of cereal grains — wheat, rice, corn, barley and sorghum — nearly doubled, from 1 billion to 1.8 billion metric tons, and cereal prices dropped by 40 percent.

Today, wheat provides about 20 percent of the food calories for the world's people. The world wheat harvest now stands at about 600 million metric tons.

In the last decade, global wheat production has not kept pace with rising population, or the increasing per capita demand for wheat products in newly industrializing countries. At the same time, international support for wheat research has declined significantly. And as a consequence, in 2007-08, world wheat stocks (as a percentage of demand) dropped to their lowest level since 1947-48. And prices have steadily climbed to the highest level in 25 years.

The new strains of stem rust, called Ug99 because they were discovered in Uganda in 1999, are much more dangerous than those that, 50 years ago, destroyed as much as 20 percent of the American wheat crop. Today's lush, high-yielding wheat fields on vast irrigated tracts are ideal environments for the fungus to multiply, so the potential for crop loss is greater than ever.

If publicly financed international researchers move together aggressively and systematically, high-yielding replacement wheat varieties can be developed and made available to farmers before stem rust disease becomes a global epidemic.

The Bush administration was initially quick to grasp Ug99's threat to American wheat production. In 2005, Mike Johanns, then secretary of agriculture, instructed the federal agriculture research service to take the lead in developing an international strategy to deal with stem rust. In 2006, the Agency for International Development mobilized emergency financing to help African and Asian countries accelerate needed wheat research.

But more recently, the administration has begun reversing direction. The State Department is recommending ending American support for the international agricultural research centers that helped start the Green Revolution, including all money for wheat research. And significant financial cuts have been proposed for important research centers, including the Department of Agriculture's essential rust research laboratory in St. Paul.

This shocking short-sightedness goes against the interests not only of American wheat farmers and consumers but of all humanity. It is tantamount to the United States abandoning its pledge to help halve world hunger by 2015. If millions of small-scale farmers see their wheat crops wiped out for want of new disease-resistant varieties, the problem will not be confined to any one country. Rust spores move long distances in the jet streams and know no political boundaries. Widespread failures in global wheat production will push the prices of all foods higher, causing new misery for the world's poor.

Ug99 could reduce world wheat production by 60 million tons. But a global crop failure of this magnitude can be avoided. Before it is too late, America must rebuild, not destroy, the collaborative systems of international agricultural research that were so effective in starting the Green Revolution.

Norman E. Borlaug, who received the Nobel Peace Prize in 1970, is a professor of international agriculture at Texas A&M University.

http://www.nytimes.com/2008/04/26/opinion/26borlaug.html?_r=1&th&emc=th&oref=slogin

Bicycle-Sharing Program to Be First of Kind in U.S.

By BERNIE BECKER

WASHINGTON — Starting next month, people here will be able to rent a bicycle day and night with the swipe of a membership card.

A new public-private venture called SmartBike DC will make 120 bicycles available at 10 spots in central locations in the city. The automated program, which district officials say is the first of its kind in the nation, will operate in a similar fashion to car-sharing programs like Zipcar.

The district has teamed up with an advertiser, Clear Channel Outdoor, to put the bikes on the streets.

“There’s a lot of stress on our transit systems currently,” said Jim Sebastian, who manages bicycle and pedestrian programs for Washington’s Transportation Department. Offering another option, Mr. Sebastian said, “will help us reduce congestion and pollution,” as well as parking problems.

In the deal, Clear Channel will have exclusive advertising rights in the city’s bus shelters. The company has reached a similar deal with San Francisco, and Chicago and Portland, Ore., are considering proposals.

For a $40 annual membership fee, SmartBike users can check out three-speed bicycles for three hours at a time. The program will not provide helmets but does encourage their use.

Similar programs have proved successful in Europe. The Vélib program in Paris and Bicing in Barcelona, Spain, both started around a year ago and already offer thousands of bicycles.

Mr. Sebastian, who started trying to bring bike-sharing to Washington even before its success in Paris and Barcelona, said he believed that the program could grow within a year and hoped that it would eventually offer 1,000 bicycles.

While automated bike-sharing programs are new to the United States, the idea of bike-sharing is hardly novel. Milan, Amsterdam and Portland have all had lower-tech free bike-sharing programs in the past, with Amsterdam’s dating to the 1960s.

But "studies showed that many bikes would get stolen in a day, or within a few weeks," said Paul DeMaio, a Washington-area bike-sharing consultant. "In Amsterdam, they would often find them in the canals."

Improved technology allows programs to better protect bicycles. In Washington, SmartBike subscribers who keep bicycles longer than the three-hour maximum will receive demerits and could eventually lose renting privileges. Bicycles gone for more than 48 hours will be deemed lost, with the last user charged a $200 replacement fee.

That technology comes with a price, which is one reason cities and advertisers started joining forces to offer bike-sharing. The European programs would cost cities about $4,500 per bike if sponsors did not step in, Mr. DeMaio said.

Cities realize "they literally have to spend no money on designing, marketing or maintaining" a bike-sharing program, said Martina Schmidt of Clear Channel Outdoor. Washington will keep the revenue generated by the program.

Bike-sharing has become a "public service subsidized by advertising," said Bernard Parisot, the president and co-chief executive officer of JCDecaux North America, an outdoor advertiser that made a proposal to bring bike-sharing to Chicago.

But, Mr. Parisot added, if users had to pay all of the costs for bike-sharing, "they would probably just take a cab."

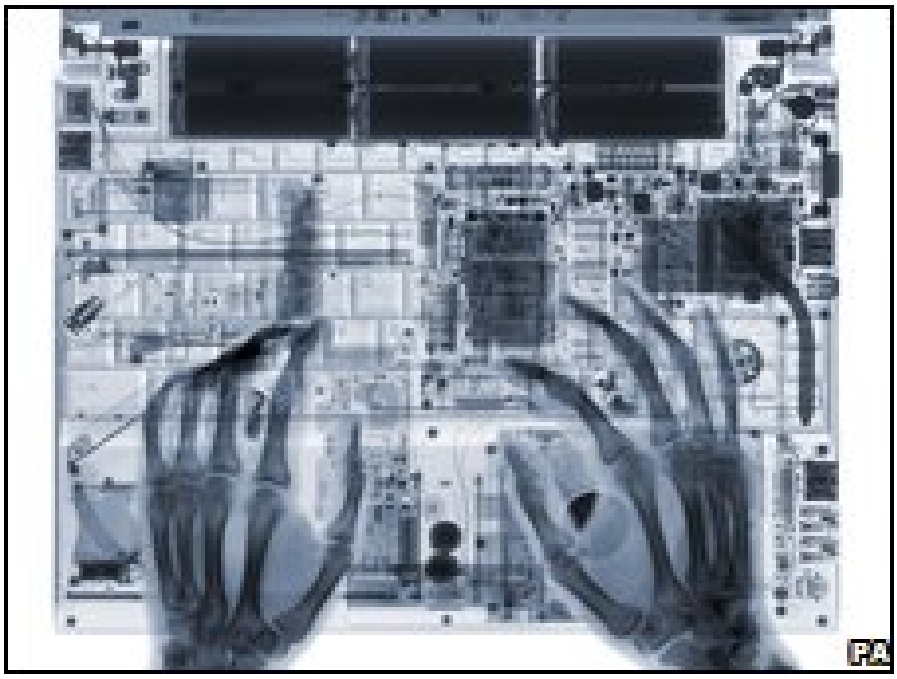
The low cost could be one of the program's major selling points.

At George Washington University in Foggy Bottom, one of the program's 10 locations, students were unsure how often they would use SmartBike, but said its price made it worth a try.

"I'd probably use it more in the summer than winter," said Dewey Archer, a senior. "But for $40? That's cheaper than gas."

http://www.nytimes.com/2008/04/27/us/27bikes.html?ref=science&adxnnlx=1209258042-GYNfMz1yLJgqB5H3RCnJrg&pagewanted=print

Hackers warn high street chains



High street chains will be the next victims of cyber terrorism, some of the world's elite hackers have warned.

They claim it is only a "matter of time" before the likes of Tesco and Marks & Spencer are targeted.

Criminals could use the kind of tactics which crippled Estonia's government and some firms last year, they warned.

The experts were members of the infamous "Hackers Panel" which convened in London this week at the InfoSecurity Europe conference.

The panel includes penetration testers and so-called "white hat" hackers, who help companies tighten up their digital security by searching for flaws in their defences.

Previous panellists include Gary McKinnon, known as Solo, alleged by the US government to have hacked into dozens of US Army, Navy, Air Force, and Department of Defense computers.

The "hackers" usually remain anonymous, "for security reasons", but this year's panellists agreed to break cover.

Common cause

First up was Roberto Preatoni, the founder of the cyber crime monitoring site, Zone-H, and WabSabiLabi, a trading site for security researchers.

His appearance came just a few months after he was arrested by Italian authorities on charges of hacking and wiretapping, as part of the ongoing investigation into the Telecom Italia scandal.

Mr Preatoni told the audience that the attacks in Estonia were a harbinger for a new era of cyber warfare.

"I'm afraid we will have to get used to this," said Mr Preatoni, also known as SyS64738. "We had all been waiting for this kind of attack to happen.

"Estonia was just unfortunate to be the first country to experience it. But very soon, our own [western] companies and countries will be getting attacked for political and religious reasons.

"This kind of attack can happen at any time. And it will happen."

During the two week "cyber war" against Estonia, hackers shut down the websites of banks, governments and political parties using "denial-of-service" (DoS) attacks, which knock websites offline by swamping servers with page requests.

As many of the attacks originated from Russia, the Estonian government pointed the finger at the Kremlin. But Mr Preatoni said that, having spoken to contacts in the hacking community, he was clear that "Putin was not involved".

"In my opinion, this was a collection of private individuals who spontaneously gathered under the same flag.

"Even though Estonia is one of the world's most advanced countries in IT technology, the whole economy was brought to its knees.

"That's the beauty of asymmetric warfare. You don't need a lot of money, or an army of people. You can do it from the comfort of your living room, with a beer in your hand.

Gate control

His warning was echoed by Steve Armstrong, who teaches seminars in hacking techniques, at the SANS Institute for information security training.

"If someone wants to have a pop at the UK, they are unlikely to go for the government web servers. They will go for the lower hanging fruit - companies which are seen as good representatives of the country.

"The likes of Tesco, Marks & Spencer and B&Q can be seen as legitimate targets.

"We have to get the message across to companies [to invest in information security].

"At the moment Chief Executives are only interested in the bottom line. But remember - if tesco.com goes down, that's a lot of shopping."

Mr Preatoni said that the Estonian government's repeated failure to thwart the attacks was proof that we still have "no good solutions" for denial of service attacks.

The panellists then argued over whether Internet Service Providers should do more to tighten security, by helping customers' protect their computers from being "zombified" by hackers for use in distributed DoS attacks.

"Actually, I don't think the ISPs should have any role in security," said Preatoni.

"In my opinion, that's like asking the Royal Mail to be responsible for the quality of your post."

But his view was immediately challenged by the third panellist, Jason Creasey, head of research at the independent Information Security Forum.

"I believe ISPs can play a phenomenal role in security, with a little bit of legal pressure," he claimed.

Net weakness

He was backed by an audience member, Angus Pinkerton, of Lynks Security Consulting. "The only way to defend against a distributed attack is with a distributed defence," he argued.

"I think it's unacceptable that ISPs are content to let their customers be part of bot-nets."

He challenged Steve Armstrong's view that asking ISPs to perform security duties was "fundamentally, censorship."

"This is not about free speech," said Mr Pinkerton. "Free speech does not entitle you to shout fire in a crowded theatre."

In the meantime, Mr Preatoni warned the audience it is "only going to get easier" to carry out a DoS attack, because he claimed the latest net address system, known as Internet Protocol Version 6 (IPv6), is actually more amenable to DoS.

Later, he told the BBC that the rise in cyber attacks originating in China was a convenient cloak for western countries to disguise their own cyber espionage activities.

"It's too easy to blame China," he said. "In fact, legitimate countries are bouncing their attacks through China. It's very easy to do, so why not?

"My evil opinion is that some western governments are already doing this."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/technology/7366995.stm

Published: 2008/04/25 13:48:46 GMT

Third of girls 'have self-harmed'

A third of UK girls aged 11 to 19 have tried to harm themselves, a survey for a mental healthcare provider suggests.

More than half of the 800 young people said they knew someone who had self-harmed - either through cutting, burning or punching themselves.

The main reason given was feeling depressed, with the results among boys being slightly lower at 22%.

Mental health charities said the figures were "worrying" and adolescents needed better access to treatment.

The survey showed that 73% of young people who self-harmed admitted to cutting, 48% to punching themselves, 14% to burning and 10% to self-poisoning.

Of those who admitted to self-harm, 43% said they did it because they were depressed, 17% because they were angry, 10% because of relationship problems and 10% because they were stressed.

'Increasing problem'

Dr David Kingsley, consultant psychiatrist at Cheadle Royal Hospital run by Affinity Healthcare - a mental healthcare provider for the NHS who commissioned the research - said professionals felt it was an increasing problem.

"One in three girls is an extraordinary figure - I was stunned by it.

"A study recently suggested three biggest causes were family problems, problems with friends and problems at school."

He said parents and teachers should be vigilant for young people who were withdrawn, struggling emotionally, or feeling low.

It is essential that the rising number of young people who self-harm are helped to stop before it develops into what may become a life-long illness
Majorie Wallace, Sane

"We need to ask ourselves what it is about modern living that is causing such stress for our youngsters."

He said people often kept it secret from friends and family which stopped them getting help and sometimes young people were put off because they had a negative reaction when they confided in someone.

Marjorie Wallace, chief executive of the mental health charity Sane, said the findings were very troubling.

"Evidence from our own helpline suggests there is a growing epidemic of self-harm amongst our young, who are using ever more extreme ways to find release from their mental turmoil.

"It is an addictive and desperate way of dealing with the stresses of growing up.

"It is essential that the rising number of young people who self-harm are helped to stop before it develops into what may become a life-long illness."

She said any child suspected of self-harming needs to be identified early and treatment and counselling made available immediately.

Sarah Brennan, acting chief executive of Young Minds, said: "Parents often feel disempowered when they discover their child is self harming.

"Raising awareness to parents and those working in young people services will ensure parents have someone informed to turn to should their child be self harming."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7365192.stm

Published: 2008/04/25 01:01:19 GMT

Reluctantly, a Daily Stops Its Presses, Living Online

By NOAM COHEN

With print revenue down and online revenue growing, newspaper executives are anticipating the day when big city dailies and national papers will abandon their print versions.

That day has arrived in Madison, Wis.

On Saturday, The Capital Times, the city's fabled 90-year-old daily newspaper founded in response to the jingoist fervor of World War I, stopped printing to devote itself to publishing its daily report on the Web.

(The staff will also produce two print products: a free weekly entertainment guide inserted in Madison's remaining daily newspaper, The Wisconsin State Journal, and a news weekly that will be distributed with the paper.)

An avowedly progressive paper that carried the banner of its founder, William T. Evjue, The Capital Times is wrapped up with the history of two larger-than-life Wisconsin senators, the elder Robert La Follette (whom it favored) and Joseph R. McCarthy (whom it opposed). But in recent years, the paper's circulation dropped to about 18,000 from a high in the 1960s of more than 40,000.

"We felt our audience was shrinking so that we were not relevant," Clayton Frink, the publisher of The Capital Times, said in an interview two days before the final daily press run. "We are going a little farther, a little faster, but the general trend is happening everywhere."

The transition in Madison, while long foretold — The Capital Times was doubly part of a dying breed, being the afternoon paper in a two-newspaper town — has hardly been neat and clean and cathartic.

More than 20 members of the newsroom staff lost their jobs, mainly through buyouts, but also through layoffs. Each departing journalist was profiled in the final paper, and lives on at the Web site Madison.com under the headline "A Fond Farewell to Talented Colleagues," with a "class photo" taken next to the presses.

The new staff total will be in the 40s. This includes seven new hires in areas like Web producing and arts coverage. Copy editors, by contrast, are "exiting at a higher rate than reporters," said Paul Fanlund, the editor who arrived from The State Journal in 2006.

The Web strategy, while seen as a long-term solution, is still a work in progress, Mr. Fanlund says. It revolves around a portal, Madison.com, which is owned under the same joint arrangement mandating that both Madison papers share revenues, though they are editorially independent.

The Capital Times will operate a nearly continuous Web newsroom and focus on repurposing online the cultural and entertainment material the staff will begin to produce in the supplement, 77 Square, to be inserted in The State Journal.

"If there is a window of opportunity for newspapers on the Web, it is locally," said James L. Baughman, director of the University of Wisconsin journalism school in Madison. "The reason the online version of the Cap Times may have life is that opportunity."

Once upon a time, the afternoon newspaper was the Internet of its day, Mr. Baughman said, giving afternoon baseball scores and stock market reports in a quick turnaround. It was the more lucrative slot as a result.

The liberal afternoon newspaper still has a sympathetic audience in Madison, but the changing pace of news is more important. “The political activism is there, you can’t deny it,” he said of Madison’s newspaper readers, “but they want the morning box scores.”

And while Mr. Fanlund takes pain to stress the need to continue the progressive editorials and watchdog role of the reinvented Capital Times, it is sports that serves as a perfect example of the changes he says have been long overdue.

As an afternoon paper that did not publish on Sundays, he says, his sportswriters would be covering a college football game and “it would be 48 hours until the articles would be read.” Those writers, who will be making the transition online, “see the Web as a new lease on life.”

But the decision to migrate online, and in free weeklies, necessarily involves reinventing the core mission at the newspaper and the core audience. The subscribers to The Cap Times reliably moved to The State Journal, a less progressive paper with the morning slot.

In its account of The Capital Times’s last daily press run, The State Journal reported that it had “succeeded in garnering most of The Capital Times’s former subscribers and will see its average daily circulation rise from 89,000 to at least 104,000 starting Monday.”

In the Madison weekly Isthmus, one columnist wrote that the new Capital Times suddenly looked like a rival going after the same “urban advertising market that Isthmus has cultivated for 32 years.”

While acknowledging the long, proud print tradition there, the columnist, Marc Eisen, wrote: “Cap Times editors and reporters see themselves as reimagining founder Bill Evjue’s progressive vision for the Internet age. But, functionally, the new editions are all about the advertising.”

Mr. Evjue is the old-world figure at the paper, the John Henry, of sorts, whose hammer — his typewriter — the staff still hears. The final paper showed him in a 1961 photograph pressing the button on new presses, embracing technological change.

The final editorial of the print daily pledged itself to Mr. Evjue’s purpose as “an independent voice for peace and economic and social justice that speaks truth to power each and every day.”

The editorial evoked him to give his endorsement of the steps the newspaper is taking: “He would caution us not to worry about the form The Capital Times takes, but rather to be concerned with the content and character of our message.” And, in its final words, to its final audience, wrote: “All will be well.”

http://www.nytimes.com/2008/04/28/business/media/28link.html?_r=1&th&emc=th&oref=slogin

A Google Prototype for a Precision Image Search

By JOHN MARKOFF

SAN FRANCISCO — Google researchers say they have a software technology intended to do for digital images on the Web what the company's original PageRank software did for searches of Web pages.

On Thursday at the International World Wide Web Conference in Beijing, two Google scientists presented a paper describing what the researchers call VisualRank, an algorithm for blending image-recognition software methods with techniques for weighting and ranking images that look most similar.

Although image search has become popular on commercial search engines, results are usually generated today by using cues from the text that is associated with each image.

Despite decades of effort, image analysis remains a largely unsolved problem in computer science, the researchers said. For example, while progress has been made in automatic face detection in images, finding other objects such as mountains or tea pots, which are instantly recognizable to humans, has lagged.

"We wanted to incorporate all of the stuff that is happening in computer vision and put it in a Web framework," said Shumeet Baluja, a senior staff researcher at Google, who made the presentation with Yushi Jing, another Google researcher. The company's expertise in creating vast graphs that weigh "nodes," or Web pages, based on their "authority" can be applied to images that are the most representative of a particular query, he said.

The research paper, "PageRank for Product Image Search," is focused on a subset of the images that the giant search engine has cataloged because of the tremendous computing costs required to analyze and compare digital images. To do this for all of the images indexed by the search engine would be impractical, the researchers said. Google does not disclose how many images it has cataloged, but it asserts that its Google Image Search is the "most comprehensive image search on the Web."

The company said that in its research it had concentrated on the 2000 most popular product queries on Google's product search, words such as iPod, Xbox and Zune. It then sorted the top 10 images both from its ranking system and the standard Google Image Search results. With a team of 150 Google employees, it created a scoring system for image "relevance." The researchers said the retrieval returned 83 percent less irrelevant images.

Google is not the first into the visual product search category. Riya, a Silicon Valley start-up, introduced Like.com in 2006. The service, which refers users to shopping sites, makes it possible for a Web shopper to select a particular visual attribute, such as a certain style of brown shoes or a style of buckle, and then be presented with similar products available from competing Web merchants.

Rather than relying on a text query, the service focuses on the ability to match shapes or objects that might be hard to describe in writing, said Munjal Shah, the chief executive of Riya.

"I think what they're trying to accomplish is largely impossible," he said. "Our belief is, there is not large-scale solutions."

Mr. Shah said there had been a number of technology demonstrations by Google Labs researchers, such as a project in 2005 that used machine learning techniques to recognize the gender of a person in an image. However, the company has been slow to deploy its research, he said.

http://www.nytimes.com/2008/04/28/business/media/28link.html?_r=1&th&emc=th&oref=slogin

AKRAM KHAN COMPANY

Humiliation and Death on a Fateful Journey

By GIA KOURLAS

Akram Khan continued his engagement at City Center on Friday night with “zero degrees,” a work for himself and the Flemish-Moroccan choreographer Sidi Larbi Cherkaoui. Like “bahok,” performed earlier in the week, the duet deals with cultural identity, anger, humiliation and frustration.

The intimate dance recounts a harrowing train journey that Mr. Khan and his cousin experienced on their way from Bangladesh to India, as told in unison by both performers. As they describe the soulless eyes of the guards who confiscated their passports, the dancers punctuate their words with a flurry of matching hand gestures.

Later, we learn, there is a death on the train. Persuaded by his cousin to ignore the man’s wailing wife so that he won’t be implicated, Mr. Kahn is full of guilt and troubled by his own submission. A lost passport and a corpse, as he indicates in his program notes, symbolize the reference point between life and death, where everything begins and ends.

Much of the allure of the work is the physical pairing of Mr. Khan, who was raised in London by immigrant Bangladeshi parents and grew up studying traditional Indian Kathak dance, and Mr. Cherkaoui, of the Belgian collective Les Ballets C. de la B. Mr. Cherkaoui possesses a body so elastic it seems more cartoon than human. They are joined onstage by two others — in the form of life-size mannequins by the sculptor Antony Gormley. Four musicians, visible behind a scrim, perform Nitin Sawhney’s score.

In one scene Mr. Khan dribbles Mr. Cherkaoui’s malleable body like a basketball. In another Mr. Cherkaoui slaps a mannequin as Mr. Khan’s immobile body, sprawled on the floor, recoils as if he has been hit. But along with such gimmicks are extended passages of dancing, which include intricate hand-and-arm duets and a distillation of martial arts, beautifully displaying Mr. Khan’s whiplash speed and Mr. Cherkaoui’s supple control.

Yet in “zero degrees” Mr. Khan is also prone to heavy-handedness. At times his work feels cinematic and contrived, a bit like the Hollywood version of an independent film: full of significant moments, pregnant pauses and sweeping music in all the right places. Everything seems to work as it should, but it doesn’t really stick to the soul.

http://www.nytimes.com/2008/04/28/arts/dance/28khan.html?ref=arts

Making Wikis Work for Scholars

Even if they won't admit it, students are using Wikipedia to kick off their research and fill the gaps in their class notes ... *right now*. It might not show up in the bibliography, but the free, open source online resource has long since become the starting point for settling factual disputes, brainstorming paper ideas and even offering suggestions for further reading.

If that's an open secret, then so is this: For all the hand-wringing over whether Wikipedia is a legitimate source for completing college assignments, some professors are quietly incorporating it into their classrooms and even their research. Others, noting features of the Web site that contribute to inaccuracies and shortchange the value of expertise, are building variations on the model that are more amenable to academics and to peer review.

A good number of college professors "work on Wikipedia pretty regularly, and of course their work is one of the main reasons why Wikipedia is as good as it is," said Larry Sanger, one of the founders of the site who has since become a critic of what he refers to as its "worst elements."

A quick glance at the syllabus for Breno de Medeiros's Advanced Topics in Cryptography and Network Security course at Florida State University, to take one example, reveals reading assignments — in addition to the usual textbook chapters and published papers — that direct students to pages on Wikipedia. Introduction to complexity theory? See the page on P and NP classes. Brush up on probability theory? See Wikipedia's entry on the Chernoff bound. Far from the amateurish, typo-ridden entries some have come to expect, the articles are straightforward and include definitions, illustrations and explanations that at least match similar content from comparable textbooks.

"Information on computer science subjects in Wikipedia is likely to be accurate and informative, often using unique resources to illustrate concepts that are not available to print media," wrote de Medeiros in an e-mail. "This probably derives from the fact that computer scientists use the computer as their main form of access to scientific articles and journals, that they take advantage of electronic forms to disseminate their research, including instructional materials in various formats. Researchers and educators of high caliber are probably behind most Wikipedia articles in computer science."

In all likelihood, tech-savvy scholars are among those keeping such isolated corners in the digital stacks of Wikipedia relevant, up to date and accurate. For computer science, especially, many topics on Wikipedia are in a form polished and accessible enough to assign to students as reading, and the subjects aren't controversial in a way that would inspire the sort of back-and-forth citation wars that cause some articles to fluctuate wildly between competing versions. But other topics get assigned from Wikipedia as well — not least in courses about digital culture itself.

"I use Wikipedia a lot for my own research and for course preparation. Often, to the extent that [Wikipedia articles] appear on my syllabi it's to give students a quick overview of a subject or concept when I'm looking less for a theoretical or critical perspective and more for this kind of open-source knowledge, or kind of 'crowd-sourced' perspective," said Mark Tribe, a professor of modern culture and media studies at Brown University.

Tribe's course outlines are posted on wiki-like pages, and he uses the format in some assignments for students. Some professors have even experimented with assigning students to create their own Wikipedia pages. Still, some continue to worry that the very structure of Wikipedia encourages editors (who can be anyone) to disregard expertise and undermine the basic mechanics of peer review and academic credibility.

In other words, what happens to articles once they're posted? Will they be watered down or made inaccurate by someone with no relevant credentials? Wikipedians would argue that credentials are besides the point — that anyone with a computer can police the encyclopedia by judging source material, sifting through edits and using a neutral tone to describe disputes. It's a dynamic that Sorin Matei, a communications professor at Purdue University, describes this way: "He who can sit for the longest in front of the computer is right."

Wikipedia "speaks with a million voices, and these voices kind of jump on each other," he said. In this view, the site's openness — the ability of everyone to participate, without having to identify themselves

by name — leads to an erosion of accountability and, often, an increasingly shrill cacophony. Matei is academic content coordinator of the Eduzendium initiative, an attempt to bridge the wiki format and academe. Entire classes can join up so that professors can coordinate the production of certain articles with students — either individually or as a group assignment. It's up to the instructors how exactly to divide the labor, but the idea is that more accurate content will result from putting one's real name (and, possibly, grade) on the line and from the checks and balances set up to minimize the kind of interference seen on Wikipedia pages.

The project is only a few months old, part of the larger Citizendium enterprise initially set up by Sanger as a "fork" of Wikipedia. One of his main criticisms of that site, which he co-founded and helped conceive and develop in its early years, was what he characterized as users' general skepticism of the value of expertise in a given field. "I think that it would be possible for people to, if they were properly motivated, to make a lot of good solid changes to Wikipedia articles. My question is whether they would think that it's really worth the effort ...," he said, to "do battle" with more energetic editors who perhaps don't have the same expertise.

"A lot of people might come to Wikipedia with the false idea that well of course, my credentials are going to count for something," continued Sanger, who holds a Ph.D. in philosophy and taught at Ohio State University. "For some sensible Wikipedians ... that's true. For a lot of people, and in particular the people who cause the problems, basically, it doesn't matter at all what sort of training you might have had. They don't care, and in fact, I've heard from many people who come back and say, well I was told that because I have published a lot in this area I have a conflict of interest."

Citizendium, with over 6,100 articles and counting, tries to attack the problem by enabling experts to essentially "freeze," or approve, articles when they have reached a certain level of completion. Anyone can still participate in creating content — but their work is "gently guided by experts," as the site puts it. Dubbing itself a "republic of letters," Citizendium is described in terms borrowed from political philosophy. Sanger refers to "good governance," and notes that "it's a social contract. It's called the Citizens' Compendium and not Expertpedia for a reason. What we are emphasizing is reliability and responsibility both in terms of the quality of information and also the way that it's created."

Contributors use their real names, and experts have their work evaluated and revised by others with similar qualifications, rather than just an "anonymous crowd," an arrangement that Sanger said was paramount in his discussions with academics in attracting them to devote time and resources to the project. On Wikipedia, "the peer review is done by self-selection or a process of selection that is totally opaque, in my view," Matei said.

Building on that specific complaint, another variation of the model is trying to make peer review work in a wiki environment. On Scholarpedia, articles are written by "experts," who are elected by users or selected by other experts. If an article is peer-reviewed — a process that is anonymous and restricted to other designated experts, per scholarly convention — its author automatically becomes a "curator" for that article and presumably for related subjects as well.

"Our goal is not to create ... content very fast. We want to get the best people (living legends) to participate in the project, so that the content will survive and will be maintainable by the future generation of experts 100 years from now. This is why we are so selective," said Eugene M. Izhikevich, a senior fellow in theoretical neurobiology at the Neurosciences Institute in San Diego, Calif., and Scholarpedia's editor-in-chief, in an e-mail.

Izhikevich said his site offers the necessary incentives for academics to be "willing to invest their time" in the project, most notably acknowledgment (by name), full editorial control and peer review processes that allow scholars to cite their Scholarpedia work in their CVs, and in applications for tenure or grants. He added that Scholarpedia has its own International Standard Serial Number from the Library of Congress, and he has cited his own works on the site in peer-reviewed, published journal articles. "Scholarpedia is under consideration to be included [in] citation databases, such as MedLine, PubMed and ISI Web of Science," he noted. (The site hosts encyclopedias in several subfields, such as astrophysics and computational intelligence, and there are plans to publish those in print.)

"The only difference between the peer-review process in Scholarpedia and in *Science*, *Nature*, [*Proceedings of the National Academy of Sciences*] and many other journals, is that the reviews are open to the public and the reviewers may choose to (but do not have to) reveal their name," Izhikevich continued. "I would love to read the review of Einstein's 'Space-time' entry in Britannica. I would love to know what was the state of mind and the prevailing dogma at that time. Unfortunately, it is not available, like most reviews of the other peer-reviewed journals. Scholarpedia maintains the history of its reviews and all article versions for the future generations to read and analyze."

It's unclear whether such sites will gain popularity in the academic mainstream, but there's no doubt that interest is increasing. Sanger said he's noticed a significant uptick in editing activity recently on Citizendium. "I don't know that we will in the long run have the same number of articles as Wikipedia, but I can say that we are definitely on track to create large numbers of very, very good articles. I see every reason to think that we are going to continue to grow ... throughout this year and the next year and so forth," he said.

A sign that people might become more receptive to a modified form of Wikipedia is that Google is getting into the mix with a tool of its own, dubbed knol, that won't be restricted to experts but will offer name recognition (and presumably, other benefits that come with a higher page rank) to those who have credentials.

In a blog post, the company elaborated: "The key idea behind the knol project is to highlight authors. Books have authors' names right on the cover, news articles have bylines, scientific articles always have authors — but somehow the web evolved without a strong standard to keep authors names highlighted. We believe that knowing who wrote what will significantly help users make better use of web content."

— Andy Guess

The original story and user comments can be viewed online at
http://insidehighered.com/news/2008/04/28/wiki.

Robbins's Legacy of Anguish and Exuberance

By ALASTAIR MACAULAY

THE choreographer and director Jerome Robbins, who would have been 90 on Oct. 11, died 10 years ago this July. This double anniversary is a cue for worldwide commemoration. "Gypsy," the show he directed and choreographed in 1959, is again a hit on Broadway. A handsome Robbins exhibition, reflecting many facets of his career, is running until June 28 at the New York Public Library for the Performing Arts, at Lincoln Center. New York City Ballet's spring season, starting Tuesday, will include no fewer than 33 Robbins works, ranging chronologically from "Fancy Free" (1944) to "Brandenburg" (1997). Other companies — from Seattle to Sydney, from San Francisco to Paris — have presented or will present Robbins programs during the year.

In 1989 Robbins, who had been world-

famous since the 1940s, staged one kind of autobiography: "Jerome Robbins's Broadway." This remarkable anthology brought together numbers from shows including "On the Town" (1944), "Billion Dollar Baby" (1945), "Look, Ma, I'm Dancing" (1948), "The King and I" (1951), "Peter Pan" (1955), "West Side Story" (1957), "Gypsy" (1959) and "Fiddler on the Roof" (1964) — productions that had embodied a golden age of Broadway musicals. It was an extraordinary retrospective, running for 633 performances and winning four Tony Awards. After the first night Robbins was in tears: "I don't want it to be over."

In the two years that followed he spent months working on a yet more autobiographical show. He called it "The Poppa Piece": it addressed issues in his life that stemmed from his father. Mr. Robbins Sr., who had come to New York in 1905, had been born Herschel Rabinowitz in the land that is now part Lithuania, part Belarus, and then had recently been taken from Poland by Russia. The nexus of issues he embodied for his son (who spent decades in psychoanalysis) included Jewish tradition, masculinity, homophobia and other aspects of repression.

Somehow "The Poppa Piece" tied this small-scale patriarch to the most notorious event of Jerome Robbins's life, the 1953 House Un-American Activities Committee hearing in which the young but celebrated choreographer named Communist Party members he had known. Though Robbins remained otherwise silent about this throughout his life, in "The Poppa Piece" he labeled it The Trial. And he acknowledged that, for him, The Trial was always about betrayal.

"I betrayed my manhood, my Jewishness, my parents, my sister," he wrote in a diary. "I can't undo it, and I can't undo it in this piece." Though the piece was in rehearsal for months — prolonged gestation periods had been characteristic of his career, with his casts all expected to learn multiple alternative versions of each piece of material — in the fall of 1991 Robbins suddenly put the lid on it, canceled rehearsals and stopped all further work on it.

This was characteristic. More than once before in his career Robbins, the great showman (and probably the most brilliant show doctor in Broadway history), had known when to close a show before it reached the stage or Broadway because he could see it was doomed.

Shameful as Robbins's 1953 testimony was, his effort to address it in art seems admirable. His decision to abandon that effort seems more commendable yet. Having put it behind him, he went back not to Broadway — which he had generally renounced in the 1960s — but to ballet.

While he was a young dancer, first on Broadway and then in Ballet Theater (well before it became American Ballet Theater), most of the foremost choreographers of the age — Michel Fokine, Leonide Massine, George Balanchine, Agnes de Mille, Antony Tudor — had created roles for him to dance before he was 25. Then he worked with Leonard Bernstein and the designer Oliver Smith to create his first ballet, the smash hit "Fancy Free." An American classic, it is still being danced from coast to coast.

Before the year was out, Robbins, Bernstein and Smith had turned the same idea into a musical: “On the Town,” another triumph. He was just 26.

For the next 20 years Robbins rode two horses, creating ballets and musicals with equal success. The ballets included “Interplay” (1945), “The Cage” (1951), “Afternoon of a Faun” and “Fanfare” (1953), “The Concert” (1956), “N.Y. Export: Opus Jazz” (1958) and “Moves” (1959) — all of which remain in repertory today.

He was an emphatically American artist. When he formed a ballet company, he called it Ballets U.S.A. The views of New York he created in “Fancy Free,” “On the Town” and “West Side Story” have entered into the mythology of the city. He was a crucial figure in what I have called the New York School of Choreography: a diverse post-1940s range of modernist choreographers who took inspiration from those very different senior figures Balanchine, Martha Graham and Tudor, and who also fed aspects of New York street life into their dance theater. Some of his comedy movement has the quality of New Yorker cartoons; many of his dances have the improvisational, unstudied air that was the lifeblood of much American art; and he had hot lines to adolescence and to jazz.

The whole arc of his career as dancer and choreographer kept bringing him into contact with another father figure: Balanchine. Though an immensely authoritative figure, Balanchine, to Robbins, was genial and encouraging. Balanchine seldom paid serious compliments to any other choreographers. But we know more of his feelings for Robbins than for any other dancemaker of his day.

He asked Robbins to stage the fight between mice and toys in “The Nutcracker” (1954), and they collaborated on other projects up to the 1970s. He loved “The Concert” so much that he once played the part of the hen-pecked but lascivious husband in it. He kept watching “Dances at a Gathering” from the wings. And he told the ballerina Violette Verdy: “You know, Violette, the real American choreographer at the New York City Ballet is Jerry, not me. He’s the one who can capture the fashions, the trends, the relaxed character of American dancers, their lack of a past or a style, but an ability to do all they’re asked without discussion or preconception.” In turn Robbins in the 1970s could write in his journal, “When I watch Balanchine work, it’s so extraordinary that I want to give up.”

There were complications between the two. Balanchine knew that Robbins’s ballets were almost invariably hits, and his less pleasant remarks are likely to have been prompted by jealousy or frustration; likewise some of his compliments may have been prompted by his awareness of Robbins’s usefulness to the company. Robbins, in turn, did not always behave well either.

Even so, it was to Balanchine’s company, New York City Ballet, that Robbins devoted most of the last 30 years of his life. This kept him in Balanchine’s shadow, but on the whole he loved and revered that shadow. It is hard to think of any world-

famous artist in history working as Robbins chose to: as great a celebrity as Balanchine or more so, and much wealthier, he used the dancers Balanchine had trained, he used ballet technique as Balanchine had developed it, and his ballets were performed in a repertory that was dominated by Balanchine’s. He had the humility (and the enthusiasm) to regard Balanchine as the greater artist, as the choreographer from whom he could always learn.

His permanent return to ballet, and specifically to City Ballet, occurred in 1969, with the epoch-making “Dances at a Gathering.” Where Balanchine ballets are architectural constructions in space and time, “Dances” — a classic of 1960s nonhierarchical equality and intimacy — showed dancers responding to the space, to the music and to one another, becoming a community, summoning up a dreamlike kaleidoscope of feelings as the music (piano pieces by Chopin) proceeded like changes in the light.

In the solo that opens the ballet, the first male dancer addresses the audience so little that he may be hard to identify. (At the Royal Ballet, Robbins told Rudolf Nureyev, of all people, “I don’t want the audience to know who you are until you’re off the stage.”) In its first 10 years at either City Ballet or the Royal Ballet, each of its dancers had in it an unaffected bloom that went beyond anything you knew they had

achieved elsewhere. You could see senior choreographers — Tudor in "The Leaves Are Fading," Frederick Ashton in "A Month in the Country," even Balanchine in ballets like "Duo Concertant," "Sonatine" and "Robert Schumann's 'Davidsbündlertänze,' " — all borrowing from the flavors and devices of this Robbins dance drama.

The purity that Robbins was seeking in the plotless, abstract conditions of his later ballets may well have embodied the redemption he felt he needed for his own guilt. (Naming names was not the only thing he felt guilty about; apart from his many repressions, he was notorious for the tongue-lashings he inflicted on successive performers over the years.) Often enough he achieved that purity, and in ballets that survive. He could even work with the younger Twyla Tharp, whom he greatly admired, on "Brahms/Handel" (1984) for New York City Ballet, surely still the most irresistible and ebullient masterpiece created for that company since the death of Balanchine the year before.

Three biographies of Robbins have been published in this decade; I have recently read all of them. Greg Lawrence's "Dance With Demons: The Life of Jerome Robbins" (Putnam's, 2001) has an astonishing wealth of personal and professional detail; Amanda Vaill's "Somewhere: The Life of Jerome Robbins" (Broadway, 2006) and Deborah Jowitt's "Jerome Robbins: His Life, His Theater, His Dance" (Simon & Schuster, 2004) draw, in equal detail, from Robbins's private papers: Ms. Vaill's work has the largest amount of personal material, but Ms. Jowitt's, the best shaped of all three books, has the strongest sense of his place in dance history and of the main issues, personal and artistic, in his life.

I enjoyed (and am indebted to) all three. And each, despite the many accounts of Robbins's cruelty to performers and even to office staff members, make me like the man immensely. He was passionate about art and literature (and dogs), he was loved by a wide range of friends to whom he gave real consideration, he had few affectations or offstage pretensions, and he was often the best fun in the world.

His onstage legacy remains colossal. Much of it will not need too much dusting off; few of City Ballet's Robbins works have been out of repertory worldwide for more than a few seasons. Plenty of it will continue spreading in the years to come. (In 2009 Pacific Northwest Ballet, in Seattle, is to perform "Dances at a Gathering" for the first time.) The big issue now is, How well are his dances surviving him? I am impatient to find out in the coming months.

http://www.nytimes.com/2008/04/27/arts/dance/27maca.html?ref=arts

Robbins Celebration at City Ballet:

Exclusive interviews with Baryshnikov, Wendy Whelan, and Damian Woetzel on the man and his dances

Natalia Makarova rehearsing "Other Dances" with Jerome Robbins for "Dance in America." The NYC Ballet fetes Robbins' work through June 29. (Photo by Brownie Harris for WNET/13, 1980.)

Here's my tiny story for Newsday on the huge Robbins Celebration at New York City Ballet, followed by Q&As with Baryshnikov and City Ballet principals Damian Woetzel and Wendy Whelan that didn't make the cut. (Imagine an enormous sidebar!) All of the dances discussed in the story and the Q&As are part of the festival, which begins Tuesday.

Apologies for my lousy cropping of the gorgeous photos. (I have no idea how to do that.) The black and whites are by Brownie Harris for WNET, the colors by Paul Kolnik for New York City Ballet.

BY APOLLINAIRE SCHERR
Special to Newsday

"To make a decision, he was torturing everyone else and himself until the very last second," says Mikhail Baryshnikov of his friend Jerome Robbins. "Which means there was probably no better choreographer in the history of Broadway."

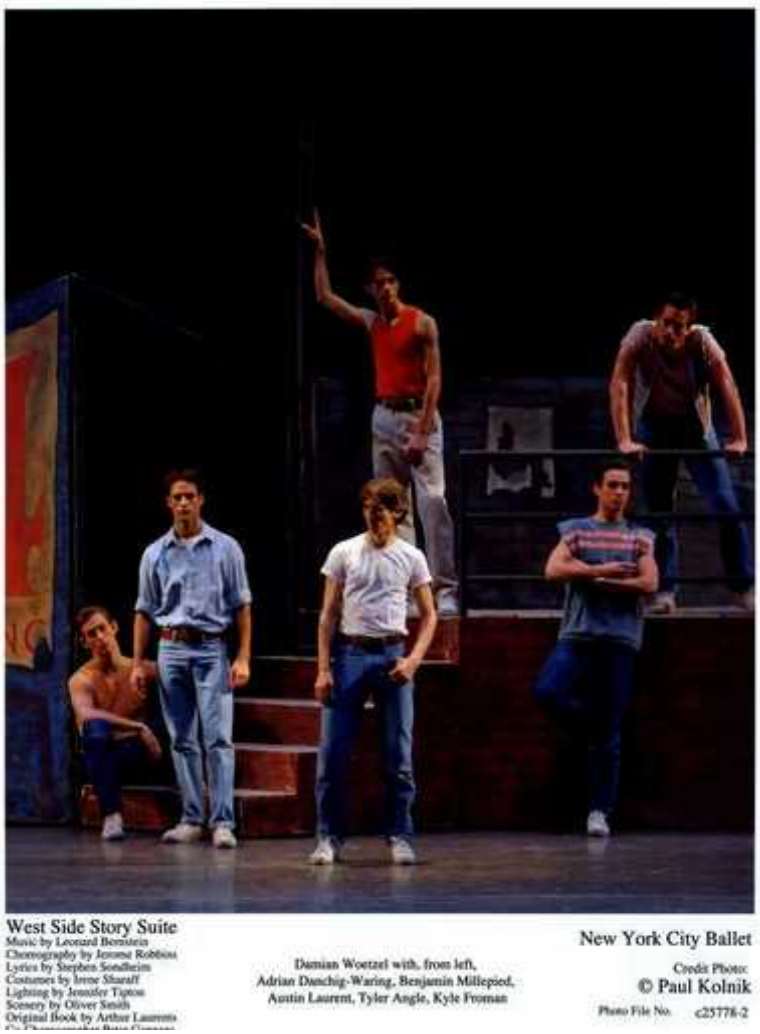
The quick-witted, neurotic New Yorker may be most famous for "West Side Story" and "Fiddler on the Roof," but he was wowing Broadway audiences--and producers--as early as 1944, at age 26, with "On the Town."

"Then he decides he wants to choreograph for women on pointe," explains Baryshnikov.

Enraptured by the New York City Ballet's debut performance in 1948, Robbins wrote its director, George Balanchine, "I'll come as anything you want. I can perform, I can choreograph."

"Come," was Balanchine's response. Robbins spent most of the rest of his life shuttling between Broadway and ballet.

On the tenth anniversary of his death, New York City Ballet celebrates Robbins with a whopping 33 ballets on 10 distinct programs through June.



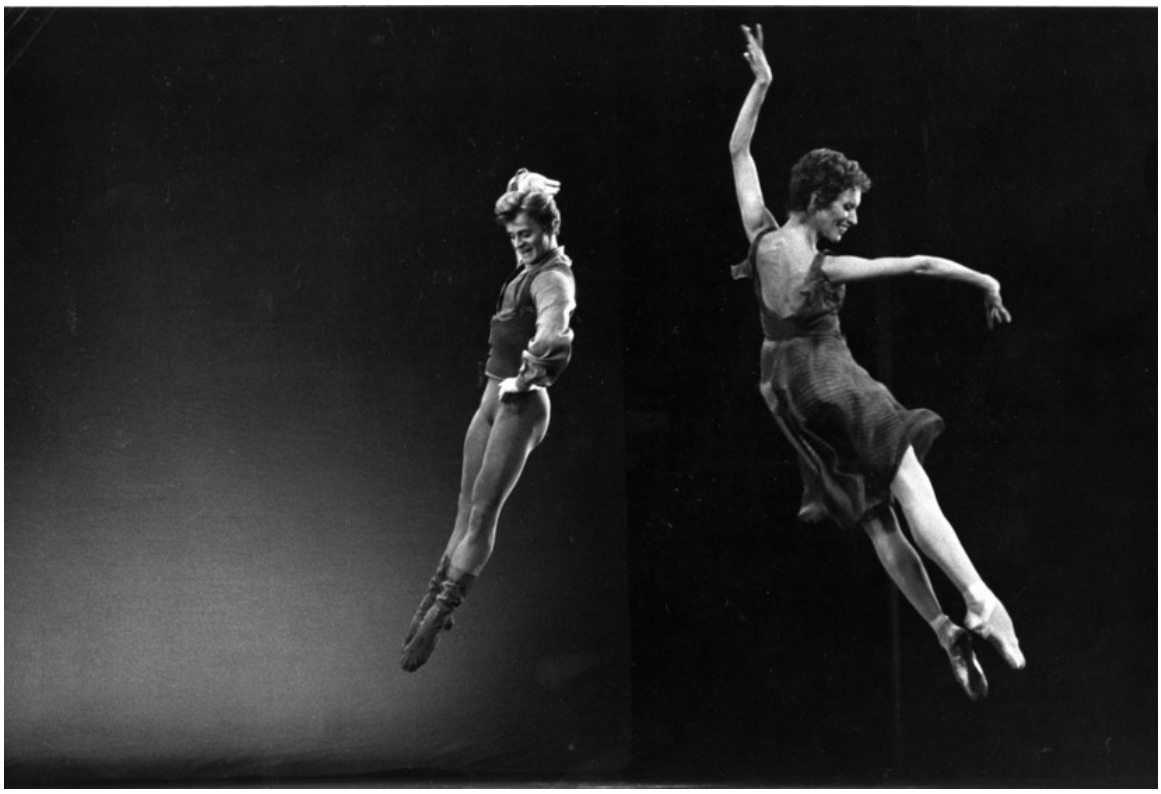
Many of the dances--the social comedies "Fancy Free" and "The Concert," for example, and the sensual fantasy "Afternoon of a Faun"-- are plainly the product of a theater mind. For these, the choreographer focused on mood, says Damian Woetzel, whom Robbins--with his unerring eye for talent--plucked from the City Ballet school in 1984.

Woetzel, whose two decades of unforced virtuosity end in a final burst of major Robbins roles this season, recalls learning the role of Riff in "West Side Story Suite": "Jerry thought I looked a little *too* ready to fight when the curtain comes up. He said, 'You're confident, so of course you're ready to fight, but you're not *already* fighting.' "

Even when the ballet had no story and dramatic intent wasn't an issue, Robbins demanded "the opposite of a jewelry-box dancer," explains City Ballet's extraordinary Wendy Whelan, who says she owes her "bit of authenticity" to the many hours spent in the studio with Robbins early in her career.

In "Brandenberg," the 1997 Bach epic, "you feel like a kid--scurrying and running and skipping and playing games," she says. And "Brahms/Handel," a collaboration with Twyla Tharp, "is a conversation between the two of them--and they really like each other. His lines are very clear, and hers are tweaked and curved. The dance weaves between them."

But in both ballets--in nearly every Robbins ballet--"it's about looking at each other, relating to each other, being down-to-earth," says Whelan.



"Jerry didn't want it to look like you were out there giving a show," Woetzel says. "And isn't that ironic--because he was such a great showman."

WHEN&WHERE New York City Ballet's Jerome Robbins Celebration runs through June 29 at the State Theater, Lincoln Center. Tickets $12 to $98. Call 212-870-5570 or visit nycballet.com.

Q&As

MIKHAIL BARYSHNIKOV, for whom Robbins choreographed "Other Dances" with fellow Russian émigré Natalia Makarova for a 1976 gala. When Baryshnikov went to City Ballet in 1978, Robbins made major roles for him in "The Four Seasons" and "Opus 19/The Dreamer." Later he created "A Suite of Dances" for Baryshnikov for the White Oak project. All of these works will be performed this season at City Ballet.

Baryshnikov doing his Slavic thing in "Other Dances" (Photo courtesy of WNET/13, by Brownie Harris. 1980)

How did you know Robbins?
We were friendly before we worked together. We had mutual friends and I was very flattered that he

came to see me dance at Ballet Theatre, and we had a few dinners. And of course for the gala for the public library [where "Other Dances" premiered in 1976] Genia Doll [who paid for the dance] was a dancer in Ballets Russes and married to Leonide Massine, and had a salon in New York--her husband was a wealthy French man, and they had a house near Jerry's house in Long Island. And we spent a lot of time together either in her place on Fifth Avenue or in the Hamptons.

Because of the fascination with Natasha's arms.

I was really proud that I can be Jerry's friend. Totally starstruck.

Do you think he was starstruck over you?
I didn't give a damn what he cared about me! This guy choreographed "Fiddler on the Roof" and "West Side Story"!

Did you know about him in the Soviet Union?
I was 26 years old when I came here. I'd seen the movie of "West Side Story" and I saw New York City Ballet in 1972 in Leningrad. I knew not just of him, but his work already--in small doses, I must admit.

What was he like socially?
He was very funny, he was a very good storyteller.

Okay, "Other Dances" ....
The whole thing about "Other Dances" was he didn't want people confusing it with "Dances at a Gathering." "Other Dances" is not, "Yes, Virginia, another piano ballet on Chopin's music," you know what I mean. "Dances at a Gathering" was a community piece and very earthy and very gestural. And in its intent, when Eddie Villella [the originator of the boy in brown, the first dancer onstage] kneels and touches the ground, it's very emotional inside somehow. It is a slice of communal belonging. While "Other Dances" is a pas de deux and utterly Slavic, you know.

You're Slavic.
Yes, it's true, but it's very much about her. The people whom Jerry admired, he really, truly admired. He adored Natasha Makarova for the way she moved, the way she moved her arms--he was totally fascinated. At rehearsals, she was very flirty with him and very upfront, and he loved that. He loved to be tenderly abused. She never had a very good memory from rehearsal to rehearsal. She was kind of improvising all the time, and Jerry loved that too, but he'd say, "Well, yesterday I saw you do this." And she'd say, "Well, today is a different day, Jerry." He loved that kind of attitude, because she was not working for him, she was really a higher hand, and he would take from her anything. It was sort of a comedy routine with Natasha. It was sweet to see them play like two kids.

And you just sat there and watched?
Yes, of course, and I'd be doubling for him. He was usually trying to do the steps full out. Sometimes I say, "Jerry, stop it. You'll kill yourself."

Misha looking on while Jerry and Natasha have all the fun

What kind of a dancer was he?
He was a great character dancer, you could see it. And, remember, he was one of the best interpreters of Petrushka, everybody thought--the most fascinating and deep and tragic. People who worked with him at that time said so. [Robbins returned the compliment, saying of Baryshnikov's Petrushka at ABT, "[I] very gratefully gave him my invisible cape that said on it The Petroushka."]

And in "Other Dances" he uses mazurka and the stamping and the arms absolutely from character dancing. In a way, "Dances at a Gathering" is a pure neoclassical piece, even though there's the *epaulement* and the Polish arms. Here, because we are both Russian and we did those steps from our childhood, it was utterly Slavic in nature. When I start to dance this with [New York City Ballet dancer] Patricia McBride she interpreted it as Jerry's dancer, she knew his choreography. It was a totally different sentiment; she was wonderful dancer, you know, but it was definitely a different color.

Do you think he was nostalgic about Russia/Poland--wished he had an Imperial background or was closer to his own roots in Poland?
Of course, because he was a great character dancer, he admired, growing up, people like Leonide Massine--the old Russians--because they were part of history. Jerry just admired the spirit of those people.

I remember I talked to Boris Aronson, a famous designer--he designed my "Nutcracker"-- and he said about "Fiddler on the Roof," "The dance with the bottles on their heads, it's such a nonsense. Jews would never do that. And yet, how correct it is! How theatrically ingenious." That's the biggest compliment from an old timer like that.

You know when you're doing those mazurka head waggles [in the 1980 Dance in America film of "Other Dances"] and you're shaking your head like a madman--was that your idea?
No, no, no. On my end, I never improvised. It was Jerry. In fact there are some photographs of Jerry in rehearsal flicking his wrist and turning around. It was very much Jerry. I could see him, in rehearsals, wearing sneakers and the velvet jeans and that Slavic shirt--you know, without the collar. And that's where the costume came from. He always got into this folk element with all his heart.

[About the dance's last section] I told him that when Balanchine came to Russia, a journalist said, "Oh, Mr. Balanchine, Tchaikovsky's Serenade--it's just impossible to imagine another piece of choreography to this music." And Balanchine said, "Nonsense. I could do two more ballets, and maybe even better than this one." I told Jerry this and he laughed. He never heard this story. He first choreographed my dance and then he decided to do another for Natasha to the same music. I don't know how much my story enlightened this decision, but I think it might have.

You've worked with a lot of choreographers; Robbins had a special reputation for being monstrous...
People who worked with him had these horror stories and at the same time fascination. But 99 percent of the time I had a great time. When he would come with his little dog Nick, I knew it would be a great rehearsal. When something troubled him, he would play with Nick and become Fun Jerry again. But when he got into that staring into the floor and very silent and very abrupt and very rude without understanding what he was saying, I left him alone. I just knew, Thank God *I'm* not the choreographer. Balanchine never had to remind company to pay attention. Certain choreographers have to have a whip in their hand or a sharp tongue. They all work in their different ways.

What is his legacy? What choreographers have taken from him?
His legacy is so abruptly divided between Broadway and ballet. I really think that inviting Robbins to be an associate choreographer Balanchine knew very well his Broadway work and the level of the talent, and especially Jerry's immense desire to work with him and admiration. Balanchine took him as an apprentice and trusted him. I think that was one of Balanchine's great qualities as a leader. But who took from Robbins? I don't know, I don't know, I really do not know. Jerry's a self-made choreographer. He is an odd, odd bird in this sense.

Albert Evans and Wendy Whelan in "Goldberg Variations." Photo, Paul Kolnik.

WENDY WHELAN, principal dancer, joined New York City Ballet as an apprentice in 1984 and was cast in Robbins and Tharp's "Brahms/Handel." She also originated a role in "Brandenberg," his final work.

As a young dancer, he was my Balanchine, I didn't have Balanchine, but I had Robbins. I feel very grateful and lucky for that. I was in the room with him every day for a good seven years, maybe a little more. Ten years almost.

What did you learn?
It was all about looking at each other, relating to each other, being natural.

I remember makeup and hair for his pieces he wanted to look more natural, more browns and earth tones. He wanted you to look real, like a human being.

And is that how it feels dancing it?
Yeah. Either a human being or a part of a social system. It wasn't like you're out of this world. You're either an insect or you're a person dying or you're a person studying or working--in a lot of his ballets you're wearing practice clothes--or you're relating in the spirit of each other, but it's never like you are Balanchine's Palais de Crystal jewel in the center. I never felt like that.

I know this might be impolite to ask, but did it feel more true?
For me, it was, first of all because I never knew Balanchine, so I never really knew my essence in his work. He wasn't there to accept me. With Robbins, I learned it was so important to him to be honest and true as yourself.

He finds people who have a strong individuality and who aren't afraid of exposing it. Because when you're in the studio with him, he wants you to open up to him. If you're shy, he's like, "I don't have time to waste. You either do it or you don't." He would push people to see their true colors and then he would go with that.

And you see that his best friends were really outspoken people, like Tanny LeClerq. She just said it like it was. And he appreciated it.

Tell me about the two pas de deux you've done in "Goldberg Variations."
First there's the crazy, Allegra Kent, acrobatic one [that Rachel Rutherford does now]. I adore that pas de deux. It goes to both extremes. It's a play on the bendy and sharp to the quick and sharp. And if he's going to put anything sexual in "Goldberg," it's in there. Yeah, throw a little sex into the second part.

And the third pas de deux [which she did last season and will do again]?
I'm still figuring that one out. It's very epic, because it's so long. The tone is sad, and it ends very sadly. She goes over his back and reaches up, and she roollllls down like a log from up high, facing the floor, and he lifts her off.

It's unresolved. I think Jerry likes that, when there's not really an answer: a giant question mark in the middle. There's so many things in dance that you can't explain.

[About a duet in the Robbins-Tharp collaboration "Brahms/Handel," a "West Side Story" for the classical set, with Robbins dancers in blue and Tharp dancers in green] This might be my favorite section. It's very brief but it's kind of jiggy, which Jerry liked. His humor comes into his ballets a lot and it's a jiggy humor.

Was he a jiggy dancer?
Yeah a little bit. There's a lot of stuff with hands on your hips just plieing to the music (*dunk, da-dunk-dunk*). It's just fun. That's part of the socialness of it. You're dancing with each other and there's some kind of deep-seated humor to it, and it just feels good to be dancing with your friend. Kind of beautiful.

DAMIAN WOETZEL, beloved principal dancer with City Ballet, which he joined in 1985 and is leaving this season. This is the last chance to catch him in "Fancy Free" (above) or in "Dances at a Gathering," for example. His farewell performance is June 18.

"Fancy Free" was the first ballet I went to a rehearsal for. I was still in the school and Jerry had seen me dance and he told me to come watch him rehearse. I was 17 year old. The attention to detail within the choreography for each character is what stuck out. The corrections he gave weren't, You're doing the step wrong. It was how the step related to the character, and that was what was wrong. And he's famous for that in his Broadway life--through the dance came the drama--and "Fancy" [Robbins' first ballet, from 1944] obviously previewed that.

When I got to do the ballet, I was doing the part he made on himself, and that gave me a little more insight into his thought patterns because they were in his body in a different way. He was so famous for his ability to demonstrate. The way he would do the [fans?] part in "The Concert," it was just beyond hysterical. He was so good at mime, for lack of a better word. As a dancer, to make that your own and imitate at the same time can be a life's work. But with Jerry's stuff, it's all so perfectly natural that it makes perfect sense. To use an example from "Fancy Free," the three sailors' every step is choreographed dramatically.

There's a tendency to overdo in an effort to succeed--in everything in life, probably--and Jerry's works succeeds by nuance and subtlety. I'm sure you've heard how he told dancers to mark in rehearsal and even on stage at moments, and that spoke to his desire to get beyond just energy. It demanded even more energy to do it that way, but it's a more sophisticated challenge.

Was there a difference between how he coached his situation ballets such as "Fancy Free" and plotless dances like "Dances at a Gathering"?
There's a tremendous difference. He was adamant that there was no story in "Dances at a Gathering," for instance.

So what does he say about touching the ground at the beginning of "Dances at a Gathering"?
When we would do the touching of the floor, the mood was of temperature, of feeling the place itself. What did it mean? Ooh, he didn't talk about that. Definitely he would set the stage for the emotional setting. I think [that first section] was an archetype. It was a half-marked, half-danced remembrance of things past, and yet it's just a dance. And it ends with typical American nonchalance. It dwindles out, and that was very Jerry.

You know the story of Jerry seeing Eddie Villella in a shaft of light and that's where "Afternoon of a Faun" came out of? It's the unconscious conscious. The unstudied practice.

He has a sense of situation whether in "Faun" or "Fancy Free."
Yes, but those two are so wildly different in the way he gets into people's heads. "Faun" is a covert action and "Fancy" is a might yawp. Those four *bat-bat-bat-bat* at the start of "Fancy"--can you imagine the arrival of Jerome Robbins [as one of the sailors in "Fancy Free" and as a choreographer]?

That is quite an arrival.

http://www.artsjournal.com/foot/2008/04/the_jerome_robbins_celebration.html

Help For Insomnia Patients? Different Processes Govern Sight, Light Detection

Patients with trouble sleeping or seasonal depression — disorders that can be linked to lack of exposure to daylight — could benefit from development of easier, more available tests to determine if they are able to detect light properly for functions distinct from normal sight. (Credit: iStockphoto/Karen Winton)

ScienceDaily (Apr. 28, 2008) — A Johns Hopkins University biologist, in research with implications for people suffering from seasonal affective disorder and insomnia, has determined that the eye uses light to reset the biological clock through a mechanism separate from the ability to see.

The findings suggest that patients with trouble sleeping or seasonal depression — disorders that can be linked to lack of exposure to daylight — could benefit from development of easier, more available tests to determine if they are able to detect light properly for functions distinct from normal sight, said Samer Hattar, assistant professor of biology in the university's Zanvyl Krieger School of Arts and Sciences.

"It seems that even if individuals have normal sight, they might be having a malfunction that is contributing to their inability to detect light, which can adversely affect their biological clocks," Hattar said.

Hattar and colleagues reported that they genetically modified mice so that a particular set of retinal ganglion cells — cells that receive input from the rods and cones of the animals' eyes and send information to the brain — no longer functioned.

The mice were still able to use light to see normally, but had great difficulty synchronizing their circadian rhythms to light/dark cycles, the constant lengthening or shortening of daylight hours that occurs depending on the time of year.

Prior research in the field leads the researchers to believe that because the rodents' internal, biological "clocks" are out of sync with the solar day, the rodents would have difficulty learning and sleeping on a regular, 24-hour cycle. The team has not yet tested that hypothesis.

"This research illustrates that there are two distinct pathways for the two different aspects of light detection: image-forming and non-image-forming," Hattar said.

The team's next step will be working toward a broad understanding of the functions of light for animals and to differentiate between those which are associated with image formation and those which are associated with simple light detection.

Even without that additional research, however, Hattar and his team are convinced, on the basis of a long line of work by other researchers, that daily exposure to natural light enhances memory, mood and learning.

"Our tips are simple: Get out in the sun for at least a little while each day," Hattar said. "There's a reason why we seek the sun and the beach and we feel better when we can sit in the sun and bask.

"Also, avoid very bright lights during the night, as exposure to them can cause a malfunction in your biological clock," he said. "The idea is to keep your internal rhythm in sync with the cycle of the sun: exposure during the day when the sun is out, less exposure at night, when the sun is down, so to speak. I am convinced that this will help improve your memory and your learning."

This research is published in the April 23 Advance Online issue of Nature (available at http://www.nature.com) and in the May 1 print issue. Ali D. Guler, Jennifer L. Ecker, Cara M. Altimus and Haiqing Zhao, all of the Department of Biology at Johns Hopkins, are co-authors. Other authors include Gurprit S. Lall, Alun R. Barnard and Robert Lucas, all of the University of Manchester, United Kingdom; Shafiqul Haq, Hsi-Wen Liao, Hugh Cahill, Tudor C. Badea and King-Wai Yau, all of the Johns Hopkins University School of Medicine; Mark Hankins of University of Oxford, United Kingdom; and David M. Berson of Brown University.

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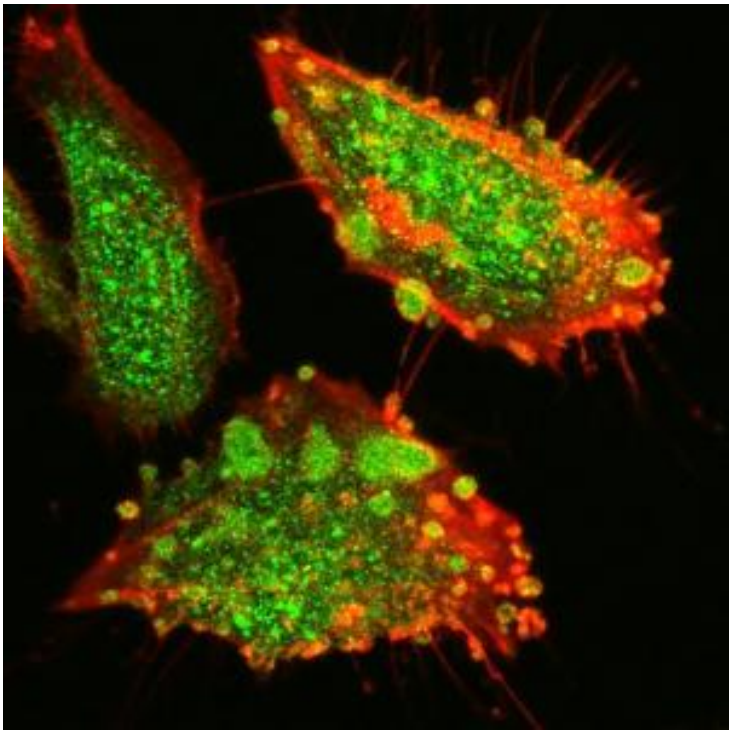
http://www.sciencedaily.com /releases/2008/04/080425095204.htm

Trojan Horse Of Viruses Revealed



The vaccinia virus disguises itself as cell waste, triggers the formation of evaginations in cells and is suspected to enter the cell interior before the immune defense even notices. (Credit: J. Mercer / Institut für Biochemie, ETH Zürich)

ScienceDaily (Apr. 28, 2008) — Viruses use various tricks and disguises to invade cells. Researchers have now discovered yet another strategy used by viruses: the vaccinia virus disguises itself as cell waste, triggers the formation of evaginations in cells and is suspected to enter the cell interior before the immune defense even notices. The research results have been published in Science.

The vaccinia virus has a problem: it is a giant among viruses and needs a special strategy in order to infiltrate a cell and reproduce. Professor Ari Helenius and Postdoc Jason Mercer from ETH Zurich's Institute for Biochemistry have now discovered what this strategy is. In the process, they stumbled upon new and surprising findings.

The invasion strategy

In order to infiltrate a cell, the vaccinia virus exploits the cellular waste disposal mechanism. When a cell dies, other cells in the vicinity ingest the remains, without needing waste disposal experts such as macrophages. The cells recognize the waste via a special molecule, phosphatidylserine, which sits on the inner surface of the double membrane of cells. This special molecule is pushed out as soon as the cell dies and is broken into parts. The vaccinia virus itself also carries this official waste tag on its surface. "The substance accumulates on the shell of vaccinia viruses", Jason Mercer explained. The pathogen disguises itself as waste material and tricks cells into digesting it, just as they normally would with the remains of dead cells. As the immune response is simultaneously suppressed, the virus can be ingested as waste without being noticed.

The uptake into the cell itself is via macropinocytosis. The ETH Zurich researchers have demonstrated that the vaccinia virus moves along actin-rich filamentous extensions towards the cell. As soon as they impinge upon the cell membrane, an evagination forms, a bleb. The virus itself is the trigger for the formation of the evagination. Using a messenger substance to "knock on the door", the virus triggers a

signaling chain reaction inside the cell so that the bleb forms, catches the virus and smuggles it into the cell.

Proteins as unsuspecting allies

"The viruses are the Trojan horses that want to enter Troy; the Trojans are the many proteins that transmit the signals and open the 'city gates' to the unwelcome guest", Ari Helenius said. Aided by Professor Lukas Pelkmans' team, Jason Mercer examined over 7000 different proteins in order to find out not only which Trojans let the virus in, but which as well are chiefly involved in the supply chain. Using definitive methods, the researchers de-activated each one of the suspected proteins to examine their function,and narrowed the vast number of proteins down to 140 potential culprits. The enzyme kinase PAK1 turned out to be an especially "helpful" citizen of Troy. Without PAK1, the pathogen's trick did not work and the cell did not form any evaginations.

Until now, very little has been known about the mechanism vaccinia viruses use to infiltrate a cell. Professor Helenius, whose research objective is to find out what methods and strategies various different viruses employ to invade somatic cells, clarified "This strategy is a new one". Other viruses, such as herpes, adeno and H1 viruses use macropinocytosis. However the vaccinia virus is the first one identified that uses apoptotic mimicry as an entry strategy.

Knowledge of the virus strategies and the signal proteins involved in the ingestion of a virus by a cell is crucial to finding and developing new agents against the pathogens. Until now, antiviral medication has targeted the virus itself. Ari Helenius, however, is looking for substances that interrupt the signaling chain and halt the communication between the virus and the cell. If the cell does not ingest a virus, the virus cannot reproduce and is quickly eliminated by the immune system. This process also has another big advantage: "Viruses cannot adapt to the obstruction of the signal chain all that quickly", he said.

Smallpox: a bioterrorist attack?

The vaccinia virus belongs to a family of particularly dangerous viruses, namely the pox viruses. The most infamous member, Variola, the casitive agent of smallpox constituted a global pandemic disease in the Middle Ages, causing the deaths of millions of people, especially among the indigenous population of North America who became infected by European settlers. Pox was the first viral disease against which a vaccination was developed. In 1771, the first rudimentary vaccine was produced from cowpox viruses, which protected people from the sequelae of the disease. Since 1978, the disease has been classed as eradicated and officially is preserved in only two laboratories; one in Atlanta, the other in Novosibirsk. US authorities, however, fear bioterrorist attacks with pox viruses. Research on these dangerous pathogens is thus encouraged.

Adapted from materials provided by ETH Zurich/Swiss Federal Institute of Technology.

http://www.sciencedaily.com:80 /releases/2008/04/080425065354.htm

New Iconic Drug Information System Inspired By Road Signs

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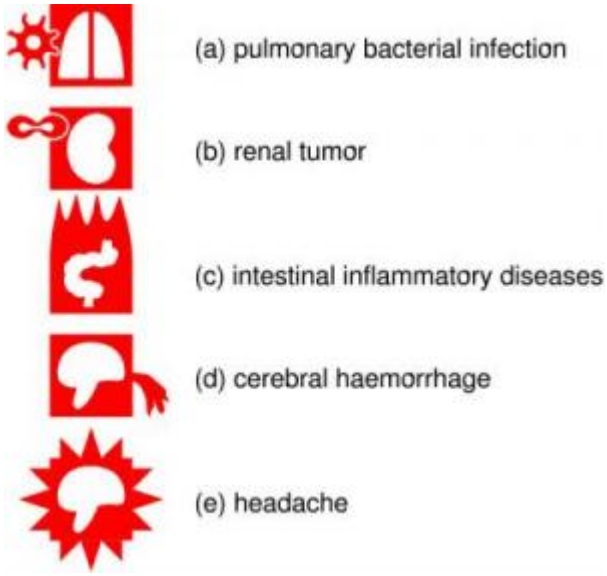


VCM icons for current diseases and signs, risks and antecedents. (Credit: Lamy et al, BMC Medical Informatics and Decision Making)

ScienceDaily (Apr. 28, 2008) — Although drug prescriptions are notoriously difficult to read, prescribing errors due to a lack of knowledge of drug properties are a worse problem.

Now, a new information icon system has been developed by researchers in France. The researchers describe their system, a graphical language for medical knowledge visualisation called VCM (Visualisation des Connaissances Médicales), in the open access journal BMC Medical Informatics and Decision Making.

Jean-Baptiste Lamy of the University of Paris and colleagues recognized that doctors do not always recall, nor have easy access to, detailed drug information. They can refer to drug monographs, but this can be inconvenient and time consuming in a busy medical practice. Lamy and his team reasoned that a new symbolic language for drug information could speed up the process and help avoid prescribing errors.

The VCM graphical language uses a small set of graphical signs, akin to laundry symbols or road signs, which may be combined to build simple sentences that convey information of the kind usually described in long-winded drug monographs, such as a drug's side effects or interactions and conditions when it should not be prescribed. The resulting system, together with the doctor's underlying medical training, can be used to help determine the appropriate prescription for the patient.

The researchers tested VCM with a group of volunteer general practitioners to assess whether the language is easy to learn and understand and whether it works in practice. Each practitioner underwent training to learn VCM and was then tested on the meanings of the icons and combinations of icons representing different aspects of a drug monograph. Results show that physicians read VCM significantly faster than an equivalent text, with fewer errors.

"VCM can be learnt in a few hours and appears to be easy to read" says Lamy. "It will considerably speed up access to drug information. The language could also be used to enrich other medical documents and for patient electronic records" Lamy adds.

Journal reference: An iconic language for the graphical representation of medical concepts Jean-Baptiste Lamy, Catherine Duclos, Avner Bar-Hen, Patrick Ouvrard and Alain Venot. BMC Medical Informatics and Decision Making (in press)

Adapted from materials provided by BMC Medical Informatics and Decision Making, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com:80 /releases/2008/04/080423202903.htm

Engineers Discover Theoretical Model To Predict Jamming

ScienceDaily (Apr. 28, 2008) — Researchers at the UCLA Henry Samueli School of Engineering and Applied Science have come up with a theoretical model to predict when granular materials become jammed. This advancement not only broadens fundamental knowledge, it also provides new avenues to a number of practical areas that ranges from materials innovation to medicine. The study, currently available on the Nature Physics Web site, will be published in the journal's print edition on May 1.

"We started this research by looking at the behavior of dry powders as solid lubricants as well as the behavior of a powdered rock in fault zones called gouge during an earthquake. What we found led us to a model that can accurately predict the behavior of dense granular flows. What we realized soon after was that the granular particles interact similarly to that of molecules in materials that jam, such as colloids and foam" said study's author Pirouz Kavehpour, an assistant professor of mechanical and aerospace engineering and director of the Complex Fluids & Interfacial Physics Laboratory at UCLA. "From there, we were able to find a universal law that can predict the jamming behavior for the first time."

According to Emily Brodsky, associate professor of earth and planetary sciences at UC Santa Cruz and also an author of the study, "We understand how water flows. We understand how honey flows. We even understand how elastic bands deform. But granular flows are complicated and hard to understand. If you're pouring sand down a hill or in an hour glass, there was never a good formula for the strain or the strain rate as a function of stress. This formula is definitely new and unique."

Kevin Lu, UCLA graduate student and lead author of the study, showed that the formula also quantified glass-transition. "Glass is a solid that flows. But structurally, it's a liquid. The molecules in a glass are jammed and unable to flow past each other so the material actually flows sluggishly. One evidence of this can be found in the window panes of old churches in Europe. Studies have shown that the bottom of the windows are consistently thicker than the top. Glassy liquids flow very much in the same manner as granular media." said Lu.

This new theoretical framework, the authors believe, can be applied to many different areas. Pharmaceutical companies can use the new equation to decide the size and quantities of pills that may or may not fit through a shoot that fills containers. Also, from knowing the fundamentals of jamming, scientists can now engineer materials that are both durable and strong. Instead of working with composites or alloys, the jamming theory provides a roadmap to tune material properties from pure substances.

"It can also help us to better understand certain diseases in medicine. In sickle cell anemia, for example, the abnormal blood cells are long and skinny, resulting in the obstruction of blood flow to various organs. Now we can do more to reduce the likeliness of death-threatening implications to benefit the medical community," said Lu.

As a geologist who studies fault zones and earthquakes, Brodsky is particularly interested in the granular flow of gouge found in fault zones and having a formula to figure out when the rock is jammed and when it's free flowing can be significant.

"Knowing how things flow and the granular behavior in a fault zone is one of the very important steps in trying to figure out how exactly faults slip," said Brodsky.

The study was partially funded by the Air Force Office of Scientific Research.

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

http://www.sciencedaily.com:80 /releases/2008/04/080425130102.htm

Technological Breakthrough In Fight To Cut Greenhouse Gases

Scientists at Newcastle University have pioneered breakthrough technology in the fight to cut greenhouse gases. (Credit: iStockphoto/Jaap Hart)

ScienceDaily (Apr. 27, 2008) — Scientists at Newcastle University have pioneered breakthrough technology in the fight to cut greenhouse gases. The Newcastle University team, led by Michael North, Professor of Organic Chemistry, has developed a highly energy-efficient method of converting waste carbon dioxide (CO_2) into chemical compounds known as cyclic carbonates.

The team estimates that the technology has the potential to use up to 48 million tonnes of waste CO_2 per year, reducing the UK's emissions by about four per cent.

Cyclic carbonates are widely used in the manufacture of products including solvents, paint-strippers, biodegradable packaging, as well as having applications in the chemical industry. Cyclic carbonates also have potential for use in the manufacture of a new class of efficient anti-knocking agents in petrol. Anti-knocking agents make petrol burn better, increasing fuel efficiency and reducing CO_2 emissions.

The conversion technique relies upon the use of a catalyst to force a chemical reaction between CO_2 and an epoxide, converting waste CO_2 into this cyclic carbonate, a chemical for which there is significant commercial demand.

The reaction between CO_2 and epoxides is well known, but one which, until now, required a lot of energy, needing high temperatures and high pressures to work successfully. The current process also requires the use of ultra-pure CO_2 , which is costly to produce.

The Newcastle team has succeeded in developing an exceptionally active catalyst, derived from aluminium, which can drive the reaction necessary to turn waste carbon dioxide into cyclic carbonates at room temperature and atmospheric pressure, vastly reducing the energy input required.

Professor North said: 'One of the main scientific challenges facing the human race in the 21st century is controlling global warming that results from increasing levels of carbon dioxide in the atmosphere.

'One solution to this problem, currently being given serious consideration, is carbon capture and storage, which involves concentrating and compressing CO_2 and then storing it,' he said. 'However, long-term storage remains to be demonstrated'.

To date, alternative solutions for converting CO_2 emissions into a useful product has required a process so energy intensive that they generate more CO_2 than they consume.

Professor North compares the process developed by his team to that of a catalytic converter fitted to a car. 'If our catalyst could be employed at the source of high-concentration CO_2 production, for example in the exhaust stream of a fossil-fuel power station, we could take out the carbon dioxide, turn it into a commercially-valuable product and at the same time eliminate the need to store waste CO_2', he said.

Professor North believes that, once it is fully developed, the technology has the potential to utilise a significant amount of the UK's CO_2 emissions every year.

'To satisfy the current market for cyclic carbonates, we estimate that our technology could use up to 18 million tonnes of waste CO_2 per year, and a further 30 million tonnes if it is used as an anti-knocking agent.

'Using 48 million tonnes of waste CO_2 would account for about four per cent* of the UK's CO_2 emissions, which is a pretty good contribution from one technology,' commented Professor North. The technique has been proven to work successfully in the lab. Professor North and his team are currently carrying out further lab-based work to optimise the efficiency of the technology, following which they plan to scale-up to a pilot plant.

* Based on 2004 figures from the UN.

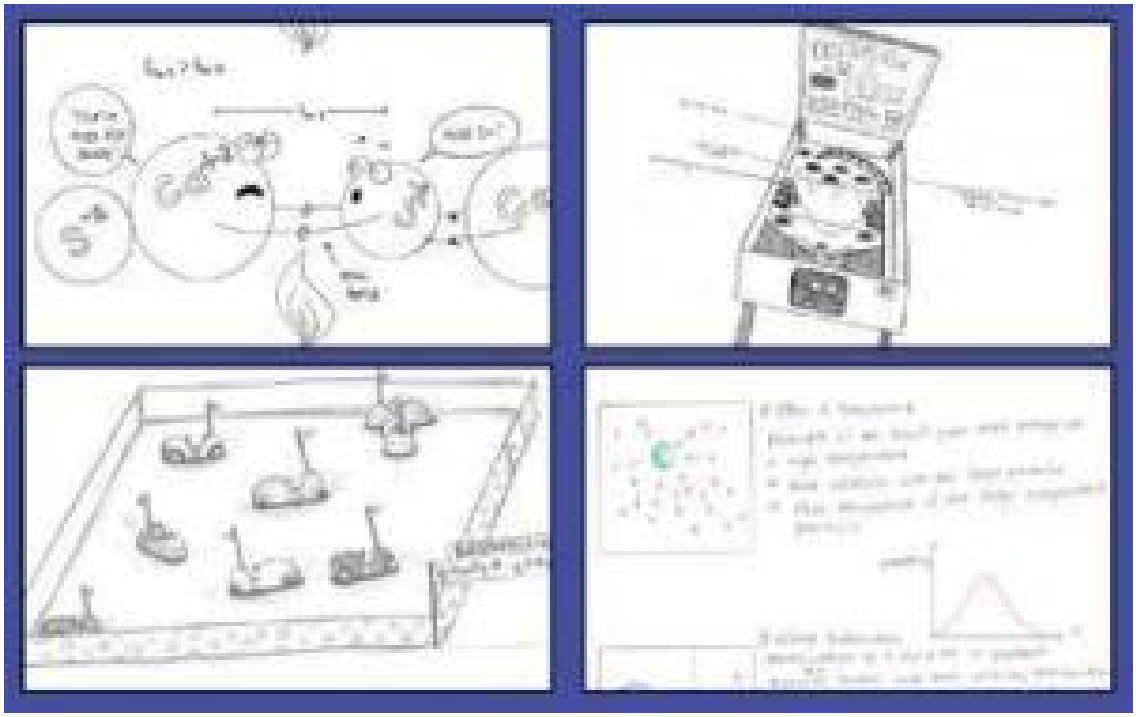
The paper 'Synthesis of cyclic carbonates from atmospheric pressure carbon dioxide using exceptionally active aluminium(salen) complexes as catalysts' s been published in the European Journal of Inorganic Chemistry.

The project was funded by the Engineering and Physical Sciences Research Council.

Adapted from materials provided by Newcastle University.

http://www.sciencedaily.com:80 /releases/2008/04/080424103217.htm

Picture This: Explaining Science Through Drawings



The act of creating pencil drawings helps students clarify the underlying science. (Credit: Kara Culligan and Eunji Chung, Harvard University; Lina Garcia, Massachusetts Institute of Technology.)

ScienceDaily (Apr. 27, 2008) — If a picture is worth a thousand words, creating one can have as much value to the illustrator as to the intended audience. This is the case with "Picturing to Learn," a project in which college students create pencil drawings to explain scientific concepts to a typical high school student. The National Science Foundation (NSF), Division of Undergraduate Education, provides support for this effort.

What sets this project apart is its emphasis on inviting students to draw in order to explain scientific concepts to others. The act of creating pencil drawings calls into play a different kind of thought process that forces students to break down larger concepts into their constitutive pieces. This helps clarify the underlying science--from Brownian motion (the movement of particles suspended in a liquid or gas and the impact of raising the temperature of the liquid), to chemical bonding, to the quantum behavior of a particle in a box. In the same assignment, students are asked to evaluate their own drawings, which helps them identify and appreciate critical components.

"Visually explaining concepts can be a powerful learning tool," says Felice Frankel, principal investigator at Harvard University. "The other important part of this is that the teacher immediately identifies student misconceptions."

The project brings together five institutions: Harvard, the Massachusetts Institute of Technology (MIT), Duke University, Roxbury Community College and the School of Visual Arts in New York City. The students involved are undergraduates studying physics, chemistry and biology.

Each drawing assignment asks students to explain a science concept or process. For example, in addressing the question of how to identify which of two compounds has the higher boiling point, students are encouraged to be creative and to consider a variety of formats, including cartoons and stick figures. Students are also told, "In your drawing, strive for clarity in visually representing the concepts of bond type and strength."

Many of the drawings bring scientific concepts to life in interesting and unexpected ways. They also bring any misconceptions immediately to light so that professors can address them with students.

"I've been surprised and very pleased about the enthusiasm and excitement we've seen in some very renowned science professors," says Rebecca Rosenberg, the project manager and a former secondary school science teacher. "They could have pooh-poohed this idea, but instead, they're seeing how it helps inform their teaching."

Four Harvard physics majors will take their work to the next level on April 12, when they travel to New York City for a workshop with design students at the School of Visual Arts (SVA). The idea is to engage design students in conversation with science students so that each can learn from the other. In a previous workshop which involved students from SVA and MIT, the participants created an anthropomorphic metaphor, where "little guys" representing particles interacted with each other. As the students drew out the metaphor, they ultimately realized that this model wouldn't work. They scrapped it and started over, in the process developing a better understanding of both the concept and how to communicate it to others.

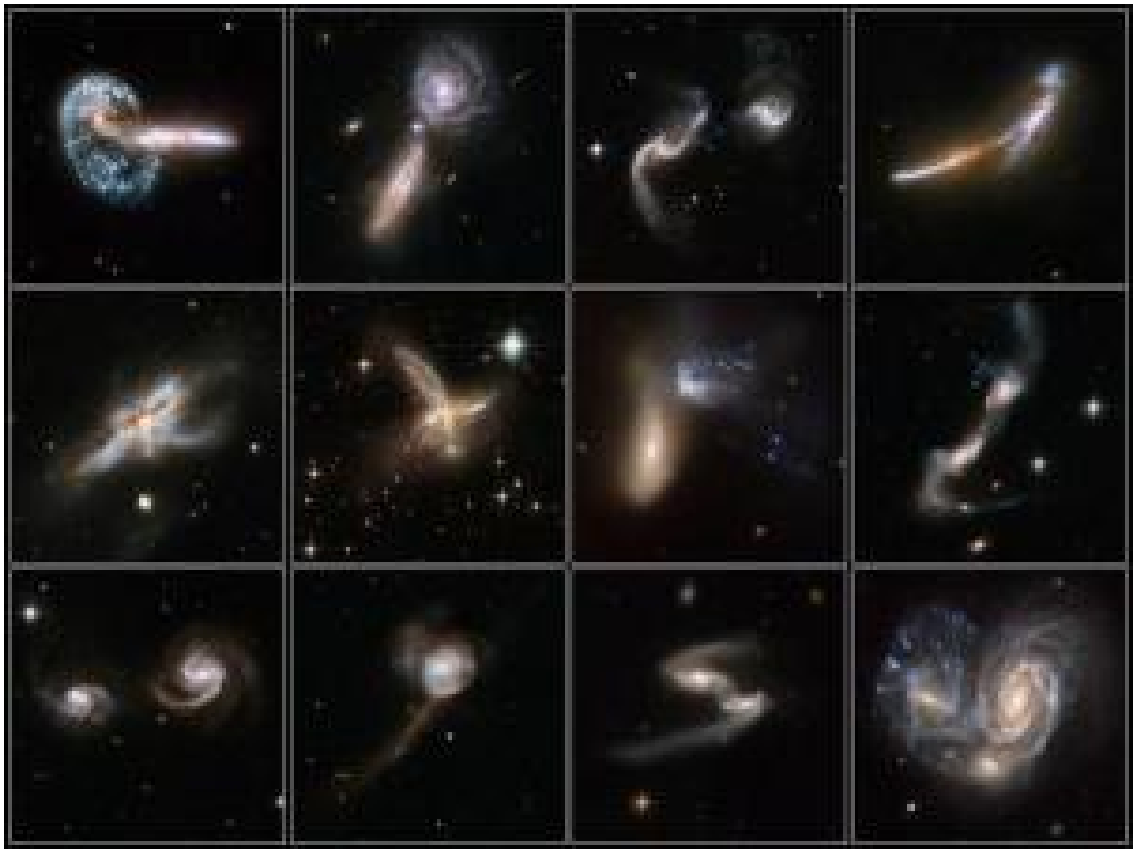
An eventual goal of the project is to expand it to students in middle school, high school and graduate school. In parallel, this approach is of growing interest to educators.

"This project promotes widespread adoption of these methods through workshops and publications," says Hal Richtol, NSF program manager. "Clearly it offers a useful teaching tool to anyone teaching science at any level."

Adapted from materials provided by National Science Foundation.

http://www.sciencedaily.com:80 /releases/2008/04/080410153625.htm

Galaxies Gone Wild: Dramatic Collisions Trigger Bursts Of Star Formation



The best 12 images in the collection. (Credit: NASA, ESA, the Hubble Heritage Team (STScI/AURA)-ESA/Hubble Collaboration and A. Evans (University of Virginia, Charlottesville/NRAO/Stony Brook University), K. Noll (STScI), and J. Westphal (Caltech))

ScienceDaily (Apr. 27, 2008) — Interacting galaxies are found throughout the Universe, sometimes as dramatic collisions that trigger bursts of star formation, on other occasions as stealthy mergers that result in new galaxies. A series of 59 new images of colliding galaxies has been released from the several terabytes of archived raw images from the NASA/ESA Hubble Space Telescope to mark the 18th anniversary of the telescope's launch. This is the largest collection of Hubble images ever released to the public simultaneously.Galaxy mergers, which were more common in the early Universe than they are today, are thought to be one of the main driving forces for cosmic evolution, turning on quasars, sparking frenetic star births and explosive stellar deaths. Even apparently isolated galaxies will show signs in their internal structure that they have experienced one or more mergers in their past. Each of the various merging galaxies in this series of images is a snapshot of a different instant in the long interaction process.

Our own Milky Way contains the debris of the many smaller galaxies it has encountered and devoured in the past, and it is currently absorbing the Sagittarius dwarf elliptical galaxy. In turn, it looks as if our Milky Way will be subsumed into its giant neighbour, the Andromeda galaxy, resulting in an elliptical galaxy, dubbed "Milkomeda", the new home for the Earth, the Sun and the rest of the Solar System in about two billion years time. The two galaxies are currently rushing towards each other at approximately 500,000 kilometres per hour.

Cutting-edge observations and sophisticated computer models, such as those pioneered by the two Estonian brothers Alar Toomre and Juri Toomre in the 1970s, demonstrate that galaxy collisions are far more common than previously thought. Interactions are slow stately affairs, despite the typically high relative speeds of the interacting galaxies, taking hundreds of millions of years to complete. The

interactions usually follow the same progression, and are driven by the tidal pull of gravity. Actual collisions between stars are rare as so much of a galaxy is simply empty space, but as the gravitational webs linking the stars in each galaxy begin to mesh, strong tidal effects disrupt and distort the old patterns leading to new structures, and finally to a new stable configuration.The pull of the Moon that produces the twice-daily rise and fall of the Earth's oceans illustrates the nature of tidal interactions. Tides between galaxies are much more disruptive than oceanic tides for two main reasons. Firstly, stars in galaxies, unlike the matter that makes up the Earth, are bound together only by the force of gravity. Secondly, galaxies can pass much closer to each other, relative to their size, than do the Earth and the Moon. The billions of stars in each interacting galaxy move individually, following the pull of gravity from all the other stars, so the interwoven tidal forces can produce the most intricate and varied effects as galaxies pass close to each other.

Typically the first tentative sign of an interaction will be a bridge of matter as the first gentle tugs of gravity tease out dust and gas from the approaching galaxies (IC 2810). As the outer reaches of the galaxies begin to intermingle, long streamers of gas and dust, known as tidal tails, stretch out and sweep back to wrap around the cores (NGC 6786, UCG 335, NGC 6050). These long, often spectacular, tidal tails are the signature of an interaction and can persist long after the main action is over.As the galaxy cores approach each other their gas and dust clouds are buffeted and accelerated dramatically by the conflicting pull of matter from all directions (NGC 6621, NGC 5256). These forces can result in shockwaves rippling through the interstellar clouds (ARP 148). Gas and dust are siphoned into the active central regions, fuelling bursts of star formation that appear as characteristic blue knots of young stars (NGC 454). As the clouds of dust build they are heated so that they radiate strongly, becoming some of the brightest (luminous and ultraluminous) infrared objects (APG 220) in the sky.

These objects emit up to several thousand billion times the luminosity of our Sun. They are the most rapidly star-forming galaxies in today's Universe and are linked to the occurrence of quasars. Unlike standard spiral galaxies like the Milky Way, which radiate from stars and hot gas distributed over their entire span of perhaps 100 000 light-years, the energy in luminous and ultraluminous infrared galaxies is primarily generated within their central portion, over an extent of 1000 to 10,000 light-years. This energy emanates both from vigorous star formation processes, which can generate up to a few hundred solar masses of new stars per year (in comparison, the Milky Way generates a few solar masses of new stars per year), and from massive accreting black holes, a million to a billion times the mass of the Sun, in the central region.Intense star formation regions and high levels of infrared and far-infrared radiation are typical of the most active central period of the interaction and are seen in many of the objects in this release. Other visible signs of an interaction are disruptions to the galaxy nuclei (NGC 3256, NGC 17). This disruption may persist long after the interaction is over, both for the case where a larger galaxy has swallowed a much smaller companion and where two more closely matched galaxies have finally separated.

Most of the 59 new Hubble images are part of a large investigation of luminous and ultraluminous infrared galaxies called the GOALS project (Great Observatories All-sky LIRG Survey). This survey combines observations from Hubble, the NASA Spitzer Space Observatory, the NASA Chandra X-Ray Observatory and NASA Galaxy Explorer. The Hubble observations are led by Professor Aaron S. Evans from the University of Virginia and the National Radio Astronomy Observatory (USA).

A number of the interacting galaxies seen here are included in the The Atlas of Peculiar Galaxies, a remarkable catalogue produced by the astronomer Halton Arp in the mid-1960s that built on work by B.A. Vorontsov-Velyaminov from 1959. Arp compiled the catalogue in a pioneering attempt to solve the mystery of the bizarre shapes of galaxies observed by ground-based telescopes. Today, the peculiar structures seen by Arp and others are well understood as the result of complex gravitational interactions.

Collection of images at: http://www.spacetelescope.org/images/html/heic0810ab.html.

Adapted from materials provided by ESA/Hubble Information Centre.

http://www.sciencedaily.com:80 /releases/2008/04/080424092756.htm

Next Step In Robot Development Is Child's Play

Teaching robots to understand enough about the real world to allow them act independently has proved to be much more difficult than first thought. (Credit: Image courtesy of ICT Results)

ScienceDaily (Apr. 26, 2008) — Teaching robots to understand enough about the real world to allow them act independently has proved to be much more difficult than first thought.

The team behind the iCub robot believes it, like children, will learn best from its own experiences.

The technologies developed on the iCub platform – such as grasping, locomotion, interaction, and even language-action association – are of great relevance to further advances in the field of industrial service robotics.

The EU-funded RobotCub project, which designed the iCub, will send one each to six European research labs. Each of the labs proposed winning projects to help train the robots to learn about their surroundings – just as a child would.

The six projects include one from Imperial College London that will explore how 'mirror neurons' found in the human brain can be translated into a digital application. 'Mirror neurons', discovered in the early 1990s, trigger memories of previous experiences when humans are trying to understand the physical actions of others. A separate team at UPF Barcelona will also work on iCub's 'cognitive architecture'.

At the same time, a team headquartered at UPMC in Paris will explore the dynamics needed to achieve full body control for iCub. Meanwhile, researchers at TUM Munich will work on the development of iCub's manipulation skills. A project team from the University of Lyons will explore internal simulation techniques – something our brains do when planning actions or trying to understand the actions of others.

Over in Turkey, a team based at METU in Ankara will focus almost exclusively on language acquisition and the iCub's ability to link objects with verbal utterances.

"The six winners had to show they could really use and maintain the robot, and secondly the project had to exploit the capabilities of the robot," says Giorgio Metta. "Looking at the proposals from the winners, it was clear that if we gave them a robot we would get something in return."

The iCub robots are about the size of three-year-old children, with highly dexterous hands and fully articulated heads and eyes. They have hearing and touch capabilities and are designed to be able to crawl on all fours and to sit up.

Humans develop their abilities to understand and interact with the world around them through their experiences. As small children, we learn by doing and we understand the actions of others by comparing their actions to our previous experience.

The developers of iCub want to develop their robots' cognitive capabilities by mimicking that process. Researchers from the EU-funded Robotcub project designed the iCub's hardware and software using a modular system. The design increases the efficiency of the robot, and also allows researcher to more easily update individual components. The modular design also allows large numbers of researchers to work independently on separate aspects of the robot.

iCub's software coding, along with technical drawings, are free to anyone who wishes to download and use them.

"We really like the idea of being open as it is a way to build a community of many people working towards a common objective," says Giorgio Metta, one of the developers of iCub. "We need a critical mass working on these types of problems. If you get 50 researchers, they can really layer knowledge and build a more complex system. Joining forces really makes economic sense for the European Commission that is funding these projects and it makes scientific sense."

Built-in learning skills

While the iCub's hardware and mechanical parts are not expected to change much over the next 18 months, researchers expect to develop the software further. To enable iCub to learn by doing, the Robotcub research team is trying to pre-fit it with certain innate skills.

These include the ability to track objects visually or by the sounds – with some element of prediction of where the tracked object will move to next. iCub should also be able to navigate based on landmarks and a sense of its own position.

But the first and key skill iCub needs for learning by doing is an ability to reach towards a fixed point. By October this year, the iCub developers plan to develop the robot so it is able to analyse the information it receives via its vision and feel 'senses'. The robot will then be able to use this information to perform at least some crude grasping behaviour – reaching outwards and closing its fingers around an object.

"Grasping is the first step in developing cognition as it is required to learn how to use tools and to understand that if you interact with an object it has consequences," says Giorgio Metta. "From there the robot can develop more complex behaviours as it learns that particular objects are best manipulated in certain ways."

Once the assembly of the six robots for the research projects is completed, the developers plan to build more iCubs, creating between 15 and 20 in use around Europe.

Adapted from materials provided by ICT Results.

http://www.sciencedaily.com:80 /releases/2008/04/080421162240.htm

Northern Lights Glimmer With Unexpected Trait

The glow of Earth's aurora is polarized, an unexpected state for such emissions. Measurements of this newfound polarization in the Northern Lights may provide scientists with fresh insights into the composition of Earth's upper atmosphere, the configuration of its magnetic field, and the energies of particles from the Sun. (Credit: iStockphoto/Andrew Dawson)

ScienceDaily (Apr. 26, 2008) — An international team of scientists has detected that some of the glow of Earth's aurora is polarized, an unexpected state for such emissions. Measurements of this newfound polarization in the Northern Lights may provide scientists with fresh insights into the composition of Earth's upper atmosphere, the configuration of its magnetic field, and the energies of particles from the Sun, the researchers say.

If observed on other planets, the phenomenon might also give clues to the shape of the Sun's magnetic field as it curls around other bodies in the solar system.

When a beam of light is polarized, its electromagnetic waves share a common orientation, say, aligned vertically, or at some other angle. Until now, scientists thought that light from energized atoms and molecules in planetary upper atmospheres could not be polarized. The reason is simple: in spite of the low number of particles at the altitudes concerned (above 100 kilometers (60 miles)), there are still numerous collisions between molecules and gas atoms. Those collisions depolarize the emitted light.

Fifty years ago, an Australian researcher, Robert Duncan, claimed to observe what looked like polarization of auroral light, but other scientists found that single observation unconvincing.

To revisit the question, Jean Lilensten of the Laboratory of Planetology of Grenoble, France, and his colleagues studied auroral light with a custom-made telescope during the winters of 2006-2007 and 2007-2008. They made their observations from Svalbard Island, Norway, which is in the polar region, at a latitude of 79° north.

At the north and south magnetic poles, many charged particles in the solar wind --a flow of electrically charged matter from the Sun--are captured by the planet's field and forced to plunge into the atmosphere. The particles strike atmospheric gases, causing light emissions.

Lilensten and his colleagues observed weak polarization of a red glow that radiates at an altitude of 220 kilometers (140 miles). The glow results from electrons hitting oxygen atoms. The scientists had suspected that such light might be polarized because Earth's magnetic field at high latitudes funnels the electrons, aligning the angles at which they penetrate the atmosphere.

The finding of auroral polarization "opens a new field in planetology," says Lilensten, who is the lead author of the study. He and his colleagues reported their results on 19 April in Geophysical Research Letters, a publication of the American Geophysical Union, or AGU.

Fluctuations in the polarization measurements can reveal the energy of the particles coming from the Sun when they enter Earth's atmosphere, Lilensten notes. The intensity of the polarization gives clues to the composition of the upper atmosphere, particularly with regard to atomic oxygen.

Because polarization is strongest when the telescope points perpendicularly to the magnetic field lines, the measurements also provide a way to determine magnetic field configurations, Lilensten adds. That could prove especially useful as astronomers train their telescopes on other planetary atmospheres. If polarized emissions are observed there as well, the measurements may enable scientists to understand how the Sun's magnetic field is distorted by obstacles such as the planets Venus and Mars, which lack intrinsic magnetic fields.

Journal reference:Lilensten, J., J. Moen, M. Barthélemy, R. Thissen, C. Simon, D. A. Lorentzen, O. Dutuit, P. O. Amblard, and F. Sigernes (2008), Polarization in aurorae: A new dimension for space environments studies, Geophys. Res. Lett., 35, L08804, doi:10.1029/2007GL033006.

Adapted from materials provided by American Geophysical Union.

http://www.sciencedaily.com:80 /releases/2008/04/080425123355.htm

Sierra Nevada Rose To Current Height Earlier Than Thought, Say Geologists

Geologists studying deposits of volcanic glass in the western United States have found that the central Sierra Nevada largely attained its present elevation 12 million years ago, roughly 8 or 9 million years earlier than commonly thought. (Credit: iStockphoto/Ken Babione)

ScienceDaily (Apr. 26, 2008) — Geologists studying deposits of volcanic glass in the western United States have found that the central Sierra Nevada largely attained its present elevation 12 million years ago, roughly 8 or 9 million years earlier than commonly thought.

The finding has implications not only for understanding the geologic history of the mountain range but for modeling ancient global climates.

"All the global climate models that are currently being used strongly rely on knowing the topography of the Earth," said Andreas Mulch, who was a postdoctoral scholar at Stanford when he conducted the research. He is the lead author of a paper published recently in the online Early Edition of the Proceedings of the National Academy of Sciences.

A variety of studies over the last five years have shown that the presence of the Sierra Nevada and Rocky Mountains in the western United States has direct implications for climate patterns extending into Europe, Mulch said.

"If we did not have these mountains, we would completely change the climate on the North American continent, and even change mean annual temperatures in central Europe," he said. "That's why we need to have some idea of how mountains were distributed over planet Earth in order to run past climate models reliably." Mulch is now a professor of tectonics and climate at the University of Hannover in Germany.

Mulch and his colleagues, including Page Chamberlain, a Stanford professor of environmental earth system science, reached their conclusion about the timing of the uplift of the Sierra Nevada by analyzing hydrogen isotopes in water incorporated into volcanic glass.

They analyzed volcanic glass at sites from the Coast Ranges bordering the Pacific Ocean, across the Central Valley and the Sierra Nevada and into the Basin and Range region of Nevada and Utah.

The ratio of hydrogen isotopes in the glass reflects changes that occurred to the water vapor content of air over the Pacific Ocean as it blew onto the continent and crossed the Sierra Nevada. As the air gains elevation, it cools, moisture concentrates and condenses, and it rains. Water containing heavier isotopes of hydrogen tends to fall first, resulting in a systematic decrease in the ratio of heavy water molecules to lighter ones in the remaining water vapor.

Because so much of the airborne moisture falls as rain on the windward side of the mountains, land on the leeward side gets far less rain—an effect called a "rain shadow"—which often produces a desert.

The higher the mountain, the more pronounced the rain shadow effect is and the greater the decrease in the number of heavy hydrogen isotopes in the water that makes it across the mountains and falls on the leeward side of the range. By determining the ratio of heavier to lighter hydrogen isotopes preserved in volcanic glass and comparing it with today's topography and rainwater, researchers can estimate the elevation of the mountains at the time the ancient water crossed them.

Volcanic glass is an excellent material for preserving ancient rainfall. The glass forms during explosive eruptions, when tiny particles of molten rock are ejected into the air. "These glasses were little melt particles, and they cooled so rapidly when they were blown into the atmosphere that they just froze, basically," Mulch said. "They couldn't crystallize and form minerals."

Because glass has an amorphous structure, as opposed to the ordered crystalline structure of minerals, there are structural vacancies in the glass into which water can diffuse. Once the glass has been deposited on the surface of the Earth, rainwater, runoff and near-surface groundwater are all available to interact with it. Mulch said the diffusion process continues until the glass is effectively saturated with water.

Other researchers have shown that once such volcanic glass is fully hydrated, the water in it does not undergo any significant isotopic exchange with its environment. Thus, the trapped water becomes a reliable record of the isotopic composition of the water in the environment at the time the glass was deposited.

"It takes probably a hundred to a thousand years or so for these glasses to fully hydrate," Mulch said. But 1,000 years is the blink of an eye in geologic time and, for purposes of estimating the timing of events that occur on scales of millions or tens of millions of years, that degree of resolution is quite sufficient.

Likewise, you need deposits of volcanic ash that were laid down relatively quickly over a broad area. But that's the norm for explosive eruptions. Though some ash may circulate in the upper atmosphere for a few years after a major eruption, significant quantities are generally deposited over vast areas within days.

The samples they studied ranged from slightly more than 12 million years old to as young as 600,000 years old, a time span when volcanism was rampant in the western United States owing to the ongoing subduction of the Pacific plate under the continental crust of the North American plate.

"As we use these ashes that are present on either side of the mountain range, we can directly compare what the water looked like before and after it had to cross this barrier to atmospheric flow," Mulch said. "If you just stay behind the mountain range, you see the effect of the rain shadow, but you have to make inferences about where the water vapor is coming from, what happened to the clouds before they traveled across the mountain range.

"For the first time, we were able to document that we can track the [development of the] rain shadow on both sides of the mountain range over very long time scales."

Until now, researchers have been guided largely by "very good geophysical evidence" indicating that the range reached its present elevation approximately 3 or 4 million years ago, owing to major changes in the subsurface structure of the mountains, Mulch said.

"There was a very dense root of the Sierra Nevada, rock material that became so dense that it actually detached and sank down into the Earth's mantle, just because of density differences," Mulch said. "If you remove a very heavy weight at the base of something, the surface will rebound."

The rebound of the range after losing such a massive amount of material should have been substantial. But, Mulch said, "We do not observe any change in the surface elevation of the Sierra Nevada at that time, and that's what we were trying to test in this model."

However, Mulch said he does not think his results refute the geophysical evidence. It could be that the Sierra Nevada did not evolve uniformly along its 400-mile length, he said. The geophysical data indicating the loss of the crustal root is from the southern Sierra Nevada; Mulch's study focused more on the northern and central part of the range. In the southern Sierra Nevada, the weather patterns are different, and the rain shadow effect that Mulch's approach hinges on is less pronounced.

"That's why it's important to have information that's coming from deeper parts of the Earth's crust and from the surface and try to correlate these two," Mulch said. To really understand periods in the Earth's past where climate conditions were markedly different from today, he said, "you need to have integrated studies."

The research was funded by the National Science Foundation.

Adapted from materials provided by Stanford University.

http://www.sciencedaily.com:80 /releases/2008/04/080423153318.htm

First Transistor Using Nanotechnology Is 50 Times More Energy Efficient Than Current Models

ScienceDaily (Apr. 26, 2008) — Transistors are an indispensable building block in electric appliances, where they amplify weak electric currents. Now researchers have developed a new type of transistor that is 50 times more energy efficient than today's models. It is also the first to be developed using nanotechnology.

"This kind of transistor should be able to reduce energy consumption in mobile phones and computers, for example, so they wouldn't have to be recharged so often. What's more, it can pave the way for communicating in frequencies that are too high for today's technology," says Lars-Erik Wernersson, professor of solid state physics at the Faculty of Engineering, Lund University, in Sweden.

For some time researchers have been stymied by the fact that transistors can't be reduced any further in size without overheating, since the electrons release so much energy.

"But our model is made up of indium arsenide, where the electrons move more easily compared with silicon, the conventional semiconductor material in transistors. Actually, it's hard to produce transistors with indium arsenide, but if we apply nanotechnology, it's rather simple," explains Lars-Erik Wernersson.

The transistor is thus constructed using nanotechnology. According to Lars-Erik Wernersson, this means that the material is self-organized according to a bottom-up principle instead of being "carved out," which is the conventional method.

Ultimately Lars-Erik Wernersson and his colleagues also hope to develop transistors that can communicate in entirely new frequency areas. Today's electric appliances use 3–10 gigahertz. The hope is to reach 60 GHz, which is a considerably broader frequency range.

"With 60 GHz you can only communicate across short differences and not through walls, for instance. But this new frequency range can rationalize wireless communication in the home, for example when you download a film or communicate between TVs and projectors. We know for sure that such electric appliances will be integrated more and more in the future," he adds.

There are other scientists in the world working with similar research-at IBM in the U.S., for example-but these Swedish researchers have made the most progress in this field.

Recently Lars-Erik Wernersson was informed he would receive SEK 24.5 million from the Swedish Foundation for Strategic Research to develop new wireless circuits using nanotechnology. The newly developed transistor technology will serve as the basis for the new circuits. The transistor has been partly developed in collaboration with the spin-off company QuNano.

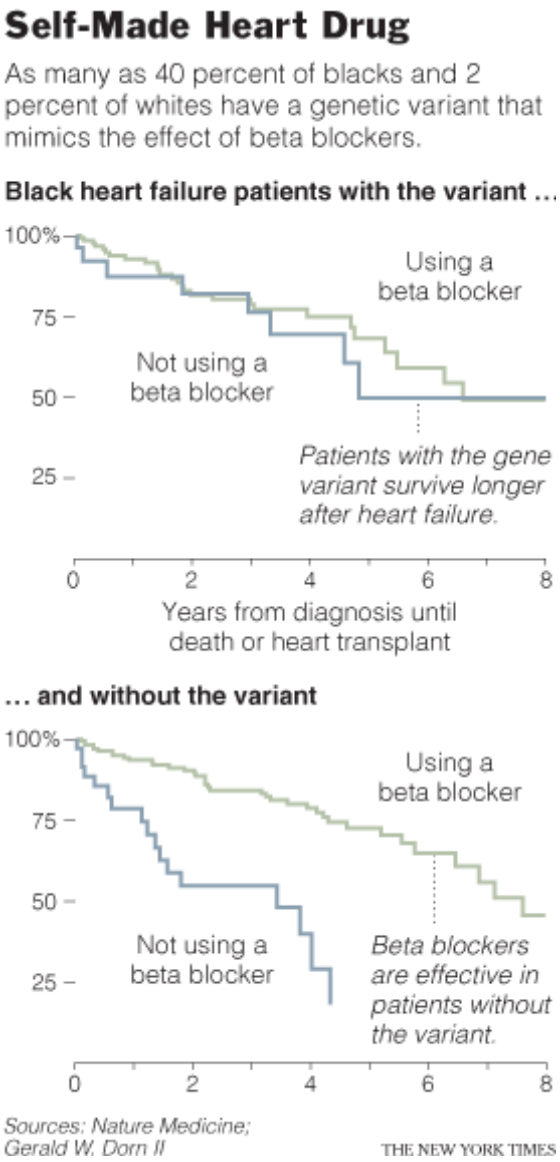
The article "Vertical Enhancement-Mode InAs Nanowire Field-Effect Transistor With 50-nm Wrap Gate" is published in IEEE Electron Device Letters, volume 29, Issue 3, 2008, pp 206 – 208.

Adapted from materials provided by Lund University, via AlphaGalileo.

http://www.sciencedaily.com:80 /releases/2008/04/080424212327.htm

Genes Explain Race Disparity in Response to a Heart Drug

By GINA KOLATA



Doctors who treat patients with heart failure have long been puzzled by a peculiar observation. Many black patients seem to do just as well if they take a mainstay of therapy, a class of drugs called beta blockers, as if they do not. It is almost as if they were immune to the drugs.

Now researchers at Washington University and the University of Maryland have discovered why: these nonresponsive patients have a slightly altered version of a gene that muscles use to control responses to nerve signals. People with this altered gene are making what amounts to their own version of beta blockers all the time. As many as 40 percent of blacks and 2 percent of whites have the gene variant, the researchers report.

The findings, heart failure specialists say, mean that people with the altered gene might be spared taking what may be, for them, a useless therapy. And since patients with heart failure typically take multiple drugs, which can interact and cause side effects like fatigue, getting rid of a drug that is not helping can be a huge benefit.

This is the first time anyone has found such a gene effect, said Dr. Stephen Liggett, a heart failure and genetics researcher at the University of Maryland and one of the first authors of the study.

“Conceptually, this is quite a surprise,” Dr. Liggett said.

Equally surprising is how common the altered gene is, especially among black patients.

“Something that occurs with a 40 percent frequency is not something that was a blip on the radar screen,” said Dr. Gerald W. Dorn, a cardiologist at Washington University and principal investigator for the study. “It must have given a survival advantage.”

But he has no idea yet what that advantage might be.

A paper describing the results of the research was published on the Web site of the journal Nature Medicine on April 20.

The discovery raises questions about whom to treat with beta blockers and how to decide, researchers say. But, they add, its implications go beyond heart failure.

For example, the gene variant may help explain why some healthy people cannot exercise vigorously — they may be making chemicals that act like beta blockers, making their hearts beat less forcefully. And variations in other genes might explain why some people with different conditions, like depression, do not respond to drugs used to treat it. It is possible that those people are already making their own versions of antidepressant drugs, and that adding more may not help.

But researchers say that people who make their own beta blockers are not protected from developing heart failure. That is because beta blockers are helpful only after the disease is established. And beta blockers can slow the disease’s progress but not cure it.

The study began with the researchers’ own puzzlement over the ways heart failure patients responded, or did not respond, to beta blockers.

In heart failure, the heart can no longer pump efficiently and grows large in a futile attempt to overcome the problem. As the heart continues to weaken, fluid accumulates in the lungs, and patients become so short of breath they cannot walk across a room.

The condition is difficult to treat, and most patients end up taking four or five drugs and, almost invariably, a beta blocker.

The idea of using beta blockers seemed heretical when it was proposed more than two decades ago. The drugs weaken the heart’s response to the fight-or-flight hormones epinephrine and norepinephrine. But the hearts of patients with heart failure cannot pump enough blood, making it seem illogical to give them drugs that impede their hearts.

It turned out that dampening the heart’s response to those hormones actually helped by giving the heart a rest from the flood of epinephrine and norepinephrine. Patients who took the drugs lived twice as long.

“Beta blockers are the best thing that ever happened in heart failure,” Dr. Liggett said.

But the drugs’ effect seemed greater in some patients, and some blacks, in particular, seemed to be getting no effect at all.

After studying the gene variant’s effects in laboratory experiments and in mice, the investigators looked at 375 black patients with heart failure. The researchers asked whether the patients had the gene variant and, if so, how it affected two key aspects of their disease: how long it took before their hearts weakened

so much that they would die without a transplant, and how long they lived after receiving a diagnosis of heart failure.

Those who had the gene variant, they report, did not benefit from taking beta blockers, faring the same whether they took the drugs or did not.

Still, experts are not certain that the evidence is sufficient to alter medical practice. It would mean testing blacks with heart failure to see if they have the gene and then not prescribing beta blockers if they do. The patients would still take the half-dozen or so other drugs that help control their disease and its symptoms.

Dr. Liggett, for one, is ready to change his practice.

He might not give beta blockers to patients with the gene variant, he says, and he might withdraw the drug from patients with the gene variant if they are having trouble with side effects.

But Dr. Dorn said more research was needed. Even if beta blockers did not help patients with the gene in the two outcomes that were measured, it remains possible, he said, that the drugs may be conferring some other benefit.

Dr. Michael Bristow, chief scientific officer at Arca Discovery, a small biotechnology firm, and a professor of medicine and cardiology at the University of Colorado, said the gene discovery could help in developing drugs that might do what beta blockers do, only more effectively.

“You try to take advantage of these natural, almost chance observances and learn from them,” he said.

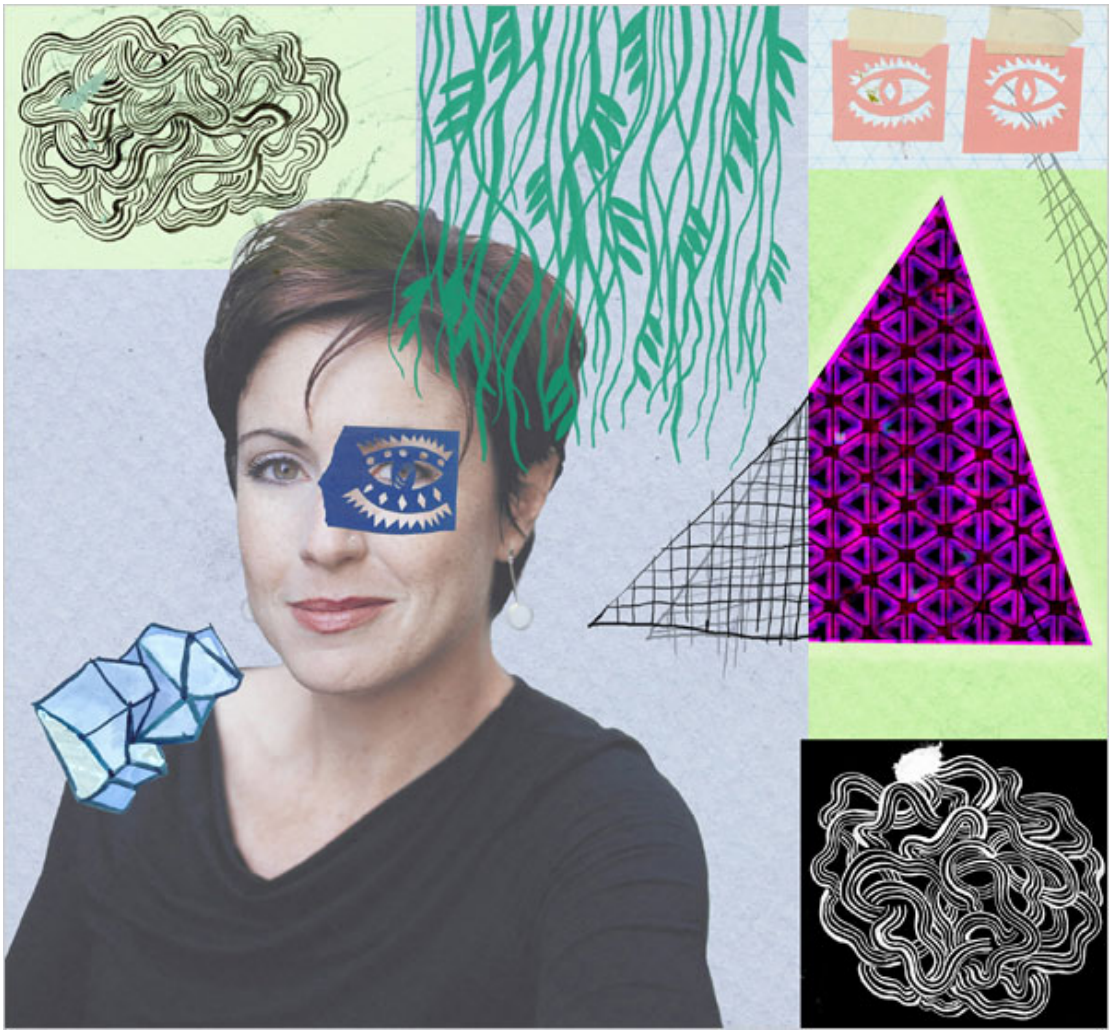
And, Dr. Bristow added, no matter what, the finding just fascinates him.

“In just about any disease, different people handle it differently and have different outcomes,” he said. “Here’s an explanation about why one group might have a better outcome.”

http://www.nytimes.com/2008/04/29/health/research/29heart.html?_r=1&nl=8hlth&emc=hltha1&oref=slogin

Quieting the Demons and Giving Art a Voice

By ABIGAIL ZUGER, M.D.
Madness: A Bipolar Life
By Marya Hornbacher. Houghton Mifflin. 299 pages. $25.
Poets on Prozac: Mental Illness, Treatment and the Creative Process.
Edited by Richard M. Berlin, M.D. Johns Hopkins Press. 200 pages. $21.95



Marya Hornbacher is a virtuoso writer: humorous, articulate and self-aware. She is also, as she has now documented in two books, incurably mentally ill.

Even on the best possible treatment, Ms. Hornbacher tiptoes along the same high wire as Plath, Lowell, Woolf and the rest of the unbalanced artistes. Off medication, she reliably falls into a turmoil of confused self-destruction, which, as she would be the first to acknowledge, means heartbreak and worry for her friends and relatives, challenges for her doctors, and, in the age-old contradiction, new fodder for her muse.

For scientists trying to parse the mystery of brain and mind, she is one more case of the possible link between mental illness and artistic creativity. With all our scans and neurotransmitters, we are not much closer to figuring out that relationship than was Lord Byron, who announced that poets are “all crazy” and left it at that. But effective drugs make the question more urgent now: would Virginia Woolf, medicated, have survived to write her final masterpiece, or would she have spent her extra years happily shopping?

Ms. Hornbacher brings to the discussion more than the usual pairing of disturbed brain and talented mind. Her talent has created a third self, an appealing, rueful narrator who can look back on three decades of manic-depressive illness, much of it untreated, and spin a story that is almost impossible to put down. In the same way that the psychiatrist Kay Redfield Jamison experienced, recorded and then analyzed her own case in the 1995 classic "An Unquiet Mind," Ms. Hornbacher provides the perfect trifecta of perspectives. Readers of her well-received book "Wasted," published in 1998 when Ms. Hornbacher was 24, left her in a state of tenuous recovery from a long struggle with anorexia. The first pages of "Madness" describe how illusory that recovery was. Prescribed an antidepressant, the common treatment for anorexia, she took a slow-motion swan dive into the full-blown anxiety, agitation and despair of bipolar disease made worse by exactly the wrong medication. Her plunge went unrecognized by her attendant mental health professionals, including one who suggested a regimen of candles, baths and aromatherapy.

Hot water did nothing to help; neither did alcohol, lots of it. Ms. Hornbacher finally picked a psychiatrist at random from the Minneapolis phone book and happened onto a good one. Her illness was accurately diagnosed and properly medicated in short order. On television, that encounter would cue the credits, but the book has barely begun. What follows is an unsparing saga of severe refractory manic-depressive illness, with treatment often undermined by Ms. Hornbacher herself. "For years after I was diagnosed, I didn't take it seriously. I just didn't feel like thinking about it. I let it run rampant, and these are the results" — a jagged decade of health and productive work alternating with relapses, hospitalizations, electroshock treatments and slow climbs back to tenuous health.

The self-absorption of mental illness can be off-putting, or just plain dull. It is a testament to Ms. Hornbacher's talent that her book is neither. She writes in a fluid staccato well suited to her stuttering reality, with a wicked ear for dialogue and a baseline common sense that contrasts with the immense senselessness of her worst manic episodes. As for the central question of whether treating the illness impairs the creativity, Ms. Hornbacher weighs in firmly on the side of her meds, imperfect though they may be. "For me, the first sign of oncoming madness is that I'm unable to write." Depression silences her; mania may flood her mind with glittering words, but they scatter before she can get them down. Only the prosaic morning meds (21 pills, at last count) will let her trap the words on the page.

More reflections on the same subject can be found in "Poets on Prozac," a collection of essays solicited from published poets with psychiatric illness. Most of the 16 contributors are decades older than Ms. Hornbacher, but while they may lack her vivid prose style, they do supply a long-term perspective on the terrain. With problems ranging from mild unmedicated depression to schizophrenia treated with an unorthodox megavitamin technique, these writers also focus on trapping the words — and all agree that the sick brain often spells catastrophe for the creative mind. While mental illness may form a part of the creative cycle, if untreated its own cycles invariably take over. "Depression steals the voice," writes Liza Porter. "Silence breeds depression. Depression breeds silence." Meanwhile, the actual hard work of editing a mass of thoughts into a finished product is purely linear. It requires detachment and perspective, what Andrew Hudgins calls the "chemical Zen" of Paxil. "I have no idea if the drug has changed my work at any fundamental level," writes Mr. Hudgins, a professor at Ohio State University, "but I doubt that it did, which is a great comfort."

Even the poet's reliable liquid elixir of inspiration is given short shrift here. Dylan Thomas be damned: it is the first national poet of Wales, Gwyneth Lewis, who writes: "I used to keep notes of my altered states of mind under the influence of drink in the hope that they would offer startling new images for poems. They didn't. It was impossible to decipher my handwriting, and I kept throwing up. Another poetic myth bites the dust."

http://www.nytimes.com/2008/04/29/health/29book.html?nl=8hlth&emc=hltha1

Perceptions: Go Ahead, Put the Water Bottle Down

By NICHOLAS BAKALAR

Drinking a lot of water is supposed to be healthy, but there is apparently little scientific support for the belief. A review of clinical studies has found no evidence that drinking eight glasses of water a day, the usual recommendation, is beneficial to a healthy person.

Numerous claims have been made about water — that it prevents headaches, removes dangerous "poisons," improves the function of various organs and is associated with reduced risk for various diseases. But none of these is supported by scientific evidence. The authors were not even able to find a study leading to the "eight glasses a day" rule, whose origin remains unknown.

The researchers, in the June issue of The Journal of the American Society of Nephrology, say some studies have found evidence that drinking extra water helps the kidneys clear sodium, and long-term sodium retention might increase the risk of hypertension, but no clinical significance for the phenomenon has been established. Water also helps clear urea, but urea is not a toxin.

There is "intriguing" evidence that water might help decrease appetite and control weight gain, write the authors, who say this might be worth more research.

"Under normal circumstances," said Dr. Stanley Goldfarb, a co-author and a professor of medicine at the University of Pennsylvania, "drinking extra water is unnecessary. I want to relieve people of the burden of schlepping water bottles around all day long."

http://www.nytimes.com/2008/04/29/health/research/29perc.html?nl=8hlth&emc=hltha2

You Name It, and Exercise Helps It

By JANE E. BRODY

Randi considers the Y.M.C.A. her lifeline, especially the pool. Randi weighs more than 300 pounds and has borderline diabetes, but she controls her blood sugar and keeps her bright outlook on life by swimming every day for about 45 minutes.

Randi overcame any self-consciousness about her weight for the sake of her health, and those who swim with her and share the open locker room are proud of her. If only the millions of others beset with chronic health problems recognized the inestimable value to their physical and emotional well-being of regular physical exercise.

“The single thing that comes close to a magic bullet, in terms of its strong and universal benefits, is exercise,” Frank Hu, epidemiologist at the Harvard School of Public Health, said in the Harvard Magazine.

I have written often about the protective roles of exercise. It can lower the risk of heart attack, stroke, hypertension, diabetes, obesity, depression, dementia, osteoporosis, gallstones, diverticulitis, falls, erectile dysfunction, peripheral vascular disease and 12 kinds of cancer.

But what if you already have one of these conditions? Or an ailment like rheumatoid arthritis, multiple sclerosis, Parkinson’s disease, congestive heart failure or osteoarthritis? How can you exercise if you’re always tired or in pain or have trouble breathing? Can exercise really help?

You bet it can. Marilyn Moffat, a professor of physical therapy at New York University and co-author with Carole B. Lewis of “Age-Defying Fitness” (Peachtree, 2006), conducts workshops for physical therapists around the country and abroad, demonstrating how people with chronic health problems can improve their health and quality of life by learning how to exercise safely.

Up and Moving

"The data show that regular moderate exercise increases your ability to battle the effects of disease," Dr. Moffat said in an interview. "It has a positive effect on both physical and mental well-being. The goal is to do as much physical activity as your body lets you do, and rest when you need to rest."

In years past, doctors were afraid to let heart patients exercise. When my father had a heart attack in 1968, he was kept sedentary for six weeks. Now, heart attack patients are in bed barely half a day before they are up and moving, Dr. Moffat said.

The core of cardiac rehab is a progressive exercise program to increase the ability of the heart to pump oxygen- and nutrient-rich blood more effectively throughout the body. The outcome is better endurance, greater ability to enjoy life and decreased mortality.

The same goes for patients with congestive heart failure. "Heart failure patients as old as 91 can increase their oxygen consumption significantly," Dr. Moffat said.

Aerobic exercise lowers blood pressure in people with hypertension, and it improves peripheral circulation in people who develop cramping leg pains when they walk — a condition called intermittent claudication. The treatment for it, in fact, is to walk a little farther each day.

In people who have had transient ischemic attacks, or ministrokes, "gradually increasing exercise improves blood flow to the brain and may diminish the risk of a full-blown stroke," Dr. Moffat said. And aerobic and strength exercises have been shown to improve endurance, walking speed and the ability to perform tasks of daily living up to six years after a stroke.

As Randi knows, moderate exercise cuts the risk of developing diabetes. And for those with diabetes, exercise improves glucose tolerance — less medication is needed to control blood sugar — and reduces the risk of life-threatening complications.

Perhaps the most immediate benefits are reaped by people with joint and neuromuscular disorders. Without exercise, those at risk of osteoarthritis become crippled by stiff, deteriorated joints. But exercise that increases strength and aerobic capacity can reduce pain, depression and anxiety and improve function, balance and quality of life.

Likewise for people with rheumatoid arthritis. "The less they do, the worse things get," Dr. Moffat said. "The more their joints move, the better."

Exercise that builds gradually and protects inflamed joints can diminish pain, fatigue, morning stiffness, depression and anxiety, she said, and improve strength, walking speed and activity.

Exercise is crucial to improving function of total hip or knee replacements. But "most patients with knee replacements don't get intensive enough activity," Dr. Moffat said.

Water exercises are particularly helpful for people with multiple sclerosis, who must avoid overheating. And for those with Parkinson's, resistance training and aerobic exercise can increase their ability to function independently and improve their balance, stride length, walking speed and mood.

Resistance training, along with aerobic exercise, is especially helpful for people with chronic obstructive pulmonary disease; it helps counter the loss of muscle mass and strength from lack of oxygen.

In the February/March issue of ACE Certified News, Natalie Digate Muth, a registered dietitian and personal trainer, emphasized the value of a good workout for people suffering from depression. Mastering a new skill increases their sense of worth, social contact improves mood, and the endorphins released during exercise improve well-being.

"Exercise is an important adjunct to pharmacological therapy, and it does not matter how severe the depression — exercise works equally well for people with moderate or severe depression," wrote Ms. Muth, who is pursuing a medical degree at the University of North Carolina, Chapel Hill.

Feel-Good Hormones

Healthy people may have difficulty appreciating the burdens faced by those with chronic ailments, Dr. Nancey Trevanian Tsai noted in the same issue of ACE Certified News. "Oftentimes, disease-ridden statements — like 'I'm a diabetic' — become barricades that keep clients from seeing themselves getting better," she said, and many feel "enslaved by their diseases and treatments."

But the feel-good hormones released through exercise can help sustain activity.

"With regular exercise, the body seeks to continue staying active," wrote Dr. Tsai, an assistant professor of neurosciences at the Medical University of South Carolina in Charleston. She recommended an exercise program tailored to the person's current abilities, daily needs, medication schedule, side effects and response to treatment.

She urged trainers who work with people with chronic ailments to start slowly with easily achievable goals, build gradually on each accomplishment and focus on functional gains. Over time, a sense of accomplishment, better sleep, less pain and enhanced satisfaction with life can become further reasons to pursue physical activity.

"Even if exercise is tough to schedule," Dr. Moffat said, "you feel so much better, it's crazy not to do it."

http://www.nytimes.com/2008/04/29/health/29brod.html?nl=8hlth&emc=hlthb2

The Truth About the Spinning Dancer

A popular e-mail going around features a spinning dancer that has been touted as a test of whether you are right-brained and creative or left-brained and logical. If you see the dancer spinning clockwise, the story goes, you are using more of your right brain, and if you see it moving counterclockwise, you are more of a left-brained person.

But while the dancer does indeed reflect the brain savvy of its creator, Japanese Web designer Nobuyuki Kayahara, it is not a brain test. Instead, it is simply an optical illusion called a reversible, or ambiguous, image. Images like this one have been long studied by scientists to learn more about how vision works.

The silhouette image of the spinning dancer doesn't have any depth cues. As a result, your eyes will sometimes see the dancer standing on her left leg and spinning to the right. And sometimes they will perceive her as standing on her right leg and spinning to the left. Most people, if they stare at the image long enough, will eventually see her turn both ways.

Perhaps the most-studied reversible image is the Necker cube, which looks like the wire-frame of a cube. The picture also lacks depth cues, so sometimes the face of the cube appears on the lower left, but sometimes it jumps to the back and the face of the cube shifts. A moving rotating Necker cube can be seen here.

"What's happening here to cause the flip is something happening entirely within the visual system,'' said Thomas C. Toppino, chair of the department of psychology at Villanova University. "If we can understand why it is these figures reverse then we're in a position to understand something pretty fundamental to how the visual system contributes to the conscious experience.''

Sometimes, a person will stare at an image and it will never reverse. Dr. Toppino advises staring at one part of the image, such as the foot, and most of the time it will eventually flip. I tried this several times, but it never flipped. Dr. Toppino says in people who can't see the reversal, it may be that one underlying neural structure is more dominant, but once someone finally manages to see the flip, it will start to happen more often.

I did finally see the dancer flip, but it was only after using a sort of cheat sheet that draws a line on the dancer's standing leg. To see the lined image moving clockwise, click here. To see it move counterclockwise, click here.

And if you haven't wasted enough time staring at the Necker cube and spinning dancer, check out these fun optical illusions. http://www.michaelbach.de/ot/index.html

http://well.blogs.nytimes.com/2008/04/28/the-truth-about-the-spinning-dancer/

Unearthing Tangled Roots of a Town's Family Trees

By MICHIKO KAKUTANI

THE PLAGUE OF DOVES

By Louise Erdrich

313 pages. HarperCollins. $25.95.

A terrible act of racism stands at the center of Louise Erdrich's masterly new novel: in the early years of the 20th century, after five members of a white family are found murdered, a group of men run down a party of Indians and deliver "what was called at the time 'rough justice.' " Three men and a boy are hanged — one miraculously survives — while the actual murderer of the Lochren family goes unpunished.

The hangings will haunt the town of Pluto (a small white settlement on the western edge of the North Dakota Ojibwe reservation that has figured in so many of Ms. Erdrich's novels), but over the decades descendants of the victims and the vigilantes will also find their lives intertwining in myriad, unexpected ways, as love and friendship and random fate conspire to blunt, if not redeem, the specter of the past.

As she's done so many times before, Ms. Erdrich uses several characters to narrate alternating chapters (the same technique pioneered by Faulkner in "As I Lay Dying"), giving us a choral story that unfolds from multiple perspectives. Only gradually are the relationships between these characters and their ancestors revealed, resulting in an elliptical, jigsaw puzzle of a narrative that italicizes the hold that time past exerts over time present, and the startling changes that have swept through the reservation and the small towns nearby in the space of a couple of generations.

In the course of "The Plague of Doves" we not only see how characters pass on their best and worst proclivities to their children — who may or may not find a way of transcending their inheritances — but we also hear how the plains, once filled with herds of buffalo and flocks of passenger pigeons, quickly gave way to the reservation and the little towns perched on its borders, and how the town of Pluto has gradually metamorphosed from a thriving little frontier community into a dying village, its businesses folding or moving away, while its young people leave for brighter horizons.

Listening to her grandfather Mooshum and the rest of her family talk about "how the town of Pluto came to be and why it was inside the original reservation boundaries," Evelina Harp realizes "that the loss of their land was lodged inside of them forever."

"This loss would enter me, too," she says. "Over time, I came to know that the sorrow was a thing that each of them covered up according to their character — my old uncle through his passionate discipline, my mother through strict kindness and cleanly order. As for my grandfather, he used the patient art of ridicule." When Neve Harp, one of the last of the town's founding families, comes to interview Mooshum about the past, he replies: "What you are asking is how was it stolen? How has this great thievery become acceptable? How do we live right here beside you, knowing what we lost and how you took it?"

Pluto, like the town of Argus depicted in many earlier Erdrich novels, is one of those little towns where everyone knows everyone else and knows virtually everything about everyone else's family history. It's a place where intimacy breeds feuds and gossip and long-simmering resentments, but also understanding and maybe even forgiveness, a place where the roots of neighbors' family trees are often mysteriously twisted together, and where the younger generations find themselves reprising — or expiating — the actions of their elders.

Mary Anita Buckendorf, one of whose relatives orchestrated the hangings of the Indians, becomes a nun, who returns to the parish to teach the local children. Mooshum, who loses two friends in the hangings, marries Junesse, the daughter of one of the vigilantes. And one of Mooshum's daughters marries Antone Coutts, whose first and longtime love was the sole survivor of the Lochren family murders, which led to the hangings in the first place.

Writing in prose that combines the magical sleight of hand of Gabriel García Márquez with the earthy, American rhythms of Faulkner, Ms. Erdrich traces the connections between these characters and their many friends and relatives with sympathy, humor and the unsentimental ardor of a writer who sees that the tragedy and comedy in her people's lives are ineluctably commingled. Whereas some of her recent novels, like "Four Souls" (2004), have suffered from predictability and contrivance, her storytelling here is supple and assured, easily navigating the wavering line between a recognizable, psychological world and the more arcane world of legend and fable.

A boy and a girl, who meet in a field during a plague of doves, run away from home and for six years find refuge with a mannish pig rustler and her notorious husband. That boy's granddaughter develops a wild crush on the local troublemaker, who will one day steal her great uncle's magical fiddle, which appeared to him in a dream. A man assembles a world-class stamp collection while living in the little town of Pluto, only to find that his obsession leads to his undoing. For years a judge carries on a passionate affair with an older woman, who ends up marrying a local developer, who buys the judge's beloved house with the intention of stripping it bare. A charismatic boy becomes a dangerous cult leader, enslaving his wife, a snake handler, who plots to liberate herself and their children from his thrall.

Although some of these portraits trail off a little too abruptly, Ms. Erdrich does a graceful job of orchestrating them, pulling the many strands and leitmotifs of her characters' stories into a symphonic portrait of a community: its endurance through droughts and economic downturns, its residents' susceptibility to freak accidents and crimes of passion, and their efforts to cope with the joys and "predictable sadnesses" of life. With "The Plague of Doves," she has written what is arguably her most ambitious — and in many ways, her most deeply affecting — work yet.

http://www.nytimes.com/2008/04/29/books/29kaku.html?th&emc=th

CONVERSATION WITH ARNO MOTULSKY

A Genetics Pioneer Sees a Bright Future, Cautiously

By CLAUDIA DREIFUS

Among scientists, 84-year-old Arno Motulsky is known as the "father of pharmacogenomics." In 1957, Dr. Motulsky, a medical doctor and researcher at the University of Washington, published an article reporting that two drugs had negative interactions with enzymes produced by certain human genes. Might this be true of other pharmaceuticals, Dr. Motulsky wondered? His question set off a revolution in research. Dr. Motulsky, who grew up Jewish in Nazi Germany, barely made his way out of wartime Europe and to safety in America.

Q. IN 1939 YOU BOARDED AN OCEAN LINER FROM HAMBURG TO CUBA WITH YOUR MOTHER, BROTHER AND SISTER. DID YOU EVER GET THERE?

A. We got as far as Havana harbor. Our ship was the S. S. St. Louis. The Cuban government had canceled the transit permits of most of the passengers — nearly a thousand refugees. We could not disembark.

Q. YOU MUST HAVE BEEN TERRIFIED.

A. I was 15. At that age, one tends to be optimistic. Many of the older men, they'd been in concentration camps and they had a better sense of what could happen. For days, appeals went out to the U.S. government to take us in. Then the Cubans ordered the St. Louis out of Havana harbor. The captain — who was a decent sort — sailed the ship up the Florida coast, hoping something would change. You could see Miami. Eventually, the St. Louis turned around for Europe. Our family was given asylum by Belgium. After a year in Brussels, we got our visas for America, but before we could leave, the country was overrun by the German Army.

Q. WERE YOU THEN INTERNED?

A. Yes, I was sent to a succession of camps in France. Though conditions were bad — hunger, typhoid — I always tried to know what was going on. I always tried to get a hold of newspapers, which was very difficult.

After many months, the Vichy French moved those internees with the possibility to emigrate to a special camp near Marseilles. We were allowed to visit consulates in the city. I spent much time at the American consulate, pleading for a renewal of my now-expired visa.

That came through right before my 18th birthday. So 10 days before I turned 18, I crossed into Spain. From there I went to Lisbon and eventually Chicago, where my father was. If my visa had taken any longer, I wouldn't be here today because Franco had barred males over 18 from transiting through Spain; I would have ended up in Auschwitz, like most of the people I left behind.

Q. WHAT BECAME OF YOUR MOTHER AND SIBLINGS?

A. For two years, there was no news. In Brussels, they'd gotten orders to be "resettled in the East." With the help of Belgian friends, they illegally crossed into Switzerland. We didn't see them until 1946.

Q. HOW DID YOU BECOME A DOCTOR? THAT COULDN'T HAVE BEEN EASY FOR A PENNILESS REFUGEE KID.

A. I had a great piece of luck. When I was 20, I was drafted! The Army needed doctors for the war. They put me into a special program, where they sent me to Yale and later to medical school.

Q. HOW DID GENETICS BECOME YOUR SPECIALTY?

A. While at Michael Reese Hospital in Chicago, I met the hematologist Dr. Karl Singer, and he had all these modern ways of studying blood. That interested me. Because there are hereditary blood diseases, I soon became interested the genetic aspect of hematology.

Q. YOUR OBSERVATION IN 1957 ABOUT THE INTERACTIONS BETWEEN THE ENZYMES PRODUCED BY GENES AND SOME DRUGS — DOES IT PLEASE YOU TO SEE HOW IMPORTANT IT HAS BECOME?

A. Yes, because at first the idea was not well accepted. I remember going to an important pharmaceutical executive and I said, "I found a new way to find out about drug reactions." And he kissed me off: "Drug reactions?"

Things also moved slowly for a long time because it was hard to test for this. But now, with the new DNA testing, you can do many things faster and better. And with the modern computerized genomics, you can even test for reactions to many different enzymes, all at the same time.

On the other hand, I think the promise of pharmacogenetics is sometimes overhyped. There are people who think we'll be able to solve almost everything with an individualized prescription. We need more research, which will be expensive.

Q. WILL HEALTH INSURANCE PAY FOR DNA TESTING AND CUSTOM PHARMACEUTICALS?

A. That's a problem. On the hopeful side, people say it may soon be possible to sequence a person's genome for $1,000. Once they figure out low-cost ways to sequence the genome, the price of personalized medicine will come down.

Still, one shouldn't be misled. What we know about the genome today is not enough for all the miracles many expect from this field. There's a lot about what regulates the genes and how they interact that we still need to understand. We won't have the answers by tomorrow.

Q. AT 84, YOU'RE STILL WORKING. WHAT ARE YOU TACKLING IN YOUR LABORATORY?

A. One project I'm very excited about relates to human color vision. About 8 percent of males have inherited red-green color blindness. This is caused by hereditary abnormalities in color sensitive pigments of the retinal cones in the back of the eyes, which are actually part of the brain. Our laboratory found that one-half of males with normal color vision had the amino acid alanine in their red pigment, while the other half all carried the amino acid serine, at the same site. This finding means that the same exact red color is perceived as a different type of red, depending on a person's genetic makeup.

Q. WHAT'S THE POINT OF KNOWING THIS?

A. It's exciting to learn that because of heredity, different people can see the same thing differently. I think this may prove useful in studying more complex brain functions. If this were 20 years ago, I'd focus on neurogenetics. What's going on in the brain, that's the last frontier.

Q. DO THE EXPERIENCES OF YOUR CHILDHOOD HAVE AN IMPACT ON YOUR LIFE AND WORK TODAY?

A. I often think about it. Whenever something good happens, I say to myself, "Look, you almost didn't live to experience this." When I see pictures from Africa, I think: "That could be me. I was once a refugee."

http://www.nytimes.com/2008/04/29/science/29conv.html?th&emc=th

Race Is On to Advance Software for Chips

By JOHN MARKOFF

PALO ALTO, Calif. — In the computer world's equivalent of "The Amazing Race," three rival teams of computer researchers are working on new types of software needed to better use computer chips that can process many tasks at the same time.

Stanford University and six computer and chip makers plan to announce Friday the creation of the Pervasive Parallelism Lab. Besides Stanford, the backers are Sun Microsystems, Advanced Micro Devices, Nvidia, I.B.M., Hewlett-Packard and Intel.

Last month, Intel and Microsoft announced they were jointly financing new labs at the University of California, Berkeley and the University of Illinois at Urbana-Champaign to tackle the same problem.

All three efforts are in response to a growing awareness that the software industry is not ready for the coming availability of microprocessors with 8 or 16 or more cores, or processing units, on a single chip. Computer and chip makers are concerned that if software cannot use the new hardware efficiently, customers will have little reason to upgrade.

The Stanford lab, which will cost $6 million over three years, will be led by Kunle Olukotun, a professor of electrical engineering and computer science. Mr. Olukotun helped pioneer the idea of multicore microprocessors, which have since gained rapid popularity in both corporate and consumer computer hardware.

The most advanced corporate server microprocessor, as well as processors for video game machines, have up to eight cores. While today's operating systems — the basic layer of software that runs a computer — can work with this type of hardware, software engineers widely acknowledge that most applications, ranging from corporate productivity software to multimedia programs, are not designed for efficient use of the dozens or hundreds of processors in future computers.

The separate university efforts will share some approaches, but will also try different experiments, including new programming languages and hardware innovations.

They will also rethink operating systems and compilers, the specialized software that translates raw programming instructions into something that computers can understand.

The Berkeley researchers have broken parallel computing problems into seven classes, each of them to be attacked using a different approach.

In contrast, the Stanford researchers said they were looking for new ways to hide the complexity of parallel computing from programmers and will use virtual world and robotic vehicles to test their ideas.

Beginning in 2004, Intel acknowledged that it had hit what was essentially a heat barrier in designing ever-faster microprocessors and aggressively shifted to multicore designs.

Now there is a rush to develop tools for mainstream programmers who have spent their entire careers designing software for sequential, not parallel, programming systems, said John L. Hennessy, Stanford's president and a professor of computer science.

http://www.nytimes.com/2008/04/30/technology/30lab.html?_r=1&th&emc=th&oref=slogin

'THE SOUND AND THE FURY'

Faulkner's Haunted Family, Moving in and Out of Time

By BEN BRANTLEY

For the record, Elevator Repair Service's "Sound and the Fury (April Seventh, 1928)" lasts over two and a half hours, counting intermission. Or that's what my watch said at the end of this hypnotic re-creation of the opening section of William Faulkner's 1929 novel.

But I really had no idea of how long I had been sitting in a state of rapt, oddly contented confusion at New York Theater Workshop, where the production opened on Tuesday night. The minutes had shrunk, stretched, flown, crept, sagged and stood still, sometimes all at once.

This is fitting for a play adapted from a work in which time is never easy to quantify. "April Seventh, 1928" is narrated by a man of 33 with the mind of a preliterate child. (Faulkner took his title from "Macbeth": "It is a tale told by an idiot, full of sound and fury, signifying nothing.")

That's Benjamin Compson, originally named Maury and often called Benjy, against his mother's wishes. For him time isn't sequential but simultaneous. The past and present blur, and people are all the ages they have ever been for as long as he has known them.

Benjy's nonlinear, noninterpretive point of view has been the bane of uninitiated English students for decades. But reading this account of a Mississippi family's decline is like looking at an impressionistic painting that at first seems to lack discernible forms, but stare long enough, and details emerge so precisely that it's finally sharper than any photograph.

Trying to translate this perspective from the page to the stage would seem to be an act of folly and hubris. But the famously venturesome Elevator Repair Service — which toured Europe with a seven-hour

rendering of F. Scott Fitzgerald's "Great Gatsby" (titled "Gatz") — brings a sanity, humility and theatrical ingenuity to their interpretation that, like the novel, illuminates the clarity within apparent chaos. Under the direction of John Collins, its founder, this 17-year-old experimental company doesn't try to impose its own order on Faulkner's prose. As it did with its "Gatsby," the troupe follows the original text, word for word. (This means that students hoping to use the play as a quick-fix trot will be thwarted.)

A dozen performers take turns reading the narrative, speaking the dialogue and acting out scenes. No single person plays one role throughout, though Benjy is mostly embodied by the actress Susie Sokol. The costumes (by Colleen Werthmann) are fanciful blends of period and contemporary clothes.But David Zinn's set is a ravishingly detailed, photo-realist evocation of what an early-20th-century parlor of a once prosperous Southern home might have looked like. (It is spiced from time to time with surrealistic accents, like a sideboard that turns into a blazing fireplace, or projected text from the book.) The setting's authenticity, combined with the presence of the team of performers, creates the sense of detectives gathered at the scene of a mystery, trying to piece together exactly what happened. Which is what we all become when we read prose that requires our active participation.The variety of the ensemble members, whose methods range from comic expressionism to naked naturalism, makes this "Sound and the Fury" a reminder of how subjective an experience reading always is. But a cohesiveness emerges as well, rooted in diverse people having worked together to arrive at shared conclusions, appropriate for a work in which an entire company is given creator's credit.At least that's what I felt when I thought about the show later. Watching it, after a few first minutes of resistance, I let myself fall into the shifting swirl of voices and movements. Sometimes it was the stylized, seemingly incongruous elements in this activity that most sharply summoned Benjy's dissociative worldview.

Antic, jaunty dances, for example, become a sensual metaphor for Benjy's watching social rituals without having a clue as to what they mean (and perhaps also for our own bewilderment). In a scene where the carriage in which Benjy and his mother are riding suddenly turns around, Ms. Sokol's body is physically twisted by others, conjuring the disrupting disorientation Benjy feels.

When he cries, as he often does, the haunted bellow that fills the air usually comes not from the person playing him, but from some unspecified source. It's a device neatly matching Benjy's inability to connect cause and effect, even when the cause is himself.

And the continuing substitutions of one performer for another in a given part wind up reflecting Benjy's tendency to confuse one person for another over time: the various black servants who take care of him, or his beloved older sister, Caddy, whom he sees in her illegitimate daughter years later.I should say that I reread "The Sound and the Fury" just before seeing this show, and even thus fortified, I was sometimes at sea. This isn't inappropriate, of course, for an account by a narrator who is himself forever at sea in time. But I can't imagine what people unacquainted with Faulkner's novel will make of this production.

What any audience that gives itself over to this talented team should sense, though, is the group's sustained theatrical discipline and energy. This work is so precisely thought out that even the slightest stumble in delivery (and there were very few) stands out.For those familiar with "The Sound and the Fury," Elevator Repair Service has provided a magical opportunity: the chance to rediscover some of the thrill that came with encountering and gradually embracing one of the great achievements of Western literature for the first time.

THE SOUND AND THE FURY

(April Seventh, 1928)

Created by Elevator Repair Service, based on the novel by William Faulkner; directed by John Collins; sets by David Zinn; costumes by Colleen Werthmann; lighting by Mark Barton; sound by Matt Tierney; production stage manager, Sarah C. Hughes; dance director, Katherine Profeta. Presented by New York Theater Workshop, artistic director, James C. Nicola. At New York Theater Workshop, 79 East Fourth Street, East Village; (212) 239-6200. Through May 18. Running time: 2 hours 40 minutes.

WITH: Mike Iveson, Vin Knight, Aaron Landsman, April Matthis, Annie McNamara, Randolph Curtis Rand, Greig Sargeant, Kate Scelsa, Kaneza Schaal, Susie Sokol, Tory Vazquez and Ben Williams.

http://theater2.nytimes.com/2008/04/30/theater/reviews/30sound.html?th&emc=th

H.P. Unveils New Memory Technology

By JOHN MARKOFF

A team of Hewlett-Packard scientists reported Wednesday in the science journal Nature that they have designed a simple circuit element they believe will enable tiny powerful computers that could imitate biological functions.

The device, called a memristor, could make it possible to build extremely dense computer memory chips that use far less power than today's DRAM memory chips, which are rapidly reaching the limit in how much smaller they can be made.

The memristor, an electrical resistor with memory properties, may also make it possible to fashion advanced logic circuits, like a class of reprogrammable chips known as field programmable gate arrays, that are today widely used for rapid prototyping of new circuits and for custom-made chips that need to be manufactured quickly.

Potentially even more tantalizing is the memristors' ability to store and retrieve a vast array of intermediate values, not just the binary 1s and 0s as conventional chips do. This makes them function like biological synapses, which would be ideal for many artificial intelligence applications ranging from machine vision to understanding speech.

The H.P. researchers said that the discovery of the memory properties in tiny, extremely thin spots of titanium dioxide, came from a frustrating, decade-long hunt for a new class of organic molecules to serve as nano-sized switches. Researchers in both industry and academia have hoped they would be able to fashion switches as small as the size of a single molecule to someday replace transistors once the semiconductor industry's shrinking of electronic circuits made with photolithographic techniques reached a technological limit.

Independent researchers said that it seemed likely that the memristor might relatively quickly be applied in computer memories, but that other applications might be more challenging. Typically, technology advances are not adopted unless they offer dramatic cost or performance advantages over the technologies they are replacing.

"Whether it will be useful for other large scale applications is unclear at this point," said Wolfgang Porod, director for the Center of Nano Science and Technology at the University of Notre Dame.

The material offers a new approach that is radically different than another type of solid state storage called "phase-change memory" that is now being pursued by I.B.M., Intel and other companies. In a phase-change memory heat is used to shift a glassy material from an amorphous to a crystalline state and back again. The switching speed of these systems is both slower and requires more power, according to the H.P. scientists.

The memristor technology should be fairly quickly commercialized, said R. Stanley Williams, director of the quantum science research group at H.P. "This is on a fast track," he said.

The memristor was predicted in 1971 by a Berkeley electrical engineer, Leon Chua. There have been hints of an unexplained behavior in the literature for some time, Mr. Chua said in a phone interview on Tuesday.

However, he noted that he had not worked on his idea for several decades and that he was taken by surprise when he was contacted by the H.P. researchers several months ago. The advance clearly points the way to a prediction made in 1959 by the physicist, Richard Feynman, that "there's plenty of room at the bottom," referring to the possibility of building atomic-scale systems.

"I can see all kinds of new technologies and I'm thrilled," he said.

The original theoretical work done by Mr. Chua was laid out in a 1971 paper titled "Memristor — The Missing Circuit Element." The paper argued that basic electronic theory required that in addition to the three basic circuit elements — resistors, capacitors, and inductors — a fourth element should exist.

The H.P. research team titled their paper, "The Missing Memristor Found."

The H.P. team has successfully created working circuits based on memristors that are as small as 15 nanometers (the diameter of an atom is roughly about a tenth of a nanometer.) Ultimately, it will be possible to make memristors as small as about four nanometers, Mr. Williams said. In contrast the smallest components in today's semiconductors are 45 nanometers, and the industry currently does not see away to shrink those devices below about 20 nanometers.

Because the idea of a memristor was invented almost 40 years ago by Mr. Chua, it is in the public domain, however the H.P. scientists have applied for patents covering their successful implementation of a working version of the device.

One of the most exciting aspects of the new devices is that they may consume dramatically less power compared with today's microprocessors and memory devices, which must be continually refreshed electrically to maintain their state. In contrast, circuits made from memristors will require power only to switch and will hold their state for at least several years once they have been set in a particular state. Moreover, they can be made in the same kinds of semiconductor factories that the chip industry now uses without specialized equipment.

The most significant limitation that the H.P. researchers said the new technology faces is that the memristors function about 10 times more slowly than today's DRAM memory cells.

The discovery was made when the H.P. researchers and a cooperating team of scientists at U.C.L.A. got widely different results in a technical experiment involving organic materials. Ultimately the H.P. team was able to prove that the dramatic changes in resistance they were seeing were coming from a contaminant, and not from the organic molecules.

"I'll take serendipity, but it took us a long time to figure this out," Mr. Williams said.

The researchers were eventually able to determine that the change in resistance came from the movement of oxygen atoms in the material in response to an electrical charge. Moreover, the changes were so significant that it was simple to detect the state of the device even at near-atomic scale.

After beginning to explore the properties of titanium dioxide, Mr. Williams said his group was at first baffled by the effect and were unable to produce it reliably. However, through experimentation they gained a solid theoretical understanding of the phenomenon. Currently they are building the devices from a sandwich of a pure layer of titanium dioxide and a second layer of the same material doped with a proprietary material.

http://www.nytimes.com/2008/05/01/technology/01hp-Web.html

Giant Squid Has Biggest Animal Eyes in World, Scientists Say

By THE ASSOCIATED PRESS

Filed at 6:30 a.m. ET

WELLINGTON, New Zealand (AP) -- Marine scientists studying the carcass of a rare colossal squid said Wednesday they had measured its eye at about 11 inches across -- bigger than a dinner plate -- making it the largest animal eye on Earth.

One of the squid's two eyes, with a lens as big as an orange, was found intact as the scientists examined the creature while it was slowly defrosted at New Zealand's national museum, Te Papa Tongarewa. It has been preserved there since being caught in the Ross Sea off Antarctica's northern coast last year.

"This is the only intact eye (of a colossal squid) that's ever been found. It's spectacular," said Auckland University of Technology squid specialist Kat Bolstad, one of a team of international scientists brought in to examine the creature.

"It's the largest known eye in the animal kingdom," Bolstad told The Associated Press.

The squid is the biggest specimen ever caught of the rare and mysterious deep-water species Mesonychoteuthis hamiltoni, or colossal squid. When caught, it measured 26 feet long and weighed about 1,000 pounds, but scientists believe the species may grow as long as 46 feet.

"This is the largest eye ever recorded in history and studied," said Swedish Professor Eric Warrant of the University of Lund, who specializes in vision in invertebrates. "It has a huge lens the size of an orange and captures an awful lot of light in the dark depths in which it hunts."

The squids can descend to 6,500 feet and are known to be aggressive hunters.

http://www.nytimes.com/aponline/science/AP-New-Zealand-Colossal-Squid.html?ref=science

Noble Eagles, Nasty Pigeons, Biased Humans

By NATALIE ANGIER

The other day I glanced out my window and felt a twinge of revulsion delicately seasoned with indignation. Pecking at my bird feeder were two brown-headed cowbirds, one male and one female, and I knew what that meant. Pretty soon the fattened, fertilized female would be slipping her eggs into some other birds' nest, with the expectation that the naïve hosts would brood, feed and rear her squawking, ravenous young at the neglect and even death of their own.

Hey, you parasites, get your beaks off my seed, I thought angrily. That feeder is for the good birds, the birds that I like — the cardinals, the nuthatches, the black-capped chickadees, the tufted titmice, the woodpeckers, the goldfinches. It's for the hard-working birds with enough moral fiber to rear their own families and look photogenic besides. It's not meant for sneaky freeloaders like you. I rapped on the window sharply but the birds didn't budge, and as I stood there wondering whether I should run out and scare them away, their beaks seemed to thicken, their eyes blacken, and I could swear they were cackling, "Tippi Hedren must go."

In sum, I was suffering from a severe case of biobigotry: the persistent and often irrational desire to be surrounded only by those species of which one approves, and to exclude any animals, plants and other life forms that one finds offensive.

It was not my first episode of the disorder, and evidently I don't suffer alone. "Throughout history there have been vilified animals and totemic animals," said John Fraser, a conservation psychologist at the Wildlife Conservation Society. "There are the animals you don't like and that you dismiss as small brown vermin, and the animals whose attributes you absolutely want to own," to be a tiger, a bear, lupine leader of the pack.

Biobigotry is different from the impulse to avoid organisms that can hurt or sicken us, like yellow jackets, mosquitoes or poison ivy, or to fend off traditional household pests like mice and roaches. Rather, it is the dislike we direct toward creatures that live outdoors and generally mind their own business, but that behave in ways we find rude, irritating, selfish or contemptible. The squirrels are gluttons, the crows are schoolyard bullies, the house sparrows are boring and look like mice when they skitter along the ground. How we love those noble falcons and eagles that lately have blessed us by nesting on our skyscrapers and bridges. How we beg them to feast freely on the pigeons and starlings that curse us by nesting on our skyscrapers and bridges.

Sometimes our biobigotry is merely attitudinal. In the course of an interview about spotted hyenas, for example, a researcher at the University of California, Berkeley, scornfully referred to the wildebeest that the hyenas frequently prey on as "wildeburgers." Why? Because once a wildebeest has been caught, said the scientist, it just stands there with cowlike passivity and allows itself to be torn apart. Compare that with a zebra, the researcher said, which will go down fighting and kicking and cracking the predator's jaw if it can.

"Oh, we're all of us prone to a massive over-interpretation of the things that we see," said Marc D. Hauser, professor of psychology and evolutionary biology at Harvard University and author of "Moral Minds." "I distinctly remember, when I first went to Amboseli National Park to study vervet monkeys, how quickly I developed strong feelings about the personalities of the monkeys — here were the great and brave ones, there were the lame ones that hid in the bushes and acted pathetic."

At other times, we take steps to favor our local heroes or thwart our chosen goats, whose greatest sin, as a rule, is being exceptionally good at their game. We try to squirrel-proof our bird feeders, yank weeds from our flower beds, call Animal Control, and when all else fails, reach for our guns. Stephen C. Sautner of the Wildlife Conservation Society cited the case of a friend and avid birder who has a colony of purple martins on his property. "He spends much of his time shooting and trapping starlings and English sparrows," said Mr. Sautner, "both of which he describes as 'evil.' "

We always have a story to justify our most aggressive attempts at unwanted-animal control. The animal is an invasive species like the European starling, and it doesn't belong here. Or it's a native species like the cowbird but its range has been unnaturally extended through deforestation. Or it likes our garbage and our raggedy parks and thus has an unfair advantage over fussier creatures. Whatever the self-exculpatory particulars, said Marc Bekoff, author of "The Emotional Lives of Animals" and emeritus professor of biology at the University of Colorado, "I see it as a double cross that we create a situation where cowbirds spread, or red foxes eat endangered birds, and then we decide, well, now we've got to go out and kill the cowbirds and the foxes."

Our proneness to biobigotry, experts said, arises from several salient human traits. For one, we are equipped with an often overactive theory of mind — the conviction that those around you have their own minds, goals and desires, and that it might behoove you to anticipate what they'll do next. We spin elaborate narratives out of the slenderest of observational threads: Look, the blue jay is trying to dislodge the cowbird from the feeder. Could the jay know the cowbird is a nest parasite and be trying to drum it out of town? "We interpret animal behaviors through a human lens and human morality," said Mr. Fraser, the conservation psychologist.

Related to the human impulse to see ourselves in nature is the persistent sense that nature belongs to us, and that we have the right and the means to control it. "In the past, when we talked about exploiting nature, that was seen as a good thing," Mr. Fraser said. "Now we realize that that attitude is counterproductive to human success."

Nowhere is our sense of droit du roi over nature more manifest than in our paradoxical attitudes toward farm animals. On the one hand, they're the beloved figures of our earliest childhood. On the other hand, many of our most pejorative comparisons were born in the barnyard — you lazy pig, you ugly cow, you chicken, what a bunch of sheep.

Conservation groups, which keep track of public attitudes toward animals, acknowledge that they are ever on the lookout for the next Animal Idol — an ecologically important creature that also happens to be large, showy, charismatic and likable. If you have two important birds from the same region of Latin America, said Mr. Fraser, one a hyacinth macaw that looks like flying jewelry and can vocalize like a human, the other a storm petrel that is brown, squawky and cakes the coastline with guano, guess which face ends up on the next fund-raising calendar.

Not that public attitudes can't be changed. Bats, for example, were long considered vermin, but nowadays, in the wake of the wildly popular children's book "Stella Luna," they've taken on a magical air, as the mosquito-eating Tinkerbells that if you're lucky will soon take up residence near you. Until then, step away from that bat house, sparrow. Don't make me shoot.

http://www.nytimes.com/2008/04/29/science/29angi.html?ref=science

Albert Hofmann, the Father of LSD, Dies at 102

By CRAIG S. SMITH

PARIS — Albert Hofmann, the mystical Swiss chemist who gave the world LSD, the most powerful psychotropic substance known, died Tuesday at his hilltop home near Basel, Switzerland. He was 102.

The cause was a heart attack, said Rick Doblin, founder and president of the Multidisciplinary Association for Psychedelic Studies, a California-based group that in 2005 republished Dr. Hofmann's 1979 book "LSD: My Problem Child."

Dr. Hofmann first synthesized the compound lysergic acid diethylamide in 1938 but did not discover its psychopharmacological effects until five years later, when he accidentally ingested the substance that became known to the 1960s counterculture as acid.

He then took LSD hundreds of times, but regarded it as a powerful and potentially dangerous psychotropic drug that demanded respect. More important to him than the pleasures of the psychedelic experience was the drug's value as a revelatory aid for contemplating and understanding what he saw as humanity's oneness with nature. That perception, of union, which came to Dr. Hofmann as almost a religious epiphany while still a child, directed much of his personal and professional life.

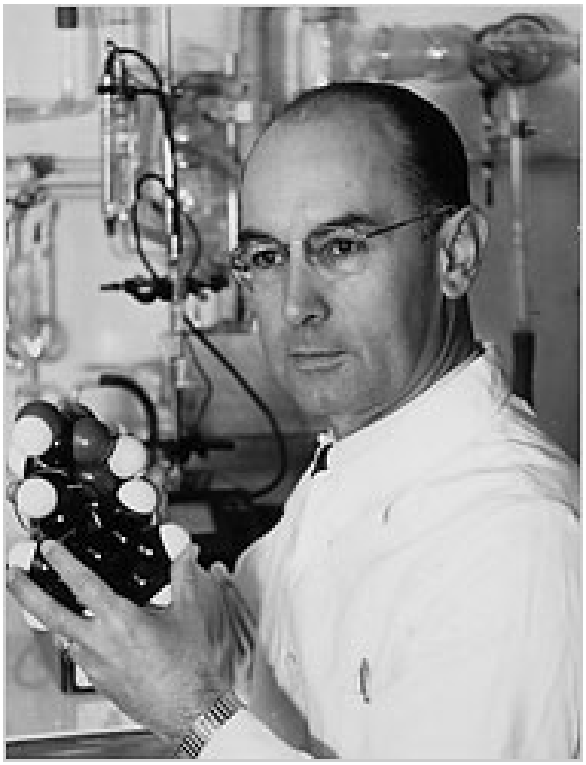
Dr. Hofmann was born in Baden, a spa town in northern Switzerland, on Jan. 11, 1906, the eldest of four children. His father, who had no higher education, was a toolmaker in a local factory, and the family lived in a rented apartment. But Dr. Hofmann spent much of his childhood outdoors.

He would wander the hills above the town and play around the ruins of a Hapsburg castle, the Stein. "It was a real paradise up there," he said in an interview in 2006. "We had no money, but I had a wonderful childhood."

It was during one of his ambles that he had his epiphany.

"It happened on a May morning — I have forgotten the year — but I can still point to the exact spot where it occurred, on a forest path on Martinsberg above Baden," he wrote in "LSD: My Problem Child." "As I strolled through the freshly greened woods filled with bird song and lit up by the morning sun, all at once everything appeared in an uncommonly clear light.

"It shone with the most beautiful radiance, speaking to the heart, as though it wanted to encompass me in its majesty. I was filled with an indescribable sensation of joy, oneness and blissful security."



Though Dr. Hofmann's father was a Roman Catholic and his mother a Protestant, Dr. Hofmann, from an early age, felt that organized religion missed the point. When he was 7 or 8, he recalled, he spoke to a friend about whether Jesus was divine. "I said that I didn't believe, but that there must be a God because there is the world and someone made the world," he said. "I had this very deep connection with nature."

Dr. Hofmann went on to study chemistry at Zurich University because, he said, he wanted to explore the natural world at the level where energy and elements combine to create life. He earned his Ph.D. there in 1929, when he was just 23. He then took a job with Sandoz Laboratories in Basel, attracted by a program there that sought to synthesize pharmacological compounds from medicinally important plants.

It was during his work on the ergot fungus, which grows in rye kernels, that he stumbled on LSD, accidentally ingesting a trace of the compound one Friday afternoon in April 1943. Soon he experienced an altered state of consciousness similar to the one he had experienced as a child.

On the following Monday, he deliberately swallowed a dose of LSD and rode his bicycle home as the effects of the drug overwhelmed him. That day, April 19, later became memorialized by LSD enthusiasts as "bicycle day."

Dr. Hofmann's work produced other important drugs, including methergine, used to treat postpartum hemorrhaging, the leading cause of death from childbirth. But it was LSD that shaped both his career and his spiritual quest.

"Through my LSD experience and my new picture of reality, I became aware of the wonder of creation, the magnificence of nature and of the animal and plant kingdom," Dr. Hofmann told the psychiatrist Stanislav Grof during an interview in 1984. "I became very sensitive to what will happen to all this and all of us."

Dr. Hofmann became an impassioned advocate for the environment and argued that LSD, besides being a valuable tool for psychiatry, could be used to awaken a deeper awareness of mankind's place in nature and help curb society's ultimately self-destructive degradation of the natural world.

But he was also disturbed by the cavalier use of LSD as a drug for entertainment, arguing that it should be treated in the way that primitive societies treat psychoactive sacred plants, which are ingested with care and spiritual intent.

After his discovery of LSD's properties, Dr. Hofmann spent years researching sacred plants. With his friend R. Gordon Wasson, he participated in psychedelic rituals with Mazatec shamans in southern Mexico. He succeeded in synthesizing the active compounds in the Psilocybe mexicana mushroom, which he named psilocybin and psilocin. He also isolated the active compound in morning glory seeds, which the Mazatec also used as an intoxicant, and found that its chemical structure was close to that of LSD.

During the psychedelic era, Dr. Hofmann struck up friendships with such outsize personalities as Timothy Leary, Allen Ginsberg and Aldous Huxley, who, nearing death in 1963, asked his wife for an injection of LSD to help him through the final painful throes of throat cancer.

Yet despite his involvement with psychoactive compounds, Dr. Hofmann remained moored in his Swiss chemist identity. He stayed with Sandoz as head of the research department for natural medicines until his retirement in 1971. He wrote more than 100 scientific articles and was the author or co-author of a number of books

He and his wife, Anita, who died recently, reared four children in Basel. A son died of alcoholism at 53. Survivors include several grandchildren and great-grandchildren.

Though Dr. Hofmann called LSD "medicine for the soul," by 2006 his hallucinogenic days were long behind him, he said in the interview that year.

"I know LSD; I don't need to take it anymore," he said, adding. "Maybe when I die, like Aldous Huxley."

But he said LSD had not affected his understanding of death. In death, he said, "I go back to where I came from, to where I was before I was born, that's all."

http://www.nytimes.com/2008/04/30/world/europe/30hofmann.html?ref=science

Memory Training Shown to Turn Up Brainpower

By NICHOLAS BAKALAR

A new study has found that it may be possible to train people to be more intelligent, increasing the brainpower they had at birth.

Until now, it had been widely assumed that the kind of mental ability that allows us to solve new problems without having any relevant previous experience — what psychologists call fluid intelligence — is innate and cannot be taught (though people can raise their grades on tests of it by practicing).

But in the new study, researchers describe a method for improving this skill, along with experiments to prove it works.

The key, researchers found, was carefully structured training in working memory — the kind that allows memorization of a telephone number just long enough to dial it. This type of memory is closely related to fluid intelligence, according to background information in the article, and appears to rely on the same brain circuitry. So the researchers reasoned that improving it might lead to improvements in fluid intelligence.

First they measured the fluid intelligence of four groups of volunteers using standard tests. Then they trained each in a complicated memory task, an elaborate variation on Concentration, the child's card game, in which they memorized simultaneously presented auditory and visual stimuli that they had to recall later.

The game was set up so that as the participants succeeded, the tasks became harder, and as they failed, the tasks became easier. This assured a high level of difficulty, adjusted individually for each participant, but not so high as to destroy motivation to keep working. The four groups underwent a half-hour of training daily for 8, 12, 17 and 19 days, respectively. At the end of each training, researchers tested the participants' fluid intelligence again. To make sure they were not just improving their test-taking skills, the researchers compared them with control groups that took the tests without the training.

The results, published Monday in The Proceedings of the National Academy of Sciences, were striking. Although the control groups also made gains, presumably because they had practice with the fluid intelligence tests, improvement in the trained groups was substantially greater. Moreover, the longer they

trained, the higher their scores were. All performers, from the weakest to the strongest, showed significant improvement.

"Intelligence has always been considered principally an immutable inherited trait," said Susanne M. Jaeggi, a postdoctoral fellow in psychology at the University of Michigan and a co-author of the paper. "Our results show you can increase your intelligence with appropriate training."

Why did the training work? The authors suggest several aspects of the exercise relevant to solving new problems: ignoring irrelevant items, monitoring ongoing performance, managing two tasks simultaneously and connecting related items to one another in space and time.

No one knows how long the gains will last after training stops, Dr. Jaeggi said, and the experiment's design did not allow the researchers to determine whether more training would continue to produce further gains.

http://www.nytimes.com/2008/04/29/health/research/29brai.html?ref=science

In Love With the History Our Teachers Never Told Us

By CHARLES McGRATH

CUTTYHUNK ISLAND, Mass. — Tony Horwitz's new book, "A Voyage Long and Strange," is about the American history most Americans never learned, including the story of the short-lived, early-17th-century colony established on this windswept island eight miles west of Martha's Vineyard.

The book starts with the Viking discovery of North America, dispels a number of myths about Columbus (a much lousier navigator than we were taught) and then traces the various Spanish and French explorations of America before turning to the English settlements at Jamestown and Plymouth.

That the Pilgrims were very tardy latecomers is one of the themes of "A Voyage Long and Strange," just published by Macmillan. Another is that much of what we think of as heroic exploration was bumbling and misguided. And a third is that large chunks of our past are preserved these days less by scholars than by passionate amateurs. Who knew, for example, that some evangelicals in Jacksonville, Fla., were keeping alive the memory of the French Huguenots who settled there and were massacred by the Spanish?

Mr. Horwitz is himself a passionate amateur of sorts. For his book "Confederates in the Attic," about Civil War re-enactors, he camped out at Antietam with a man whose specialty was making himself resemble a bloated corpse. For this book he joined some conquistador re-enactors in Bradenton, Fla., and tried on their homemade armor. The breast plate, he said, made him feel as if he were wearing a car hood on a sweltering summer day. He also baked himself — to the point of mummification, practically — in a Micmac sweat lodge in Newfoundland, and in a vain attempt to withstand the steamy climate of Santo Domingo, where Columbus may or may not be buried, he spray-painted his torso with Arrid Extra Dry and blotted himself with rolls of paper towel.

To research "A Voyage Long and Strange" Mr. Horwitz trolled through libraries and also logged extensive rental-car mileage, tracing the routes of Coronado, for example, who journeyed all the way from Mexico to what is now Kansas, and of de Soto, who went from Florida to Texas. As often as not, he found that some important but neglected site was behind a Wendy's or a Wal-Mart.

Oddly, considering that he now lives on Martha's Vineyard, one place that Mr. Horwitz writes about but did not visit is Cuttyhunk, right nearby, where the British explorer Bartholomew Gosnold established a short-lived colony in 1602. On a gray, cold and blustery day earlier this month, he rectified the omission, and afterward he wrote in an e-mail message: "I'll never complain again about the Vineyard being bleak."

To get there he had to take two ferries: from the Vineyard to Wood's Hole and then from New Bedford to Cuttyhunk. On the second leg, as Cuttyhunk — a gray smudge at the end of what are now known as the Elizabeth Islands — came into view, he explained that Gosnold sailed to the New England coast, or what he thought was northern Virginia, in search of sassafras, which was the 17th-century version of penicillin. It was believed — wrongly — to be a cure for syphilis and thus was extremely valuable. Gosnold had a crew of 31, including sailors — "none of the best," according to someone onboard — an apothecary (to identify the sassafras) and 20 settlers, who were supposed to found a year-round trading post.

The settlement lasted only a few weeks because those who were supposed to stay behind got cold feet. They felt they were insufficiently provisioned and were also worried about being cheated of their share of the cargo.

Two men left accounts of the voyage, and so the Cuttyhunk colony, though brief, is unusually well documented, Mr. Horwitz said, and what's most remarkable about these accounts is their description of the settlers' encounter with American Indians.

On first making landfall in southern Maine, Gosnold's ship, the Concord, was greeted by a canoe rigged with a mast and sails, so that it was at first mistaken for a European fishing vessel. The Indians onboard "spake diverse Christian words," one of the Englishmen wrote, "and seemed to understand much more than we." It turned out they had been trading for years with Basque fishermen.

The Indians who met them on Cuttyhunk were "exceeding courteous, gentle of disposition and well conditioned," and made a very favorable impression, especially the women. "This is the rare story of gentle first contact between Europeans and Native Americans," Mr. Horwitz said. "Some of the other stories are pretty bleak. But here you get these wonderful details like 'drinking tobacco' together and descriptions of the natives as very 'witty.' "

He added later: "One of the accounts talks about how they 'much delighted in our company,' so you get the feeling there might have been a lot of sex, though if you think about it, the Indians were probably a lot cleaner than the English. Coming off the boat, their breath and B.O. must have been just astounding."

In the summertime Cuttyhunk today has a population of about 200, but in the off season that number dwindles to 20 or 30 — fewer, Mr. Horwitz pointed out, than sailed on the Concord — and there is not a lot going on. On the day of Mr. Horwitz's visit there was only a single pupil in the island's one-room schoolhouse, Casey Dorian, a third grader. (Her sister, the only other pupil, was off-island for an orthodontist's appointment.) Even though it was a mail day, one of just two a week at that time of year, the post office was empty except for Janet Burke, the postmaster. The only traffic was a golf cart piloted by Dr. Seymour DiMare, who putt-putted down to the dock to pick up Mr. Horwitz.

Dr. DiMare is a retired cardiologist from Concord, Mass., and though he and his wife, Paula, still have a house there, they spend most of their time on the island. Dr. DiMare is a determined Cuttyhunk booster. He says it's his island, and not Bermuda, that was the inspiration for "The Tempest," and he likes to argue that Gosnold was really America's first entrepreneur.

Joined by his wife, Dr. DiMare opened the island's tiny historical museum for Mr. Horwitz and guided him around, pointing out a life-size model of Gosnold, clad in doublet and bloomerlike breeches, and a replica of one of the Concord's tiny, coffin-shaped bunks. He also showed him a copy of an engraving that indicated that Gosnold had introduced the wheelbarrow to the New World. What most caught Mr. Horwitz's eye, however, was a 13-inch stone phallus that a Cuttyhunk resident found on the beach after Hurricane Carol in 1954. "Fertility symbol," a label said.

Then Dr. DiMare drove Mr. Horwitz to the island's highest point, so he could look west at a stone tower that was erected in Gosnold's memory in 1903, supposedly, but not necessarily, on the site of the original settlement. The wind whipped in from the northeast. Whitecaps broke against the beach.

Mr. Horwitz, who is slender and scholarly-looking, with wire-rimmed glasses, was dressed more for museumgoing than exploration. He made a half-hearted attempt to look for sassafras, and then gratefully accepted a ride back to the dock. "I'm not sure I'd know sassafras if I saw it," he said.

"It's so interesting to me," he said later over a cup of chowder while warming up and waiting for the ferry to depart. "There are all these odd little corners in America where bits of history are still honored. But we're also pretty bad with our historical landscape. A lot has been paved over."

He added: "In our version of America, we don't go back nearly far enough. It's the winners who make history, and that's why we start with the Pilgrims: with the Anglo-American and New England version of the story. Culturally, we need to expand the story to include the Spanish in particular, but also the French and the Portuguese. Not only are we not an Anglo nation now, but we never really were. Early America, if you think about it, was a lot like America today — very diverse — and even the parts of the story we think we know, we don't know at all."

http://www.nytimes.com/2008/04/30/books/30horw.html?ref=arts

Silk, Spices, Gold and Destiny: Global History Is Part of the Bargain

By JOHN STEELE GORDON

A SPLENDID EXCHANGE

How Trade Shaped the World

By William J. Bernstein

467 pages. Atlantic Monthly Press. $30.

In 2006 the world's countries exported $11.8 trillion in goods and services, far above the gross domestic product of any single country except the United States, which itself exported over $1 trillion worth. World trade has nearly doubled in less than a decade, and its increase since World War II is simply staggering.

The world is knit together as never before with a cat's cradle of trade, which has already had immense consequences and will have many more. But while global trade has been much in the news lately, especially during this election year, it has an extremely long history. As William J. Bernstein makes clear in his entertaining and greatly enlightening book "A Splendid Exchange," it has been a major force in driving the whole history of humankind.

Adam Smith explained in "The Wealth of Nations" that humans, and humans alone, are endowed with "a propensity to truck, barter and exchange one thing for another." Equally important, skills and talents are not evenly distributed across the human landscape, nor are the world's resources equally distributed across the natural one. Since humans also have a propensity to bash in one another's skulls, we have always traded for what we wanted or raided for it. Mr. Bernstein's book is a history of the first option, a refreshing view, to say the least.

Ancient Mesopotamia was richly endowed with fertile soils and water from the Tigris and Euphrates rivers, but it lacked stone and wood for building, and metals like copper for tools and weapons. The Sumerians, however, had surplus food to trade, so they could bargain for stone from near the headwaters of the rivers, wood from what is now Lebanon and metal from Sinai, Cyprus and elsewhere.

The scope of ancient trade was immense. A single Bronze Age shipwreck around 1350 B.C. near Bodrum, a Turkish coastal town, yielded no less than 10 tons of copper and a ton of tin ingots along with other merchandise like ivory. (The ideal ratio of copper to tin for making bronze is 10 to 1.)

By Roman times vast armadas ferried Egyptian grain, Greek wine, Spanish copper and silver, and a hundred other commodities around the Mediterranean. India has yielded rich troves of Roman coins that reached that subcontinent to pay for spices the Romans coveted, especially pepper. Chinese silk — literally worth its weight in gold — traveled through the heart of Asia on the Silk Road to reach markets in the West.

As the West collapsed at the end of antiquity, so did its long-distance trade. Few Roman coins dating later than A.D. 180 are found in India, as the Roman economy began to run out of gold and silver. The Arabs came to dominate the major trade routes of the Indian Ocean after the rise of Islam. And as Western Europe revived economically, a lively trade developed between rising powers in Venice and the Middle East. (Venice supplied slaves from the Crimea and Caucasus in exchange for spices and sugar.)

When the Ottoman conquest of Constantinople slammed shut the sea route to the Crimea, Europe began seeking other routes to reach the resources of the East and eliminate the middleman. Columbus sailed west in 1492 and stumbled onto the New World. Vasco da Gama reached India in 1498, having rounded the southern tip of Africa. The modern world began, thanks to trade.

The history of global trade is so long and so vast that Mr. Bernstein could have easily produced a toe-breaker of a book. Happily he has not. By treating many aspects thematically rather than strictly chronologically, he shows in fewer than 400 pages of readable type how people and nations have faced the same problems over and over and often solved them the same way.

The poor soil and scant rain of ancient Greece, for instance, meant that the terrain's ability to grow grain was limited, but grape vines and olive trees grew in abundance. To export its wine and olive oil, Athens developed a pottery industry to supply the jars in which those products were transported. As Greek trade, and colonies, flourished across the length and breadth of the Mediterranean and the Black Sea, naval power was needed to suppress piracy. To control choke points like the Dardanelles and Bosporus, which led to the rich grain lands of what is now Ukraine, the Athenian empire developed.

This succession of trade, colonies, naval power and empire repeated itself with the Venetians and Genoese, the Portuguese, the Dutch and the British. Even the strategic bottlenecks have stayed the same: Suez; the Strait of Hormuz leading to the Persian Gulf; the Strait of Malacca leading to East Asia; the Bosporus and Dardanelles. Only now, instead of slaves and spices flowing through them, it is oil.

Mr. Bernstein is a fine writer and knows how to tell a great story well. And he has many in this book, from Francis Drake's voyage around the world (which repaid its backers, including Queen Elizabeth I, £50 for every one invested) to the Black Death that remorselessly followed the trade routes as it worked its devastating way through Europe and the Middle East. But he never loses sight of his overall goal: to show how trade shaped the world in the past and will shape the world in the future, whether we like it or not.

"A Splendid Exchange" is a splendid book.

John Steele Gordon is the author of "An Empire of Wealth: The Epic History of American Economic Power" (HarperCollins, 2004).

http://www.nytimes.com/2008/04/30/books/30gord.html?ref=books

Cover Story: The King of Visceral Design

By CHARLES McGRATH

GEORGE LOIS, one of the most influential admen of his generation, is the sort of person who has a dozen brainstorms an hour, at least half of them good and only a few really harebrained. Among the better ones were the early Xerox commercials showing a chimpanzee deftly operating a photocopier, the "Think small" ads for Volkswagen and the "I want my MTV" campaign. He also dreamed up Lean Cuisine and the "I want my Maypo" slogan.

But among certain groups of people — magazine collectors, veterans of the 1960s, admirers of brilliant design — Mr. Lois is best known for the covers he created for Esquire from 1962 to 1972. There were 92 in all, including one that never ran: an antiwar cover intended for the December 1962 issue, which was dropped because the State Department was insisting that American troops would be out of Vietnam by Christmas. Thirty-one of them are part of an exhibition that opened at the Museum of Modern Art on Friday.

The show looks a little like a tidied-up version of a great many college dorm rooms back in the '60s. There on the wall, neatly mounted instead of just torn out and stuck up with tape, are Tricky Dick having lipstick applied, L.B.J. holding a Hubert Humphrey dummy, Andy Warhol drowning in a Campbell's soup can, Muhammad Ali posing as St. Sebastian and a grinning Lt. William Calley, the leader of the massacre at My Lai, with four Vietnamese children. There's also the image Mr. Lois created for the December 1963 issue, in response to a plea from Harold Hayes, Esquire's editor, for something "Christmassy." It shows Sonny Liston wearing a Santa hat — probably the last person white Americans hoped to see coming down the chimney in those days.

Many of Mr. Lois's covers were controversial, not so say irreverent or deliberately provocative. The Liston cover cost the magazine $750,000 in dropped advertising. But they were immensely successful at drawing attention, on the newsstand especially.

"The covers weren't the only thing going on in those days," Byron Dobell, Esquire's managing editor during many of the Lois years, recalled recently. "We thought there was some pretty great stuff inside as well. But the covers proved to be a very effective way of advertising our kind of journalism. They were way out there."

What was remarkable then — and seems even more so now, when virtually every magazine cover is a thicket of text lines running behind or on top of one celebrity or another — is that the Lois covers were virtually textless. They achieved their effect by communicating a single idea through an image. Some were untouched photographs, but, in an era before Photoshop, some were created by the primitive technique of cutting and pasting, using photographs, clip art and sometimes hand-drawn elements.

explaining, “We Shot This Image to Catch Your Eye.”

“I remember when we were doing the Warhol cover,” Mr. Lois recalled. “I explained to Andy what I had in mind, and he said, ‘Oh, will you have to build a very big can?’ ”

There is a whole generation of current or recent magazine editors who are Lois admirers, including David Remnick, Graydon Carter and Tina Brown. “George was there during a great age,” said Mr. Carter, the editor of Vanity Fair. “You didn’t have to put low-grade movie stars on the cover then to move magazines. You could put ideas there.”

He added: “George used people like Sonny Liston and Muhammad Ali, so you could say he was using the celebrities of the day. And it was probably a little easier then, because everybody had the same frame of reference. They all read and watched the same things. But George was as good as it got.”

Few editors, though, have the nerve to try to imitate what Mr. Lois did. Esquire’s May cover this year, of a woman shaving her face, is a sort of homage to the 1965 Lois cover of Virna Lisi doing the same thing, except that in the background there’s a lot of busy type needlessly

Mr. Lois is 76 now, and not quite the hunk he used to be in the days when he was known in the ad business as the Golden Greek. “People see pictures of me back then and ask, ‘What happened?’ ” he said recently. “I’ll tell you what happened. Fifty years is what happened.” But he still plays full-court basketball — against much younger guys, he’s quick to point out — and gets by on four hours of sleep a night.

Mr. Lois grew up in a Greek-speaking household in the Bronx, where his father ran a flower shop, and he is still a bit of a neighborhood guy. He is funny, profane and opinionated, and not shy about poking you in the shoulder or the knee to make sure you’re following his point. He talks very fast, in a rumbling New York voice, but his brain works even faster, so that sometimes there’s a little lag while the words catch up.

Over a long morning interview — monologue really — that stretched into lunch, prepared by Rosemary, his wife of 56 years, Mr. Lois recalled that Martin Scorsese, a huge admirer of the Esquire covers, seemed crushed when he learned that his idol had spent most of his life in advertising. But Mr. Lois said he didn’t see much difference between ads and covers.

“I’ve always been about the big idea, the big idea,” he explained. “I never had any trouble going into a new area. It’s all a matter of creativity. I even made a music video once for Bob Dylan, using 5,000 years of the history of art.”

The Esquire connection came about, he recalled, in June 1962, when Harold Hayes — a courtly, soft-spoken Southerner who favored white suits even before Tom Wolfe — called looking for advice about covers. When Mr. Lois learned that Esquire covers were conceived and assigned by an editorial committee, he likened the process to gang rape and said to Mr. Hayes: “Is that what you do when you

assign a story to Talese or to Mailer — you have a group grope? You need to get one guy who understands the culture, who likes comic strips, goes to the ballet, visits the Metropolitan Museum."

According to Mr. Lois, Mr. Hayes replied, "Hey, pal, could you do me a favor? Could you do just do me one cover — to show me what the hell you're talking about?"

The cover Mr. Lois did — for the October issue, which came out a few days before the Floyd Patterson-Sonny Liston fight that year — showed a Patterson look-alike sprawled, possibly dead, in an empty boxing ring. This was a huge gamble, because most experts had picked Patterson to win. "But I knew," Mr. Lois said. "I just knew that Liston was going to wade through him." Mr. Lois also got lucky when, after a coin flip, he predicted that Patterson would be wearing white trunks.

The cover was a hit, and Mr. Lois had a job, which he kept until Mr. Hayes stepped down in 1972. There were no committees, no group gropes. Mr. Lois dealt solely with the editor , and he likes to say now that Mr. Hayes was one of the few at Esquire who really liked the covers, though people who were there at the time disagree.

Lee Eisenberg, an editorial assistant in the early '70s who eventually became editor of Esquire, said: "The Lois covers were one of the key reasons I and a lot of people there were drawn to Esquire in the first place. We loved them. They set a visual tone that complemented the distinctiveness of the rest of the magazine.

"The only real controversy that I recall was about the Calley cover. There was a lot of argument and bitterness over that, and it was the one time that the privacy of the relationship between Harold and George became an issue. There was an alternative version — the exact same cover but with Calley not smiling — and Harold didn't show that to anyone."

Mr. Lois recalled: "Harold used to say that we were doing was 'pictorial Zolas' — you know, 'J'accuse.' " He added: "People ask me, 'Did you know when you were doing this that you were making an important statement?' Yeah, I knew. I'm a designer. I know what I'm doing. I have designs on things."

http://www.nytimes.com/2008/04/27/arts/design/27mcgr.html?ref=design

At the Ready When Artists Think Big

By JORI FINKEL

Los Angeles

WHEN Michael Govan, director of the Los Angeles County Museum of Art, began talking with the artist Jeff Koons about building a reproduction of a 1943 Baldwin locomotive (suspended from a crane) outside the museum, talk soon turned to rather sizable engineering challenges.

Is it possible to make a full-scale 70-foot model of the locomotive so that it is hyper-realistic and semifunctional — with wheels spinning as fast as 100 miles per hour and steam belching three times a day — and also make it lightweight enough to be safe? How much would the whole thing — which could easily top $25 million — actually cost to build? How long would it take? And what would happen in the event of an earthquake?

For answers they turned straight to one source: Carlson & Company in San Fernando, Calif. One of the art world's leading fabricators, it specializes in making artworks that are too large, industrial, labor-intensive, time-consuming or otherwise complex for the artists to make in their own studios. Its clients over the years have included artists as diverse as Isamu Noguchi, Ellsworth Kelly, the duo Claes Oldenburg and Coosje van Bruggen and, perhaps most prominent, Mr. Koons.

Along with working on smaller pieces for him over the years, the company has quietly been researching his plan for a dangling locomotive, which promises to be his biggest project yet. It delivered a feasibility report of several hundred pages at the end of March.

"I would say the project is unprecedented in the art world," said Peter Carlson, the company's founder. "It's art on the scale of major industrial pieces, like the Eiffel Tower, like bridges."

Or like a roller coaster at Disney World, said his partner in the business, Ed Suman. “What they call ‘show action equipment’ in the themed entertainment business has a lot of similar concerns,” he said, like safety, reliability and availability to the public.

For the last two years Mr. Suman has supervised a team of eight — including some engineers from Disney Imagineering — working full time to complete the feasibility study. And that’s not counting dozens of other Carlson employees who have had a hand in producing Mr. Koons’s work over the past decade. (There are 75 employees in all, heavy on artists and engineers.)

The company has been working on his famous — and famously troubled — “Celebration” series since 1996, when it received a unsolicited fax from his studio detailing his plans for gigantic sculptures of children’s toys. At that point Mr. Koons was pushing to finish the series in time for an exhibition at the Solomon R. Guggenheim Museum in New York, but the show was ultimately canceled because of production delays and cost overruns.

Things got messy enough that Carlson suspended production of the series, but work resumed in 2000 with new financing from top collectors. The company has since built a giant playroom’s worth of pieces, including a nine-foot-wide stainless-steel sculpture of a Mylar balloon called “Moon” that weighs more than a ton, in an edition of five. And it completed five 10-foot-tall versions of “Balloon Dog,” also in stainless steel, in candy colors for some of the world’s biggest collectors.

Among them is the yellow puppy made for the hedge-fund manager Steven A. Cohen, which was installed this month at the Metropolitan Museum of Art in New York as part of “Jeff Koons on the Roof,” and an orange version for the publisher Peter Brant that is part of a Koons retrospective opening at the Museum of Contemporary Art in Chicago on May 31. (Carlson did not fabricate Mr. Koons’s “Tulips,” which recently made news after a visitor at the Los Angeles County Museum of Art apparently scratched it with her bracelet.)

Even today you can find odds and ends from the “Celebration” series in progress at Carlson’s building, a warehouse with 30,000 square feet of manufacturing space as well as offices.

The manufacturing area looks like a sci-fi incubator for some kind of cyborg life form, only the aliens turn out to be artworks. Here the machines, which you might find in a metal shop, wood shop or auto-body shop, stand near sculptures you might find in a museum. There’s a wide, mechanized screen of rotating hexagonal mirrors by Doug Aitken; a tall, bronze rectangular column by John McCracken; and a boulder-size bronze-composite version of one of Ken Price’s vaguely biomorphic speckled ceramic sculptures, which are usually small enough to fit in a duffel bag.

Then there are the oversize pots and pans that Carlson is creating for Robert Therrien’s exhibition in May at Gagosian Gallery in Chelsea. Two worktables were covered with molds for kitchenware — an enormous lid here, an overly generous salad bowl there. On the floor other super-size pieces — a steel bowl, a steel colander and a Revere Ware saucepan complete with copper detailing — were stacked on a post. It’s all part of Mr. Therrien’s surreal but highly functional vision, which can inspire an Alice-in-Wonderland sense of both vertigo and wonderment.

Mr. Carlson said he had been working with Mr. Therrien for about eight years. And he made his first sculpture for Mr. McCracken back in 1985, when the polishing technology for achieving mirror-finish stainless-steel surfaces was so crude that the artist’s response was, “Nice try.”

Recently, however, Mr. McCracken has been won over. “Making what I want in stainless steel and bronze is very notably not an easy thing to do,” he explained. “He pulls out all the stops to accomplish it, even inventing processes and machines to do it.”

An electrical engineering student who discovered art in college, Mr. Carlson founded the company in 1972 after briefly working for the print shop Gemini G.E.L. producing multiples for artists like Mr. Kelly

and Robert Rauschenberg. Mr. Suman, an art student who logged some time on drilling rigs in the Gulf of Mexico, joined the company in 1992 and became a principal five years ago.

As their relationships with artists have developed, so have certain technologies. The company has spent years perfecting its "optically perfect mirror polish finish" stainless-steel surface, which is a hallmark of Mr. Koons's work.

"Jeff is one of the most courteous, gentlemanly, considerate people you can ever imagine would ever be working at such a high level of his profession," Mr. Suman said. "At the same time he has very specific ideas about what he would like to create. It would certainly be fair to say that he is very demanding, but in a soft-spoken way, I think."

Part of the challenge was creating a smooth contour for sculptures like "Balloon Dog," in which 60 parts are welded to produce the round limbs and torso. "What makes it so tricky is that these are very simple shapes, and suggestive," Mr. Suman said. "So if the form doesn't look 100 percent perfect, the defects really stand out."

The company also had to figure out how to achieve this mirror polish finish in bright colors like magenta and blue. Carlson's experts will not give away their secret except to say that it is a multistage process involving the application of certain adhesives before an "automobile-type" paint goes on. (And like a car this sculpture is vulnerable to scratches, as was the case with "Tulips.")

These days it sometimes seems as though every artist (and every other architect) wants the same glossy look. "It's like the four-minute mile: once one person breaks the record, it seems like everyone does," Mr. Carlson said. "By working on such scale with such perfection, Jeff showed everyone else what's possible."

But more than identifying themselves with any technical solution, Mr. Carlson and Mr. Sumac see themselves as problem solvers who can assemble the right team and tools for a particular job, however odd.

Their work typically requires reverse engineering — starting with an image or model supplied by the artist and working backward to figure out how to achieve it. It's the same basic process Mr. Carlson used when, still in preschool, he made himself a bicycle out of scrap parts he picked up in an alley. (Yes, it worked.)

Sometimes Mr. Carlson and Mr. Sumac end up using old-fashioned techniques. They are making a giant lump of Play-Doh for Mr. Koons, for instance, by using assorted tools to measure every nook and cranny of a small-scale model and then blowing up those measurements, a technique that dates back to the age of Greek and Roman sculpture.

Today, though, the Carlson team is relying more and more on 3-D modeling technology to scan and manipulate a form in the computer. The resulting data then guide machines that shape a three-dimension object or model. If the company doesn't have (or cannot devise) the right tools in house, it will farm out a piece of a project, working closely with several subcontractors that sprung up to serve the once-booming aerospace industry in Southern California.

Carlson & Company also devises custom shipping fixtures, steel armatures that safeguard the artwork and allow cranes or other equipment to attach to the framework, not the artwork. In the case of "Moon," also heading to Chicago for the Koons retrospective, the shipping fixture consists of a tubular steel framework that holds the piece at enough of an angle that it can fit through doorways. In the case of "Balloon Dog" the shipping fixtures are smaller, as the company has designed the sculpture to be dismantled into 10 pieces.

What museum visitors won't see are the holes beneath the dog's paws, about the size of a fist, into which highly customized wrenches can be inserted to loosen the body parts. The company helps with installation

and also conservation, both of which it tries to address from the start. There is no way to guard against every interaction when it comes to public art, of course, but Mr. Suman did note that the Met's version has a large pedestal that should help protect it from run-ins.

As for the Koons locomotive, Mr. Suman said that its prospects look good. "There were a number of technical issues," he said. "We were unsure they could be resolved. But it appears like they can."

Otherwise the Carlson group declined to disclose specific findings of the report, including cost estimates, and Mr. Koons and Mr. Govan were unavailable for comment despite multiple phone calls to each.

"We just submitted the final report," Mr. Suman said. "They probably just need a little time to digest it and decide what they want to do next." And no doubt to drum up the financing in a shaky economy.

http://www.nytimes.com/2008/04/27/arts/design/27fink.html?ref=design

Sepia No More

By VIRGINIA HEFFERNAN

Let's face facts: the Web, after nearly 20 years, has failed to uncover new masters of noble art forms like poetry, sculpture and the airport thriller. But it has engendered — for good or ill — new forms of creative expression. Blogs and viral videos are only the most obvious. Fan fiction, wikis, Flash animation and Second Life avatars are a few more. People don't upload to the Web words and images they had fashioned apart from the Web; they fashion their stuff specifically for online platforms and audiences.

Consider photography. As art-school photographers continue to shoot on film, embrace chiaroscuro and resist prettiness, a competing style of picture has been steadily refined online: the Flickr photograph. Flickr, the wildly popular photo-sharing site, was founded by the Canadian company Ludicorp in 2004. Four years later, amid the more than two billion images that currently circulate on the site, the most distinctive offerings, admired by the site's members and talent scouts alike, are digital images that "pop" with the signature tulip colors of Canon digital cameras.

While pretty and even cute, these images are also often surreal and prurient, evoking the unsettling paintings of de Chirico and Balthus, in which individual parts are beautiful and formally rendered, but something is not quite right over all. Flickr's creamy fantasy pictures, many of them "erotic" (rather than sexy) portraits that have been forcibly manipulated with digital tricks, stand in contrast to the rawer and grainier 35-millimeter photography that's still canonized by august institutions like the International Center of Photography.

Rebekka Guoleifsdottir, one of Flickr's most popular photographers, is the leading exponent of the site's style. An art student from Iceland who turned to social networking to acquire commissions for her drawings, she came to photography relatively late. Tellingly, she learned to work Flickr before she became proficient with a camera. She discovered how to create the minicollections called "photostreams"; how to create images that would look good shrunk, in "thumbnail" form; and how to flirt with the site's visitors in the comments area to keep them coming back. As perhaps is always the case with artists, Guoleifsdottir's evolution as a photographer was bound up in the evolution of her modus operandi, a way of navigating the institutions and social systems that might gain her a following and a living.

Guoleifsdottir's Flickr opus, and her notes on the site about it, supply a portrait of the artist. In 2005, she uploaded simple snapshots of some of her drawings to the site, mostly portraits of children. Some are cool with a storybook quaintness; others look like vanity speed portraits done at a street fair. The most striking is a pastel of Guoleifsdottir's nephew, apparently a rendering of a single-source flash snapshot, in which the boy's wholesome face appears stung with bright light and his tightly-constricted pupils are tinted with the red that some camera flashes impart.

Because Flickr is a site for photography, commenters tend to go easy on photos of paintings or drawings, which they don't pretend to have expertise in. As a result, the minimal commentary on Guoleifsdottir's early drawings was very forgiving — and even naïve. About the image of a young boy, one commenter gushed, "This is fabulous work, how long does it take you to do one of these?"

On the heels of this encouragement, Guoleifsdottir turned to photography in earnest. The first photos Guoleifsdottir posted to Flickr were shot with an analog camera: snapshots of her school-age sons and a portrait or two of herself. Commenters loved the way Guoleifsdottir looked — she's a weight-trained, protean-looking woman with movie-star eyes — but Flickr members often deem analog photos unfocused. ("A mixture of melancholy and curiosity," wrote a commenter on one image. "It's a shame about the focus.")

Guoleifsdottir shifted to a digital camera, first using a Canon Digital Ixus, and then a Canon EOS Digital Rebel XT, one of the most popular cameras on Flickr. (Discussions of cameras, lenses and film pervade the site.) When she started uploading digital pictures, like her stony self-portrait "torso," her photos starting breaking Flickr records for numbers of views, and comments turned to catcalls ("gosh . . . huge breasts," someone noted astutely).

Guoleifsdottir learned how to title and tag photos so that they might readily come up in searches; how to police copyright transgressions (as when some of her photos were sold illegally on eBay); and how to push, push contrasts by processing her pictures with Photoshop software. These skills might not have advanced her with New York galleries, but they made for a charmed ride on Flickr. A photography blogger who posts under the name Thomas Hawk is a Flickr regular, and he told me in an e-mail conversation that there is not a single Flickr style. But he conceded that intense postproduction processing is necessary for popularity on the site.

Guoleifsdottir's next step was to abandon realism. A few experiments in 10-second exposures led her to juvenile representations of specters and phantoms, which nonetheless drew praise. Playing with shutter speed, she caught an image of liquor splashing out of a glass; Flickr named it the most-interesting photo of the day on July 29, 2005. She started intensely manipulating and coloring her photos in postproduction, creating haunted interiors, doubled images, filtered landscapes and contrived composites. Comments shot up; her page-views hit the millions.

In June 2006, having followed Guoleifsdottir's Flickr ascendancy, an advertising executive for Toyota came calling and assigned her a print campaign for the Prius in Iceland. She was to illustrate the car's hybrid quality, applying her wintry formalism and production mischief and producing many doubled self-portraits. A star was born, along with the legend of her rise to prominence on Flickr.

In the meantime, another popular Flickr photographer who goes by the name Merkley was building up his own opus. He has even written a treatise extolling digital manipulation called "I'm Not a Photographer," deriding mainstream art photographers who "show you shoes hanging on wires, pink boxes in the green weeds, little black girls with blue eyes and nuns sitting under billboards of naked men." On his Flickr profile, he calls the classic film camera "The Robot Camera Machine" and proposes digital processing as the antidote to film's inhumanity.

Merkley's style is more R-rated and carnivalesque than Guoleifsdottir's, but together the two Flickr stars have mounted a case against vérité rawness, in favor of posing, cropping and special effects. Guoleifsdottir and Merkley might have amounted to nothing in analog times, when elaborate deference to institutions, hard-won group shows and expensive years spent in unnoticed toil were the only way to

success. But just as certain ne'er-do-well writers have found themselves in blogging, and failed filmmakers have taken to online video, these seemingly out-of-step artists have both invented and mastered the Flickr photograph. Other photographers have added still more levels of processing — including the otherworldly contrasts achieved with high-dynamic-range photography — to the quintessential Flickr image, and it's becoming only more eye-popping and stylized.

And none of it looks like Diane Arbus or Henri Cartier-Bresson, the photographer many critics still consider the greatest of all time. On Flickr, Cartier-Bresson is no Guoleifsdottir. Maybe it's no surprise, then, that when a prankster posted a Cartier-Bresson photo of a cyclist passing a spiral staircase, passing the photo off as his own, a mob of commenters shouted it down, crying for it to be deleted. "When everything is blurred you cannot convey the motion of the bicyclist," one commenter carped. "Why is the staircase so 'soft'? Camera shake?" wrote another. "Gray, blurry, small, odd crop," someone concluded. That seemed to be the final word.

Points of Entry

THIS WEEK'S RECOMMENDATIONS

BY CONTRAST: Explore your camera's capacity to do more than take pictures. Maybe the actual shoot is just the first step in acquiring the raw materials (colors, shapes) that get twisted at the computer. If you dare, visit the high-dynamic range, where boring travel shots turn into the landscapes of Coleridge. See the Cambridge in Colour site for online tutorials in HDR. Flickr's HDR group is also illuminating: flickr.com/groups/hdr/.

LES PHOTOS DES SUPERCUTIES: O.K., so they don't sound as classy as Cartier-Bresson, but Extra Super Cutie and smoothdude — screen names for exceptional Flickr photographers — might just be photography's new wave. Other compelling Flickr artists: antimethod, aqui-ali, ar'alani, eyetwist, sweet distin and razorbern. Let go of your snobberies and float down their photostreams.

ORGANIZE YOUR LAUGHTER: HumorFeed.com distills the best news satire on the Web. So you can very, very efficiently find funny things and laugh at them.

http://www.nytimes.com/2008/04/27/magazine/27wwln-medium-t.html?ref=design

Filling in the Contours of a Surprising Golden Age

By ROBERTA SMITH

The little-known American sculptor Asa Ames worked mostly from life, carving and then painting three-dimensional wood portraits. He made either busts or full-length figures, depicting family and friends, and when he died of consumption in 1851, at 27, he left behind 12 or 13 sculptures from the last four or five years of his life. Eight of these works form a stunning little show at the American Folk Art Museum, the first ever devoted to Ames's work. It has been organized by Stacy C. Hollander, the museum's senior curator and director of exhibitions.

The art, artifacts and objects produced in America during the first half of the 19th century constitute something of an artistic golden age, but a highly disorganized one that is still yielding surprises. Its legacy is short on towering stone temples or airy frescoes that stay in one place, and long on portable objects made for pleasure, use, profit or a combination of the three. These often anonymous efforts constitute an amazing tribute to the collective spirit, imagination and ingenuity of a time when creativity was widespread, initiative was bottom-up, and per capita participation was high. They also confirm the basic human need for beauty and decoration. Enterprising self-taught painters of the period like Ammi Philips and Erastus Salisbury Field, who traveled around New England painting portraits for a living, have long been known in the folk-art world and beyond. Similarly determined sculptors are much rarer. Ames is an exception, though much about his life remains a mystery. He was born in 1823 in Evans, N.Y., a small town 20 miles south of Buffalo. His date of birth and death both come from his gravestone. And an 1850 federal census tantalizingly lists his occupation as "sculpturing." He might have spent time at sea and been apprenticed to a carver of ships' figureheads or trade figures. Until 25 years ago, Ames's work, when noticed at all, was probably lumped together with such carvings. But in 1981 the American Folk Art Museum received an anonymous piece as a gift: a wood bust of a young girl whose head has a phrenology chart painted on it. Ms. Hollander ultimately attributed it to Ames. In 1982 Jack T. Ericson, an antiques dealer, culminated 12 years of research on Ames with an article in Antiques magazine. It reproduced the works that could be traced or attributed to him, including the folk art museum's piece, which is thought to have been made at the end of Ames's life, when he was ill and living with a doctor who practiced alternative medicine.

One of the show's standouts was discovered only in 2003, in the basement of the Boulder History Museum in Colorado. Made in December 1849, it is a full-length portrait of Susan Ames, the daughter of his brother Henry G. Ames. Wearing a violet dress, Susan stands staunch and solemn, showing that posing was not much fun. Her eyes are intent but unfocused; she is holding still as best she can by thinking about other things. She has a small Bible or hymnal in her right hand; her left is raised. The violet of Susan's dress is boldly accented with a red collar, waist and hem; its gathers are round and regular, almost like the flutes on a Classical column. Her pantaloons are edged in eyelet lace whose holes have been carefully carved, as has the red upholstered footstool she stands on, right down to its brass-colored tacks. The colors and details imbue the entire sculpture with the intensity of Susan's expression.

Ames's artistry has a distinct personality. His work is full of signature tics, like his careful carvings of his subjects' hair or ears. There is also a familial resemblance among the sculptures, and between them and Ames, as shown by the only known photograph of him.

Two of the best pieces in the show are sculptures of robust young men who might be Ames's brothers or Ames himself. "Head of a Boy" is luxuriant with youth, from its thick, carefully combed hair (back from the brow, but forward on the sides) and flushed cheeks to its fine-looking jacket, tie and shirt. His dark, focused eyes and slightly pursed lips brim with ambition and hope; he seems to be practicing to look like a judge or senator. The slightly fairer subject of "Bust of a Young Man" is even more lifelike; here the pursed lips seem about to speak. He brings to mind the figures of the self-taught sculptor and photographer Morton Bartlett and Charles Ray's mannequin sculptures.

Ames's inspirations clearly included the portraits that itinerant painters were making during this period, but translating these wonderfully stiff, often emotionally fraught images into three dimensions gives them an added sense of life. The best of them have the artifice and complexity of 19th-century photographs, with which Ames had at least one close encounter.

The strange, beautiful and overpopulated daguerreotype that this encounter produced testifies to Ames's ambition. He is in his Sunday best, working intently with a mallet and chisel on a bust of a man. (Its profile, near his knee, suggests a self-portrait.) Three sculptures look on from the upper right: a pudgy baby with a drape of fabric around its middle (it is in the exhibition, without the drape) and the busts of two other children, both in carved, off-the-shoulder togas in keeping with the neo-Classical style of the day.

The busts teeter on a textile-covered stand beneath which, peeking upward, is a young man, who might almost be another sculpture. The carving of a hand (also in the show) and real-looking bass viol visible behind this party of five increase the sense of elaborate stage-managing. Ames was probably ill when this photograph was made, and perhaps he knew that obscurity threatened. Packed with details about his leisure interests as well as his "sculpturing," with his works doubling as an imagined audience, this carefully constructed image has the same intensity as Ames's portraits. It is a detailed message in a bottle that he sent into the future, which is now.

"Asa Ames: Occupation Sculpturing" continues through Sept. 14 at the American Folk Art Museum, 45 West 53rd Street, Manhattan; (212) 265-1040, folkartmuseum.org.

http://www.nytimes.com/2008/04/25/arts/design/25ames.html?ref=design

Hair-Raising Convergence of the Mystical and the Mundane

By KEN JOHNSON

Mary stands on a crescent moon. Enveloped in mauve satin and blue velvet, hands prayerfully joined, she gazes with pensive beneficence upon a dark, pastoral landscape. Twelve twinkling stars circle her head, and clouds irradiated by golden light billow behind her.

What is striking about this lovely picture painted by Diego Velázquez in 1618-19, when he was just about 20, is not the mystic vision. Similar pictures of the Virgin of the Immaculate Conception were painted by many other artists. The startling part is Mary's face. Painted with Vermeerish, almost photographic verisimilitude, this pretty, long-haired, big-eyed girl with the pouty lips and small chin looks uncannily modern, like a teenager you could pass on the street.

That hair-raising convergence of the mystical and the mundane runs irregularly but potently through "El Greco to Velázquez: Art During the Reign of Philip III," a rich, uneven stew of an exhibition at the Museum of Fine Arts, Boston. It was organized by Ronni Baer, senior curator of paintings in the museum's art of Europe department, and Sarah Schroth, a senior curator at the Nasher Museum of Art at Duke University, where the show will reopen on Aug. 21. With more than 60 paintings and sculptures by 19 artists, the show is a presentation of Ms. Schroth's extensive research into a period that has heretofore been considered a bleak time for Spanish art.

Still-life paintings are on view, along with portraits, scenes from the lives of saints and biblical images. Not every piece is great. If El Greco's brushy, spectral paintings of white figures with weirdly elongated limbs are not to your taste, you may be thankful that the 11 works in the show from late in his life are balanced by 7 wonderful pieces made by Velázquez at the start of his career. The Velázquezes include

lovingly observed tavern scenes and the Boston museum's own stunning small portrait of the poet Luis de Góngora y Argote.

What saves the show from being merely a hodgepodge of Spanish treasures can be summed up in a word: realism. It is not the explicitly stated theme, but it is, in one way or another, an urgent concern for the exhibition's most interesting artists.

Around this time, intellectuals throughout Europe were turning away from scholastic and ecclesiastical dogma toward empirical observation. A keen, worldly curiosity animates some of the show's smallest and most captivating works: a silver plate loaded with pears painted with tender attentiveness by an unknown artist, for example, or the extraordinarily vivid unfinished portrait of a beefy, gray-bristled monk by Juan Bautista Maino.

The fruitful complexities and contradictions of realism most fully emerge in religious paintings. In officially Roman Catholic Spain, the creation of devotional images was much encouraged. The more naturalistically rendered they were, the better, because they would impress the minds of the faithful that much more persuasively.

See, for example, Eugenio Cajés's large painting of a solitary, nearly naked Jesus sitting on a rock in sorrowful meditation. With his lean, bloodied body; the meticulously realized rope around his neck; and a precisely rendered basket containing a hammer, rope and pincers at his feet, the painting does more than illustrate a moment in the story of the Passion. It brings Jesus to life. It's as if you, the viewer, were not just looking at a painting but having a mystical vision. Well, that's the idea, anyway.

In an essay in the exhibition catalog the art historian Rosemarie Mulcahy quotes the 16th-century mystic Teresa of Avila, who recalled a curious ambiguity in her visions of Jesus. While sometimes it seemed that Jesus himself really appeared to her, at other times it was as if she were looking at a painting: “a painting quite different from those here on earth, even the very best.” St. Teresa was not an art critic, but she evidently knew something about the dream of realist painting.

Among the show’s most floridly imaginative works are paintings showing St. Francis of Assisi having visions. In one by Vicente Carducho, the saint levitates over a rural landscape and receives stigmata from Jesus, who hovers before him, crucified on a cross of pink, angelic wings. The ecstasy seems as much erotic as religious.

In a painting by Francisco Ribalta, St. Francis beholds a wild-haired, lute-playing angel who has floated into his rough cell on a cloud. Such paintings offered themselves as models of religious experience. The sufficiently devout and spiritually imaginative might one day be granted similarly arousing supernatural visitations.

While the trend in European high culture became increasingly secular, a dialogue persisted in Western painting between the material and the metaphysical; that is, between the sensory reality of paint and the virtual reality of illusory spaces and objects.

That realist painting remains in some sense a mystical project might be deduced from another exhibition at the museum, a retrospective of paintings and sculptures by the widely admired Spanish realist Antonio López García. Presenting about 55 works made over the last half-century, the exhibition shows Mr. López García starting out in a magic realist vein and evolving into a steely-eyed painter of expansive cityscapes and domestic scenes and objects. A large canvas from 1991-94 represents an open-doored refrigerator lighted from within not

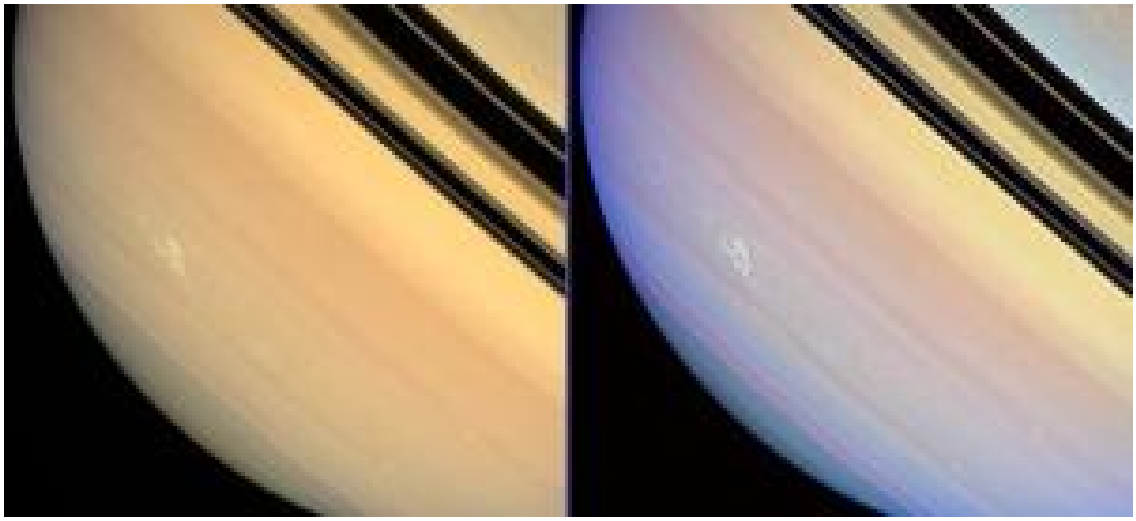
by divine radiance but by an electric bulb.

Mr. López García, who is 72 and lives in Madrid, does not produce photographic transparency. He leaves some areas unfinished, while in others he applies paint in thick strokes. This generates that flip-flop between image and paint that has been so dear to Modernist painters at least since the heyday of Manet. It may not be religious but it is mysterious: how can such inert stuff applied to a flat surface give rise to nonmaterial visions of objects in space? Like the relationship between the brain and the mind, it's a tantalizing enigma.

"El Greco to Velázquez: Art During the Reign of Philip III" and "Antonio López García" continue through July 27 at the Museum of Fine Arts, Boston, 465 Huntington Avenue; (617) 267-9300, mfa.org.

http://www.nytimes.com/2008/04/25/arts/design/25grec.html?ref=design

NASA Spacecraft Tracks Raging Saturn Storm



It is no Great Red Spot, but these two side-by-side views show the longest-lived electrical storm yet observed on Saturn by NASA's Cassini spacecraft. The view at left was created by combining images taken using red, green and blue spectral filters, and shows Saturn in colors that approximate what the human eye would see. The storm stands out with greater clarity in the sharpened, enhanced color view at right. (Credit: NASA/JPL/Space Science Institute)

ScienceDaily (Apr. 30, 2008) — As a powerful electrical storm rages on Saturn with lightning bolts 10,000 times more powerful than those found on Earth, the Cassini spacecraft continues its five-month watch over the dramatic events.

Scientists with NASA's Cassini-Huygens mission have been tracking the visibly bright, lightning-generating storm--the longest continually observed electrical storm ever monitored by Cassini.

Saturn's electrical storms resemble terrestrial thunderstorms, but on a much larger scale. Storms on Saturn have diameters of several thousand kilometers (thousands of miles), and radio signals produced by their lightning are thousands of times more powerful than those produced by terrestrial thunderstorms.

Lightning flashes within the persistent storm produce radio waves called Saturn electrostatic discharges, which the radio and plasma wave science instrument first detected on Nov. 27, 2007. Cassini's imaging cameras monitored the position and appearance of the storm, first spotting it about a week later, on Dec. 6.

"The electrostatic radio outbursts have waxed and waned in intensity for five months now," said Georg Fischer, an associate with the radio and plasma wave science team at the University of Iowa, Iowa City. "We saw similar storms in 2004 and 2006 that each lasted for nearly a month, but this storm is longer-lived by far. And it appeared after nearly two years during which we did not detect any electrical storm activity from Saturn."

The new storm is located in Saturn's southern hemisphere--in a region nicknamed "Storm Alley" by mission scientists--where the previous lightning storms were observed by Cassini. "In order to see the storm, the imaging cameras have to be looking at the right place at the right time, and whenever our cameras see the storm, the radio outbursts are there," said Ulyana Dyudina, an associate of the Cassini imaging team at the California Institute of Technology in Pasadena, Calif.

Cassini's radio plasma wave instrument detects the storm every time it rotates into view, which happens every 10 hours and 40 minutes, the approximate length of a Saturn day. Every few seconds the storm gives off a radio pulse lasting for about a tenth of a second, which is typical of lightning bolts and other

electrical discharges. These radio waves are detected even when the storm is over the horizon as viewed from Cassini, a result of the bending of radio waves by the planet's atmosphere.

Amateur astronomers have kept track of the storm over its five-month lifetime. "Since Cassini's camera cannot track the storm every day, the amateur data are invaluable," said Fischer. "I am in continuous contact with astronomers from around the world."

The long-lived storm will likely provide information on the processes powering Saturn's intense lightning activity. Cassini scientists will continue to monitor Storm Alley as the seasons change, bringing the onset of autumn to the planet's southern hemisphere.

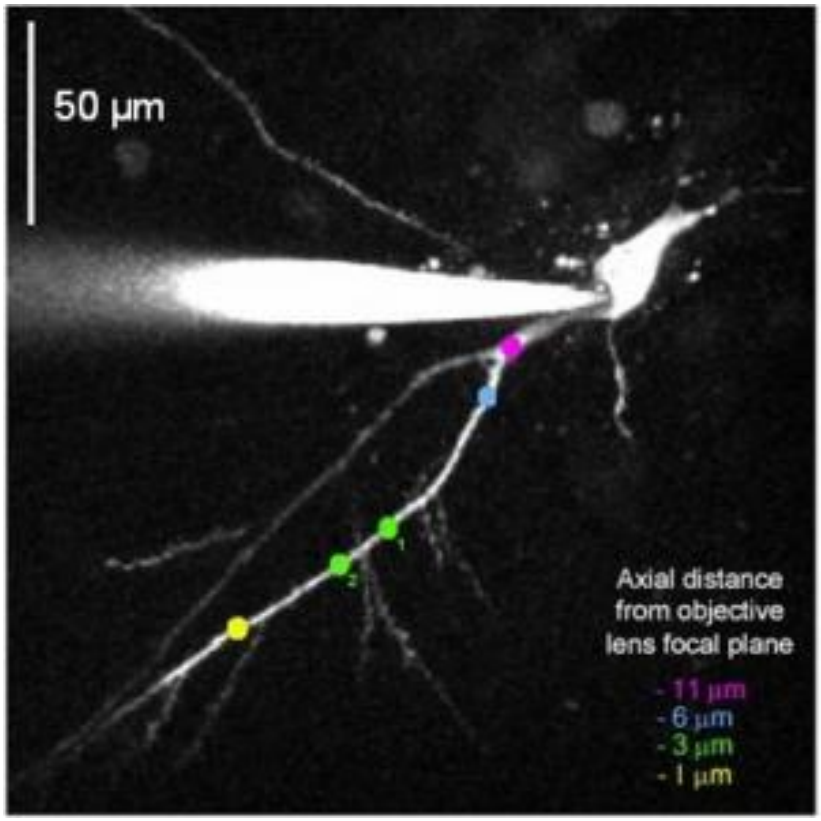
The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. JPL, a division of Caltech, manages the Cassini mission for NASA's Science Mission Directorate, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging team is based at the Space Science Institute, Boulder, Colo. The radio and plasma wave science team is based at the University of Iowa, Iowa City.

Color images of the storm are available at: http://saturn.jpl.nasa.gov and http://www.nasa.gov/cassini and http://ciclops.org.

Adapted from materials provided by NASA/Jet Propulsion Laboratory.

http://www.sciencedaily.com:80 /releases/2008/04/080429174658.htm

Looking At Neurons From All Sides



3-D functional imaging of neurons. (Credit: Image courtesy of Baylor College of Medicine)

ScienceDaily (Apr. 30, 2008) — A new technique that marries a fast-moving laser beam with a special microscope that look at tissues in different optical planes will enable scientists to get a three-dimensional view of neurons or nerve cells as they interact, said Baylor College of Medicine scientists in a report that appears in the journal Nature Neuroscience.

"Most microscopes can only study cell function in two dimensions," said Dr. Gaddum Duemani Reddy, an M.D./Ph.D. student at BCM at Houston and Rice University and also first author of the study. "To look at different planes, you have move your preparation (of cells) or the objective lens. That takes time, and we are looking at processes that happen in milliseconds."

To solve that problem, he said, they developed a "trick" to quickly move a laser beam in three dimensions and then adapted that laser beam to the multi-photon microscope they were using. That allowed them to "see" the neuron's function in three dimensions, giving them a much better view of its activity.

A multiphoton microscope looks much like a conventional, upright microscope but it has an adaption that allows it to look at tissues in sections. A conventional multiphoton microscope does that very slowly, he said.

"With ours, you can do it very quickly. We are starting to see how a single neuron behaves in our laboratory," he said. The next step, he said, will be to use to it to look a clusters or colonies of neurons. This will enable them to actually see the neuronal interactions.

"At present, the technology is applied in my lab to study information processing of single neurons in brain slice preparations by 3D multi-site optical recording," said Dr. Peter Saggau, professor of neuroscience at BCM and the paper's senior author.

He is collaborating with two other labs on using the technology in other ways. In one, he said, researchers plan to use the technology to monitor nerve activity in the brains of lab animals in order study how populations of neurons communicate during visual stimulation. Another study attempts to use the technology to monitor stimulation of the acoustic nerve optically. Those scientists hope to reinstate hearing in lab animals whose inner ear receptors do not work.

Others who took part in the research include Keith Kelleher of the University of Houston and Rudy Fink of BCM.

Funding for this work comes from the National Institutes of Health and the National Science Foundation.

Adapted from materials provided by Baylor College of Medicine.

http://www.sciencedaily.com:80 /releases/2008/04/080427194715.htm

Caring Men Are Happier Than Traditional 'Macho' Men, Study Suggests

ScienceDaily (Apr. 30, 2008) — Professor Miguel Arciniega clearly remembers the dichotomy of being a Mexican-American youth trying to learn what it means to be a man. Now he and his colleagues have developed an academic scale to define what it means to be either a gentleman or a "macho" man in the Mexican-American culture.

"This has been a lifelong thing for me, in terms of growing up in El Paso, Texas, and finding out the messages about being a man from my father and grandfather," says Arciniega, an associate professor of counseling and counseling psychology in the Division of Psychology in Education with ASU's Mary Lou Fulton College of Education. "On the streets, from my friends, it was a very different message."

Arciniega says he was raised to believe that men took care of their families and respected their wives. His family raised him to be un caballero – "a gentleman" – but his peers embodied machismo, which is the stereotypical, hypermasculine image of Mexican-American men as chauvinists who drink too much and fight too much.

This contradiction in the meaning of "manhood" resulted in Arciniega pursuing an extensive study of machismo in the Mexican-American community. The resulting research article, "Toward a Fuller Conception of Machismo: Development of a Traditional Machismo and Caballerismo Scale," was published earlier this year by the Journal of Counseling Psychology.*

"Both the academic literature and the popular literature tended to talk about machismo as very negative," Arciniega says. "Other measurement scales only perpetuated this negative stereotype."

The researchers used Anderson's own instrument in a sampling of 403 Mexican-American men of various ages and education levels. Anderson gathered 71 positive and negative statements about manhood from traditional Latino stories, folklore and interviews with Mexican-American males about their gender roles and values.

The statements ranged from "real men should never let down their guard" to "men should be affectionate with their children."

The responses helped the team discover two distinct constructs:

1. Traditional machismo is the stereotypical masculine personification of a Mexican-American man as controlling, sexist and violent, correlated with antisocial behavior, aggressive masculinity and wishful thinking as a coping style. These men tend to have more difficulty expressing emotion. However, traditional machismo did not correlate with dominance as hypothesized.
2. Caballerismo is a positive image of a man as the family provider who respects and cares for his family. It depicts Mexican-American men as chivalrous, nurturing and noble. These men rated higher on the social connectedness scale, saying they felt value in their family relationships and were in touch with their feelings, and the feelings of others. They also displayed more practical ways of solving their problems.

As expected, younger, less-educated men identified more with traditional machismo than caballerismo. However, the hypothesis that older, more educated Mexican-American men would correlate more with caballerismo did not hold true, Tovar-Blank says.

The study also revealed that overall satisfaction of life among these men contradicted expectations of lower satisfaction of life. Caballerismo was associated with a higher satisfaction of life, but the men who displayed traits of traditional machismo didn't see their manly characteristics as negative. They viewed themselves as assertive men who stood up for themselves and were the heads of their household.

"Individuals who endorsed a more positive aspect of machismo, such as caballerismo, reported more satisfaction with life," Tovar-Blank says.

But those men who endorsed traditional machismo also were more likely to be less in touch with their feelings or denied their emotions, which could have clinical implications for counseling Mexican-American men.

"We felt there must be a difference in coping skills," Arciniega says. "People who use wishful thinking, not practical problem-solving, were highly connected to traditional machismo."

Arciniega aays the team's hypothesis correlating traditional machismo to fighting and arrests was confirmed. Not surprisingly, the men who didn't fight identified with the more gentlemanly traits of caballerismo.

The article revealed that men who strongly identified themselves as Mexican endorsed more traditional machismo, while men who valued people from other cultural groups endorsed more caballerismo aspects. Although the study focused on Mexican-American men, there were responses from other Hispanics, including Cubans, Puerto Ricans, Guatemalans, Caribbeans and South Americans.

"It seemed to hold just as well for these groups," says Tracey, who also expressed caution in the statement because of the small sample.

"We really want to do a further study with samples from these other groups to see how these constructs apply. Do they apply to men in general?"

The team hopes to test and retest for reliability, as well as to study larger sample groups, including non-Mexicans, and include questions about sexual orientation, marriage and acculturation data.

*The machismo article is available on the journal's Web site, apa.org/journals/cou. The research team for the second study included Terence Tracey, a professor of counseling and counseling psychology in the Division of Psychology in Education with the Fulton College of Education. Tracey is an expert in statistical analysis and development of scale construction measurement. The research team also included doctoral candidate Zoila Tovar-Blank, who then was a graduate research assistant.

Adapted from materials provided by Arizona State University.

http://www.sciencedaily.com:80 /releases/2008/04/080429084317.htm

Ancient Sunflower Fuels Debate About Agriculture In The Americas

Wild sunflowers in Nuevo Leon in the foothills of the Sierra Madre Oriental mountains. (Credit: Image courtesy of University of Cincinnati)

ScienceDaily (Apr. 30, 2008) — Researchers at the University of Cincinnati and Florida State University have confirmed evidence of domesticated sunflower in Mexico — 4,000 years before what had been previously believed.

“People sometimes ask: 'What is the big deal about sunflower?'" says David Lentz, professor of biological sciences and executive director of the Center for Field Studies in the McMicken College of Arts & Sciences at the University of Cincinnati (UC). Lentz worked with Mary Pohl from Florida State University, José Luis Alvarado from Mexico’s Institute of Anthropology and History, and Robert Bye from the Independent National University of Mexico.

“First of all, sunflower is one of the world's major oil seed crops and understanding its ancestry is important for modern crop-breeding purposes," Lentz says. "For a long time, we thought that sunflower was domesticated only in eastern North America, in the middle Mississippi valley — Arkansas, Missouri, Tennessee, Illinois. This is what traditional textbooks say. Now it appears that sunflower was domesticated independently in Mexico."

"The Mexican sunflower discovery suggests that there may have been some cultural exchange between eastern North America and Mesoamerica at a very early time,” Lentz adds. “Now the textbooks need to be rewritten.”

More than just a matter of pride over which part of America can claim a flower, the debate centers on when sunflower was domesticated and which civilization first cultivated it. Now there is solid evidence that two similar events took place thousands of years and hundreds of miles apart.

Lentz and his fellow researchers have documented archaeological, linguistic, ethnographic and ethnohistoric data demonstrating that the sunflower had entered the repertoire of Mexican domesticates

by 2600 B.C., that its cultivation was widespread in Mexico and extended as far south as El Salvador by the first millennium B.C., that it was well known to the Aztecs, and that it is still in use by traditional Mesoamerican cultures today. (People of the Americas made huge contributions to today's society in terms of agriculture, including the development of a number of valuable crops such as corn, peppers, beans, cotton, squash, chocolate, tomatoes and avocadoes, as well as sunflower.)

But it is unknown if the Mexican domestication and North American domestication are related. So is it coincidence? Did one cause the other? Or did they both happen because of some other common outside factor?

"Whatever conclusions we draw, the evidence clearly shows that sunflower as a Mexican crop goes back far into antiquity," says Lentz.

In addition to the biogeographic study of sunflower, the researchers conducted archaeological, linguistic, ethnographic and ethnohistorical research, collecting data from many fields of study.

Archaeological evidence of sunflower in Mexico has been rare, probably for a number of reasons. First, the way it was used may not have been conducive to deposition in archaeological sites. Second, climatic conditions, especially in the Neotropics, have bad properties of preservation for plant parts so most things just rot away. Finally, archaeological research strategies in many areas of Mesoamerica focus more on monumental architecture and less on agricultural developments. That is, you are unlikely to find something if you are not looking for it.

Nevertheless, sunflower achenes (this is what most of us call the seed, but it is actually the fruit of the sunflower, containing the seed) were found in Mexico in situations where the preservation was especially good. Cueva del Gallo was a dry cave and the sunflower achenes there were in pristine condition. San Andrés was a waterlogged site and the sunflower remains from that site were also well preserved. Using accelerator mass spectrometry, the sunflowers at San Andrés were found to be older than 2600 B.C.

The researchers also asked indigenous people in Mexico what terms they used for the sunflower.

"They described how they used sunflower and told us the name in their native language," says Lentz. "The names they used for sunflower were all unique, not related to Spanish. That tells us the use of sunflower is older than the Spanish expeditions of the 15th and 16th centuries."

The Otomi, one of the Mexican indigenous groups interviewed, use the name "dä nukhä," which translates to "big flower that looks at the sun god," a reference to pre-Columbian solar worship. The sunflower is commonly still used as an ornament in their churches.

"When asked about sunflowers, people of the Nahua culture in Mexico, descendants of the Aztecs gave us a clue to help interpret early historic texts," describes Lentz. "The modern Nahua use two words for sunflower: 'chimalxochitl,' which means 'shield flower,' or 'chimalacatl,' which means 'shield reed,' which is also a reference to its hollow stem and large,disk-like head (that resembles an Aztec shield). These terms led us to sunflower references to listed in early chronicles of 16th century Aztec society, including 'The Florentine Codex,' written by Fray Bernardino de Sahagun. In the Florentine Codex, the sunflower is described as part of an offering to the Sun God, 'Huitzilopochtli.'"

The researchers point out, the sunflower's association with solar worship and warfare in Mexico may have led to its suppression after the Spanish Conquest.

"Sunflower was believed to be a powerful aphrodisiac, which could have also contributed to its being banned by the Spanish priests," Lentz says with a smile. "Of course, it is not but this belief was probably part of the case against sunflowers."

"Mesoamerica had a thriving culture, a grand civilization," Lentz notes. "They had irrigation systems, monumental construction, agriculture and a complex society.

The group's research is published in the

Proceedings of the National Academy of Science

(PNAS) as “Sunflower (

Helianthus annuus

L.) as a Pre-Columbian Domesticate in Mexico” with UC’s David Lentz as lead author and co-authors Mary Pohl from Florida State, José Luis Alvarado from Mexico’s Institute of Anthropology and History and Robert Bye from the Independent National University of Mexico. (Lentz’s student, Somayeh Tarighat, is also a co-author on the paper.)

“The discovery of ancient sunflower in Mexico refines our knowledge of domesticated Mesoamerican plants and adds complexity to our understanding of cultural evolution,” the authors state in the paper.

Lentz’s research on the biogeography of sunflower is also being published at the same time as the cover story for the International Journal of Plant Sciences, “Ecological Niche Modeling and Distribution of Wild Sunflower (Helianthus annuus L.) in Mexico,” with co-authors Robert Bye and Victor Sánchez-Cordero from the Independent National University of Mexico (UNAM).

“Beyond the recognition of the great cultures due these early peoples, there are very real lessons that we can learn from them. As we deal with our modern-day issues of global warming and as we evaluate and examine what crops will survive and thrive in warmer climates, the ancient Aztecs might have some valuable lessons to teach us — and the descendants of the Aztecs may have valuable sunflower seed stocks to help improve our modern agricultural capability.”

This research was funded by grants from the National Science Foundation and the National Geographic Society.

Adapted from materials provided by University of Cincinnati.

http://www.sciencedaily.com:80 /releases/2008/04/080429075321.htm

Beating The Codebreakers With Quantum Cryptography

SECOQC bank transfer demostration. (Credit: SECOQC)

ScienceDaily (Apr. 29, 2008) — Quantum cryptography may be essentially solved, but getting the funky physics to work on disciplined computer networks is a whole new headache.

Cryptography is an arms race, but the finish line may be fast approaching. Up to now, each time the codemakers made a better mousetrap, codebreakers breed a better mouse. But quantum cryptography theoretically could outpace the codebreakers and win the race. Forever.

Already the current state of the art in classical encryption, 128-bit RSA, can be cracked with enough raw, brute force computing power available to organisations like the US National Security Agency. And the advent of quantum computing will make it even simpler. The gold standard for secret communication will be truly dead.

Quantum cryptography solves the problem, and it will overcome the remaining stumbling block, the distribution of the code key to the right person, by using quantum key distribution (QKD).

Modern cryptography relies on the use of digital 'keys' to encrypt data before sending it over a network, and to decrypt it at the other end. The receiver must have a version of the key code used by the sender so as to be able to decrypt and access the data.

QKD offers a theoretically uncrackable code, one that is easily distributed and works in a transparent manner. Even better, the nature of quantum mechanics means that if any eavesdropper – called Eve in the argot of cryptographers – tries to snoop on a message the sender and receiver will both know.

That ability is due to the use of the Heisenberg Uncertainty Principle, which sits at the heart of quantum mechanics. The principle rests on the theory that the act of measuring a quantum state changes that state. It is like children with a guilty secret. As soon as you look at them their faces morph plausibly into 'Who, me?'

The practical upshot for cryptography is that the sender and receiver can verify the security of the transmission. They will know if the state of the quanta has changed, whether the key has been read en route. If so, they can abandon the key they are using and generate a new one.

QKD made its real-world debut in the canton of Geneva for use in the electronic voting system used in the Swiss general election last year. The system guaranteed that the poll was secure. But, more importantly perhaps, it also ensured that no vote was lost in transmission, because the uncertainly principle established there was no change to the transmitted data.

The end of the beginning

The canton election was a demonstration of the work done by researchers for the SECOQC project, an EU-funded effort to develop an international network for secure communication based on QKD.

The test of the technology demonstrated that QKD worked for point-to-point communications between two parties. But the demonstration was just the beginning of the SECOQC's overall goal.

"We want to establish a network wide quantum encryption, because it will mean it works over much longer distances," explains Christian Monyk, co-ordinator of the SECOQC project and head of the quantum-technologies unit at the Austrian Research Centres. "Network quantum encryption and QKD mean that many parties can communicate securely, not just two. Finally, it also means quantum encryption could be deployed on a very large scale, for the insurance and banking sectors, for example."

Moving the system from point-to-point communications to a network is an order of magnitude more difficult.

"The quantum science for cryptography and key distribution is essentially solved, and it is a great result," Monyk says. "But getting that system to work across a network is much more difficult. You have to deal with different protocols and network architectures, develop new nodes and new interfaces with the quantum devices to get it to a large-scale, long distance, real-world application."

Working at a distance

Getting the system to work over long distances is also a challenge because QKD requires hi-fidelity data transmission over high-quality physical networks like non-zero dispersion shifted fibre optics.

"It was not one big problem, it was many, many small computing science and engineering problems," says Monyk. "We had to work with a large number of technologies. And we have to certify it to experts."

But SECOQC's researchers believe they have solved the network issue. The researchers are currently putting the final touches to a demonstration of the technology to be held this October in Vienna, Austria. Industry has shown great interest in the technology. Still the technology is not quite ready for prime time.

"From a technical point of view, the technology will be ready in one or two years," says Monyk.

And that means that the race will be won, finally, by the codemakers.

Adapted from materials provided by ICT Results.

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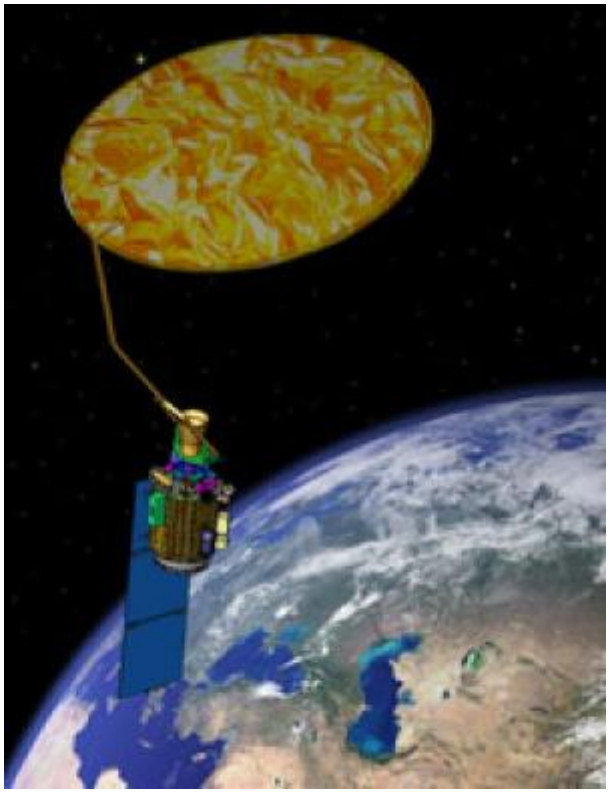
NASA Satellite To Map Earth's Water Cycle



Professor Dara Entekhabi will lead the science team for NASA's Soil Moisture Active-Passive (SMAP) satellite mission, scheduled to launch in Dec. 2012. A 6-meter deployable mesh antenna on the satellite will gather soil moisture and freeze/thaw data across 1,000-kilometer swaths, creating ribbons of measurements around the globe and completing the cycle every few days. (Credit: NASA, JPL)

ScienceDaily (Apr. 29, 2008) — MIT Professor Dara Entekhabi will lead the science team designing a NASA satellite mission to make global soil moisture and freeze/thaw measurements, data essential to the accuracy of weather forecasts and predictions of global carbon cycle and climate. NASA announced recently that the Soil Moisture Active-Passive mission (SMAP) is scheduled to launch December 2012.

At present, scientists have no network for gathering soil moisture data as they do for rainfall, winds, humidity and temperature. Instead, that data is gathered only at a few scattered points around the world.

“Soil moisture is the lynchpin of the water, energy and carbon cycles over land. It is the variable that links these three cycles through its control on evaporation and plant transpiration. Global monitoring of this variable will allow a new perspective on how these three cycles work and vary together in the Earth system,” said Entekhabi, director of the Parsons Laboratory for Environmental Science and Engineering in MIT’s Department of Civil and Environmental Engineering.

“Additionally because soil moisture is a state variable that controls both water and energy fluxes at the land surface, we anticipate that assimilation of the global observations will improve the skill in numerical weather prediction, especially for events that are influenced by these fluxes at the base of the atmosphere,” he said.

The SMAP mission is based on an earlier satellite project led by Entekhabi that had been selected by NASA from among 20 proposals and scheduled for a 2009 launch. However, the Hydrosphere State Mission (Hydros) was cancelled abruptly in 2005 when funding for NASA’s earth sciences missions was

diverted. But in July 2007, the National Research Council recommended that NASA make the soil moisture measurement project a top priority and place it on a fast track for launch.

The Jet Propulsion Laboratory (JPL) in Pasadena, Calif., is the lead NASA center for the project, with participation from NASA's Goddard Space Flight Center (GSFC) in Greenbelt, Md. NASA's lead scientists on the project are Eni Njoku, SMAP project scientist at JPL, and Peggy O'Neill, SMAP deputy project scientist at GSFC.

"Research conducted by MIT faculty and students is at the forefront of SMAP's science objectives, and MIT can play an important role in contributing to the mission's algorithms and science products," said Njoku, who earned his Ph.D. from MIT in 1976. "MIT students have the opportunity to be involved in many aspects of the mission."

SMAP's launch in 2012 is feasible in part because Entekhabi and other scientists continued to develop the mission, even when NASA's support was withdrawn in 2005.

The instruments that will be deployed in SMAP will gather both passive and active low-frequency microwave measurements on a continuous basis, essentially creating a map of global surface soil moisture. A 6-meter deployable mesh antenna on a satellite will gather data across a swath of 1,000 kilometers, creating ribbons of measurements around the globe and completing the cycle every few days.

In addition to measuring soil moisture, the satellite will detect if the surface moisture is frozen. In forests, the freeze/thaw state determines the length of the growing season and the balance between carbon assimilation into biomass and the loss of carbon due to vegetation respiration. The result of this balance can tell scientists if a forest is a net source or net sink of carbon.

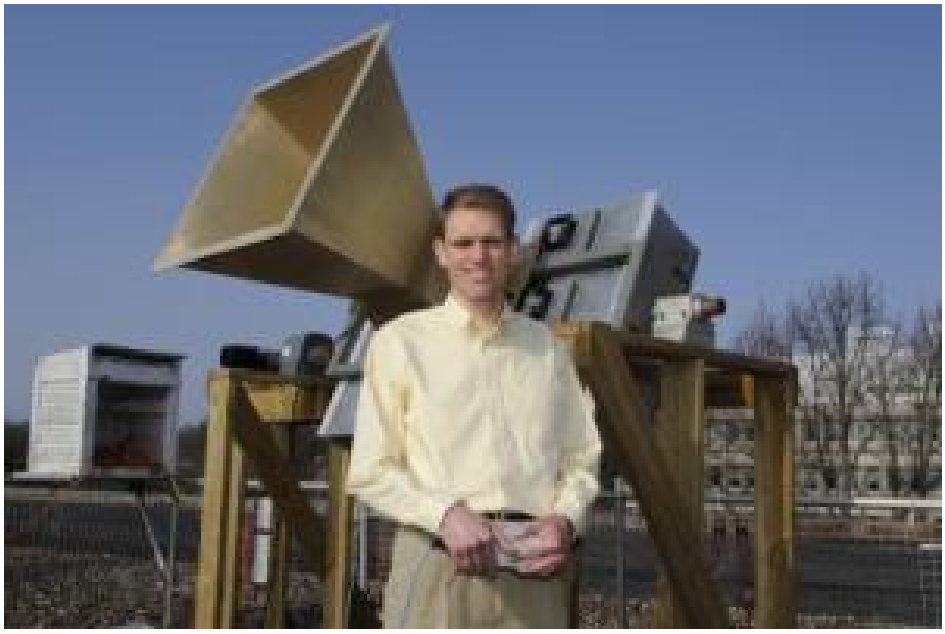
One mission obstacle that Entekhabi and team solved last year was integrating the two types of measurements the satellite would gather: passive measurements collected by radiometer, and active collected by radar. The radiometer measurements provide highly accurate data at a coarse resolution of 40 kilometers. The radar measurements provide much higher resolution (3 kilometers), but with less sensitivity.The combination of the two measurements through algorithms designed by the SMAP science team will result in accurate mapping of global soil moisture at 10 km.

Entekhabi is the Bacardi and Stockholm Water Foundations Professor in the Department of Civil and Environmental Engineering and the Department of Earth, Atmospheric and Planetary Sciences.

Adapted from materials provided by Massachusetts Institute of Technology, Department of Civil and Environmental Engineering.

http://www.sciencedaily.com:80 /releases/2008/04/080428104521.htm

How Dry We Are: European Space Agency To Test Earth's Soil Moisture Via Satellite



One of the instruments Brian Hornbuckle uses to measure soil moisture content is a microwave radiometer. (Credit: ISU photo by Bob Elbert)

ScienceDaily (Apr. 29, 2008) — Europeans want to peek into the world's soil and see how dry various regions are. The European Space Agency (ESA) is set to launch the Soil Moisture and Ocean Salinity (SMOS) satellite this fall as researchers try to learn more about the amount of moisture in the ground in the United States and around the world.

Iowa State University professor Brian Hornbuckle is eager to help, and even check the ESA's results. For the past year, Hornbuckle has led a team of investigators from ISU, the University of Iowa, and the USDA's National Soil Tilth Laboratory that measures moisture content in Central Iowa soil in using land-based technology. Now, he is working with the ESA.

The ESA will take satellite readings of soil moisture and compare them with the actual readings from Hornbuckle's land-based team. That will give the Europeans information on the accuracy of their satellite readings.

When they compare what their satellite said with Hornbuckle's actual readings, ESA researchers will then adjust the numerical models they are using to relate the satellite measurements to soil moisture.

Hornbuckle, an assistant professor in agronomy, says the arrangement is good for both ISU and ESA.

"Our deal with the European Space Agency is that they give us data that they collect from their satellite for free," said Hornbuckle. "In exchange, we'll share our data on the ground and also advise them on how their satellite is performing when it passes over Iowa."

Hornbuckle is working with Europeans because the United States does not yet have a satellite designed to monitor soil moisture.

By getting this experience with the validation and calibration team of SMOS, Hornbuckle hopes that when NASA does launch a soil moisture-measuring satellite, he may be selected to get involved with that program.

Soil moisture is important because, among other things, it directly affects weather and climate.

"Weather prediction isn't as good as it could be," said Hornbuckle. "One of the limitations of weather prediction is that we don't completely understand how water moves through our environment. Soil moisture is one important part of the water cycle that is directly linked to precipitation because it catches the rain and releases the water back into the atmosphere, either by evaporation or when plants transpire though their leaves."

Currently, weather forecasting models do not include real-time measurements of soil moisture content as part of their programs. Once scientists can better measure soil moisture, especially over large land masses such as North America, this missing piece can be included in weather prediction models, making for more complete and more accurate predictions, says Hornbuckle. And satellites can provide global coverage at the lowest cost.

Hornbuckle's land-based soil moisture-measuring techniques involve placing monitors in the ground in various locations around a farm field. These monitors electronically send soil moisture data to computers at the University of Iowa and the National Soil Tilth Laboratory.

That data is then analyzed. It is these results that the ESA is eager to access.

Amy Kaleita, an assistant professor in agricultural and biosystems engineering, helps monitor soil moisture with Hornbuckle. She specializes in precision farming and is interested in soil moisture for another reason.

"I am looking for patterns in the soil moisture," she said. "Over time, these patterns have a significant influence on crop yield."

Kaleita says that if we can understand moisture behavior in certain areas, then we can start to understand some of the variability in crop yields.

Eventually, Kaleita thinks the information collected through moisture satellites may be useful for precision farming.

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

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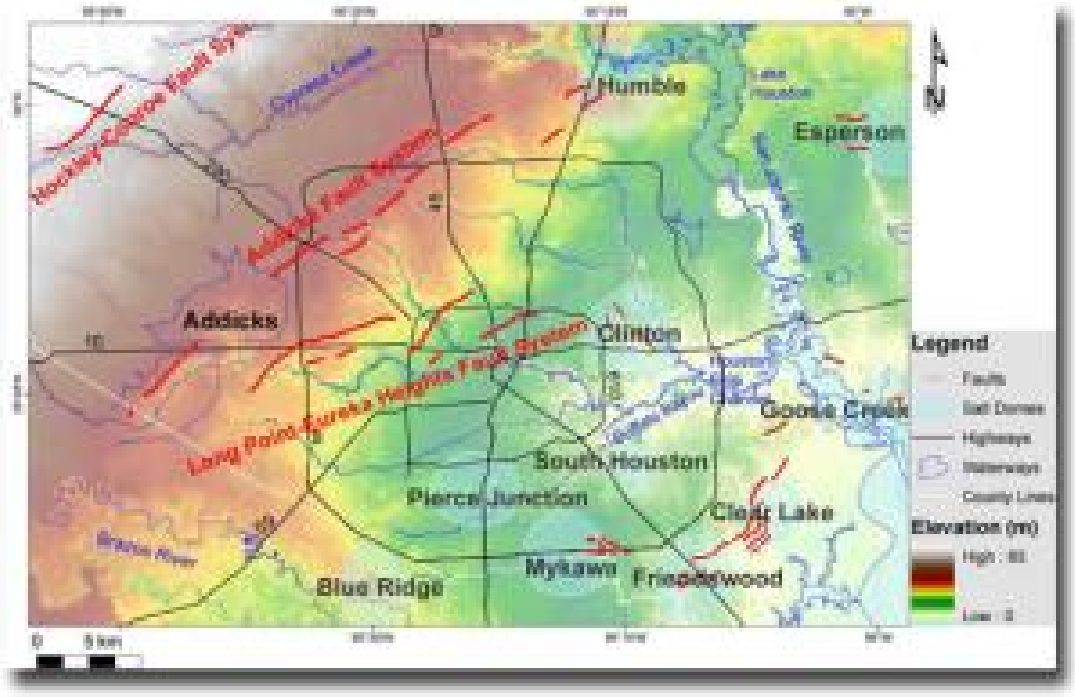
On Shaky Ground: Geological Faults Threaten Houston



Pictured is a Houston-area map showing the locations of salt domes and known active surface faults interpreted on lidar imagery. (Credit: Shuhab Khan and Richard Engelkemeir)

ScienceDaily (Apr. 29, 2008) — After finding more than 300 surface faults in Harris County, a University of Houston geologist now has information that could be vitally useful to the region's builders and city planners.

This information -- the most accurate and comprehensive of its kind -- was discovered by Shuhab Khan, assistant professor of geology, and Richard Engelkemeir, a geology Ph.D. student, using advanced radar-like laser technology. Although geologists have long known of the existence of faults in Southeast Texas, only recently have UH researchers produced a comprehensive map pinpointing the locations of the faults.

While the ground moving beneath Houstonians feet is not felt at the magnitude of recent earthquakes in San Antonio and Illinois, this shaky ground could mean trouble for buildings, roads and pipelines located on one of these hundreds of faults traversing the region's surface.

"These shifting fault lines originated millions of years ago during the formation of the Gulf of Mexico," Khan said. "While they are not the kinds that wreak havoc in earthquake-prone California and now the Midwest, they can move up to 1 inch a year, causing serious damage over the course of several years to buildings and streets that straddle a fault line. Additionally, structures on the subsiding side of the fault line could be more susceptible to flooding due to the lower elevation over time."

Khan and Engelkemeir recently presented their findings in Geosphere, a bimonthly online-only journal published by the Geological Society of America that highlights research results from all fields of the geosciences. They began by looking at data compiled during a 2001 study funded by the Federal Emergency Management Administration (FEMA) and the Harris County Flood Control District. That year, Tropical Storm Allison dumped nearly 40 inches of rain on the Houston area during the course of five days, causing nearly two dozen deaths and billions of dollars in property damage.

To update floodplain maps, FEMA and the flood district employed lidar technology -- the optical analog of radar meaning 'light detection and ranging' -- to survey the topography and elevation of the county. From an aircraft flying overhead, laser beams were directed toward the ground. The time between the laser beam pulse and the return reflection from any given point on the ground was used to determine the distance between the instrument and that point on the surface. Buildings and vegetation were then removed from the model to produce a map that recorded even the most subtle surface elevation differences.

Khan and Engelkemeir pored over the data, refining the grids to identify the more than 300 faults. Many were associated with the salt domes in the southeast part of the county. Others were located in the northwest portion of the county near highways Texas 6 and I-10, where there is ongoing subsidence, or sinking, of the ground.

During the summer of 2005, Engelkemeir personally visited about 50 of the faults he located with the lidar data, looking for signs of deformation and displacement where the land on one side of the fault was rising over the other. At many of the faults, he saw cracks in street pavements, with residents living nearby reporting foundation problems. At one home there was about a yard of displacement between the garage and the house. At another site, a building had been so damaged by ground shifts it was condemned.

Geologists are still studying what causes fault movements and the resulting subsidence in the region, with some attributing it to land-use practices such as groundwater and petroleum withdrawal, Engelkemeir said.

Khan is now turning his attention to Fort Bend County. Using lidar data, Cecilia Ramirez, a master's student working under Khan, has found one potential fault near the Brazos River levee.

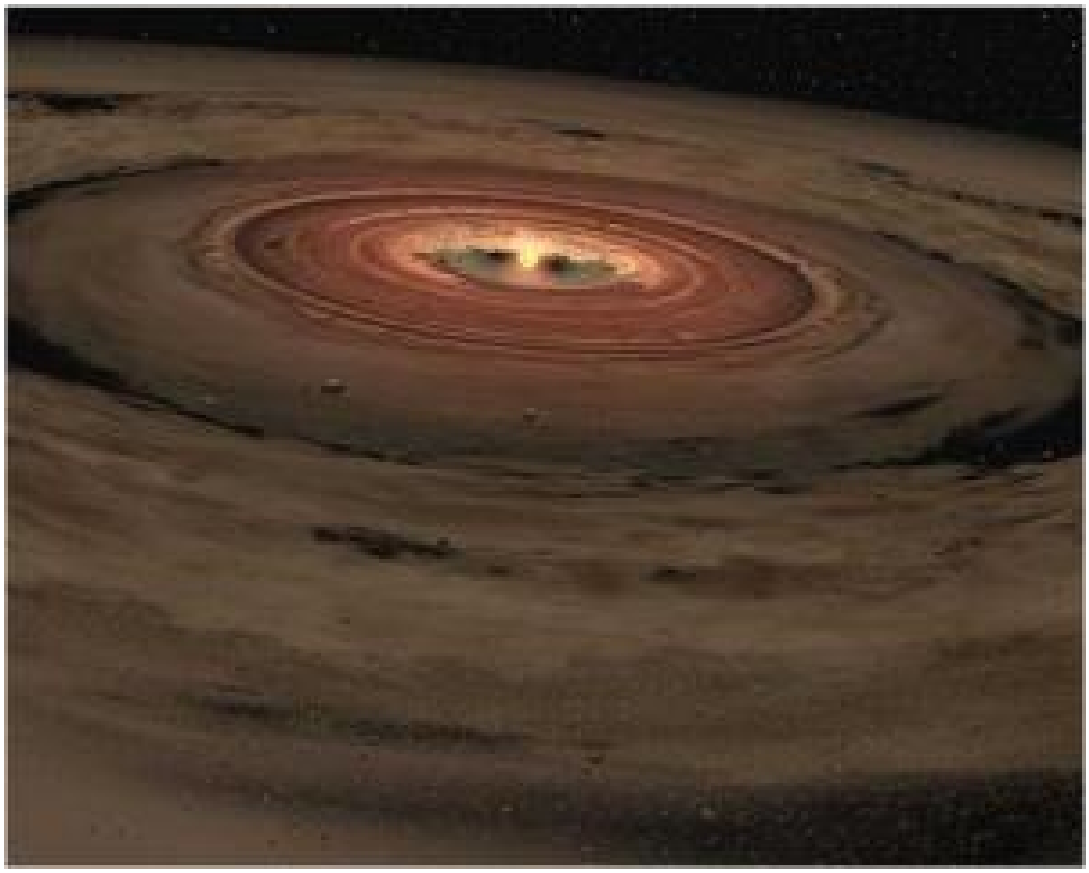
"By knowing the location of surface faults, builders and government planners will be able to avoid those areas or accommodate potential ground shifts in their construction plans," Khan said. "And we must still keep in mind that while lidar has allowed us to identify previously unmapped faults, there still might be faults in the region that have yet to be located."

Khan has given numerous talks on this work at both scientific meetings for a number of geological and petroleum organizations, as well as at more general meetings attended by the city of Houston and other local and state agencies.

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

http://www.sciencedaily.com:80 /releases/2008/04/080424153833.htm

Cracks In The Foundation: Fundamental Geological Assumption Relating To Planet Earth Not Quite True



This artistic impression shows what the solar system could have looked like once upon a time. However, how homogenous the solar nebula actually was is debatable. (Credit: NASA)

ScienceDaily (Apr. 29, 2008) — Chondritic meteorites have a similar chemical composition to the sun and are therefore reliable witnesses as to what the solar nebula, from which the planets formed, was composed of. This can be used to deduce what the Earth consists of chemically. However, ETH Zurich researchers have now discovered that strictly speaking this fundamental geological assumption is not true.

Many moons ago, geochemists discovered that the Earth must be identical to the so-called chondritic meteorites in terms of its chemical composition. The latter consist of exactly the same mixture of elements as the sun, which suggests that they mirror the composition of the solar nebula, from which the planets once emerged. This reasoning enables geologists to draw many significant conclusions. For example, geochemists can work out which elements make up the Earth's core as a result.

Or so they thought: although it may not exactly shatter this geochemical fundamental, a new publication does expose various cracks in the theory. Based on the results of their experiments, a team of researchers, which includes Bernard Bourdon, Professor of Isotope Geochemistry at ETH Zurich, recently concluded in the journal Nature that the Earth may have a slightly different composition to chondritic meteorites after all.

Theory not all that plausible

The basis for the study was the discovery by another team that the element neodymium in the rock found in the Earth's surface has a somewhat different isotopic make-up compared to the meteorites. As

neodymium is a lithophilic element and therefore not present in the Earth's core, the team suggests, there must be a hidden reservoir in the Earth's mantle that exhibits a different composition to the rest of it. However, on account of the strong convection in the Earth's mantle, which gives rise to a continual mixture of the rock, Bourdon's team did not find this theory all that plausible, and so they started looking for another explanation.

The scientists scrutinized the samarium and neodymium isotopes in rocks from the Earth, meteorites from Mars and the asteroid Vesta more closely and supplemented the values with data from the literature on moonstones. The two elements samarium and neodymium are closely related: the isotopes samarium 147 and samarium 146 namely decompose in the daughter isotopes neodymium 143 and neodymium 142. If you measure the isotopic composition of the two elements, you can reconstruct the processes that occurred in the early stages of the solar system on account of the degradation's different half-lives.

The new data reveals that rocks on the moon and Mars also exhibit an isotopic composition that differs significantly from that of the chondritic meteorites. However, the values match those of the terrestrial rocks: according to this, the Earth, Moon and Mars have a samarium-neodymium ratio that is five to eight percent above that of the chondritic meteorites. "The variance may not seem all that much", explains Bourdon. "But it is significant enough to be inconsistent with the classic model".

How homogenous was the solar nebula?

According to Bourdon, the fact that the three celestial bodies the Earth, the Moon and Mars could have the same isotopic composition proves that the theory of a hidden reservoir in Earth's mantle is far from holeproof. "Our analyses indicate that a process must have occurred in the first 30 million years of our solar system which resulted in the uneven distribution of matter in the solar system."

As far as the scientists are concerned, there are two possibilities: the first is that the matter in the solar nebula ceased to be homogenous even before the planets formed, a theory which astrophysicists consider perfectly plausible. This explanation is supported by that fact that the meteorites from the asteroid Vesta, which is considerably further from the sun than Mars, has a different isotopic composition compared to rocks from the Earth, the Moon or Mars. The data indicates that Vesta could have a similar composition to the chondritic meteorites, which also come from the asteroid belt.

The second explanation assumes that a crust formed on the first planetary bodies, the so-called planetesimals. In the course of this, the crusts and mantles of these bodies each exhibited a different composition. According to this theory, when the planets collided with one another their crust was blown away. This left bodies that had another isotopic composition to the original solar nebula, from which today's planets later emerged.

Journal reference: G. Caro et.al.: Super-chondritic Sm/Nd ratios in Mars, the Earth and the Moon. Nature 452, p.336-339 (2008).

Adapted from materials provided by ETH Zurich.

http://www.sciencedaily.com:80 /releases/2008/04/080428081732.htm

Step Right Up, Kids (and Thank the Dance Gods You're Not Elephants)

By ALASTAIR MACAULAY

With Jerome Robbins's death in 1998, roles in his ballets and shows began to be taken by performers who had never met him. Ten years later, we've already entered the era when his ballets are danced by those born after his lifetime. Enter the School of American Ballet.New York City Ballet's spring season will largely be a Robbinsfest. It opened on Tuesday night at the New York State Theater with a gala triple bill of his work, starting with "Circus Polka," the Stravinsky ballet he choreographed in 1972 for 48 children and himself as the Ringmaster cracking the whip. To see the number and the tininess of these children is, for many of us, to recall an even more classic and adorable Robbins moment: the March of the Siamese Children in "The King and I" (1951). But whereas the Siamese children are solemn and ceremonious, these Stravinskian children are ebullient and gleeful. Robbins has them entering in successive groups of 16; the third and final one features the smallest tots, who, of course, win a loud gasp from the audience. The eldest are 14, the youngest 8.Their youthfulness is the point. Stravinsky wrote the music for George Balanchine to choreograph (in 1942) for circus elephants, and it is legend that he agreed only when Balanchine assured him that the elephants were "very young." Actually it was choreographed for 50 women (and starred Balanchine's wife Vera Zorina) and 50 elephants (and starred the cow elephant Modoc), but no matter: Stravinsky's score is dedicated, "For a Young Elephant."

It was Robbins, however, who for City Ballet's 1972 Stravinsky Festival brought "Circus Polka" back to the stage, now for children of the School of American Ballet: his whip-cracking role preserved the circus element. On Tuesday that role was played by Robert La Fosse, a leading City Ballet performer of Robbins roles from 1986 until 2002. When all the kids have arrived, he marshals them in three concentric rings (revolving clockwise, counterclockwise, clockwise) and the tots brightly trot to music that, unlike them, has an elephantine galumph.

In the 1972 Robbins original, they ended up in the formation of the initials "I. S." (Igor Stravinsky). Now, they read "J. R." This was first done for a 1998 tribute to Robbins, when the Ringmaster was Mikhail

Baryshnikov. (A splendid photograph of the Baryshnikov finale hangs in the New York State Theater. In February, when I last checked, the caption mistakenly attributed the choreography to "Balanchine, 1942"; I hope someone has honored the Robbins celebration by correcting it at last.) Film and slide-show displays on Tuesday paid tribute to Robbins as both dancer and choreographer at City Ballet. The evening's more familiar but substantial pieces were "The Four Seasons" (1979) and "West Side Story Suite" (1995), nicely illustrating two different sides of his talent, ballet classicism and dramatic characterization.

Robbins's humor and wit keep bubbling up throughout "The Four Seasons." The dance for four male zephyrs in "Spring" stays marvelously unpredictable. (Which of them will do the next jump? And how many?) The slow iambic throbs of the knee-bends in the "Summer" adagio add their own sultry, suggestive slyness, and the fecund, lavish virtuoso outpouring of "Fall" is a geyser of Bacchanalian revelry. By contrast the dancing of "West Side Story Suite" is earnest, its emphasis on character and youthful intensity. My reactions to this piece vacillate rapidly. On the one hand, "West Side Story" is now so familiar that parts seem corny. How many jazzy finger-splaying gestures, how many sideways leg-extensions can we see and still respond sincerely? On the other, there are rhythms and images here that genuinely get under the skin. I can't resist the rapid double hand claps in "America," for example. And when Damian Woetzel leads the Jets in a little skimming step from side to side, the way it spreads spatially with each mini-phrase is always exhilarating. Starting as a tight little nucleus, Mr. Woetzel and company have soon expanded, and we feel the excitement of this before we pause to feel their aggression and defensiveness. It was remarkably good to see the unmannered cleanness of City Ballet's dancing (the School of American Ballet's too) throughout Tuesday's performance. And the dancing of "The Four Seasons" has acquired more bloom than when the ballet was revived in January (yet more is needed). Tyler Angle's performance in the "Summer" pas de deux is especially welcome: at the apex of the sideways jumps in his solo, he opens up and out with luxuriant ease. Mr. Woetzel is one of a number of men — others include Mr. Angle, Robert Fairchild (Tony) and Sean Suozzi — who capture the streetwise New York body language of "West Side Story" with heart-catching intensity. Not only is this spring season a chance to rediscover Robbins's choreography in depth and breadth, but it is also New York's last chance to cherish the dancing of Mr. Woetzel, who gives his farewell performance on June 18. Who, looking at him as Riff in "West Side Story," can believe that he was doing lead roles well over 20 years ago? In a ballet like this he still looks the embodiment of adolescence: raw, vulnerable, dangerous and doing everything for the first time.

The New York City Ballet season, featuring 33 Robbins ballets, continues through June 29 at the New York State Theater, Lincoln Center; (212) 870-5570, nycballet.com.

http://www.nytimes.com/2008/05/01/arts/dance/01ball.html?_r=1&th&emc=th&oref=slogin

International Development Goals

About 200 university presidents, split almost equally between American colleges and institutions abroad, are gathered in Washington this week for an invitation-only summit on the role of higher education in furthering social and economic development on a global scale. The U.S. Departments of Education and State hosted the summit, which extends through a series of roundtable discussions on specific regions scheduled for today.

In star-studded opening and closing plenary addresses Wednesday — the day's activities were otherwise closed to the press — five cabinet secretaries and several other top government officials traded largely in abstractions, describing the interrelations of international development and diplomacy, and avowing the value of partnerships in development work.

"The idea is to leverage every possible opportunity to expand opportunity," said Education Secretary Margaret Spellings.

But, lofty words aside, speakers likewise stressed a desire for concrete outcomes — specifically, that each participant leave the summit with plans in place for two new partnerships, challenged Henrietta Fore, administrator of the U.S. Agency for International Development and director of United States Foreign Assistance.

Though a show of hands toward day's end suggested that only a minority of participants had met Fore's charge, she, undaunted, unveiled the fruits of her own day's work. For the first of her two partnerships, a collaboration with the National Association of State Universities and Land-Grant Colleges, Fore announced that U.S. AID will provide $1 million for the association's Africa-U.S. Education Initiative. The money will go toward funding 20 grants of $50,000 each to support long-term collaborations between African and U.S. universities, especially in the areas of agriculture, health care, science and technology, education, business, engineering and economics.

Fore and the director of the National Science Foundation, Arden L. Bement Jr., also announced that they had signed a memorandum of understanding to combine the resources of their two granting agencies, one of which is largely externally focused (U.S. AID) and one of which is largely internally focused within the United States (NSF). "We are committed to strengthening the application of science and technology to development," said Fore.

Meanwhile, the participating presidents stressed the need to follow up with future conferences, create a centralized portal or inventory describing partnerships as they develop, and assess progress toward the day's stated goals.

The proof, they suggested, will be in what happens next.

"It was a good opportunity to get to know people," Javaid R. Leghari, president of Pakistan's Shaheed Zulfikar Ali Bhutto Institute of Science and Technology, said of the conference. "Excellent networking."

"I should hope we will see the tangible results in six to nine months. If it's real."

In breakout sessions Wednesday (closed to the press), university leaders covered such topics as open-source course materials, video conferencing technologies, connections between academe and small business development, public health infrastructure, women and leadership, sustainability and the construction of new universities from scratch (in which, for instance, David J. Skorton, Cornell University's president, talked about the institution's young medical school in Qatar.)

In an interview, Skorton said he was particularly heartened to see the summit's truly international dimensions, "how widely attended this is from around the world."

"We have to listen to our partner colleges about what they need, not tell them what they need," he stressed.

Jack Bermingham, president of Highline Community College, in Washington State, seconded Skorton's observation about the breadth of involvement but said it "remains to be seen" whether the summit could signal a reinvigoration of international development efforts. "The resources have not always been there in the public sector in recent years," he said. "The gathering this morning suggests that there's a lot of support and a lot of capacity that could be used if the resources were available."

At the last such government-sponsored summit of higher education leaders held in 2006, President Bush launched the $114 million National Security Language Initiative, a plan to provide an influx of funds to support the teaching of "critical" languages including Arabic, Chinese and Farsi.

— Elizabeth Redden

The original story and user comments can be viewed online at http://insidehighered.com/news/2008/05/01/summit.

Next decade 'may see no warming'
By Richard Black
Environment correspondent, BBC News website

The Earth's temperature may stay roughly the same for a decade, as natural climate cycles enter a cooling phase, scientists have predicted.

A new computer model developed by German researchers, reported in the journal Nature, suggests the cooling will counter greenhouse warming.

However, temperatures will again be rising quickly by about 2020, they say.

Other climate scientists have welcomed the research, saying it may help societies plan better for the future.

The key to the new prediction is the natural cycle of ocean temperatures called the Atlantic Multidecadal Oscillation (AMO), which is closely related to the warm currents that bring heat from the tropics to the shores of Europe.

The cause of the oscillation is not well understood, but the cycle appears to come round about every 60 to 70 years.

> **Imagine the payoff of knowing with some certainty what the next 10 years hold in terms of temperature and precipitation**
> Professor Michael Schlesinger

It may partly explain why temperatures rose in the early years of the last century before beginning to cool in the 1940s.

"One message from our study is that in the short term, you can see changes in the global mean temperature that you might not expect given the reports of the Intergovernmental Panel on Climate Change (IPCC)," said Noel Keenlyside from the Leibniz Institute of Marine Sciences at Kiel University.

His group's projection diverges from other computer models only for about 15-20 years; after that, the curves come back together and temperatures rise.

"In the long term, radiative forcing (the Earth's energy balance) dominates. But it's important for policymakers to realise the pattern," he told BBC News.

Deep patterns

Modelling of climatic events in the oceans is difficult, simply because there is relatively little data on some of the key processes, such as the meridional overturning circulation (MOC) - sometimes erroneously known as the Gulf Stream - which carries heat northwards in the Atlantic.

Only within the last few years have researchers begun systematically deploying mobile floats and tethered buoys that will, in time, tell us how this circulation is changing.

As a substitute for direct measurements of the MOC, the Kiel team used data going back 50 years from the Labrador Sea, where warm water gives up its heat to the atmosphere and sinks, before returning southward lower in the ocean.

Combining this ocean data with established models of global warming, they were able to generate a stream of model results that mimicked well temperatures observed in the recent past over the north Atlantic, western Europe and North America.

Looking forward, the model projects a weakening of the MOC and a resulting cooling of north Atlantic waters, which will act to keep temperatures in check around the world, much as the warming and cooling associated with El Nino and La Nina in the Pacific bring global consequences.

"We have to take into account that there are uncertainties in our model; but it does suggest a plateauing of temperatures, and then a continued rise," said Dr Keenlyside.

'No distraction'

The projection does not come as a surprise to climate scientists, though it may to a public that has perhaps become used to the idea that the rapid temperature rises seen through the 1990s are a permanent phenomenon.

"We've always known that the climate varies naturally from year to year and decade to decade," said Richard Wood from the UK's Hadley Centre, who reviewed the new research for Nature.

"We expect man-made global warming to be superimposed on those natural variations; and this kind of research is important to make sure we don't get distracted from the longer term changes that will happen in the climate (as a result of greenhouse gas emissions)."

Dr Wood cautions that this kind of modelling is in its infancy; and once data can be brought directly from the Atlantic depths, that may change the view of how the AMO works and what it means for the global climate.

As with the unusually cold weather seen recently in much of the northern hemisphere - linked to La Nina conditions - he emphasises that even if the Kiel model proves correct, it is not an indication that the longer-term climate projections of the IPCC and many other institutions are wrong.

Michael Schlesinger, the US scientist who characterised the AMO in 1994, described the new model as "very exciting".

"No doubt we need to have more data from the deep ocean, and we don't have that at present," the University of Illinois at Urbana-Champaign researcher told BBC News.

"But imagine the payoff of knowing with some certainty what the next 10 years hold in terms of temperature and precipitation - the economic impacts of that would be significant."

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Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7376301.stm

Published: 2008/05/01 03:11:00 GMT

Nuclear's CO2 cost 'will climb'

By Paul Rincon
Science reporter, BBC News

The case for nuclear power as a low carbon energy source to replace fossil fuels has been challenged in a new report by Australian academics.

It suggests greenhouse emissions from the mining of uranium - on which nuclear power relies - are on the rise. Availability of high-grade uranium ore is set to decline with time, it says, making the fuel less environmentally friendly and more costly to extract.

The findings appear in the journal Environmental Science & Technology.

Yes, we can probably find new uranium deposits, but to me that's not the real issue
Dr Gavin Mudd, Monash University

A significant proportion of greenhouse emissions from nuclear power stem from the fuel supply stage, which includes uranium mining, milling, enrichment and fuel manufacturing.

Others sources of carbon include construction of the plant - including the manufacturing of steel and concrete materials - and decomissioning. The authors based their analysis on historical records, contemporary financial and technical reports, and analyses of CO2 emissions.

Experts say it is the first such report to draw together such detailed information on the environmental costs incurred at this point in the nuclear energy chain.

Nuclear impact

The report is likely to come under close scrutiny at a time when governments around the world are considering the nuclear option to meet future energy demands and reduce greenhouse gas emissions.

Lead author Gavin Mudd, from Monash University in Australia, told BBC News: "Yes, we can probably find new uranium deposits, but to me that's not the real issue. The real issue is: 'what are the environmental and sustainability costs?'

New uranium deposits are likely to be deeper underground and therefore more difficult to extract than at currently exploited sites, said Dr Mudd. In addition, he said, the average grade of uranium ore - a measure of its uranium oxide content and a key economic factor in mining - is likely to fall. Getting uranium from lower-quality deposits involves digging up and refining more ore.

Even in the worst case scenario for CO2 emissions, the impact of nuclear on greenhouse emissions is still very small
Thierry Dujardin, NEA

Transporting a greater amount of ore will in turn require more diesel-powered vehicles - a principal source of greenhouse emissions in uranium mining.

"The rate at which [the average grade of uranium ore] goes down depends on demand, technology, exploration and other factors. But, especially if there is going to be a nuclear resurgence, it will go down and that will entail a higher CO2 cost," Dr Mudd explained.

Overall, the report suggests that uranium mining could require more energy and water in future, releasing greenhouse gases in greater quantities.

New technology

Thierry Dujardin, deputy director for science and development at the Nuclear Energy Agency (NEA), said the analysis made an important contribution to clarifying the impact of nuclear energy on CO2 emissions.

"It is the beginning of the answer to a question I have raised in many fora, including within the agency," he told BBC News.

But Mr Dujardin said he did not fully agree with the authors' conclusions.

"Even in the worst case scenario for CO2 emissions, the impact of nuclear on greenhouse emissions is still very small compared with fossil fuels," he explained.

The NEA official admitted that lower grades of ore might have to be exploited in future, but he added that emissions from mining were only a small part of those produced in the nuclear supply chain as a whole.

He said he was also confident that entirely new deposits would be found as the industry stepped up its exploration effort.

The nuclear industry is carrying out research into recovering uranium from rocks used in the industrial production of phosphates. Various technologies based on solvent extraction can be used to get the element from phosphate rocks.

And in the longer term, some predict that so-called fast breeder reactor technology would increase by up to 50-fold the amount of energy extracted from uranium.

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Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7371645.stm

Published: 2008/04/30 16:56:20 GMT

Heart disease warning for women

Fears are being raised that rising levels of obesity and diabetes may be affecting the fall in heart disease death rates in women aged under 50.

Researchers from Oxford and Liverpool universities believe death rates among that age group may be plateauing after continuous falls since the 1970s.

They studied all deaths in England and Wales from 1931 to 2005 and found the pace of the drop had started to slow.

The team said the findings, in the BMC Public Health journal, were disturbing.

> **What we may be seeing with the figures for women is a plateauing and in the future it may even rise**
> Peter Scarborough, report author

Heart disease death rates for all age groups increased until the 1970s, but have been falling continuously since.

This has been put down to better treatment and a fall in the number of people smoking.

However, the rate of the fall among women under 50 has started showing signs of slowing in contrast to the continuing increase in decline seen in older people.

For example, the death rate in the 45-49 age group nearly halved from the rate it was between 1976 and 1985 to 15 deaths per 100,000 between 1986 and 1995.

But in the 10-year period starting in 1996, it fell only to 12.5 deaths per 100,000.

Report author Peter Scarborough said: "What we may be seeing with the figures for women is a plateauing and in the future it may even rise.

"It seems to me that the increased rates of obesity and diabetes are playing a role in this and if this pattern is emerging in women then it is quite likely we will see the same in men in the future."

Action urged

The report pointed out that obesity and diabetes levels have been rising in younger age groups over the last 10 years, while physical activity levels have fallen.

However, Mr Scarborough also admitted that as the number of deaths in the younger age groups was relatively small, it was hard to draw accurate conclusions.

Professor Peter Weissberg, medical director for the British Heart Foundation, which helped to fund the study, said the findings were "worrying".

"It's a common misconception that heart disease is a male problem, yet cardiovascular disease is the biggest cause of premature death in women.

"Heart disease should be a very real issue for all women, and younger generations must take action now to cut down their risk."

Have you been affected by the issues discussed in this story? Are you a woman under 50 suffering from heart disease? Please send your comment using the form below:

Name
Your E-mail address
Town & Country
Phone number (optional):
Comments
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7375941.stm

Published: 2008/05/01 00:04:19 GMT

Take your seats for the top 100 films

Another film list? The same old Citizen Kane? No — this one's different, says The Times's chief film critic James Christopher

Phoenix Cinema in East Finchley, London

You may be suffering from list exhaustion. There are so many about, and especially on film. But this one is different. Yes, of course we'd say that. But having read endless Top 100 film lists, we felt short-changed. Sure, they're definitive in their way, but they don't have many surprises. This one aims to be all-encompassing, certainly, and authoritative. But it is also intended to cause debate and maybe consternation.

None of us — myself, my fellow critics at *The Times* and my editor Tim Teeman — realised how contentious this list would be to compile. We didn't want simply to rearrange the furniture as other lists do. Nor to kow-tow to monolithic critical masterpieces routinely crowned year on year.

There are some spectacular casualties. *Citizen Kane* (1941) failed to cut the mustard. The genius of Orson Welles was not to be denied. But it was felt that his sour and seedy thriller *Touch of Evil* (1958) was not only equally audacious in terms of pure film-making, but also had greater resonance than *Kane*.

Some omissions are too painful to talk about: *Groundhog Day, The Servant, The Lives of Others, Psycho, The English Patient*. (All my choices naturally.) Tastes vary dramatically, and you would be amazed how few critics will fall on their swords when it comes to such a fraught subject. That said, the list looks far fresher and younger than any of us dared hope. The number of recent releases vying for places near the summit is a surprise. I shall be horrified if anyone agrees with every one of our choices. The point of *The Times* Top 100 Films of All Time is to stimulate argument, and sharpen your own thoughts about the ingredients that make great movies.

Debate our list online (timesonline.co.uk/top100films) and see a clutch of the films on the big screen in *The Times*/Warner Movies that Matter season (for details see pages 20-21).

Now, if you'd like to take your seats for the main presentation . . .

Top 100 films - the full list

100 - Jurassic Park

99 - La Belle et la Bete

98 - My Fair Lady

97 - Point Break

96 - Lost in Translation

95 - Grand Hotel

94 - La Haine

93 - Cool Hand Luke

92 - A bout de soffle

91 - Short Cuts

90 - Trainspotting

89 - A Touch of Evil

88 - Wild Strawberries

87 - Silence of the Lambs

86 - Nosferatu

85 - Dog Day Afternoon

84 - Festen

83 - Spartacus

82 - Chungking Express

81 - North by Northwest

80 - Tokyo Story

79 - Deliverance

78 - The Lady Eve

77 - Pather Panchali

76 - From Here To Eternity

75 - The Good, The Bad the Ugly

74 - Rosemary's Baby

73 - Great Expectations

72 - Days of Heaven

71 - This Is Spinal Tap

70 - The Conversation

69 - Hidden (Cache)

68 - The Maltese Falcon

67 - The Piano

66 - Toy Story

65 - The Thin Blue Line

64 - Do The Right Thing

63 - On The Waterfront

62 - Taxi Driver

61 - Rashomon

60 - The Crying Game

59 - Pulp Fiction

58 - Dr Zhivago

57 - Raging Bull

56 - Whisky Galore

55 - The Matrix

54 - Roman Holiday

53 - Mildred Pierce

52 - La Dolce Vita

51 - Cabaret

50 - Blade Runner

49 - High Society

48 - Shoah

47 - Fargo

46 - All About Eve

45 - The Life and Death of Colonel Blimp

44 - A Streetcar Named Desire

43 - Terminator 2: Judgement Day

42 - Blue Velvet

41 - A Star Is Born

40 - The Life of Brian

39 - The Graduate

38 - Rear Window

37 - Beau Travail

36 - Jaws

35 - Withnail and I

34 - The Man Who Shot Libert Valance

33 - One Flew Over The Cuckoo's Nest

32 - The Empire Strikes Back

31 - His Girl Friday

30 - Rebel Without a Cause

29 - Duck Soup

28 - Gone With The Wind

27 - A Clockwork Orange

26 - Goodfellas

25 - Picnic at Hanging Rock

24 - The Philadelphia Story

23 - Some Like It Hot

22 - The Breakfast Club

21 - The Towering Inferno

20 - The Wizard of Oz

19 - The Exorcist

18 - Don't Look Now

17 - Annie Hall

16 - Metropolis

15 - Apocalypse Now

14 - Jungle Book

13 - 2001

12 - Alien

11 - The Sound of Music

10 - The Godfather

9 - Eternal Sunshine of the Spotless Mind

8 - Sunset Boulevard

7 - Kes

6 - Vertigo

5 - The Shining

4 - Chinatown

3 - ET

2 - There Will Be Blood

1 - Casablanca

http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/related_features/top_100_films/article3795569.ece

Whatever happened to book borrowers?

People seem to have forgotten how to take things out from the library and return them
April 29, 2008 12:30 PM

Bring it back ... Whitechapel public library (now closed). Photograph: Graham Turner

Brilliantly supported by a strong media campaign, Saturday's national Join a Library Day was a great scheme to boost borrower numbers. Along with the obligatory celebrity endorsement there were incentives including a welcome pack and a free guide to children's books for the first 235,000 youngsters to sign up, and loads of promotional work put into it by local librarians. Perhaps most significantly of all, beyond the gloss and trappings, was the opportunity for all to join through a simple national form which only required one bit of ID.

So, more people signing up, which is great for the library membership figures; and better open-access, which is entirely in keeping with the original mission of the public library. In fact, since it has always been a free service, it is surprising it needs such promotion at all. But, once all these people have joined, what happens about the books and the fragile eco-system of "borrowing" remains to be seen.

Everyone loves the idea of the libraries: they are the "envy of the world". The many endowed by Andrew Carnegie at the turn of the century have frequently been cited as the inspirational and practical source of both culture and education for many, and especially those who describe themselves as self-made. But despite their often grand appearance, somewhere along the line they lost their allure.

Partly one can blame the outdated stereotype of bespectacled dragons demanding absolute silence for putting people off. More recently, the image of the library as the warm retreat of the homeless hasn't helped either.

However nimbly they have adapted, modernised, lost books and gained technology, become determinedly "functional" as invaluable resource centres rather than bookstores, the libraries are always needing to boost their profile. They need more borrowers and yet, one of their biggest problems, in my experience, is

that "borrowing" is not a readily understood modern concept, however well-embedded it was in Carnegie's day.

Putting things back, apart from cars in cars clubs which are all too easily traced, is just not very fashionable. Video borrowing from shops, even with cards and passwords, suffered in the same way. Talking your way past why a video hasn't been returned, or just paying the not-very-large fine so as to release a new store of treasures, isn't that difficult. In libraries, those who don't return books often also just don't return themselves.

The situation has been compounded by free access to everything from music to films and even subscription TV channels. Ownership is collective, free at the point of receipt, temporary and an entitlement. The idea of rewarding the cultural creator through royalties, the wonderful PLR or anything else, is fading.

No one dares say how many of the books borrowed from the library are returned. The last time I asked for a book the system showed that the borough had several copies of it but none had been seen for several years. Where and when it had last been borrowed was all meticulously recorded but, alas, there seemed to be no way of actually getting the books back.

Let's hope the new users enjoy the wide range of services on offer in libraries as well as having the chance to read, borrow and return the books.

http://blogs.guardian.co.uk:80/books/2008/04/whatever_happened_to_book_borr.html

Web in infancy, says Berners-Lee
By Darren Waters
Technology editor, BBC News website

The world wide web is "still in its infancy", the web's inventor Sir Tim Berners-Lee has told BBC News.

He was speaking ahead of the 15th anniversary of the day the web's code was put into the public domain by Cern, the lab where the web was developed.

The future web will put "all the data in the world" at the fingertips of every user, Sir Tim said.

"The web has been a tremendous tool for people to do a lot of good even though you can find bad stuff out there."

Making the web free to use had a vital role in spreading its use worldwide.

There are now 165 million different websites around the world, according to internet research firm Netcraft.

Sir Tim said he was optimistic about the future of the web.

'Fantastic experience'

"The experience of the development of the web by so many people collaborating across the globe has just been a fantastic experience," he said.

"The experience of international collaboration continues. Also the spirit that really we have only started to explore the possibilities of [the web], that continues."

Sir Tim predicted that the web's ability to engender collaboration could one day see the web being used to help manage the planet.

The difficult part was explaining to them the true nature of what the web was going to be

Robert Cailliau, Cern

"What's exciting is that people are building new social systems, new systems of review, new systems of governance.

"My hope is that those will produce... new ways of working together effectively and fairly which we can use globally to manage ourselves as a planet."

The ubiquity of the web gives the impression that its success was inevitable but that was not always the case, said Robert Cailliau, who worked alongside Sir Tim.

The decision by physics laboratory Cern to release the web code into the public domain was not a straightforward one, he told BBC News.

Technical proposals

HAVE YOUR SAY As more people become web literate our ancient system of government will change David, London, UK

Mr Cailliau helped draw up one of the early technical proposals for the web and later helped convince the directors at Cern to "give the web away".

"The difficult part was explaining to them the true nature of what the web was going to be," he said.

"We had to convince them that this was going to take off and it was a really big thing. And therefore Cern couldn't hold on to it and the best thing to do was to give it away."

He added: "We had toyed with the idea of asking for some sort of royalty. But Tim wasn't very much in favour of that."

He said competing technologies, such as Gopher, which was developed at the University of Minnesota, were also offering a method of using hyperlinks to connect documents across computers on the internet.

"If we had put a price on it like the University of Minnesota had done with Gopher then it would not have expanded into what it is now.

"We would have had some sort of market share alongside services like AOL and Compuserve, but we would not have flattened the world."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/7371660.stm

Published: 2008/04/30 03:30:11 GMT

Rules for cord blood collection

The collection of cord blood at birth in the UK is to be closely regulated for the first time.

Under the rules announced by the Human Tissue Authority (HTA), collection can only be carried out by a trained specialist at an approved premises.

Samples must also be traceable from collection to any use in treatments.

The trend of collecting cord blood in public or private banks for potential medical applications has grown more popular in recent years.

> **We are introducing this regulation to make sure that the best quality samples are taken in the safest way**
> Adrian McNeil
> Human Tissue Authority

Thousands of couples have already paid large sums to store samples which - because they are a rich source of stem cells - could potentially be used in the treatment of disease.

Stem cells have the potential to turn into many different types of tissue, and in theory could be used to repair or replace damaged tissue.

In particular it is hoped that they could help replenish lost blood cells, providing an alternative to bone marrow transplant for leukaemia patients.

However, a Royal College of Obstetricians and Gynaecologists report has warned that there was "insufficient evidence" to recommend the practice.

Safety key

The HTA is keen to ensure that the practice is safe for those people who want to press ahead anyway.

To that end it will only grant a licence if the applicant can demonstrate procedures are in place which will help prevent any medical attention being drawn away from mother or child during collection.

Adrian McNeil, HTA chief executive, said: "We are introducing this regulation to make sure that the best quality samples are taken in the safest way.

"We have heard that fathers, who of course have no experience in collecting cord blood, may be involved in this procedure.

"The worry is that if inexperienced people are involved, this will not be done at the right time and in the right way.

"The result is that the best samples may not be collected. It is also important for the midwife to be allowed to concentrate on the welfare of the mother and child."

The new rules have been drawn up following widespread consultation of people working in the field.

Professor Peter Braude, chairman of the Royal College of Obstetricians and Gynaecologists' expert committee on Umbilical Stem Cell Banking, welcomed the new regulations.

He said: "There is clear evidence from the NHS Cord Blood Bank that collection conditions can influence the likelihood of stem cells being obtained from the umbilical cord blood samples collected."

Belinda Phipps, of the National Childbirth Trust, welcomed the new safeguards.

She said: "It is vital that the birth and immediate post birth period is not disrupted and that the midwife is not distracted from her primary role.

"Care must be taken not to deprive the baby of blood from the cord or placenta.

"It is also important that, if parents choose to have a sample taken in the hope that science will advance enough to make effective use of it, that the sample remains identifiable and in a viable condition."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7371801.stm

Published: 2008/04/30 00:51:28 GMT

Will Corals Survive The Stormy Future?

A view of part of the survey area in Belize, where James Crabbe and his Earthwatch team measured more than 520 corals. (Credit: James Crabbe)

ScienceDaily (Apr. 29, 2008) — Hurricanes and storms limit the ability of corals in Belize to "recruit" new coral into their communities, according to an Earthwatch-supported study published in Marine Environmental Research.

"Increasing evidence now shows that storms are becoming more intense due to climate change," said lead author and Earthwatch scientist Dr. James Crabbe from the University of Bedfordshire in the United Kingdom.

Coral reefs—which can grow to be thousands of years old—form and grow when free-swimming coral larvae in the ocean attach to rocks or other hard surfaces and begin to develop. Intense storms can wipe out this "recruitment" process.

"Storms threaten the survival of the entire reef itself," said Crabbe, who found similar results in another Earthwatch-supported study in Jamaica a few years ago. The new study will appear in the May issue of Marine Environmental Research.

"If the storms don't destroy corals outright, they render them more susceptible to disease, and that is certainly apparent on the Belize reefs," said Crabbe, who is doing a lecture tour related to this work throughout 2008—deemed the International Year of the Reef by the International Coral Reef Initiative (ICRI).

The study holds implications for marine park managers, Crabbe said. "They may need to assist coral recruitment and settlement [in hurricane years] by establishing coral nurseries and then placing the baby

corals (larvae) in the reef at discrete locations" or by setting up artificial reef blocks to help the corals survive.

Crabbe conducted the research in 2006 and 2007 with Edwin Martinez, Earthwatch Field Director in Belize and co-author, as well as with the help of young local scientists. Earthwatch, the world's largest environmental volunteer organization, has conducted a coral research program in Belize for the last three years.

The team measured the size of more than 520 non-branching corals in two major coral reef areas in southern Belize: the Sapodilla Cayes Marine Reserve, a world heritage site in the second largest barrier reef in the world, and the Port Honduras Marine Reserve. In addition to providing habitat for an array of marine life, non-branching massive corals—robust and shaped like mounds, and sometimes called 'brain corals'—buffer coastal zones from erosive wave energy.

Crabbe's team determined the surface area covered by the corals and entered the growth rates of the corals into a computer model to determine when in history the coral colonies first settled. They compared numbers of corals that started life in each year with hurricane and storm data, and as suggested by data from fringing reefs of Jamaica, the coral recruitment was much lower during storm years, Crabbe said.

"The rapid growth of the tourism industry in Belize over the past five years tops the list of threats to the corals," and agricultural runoff is a close second, Martinez said.

"Climate change is coming up the list very quickly," Crabbe said.

Adapted from materials provided by Earthwatch Institute, via Newswise.

http://www.sciencedaily.com /releases/2008/04/080428140002.htm

Monitoring Of Carbon Dioxide Will Require Global Data Collection Ten Times Larger Than Current Set Up

A research commentary in Science magazine is calling for a 10-fold increase in global carbon dioxide monitoring efforts to quantify regional emissions reduction trends. (Credit: US Fish and Wildlife Service)

ScienceDaily (Apr. 29, 2008) — Monitoring Earth's rising greenhouse gas levels will require a global data collection network 10 times larger than the one currently in place in order to quantify regional progress in emission reductions, according to a new research commentary by University of Colorado and NOAA researchers appearing in the April 25 issue of Science.

The authors, CU-Boulder Research Associate Melinda Marquis and National Oceanic and Atmospheric Administration scientist Pieter Tans, said with atmospheric carbon dioxide concentrations now at 385 parts per million and rising, the need for improved regional greenhouse gas measurements is critical. While the current observation network can measure CO_2 fluxes on a continental scale, charting regional emissions where significant mitigation efforts are underway -- like California, New England and European countries -- requires a more densely populated network, they said.

"The question is whether scientists in the United States and around the world have what they need to monitor regional fluxes in atmospheric carbon dioxide," said Marquis, a scientist at the Cooperative Institute for Research in Environmental Sciences, a joint institute of CU-Boulder and NOAA. "Right now, they don't."

While CO_2 levels are climbing by 2 parts per million annually -- a rate expected to increase as China and India continue to industrialize -- effective regional CO_2 monitoring strategies are virtually nonexistent, she said. Scientists are limited in their ability to distinguish between distant and nearby carbon sources and "sinks," or storage areas, for example, by the accuracy of atmospheric transport models that reflect details of terrain, winds and the mixing of gases near observation sites.

"We are in uncharted territory as far as knowing how safe these high CO_2 levels are for the Earth," she said. "Instead of tackling a very complex challenge with the equivalent of Magellan's maps, we need to use the equivalent of Google Earth."

Marquis and Tans propose increasing the number of global carbon measurement sites from about 100 to 1,000, which would decrease the uncertainty in computer models and help scientists better quantify changes. "With existing tools we could gather large amounts of additional CO_2 data for a relatively small investment," said Marquis. "The next step is to muster the political will to fund these efforts."

Scientists currently sample CO_2 using air flasks, in-situ measurements from transmitter towers up to 2,000 feet high and via aircraft sensors. The authors proposed putting additional CO_2 sensors on existing and new transmitter towers that can gather large volumes of climate data. While Europe and the United States have small networks of tall transmitter towers equipped with CO_2 instruments, such towers are rare on the rest of the planet, she said.

Satellites queued for launch in the next few years to help monitor atmospheric CO_2 levels include the Orbiting Carbon Observatory and the Greenhouse Gases Observing Satellite, said Marquis. The satellites will augment ground-based and aircraft measurements charting terrestrial photosynthesis, carbon sinks, CO_2 respiration sources, ocean-atmosphere gas exchanges and CO_2 emissions from wildfires.

Mandated by the U.N. Framework Convention on Climate Change in 1994, national emissions inventories for each country are based primarily on economic statistics to estimate greenhouse gases entering and leaving the atmosphere, said the authors. Such inventories are "reasonably accurate" for estimating atmospheric CO_2 from burning fossil fuels in developed countries.

But they are less accurate for other sources of CO_2, like deforestation, and for emissions of other greenhouse gases, like methane, which is emitted as a result of rice farming, cattle ranching and natural wetlands, said the authors.

There is a growing need to measure the effectiveness of particular mitigation efforts by states or regions involved in pollution caps, auto emission reduction campaigns and intensive tree-planting efforts, Marquis said. The Western Climate Initiative, for example -- a consortium of seven western U.S. states and British Columbia -- set a goal last year of reducing greenhouse gas emissions by 15 percent as of 2020.

Precise regional CO_2 measurements also could help chart the accuracy of carbon trading systems involving "credits" and "offsets" now in use in various countries around the world, said Marquis. In such systems, companies exceeding CO_2 emission caps can buy carbon credits from companies under the caps, and groups or companies can buy voluntary carbon offsets to compensate for personal lifestyle choices, such as airline travel.

"Independent verification through regional CO_2 monitoring could help determine whether carbon credits or offsets being bought or sold are of value," Marquis said.

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Adapted from materials provided by University of Colorado at Boulder.

http://www.sciencedaily.com:80 /releases/2008/04/080424141929.htm

Carbon Footprint Of Best Conserving Americans Is Still Double Global Average

A representation of different estimated annual carbon footprints. Government services were a major reason for the relatively large U.S. average, according to an MIT class led by Professor Timothy Gutowski of mechanical engineering. (Credit: MIT)

ScienceDaily (Apr. 29, 2008) — An MIT class has estimated the carbon emissions of Americans in a wide variety of lifestyles -- from the homeless to multimillionaires, from Buddhist monks to soccer moms -- and compared them to those of other nations. The somewhat disquieting bottom line is that in the United States, even the people with the lowest usage of energy are still producing, on average, more than double the global per-capita average. Whether you live in a cardboard box or a luxurious mansion, whether you subsist on homegrown vegetables or wolf down imported steaks, whether you're a jet-setter or a sedentary retiree, anyone who lives in the U.S. contributes more than twice as much greenhouse gas to the atmosphere as the global average, an MIT class has estimated.

The class studied the carbon emissions of Americans in a wide variety of lifestyles--from the homeless to multimillionaires, from Buddhist monks to soccer moms--and compared them to those of other nations. The somewhat disquieting bottom line is that in the United States, even people with the lowest energy usage account for, on average, more than double the global per-capita carbon emission. And those emissions rise steeply from that minimum as people's income increases.

"Regardless of income, there is a certain floor below which the individual carbon footprint of a person in the U.S. will not drop," says Timothy Gutowski, professor of mechanical engineering, who taught the class that calculated the rates of carbon emissions. The results will be presented this May at the IEEE International Symposium on Electronics and the Environment in San Francisco.

While it may seem surprising that even people whose lifestyles don't appear extravagant--the homeless, monks, children--are responsible for significant greenhouse gas emissions, one major factor is the array of government services that are available to everyone in the United States. These basic services--including

police, roads, libraries, the court system and the military--were allocated equally to everyone in the country in this study. Other services that are more specific, such as education or Medicare, were allocated only to those who actually make use of them.

The students conducted detailed interviews or made detailed estimates of the energy usage of 18 lifestyles, spanning the gamut from a vegetarian college student and a 5-year-old up to the ultrarich--Oprah Winfrey and Bill Gates. The energy impact for the rich was estimated from published sources, while all the others were based on direct interviews. The average annual carbon dioxide emissions per person, they found, was 20 metric tons, compared to a world average of four tons.

But the "floor" below which nobody in the U.S. can reach, no matter a person's energy choices, turned out to be 8.5 tons, the class found. That was the emissions calculated for a homeless person who ate in soup kitchens and slept in homeless shelters.

The analysis was carried out by Gutowski and 21 students in his 2007 class, "Environmentally benign design and manufacturing." They derived a system for making such comparisons, which they call ELSA--environmental life style analysis.

Unlike some other attempts to quantify carbon-emission rates, Gutowski and his students took great care to account for often-overlooked factors, such as the "rebound effect." That's when someone makes a particular choice--for example, buying a hybrid car instead of a gas-guzzler--but then uses the money saved from their reduced gasoline costs to do something else, such as taking a long trip by airplane. The net impact, in such a case, may actually be an overall increase in carbon emissions.

"When you save energy, you save money," Gutowski explains. "The question is, how are you going to spend that money?"

The students looked at the factors within each person's control that might lead to a reduction in carbon output. They found that achieving significant reductions for the most part required drastic changes that would likely be unacceptable to most people. As a result, they said, "this all suggests to us very significant limits to voluntary actions to reduce impacts, both at a personal level and at a national level."

In a continuation of the class this semester, another group of students are exploring this question in more detail, looking at just what kinds of things people really can do to limit their environmental impact. The question they are addressing, Gutowski says, is "can average Americans tighten their belts" in a way that would make a significant difference? Once again, the class will be interviewing people living in a wide variety of ways, including an Amish farming lifestyle. Then, after analyzing the results and possible changes, they will go back to the same people and ask, "Would you consider these alternatives?"

In general, spending money on travel or on goods that have substantial energy costs in their manufacture and delivery adds to a person's carbon footprint, while expenditures on locally based labor-intensive services--whether it's going to a therapist, taking an art class, or getting a massage--leads to a smaller footprint.

But the biggest factors in most people's lives were the obvious energy-users: housing, transportation and food. "The simple way you get people's carbon use down is to tax it," Gutowski says. "That's a hard pill to swallow--politicians don't like to step up" to support such measures. Absent such national actions, he says, it is important to study "what role consumer choices can play" in lowering the nation's carbon emissions.

If nothing else, the members of this class got a whole new perspective. "The students really got into it," Gutowski says. "It raised everybody's awareness about the issues."

Adapted from materials provided by Massachusetts Institute of Technology.

http://www.sciencedaily.com:80 /releases/2008/04/080428120658.htm

Tropical Reforestation Aided By Bats

Many bats eat fruits or nectar, and thus are key species for seed dispersal and flower pollination. (Credit: iStockphoto/Gijs Bekenkamp)

ScienceDaily (Apr. 28, 2008) — German scientists are engaging bats to kick-start natural reforestation in the tropics by installing artificial bat roosts in deforested areas. This novel method for tropical restoration is presented in a new study published online in the science journal Conservation Biology this week. Detlev Kelm from the Leibniz Institute for Zoo and Wildlife Research in Berlin (IZW) and Kerstin Wiesner and Otto von Helversen from the University of Erlangen–Nuremberg report that the deployment of artificial bat roosts significantly increases seed dispersal of a wide range of tropical forest plants into their surroundings, providing a simple and cheap method to speed up natural forest regeneration.

Tropical forests are of global ecological importance. They are a key contributor to the global carbon balance and are host to a major part of the world's biodiversity. Between 2000 and 2005, worldwide net losses of tropical forest cover averaged 0.18 % annually and regionally even exceeded 1.5 % annually in some Latin American countries. Forest is usually replaced by agriculture. Often soils become rapidly infertile and land is abandoned. Because deforested areas rarely offer much food or protection for seed dispersers such as birds or small mammals, natural forest regeneration is hampered by a lack of natural seed inputs. The alternative, replanting tropical forests, is too expensive and rarely a feasible option, and, in general, knowledge on how best to rapidly restore natural vegetation is lacking.

"We believe that bats could help in reforestation. They are able to cover large distances during their nightly foraging flights and are willing to enter deforested areas", says Detlev Kelm from the IZW. Many bats eat fruits or nectar, and thus are key species for seed dispersal and flower pollination. Kelm and colleagues showed that the principal barrier to reforestation - the lack of seed inputs - could be overcome by the deployment of artificial day roosts for bats in deforested areas. These roosts were designed to approximate characteristics of large, hollow tree trunks, the main type of natural bat roost. "Within a few days to weeks the first bats will move in. So far we have found ten bat species using the roosts, and several of these are common and important seed dispersers", Kelm reports. "We measured the effect of the roosts on seed dispersal and found seeds of more than 60 plant species being transported by the bats". Of these plants, most were pioneer species, which represent the initial stages of natural forest succession.

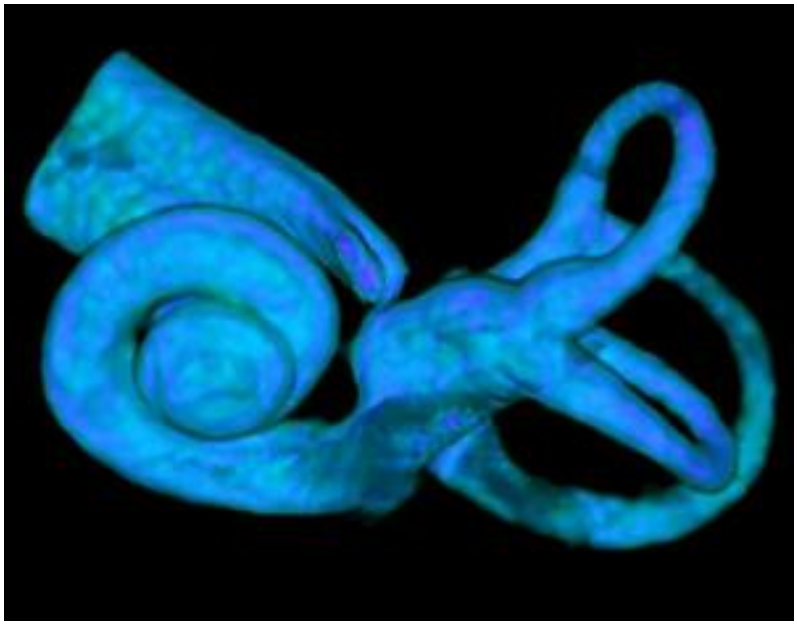
This cost and labour efficient method can thus support and speed up natural forest regeneration. Artificial roosts are simply built boxes, which require little maintenance and can be used by bats for many years. “We hope that this cheap and easy to use method will be applied in many parts of the tropics in the near future, and that bats will be “employed” as efficient agents of reforestation”, says Kelm. They may provide an effective contribution to the amelioration of deforestation and climate change.

Detlev H. Kelm, Kerstin R. Wiesner, Otto Von Helversen. Effects of Artificial Roosts for Frugivorous Bats on Seed Dispersal in a Neotropical Forest Pasture Mosaic. Conservation Biology. Published article online: 25-Apr-2008.

Adapted from materials provided by Forschungsverbund Berlin e.V..

http://www.sciencedaily.com:80 /releases/2008/04/080428124235.htm

Low-frequency Hearing Linked To Shape Of The Cochlea



Three-dimensional reconstruction of a human inner ear obtained from high resolution CT scans similar to the images used to measure cochlear radii for the species analyzed in the study. (Credit: Courtesy of Darlene Ketten)

ScienceDaily (Apr. 28, 2008) — Shape matters, even in hearing. Specifically, it is the shape of the cochlea -- the snail-shell-shaped organ in the inner ear that converts sound waves into nerve impulses that the brain deciphers -- which proves to be surprisingly important. A study published recently online in the Proceedings of the National Academy of Sciences establishes a direct link between the cochlea's curvature and the low-frequency hearing limit of more than a dozen different mammals.

The relationship will be useful in conservation to estimate the impact that the noises of human activities are having on animals like Siberian tigers, polar bears and marine mammals that won't sit still for hearing tests. It also can provide new information about the hearing of extinct mammals, like mammoths and saber-toothed tigers, and, in so doing, may contribute new insights into how the sense of hearing evolved.

"It turns out that it is the curvature of the cochlea, not its size, that is highly correlated to the low-frequency hearing limit," says Daphne Manoussaki, assistant professor of mathematics at Vanderbilt University, who headed the new study with Richard S. Chadwick, a section chief at the National Institute on Deafness and Other Communication Disorders (one of the National Institutes of Health, or NIH).

Spiral-shaped cochleae are exclusive to mammals. Birds and reptiles generally have plate-like or slightly curved versions of this critical organ, limiting the span of octaves that they can hear. Animals with tightly coiled cochleae tend to have greater hearing ranges, but previous attempts to associate these auditory effects with the physical characteristics of the cochlea have proven unsatisfactory because they did not take a critical acoustic effect into account. In 2006 Manoussaki and her NIH collaborators published a paper proposing that the helical shape of the cochlea enhances low-frequency sounds through an effect analogous to the well-known "whispering gallery effect" in which soft sounds that travel along curved walls in a large chamber remain loud enough that they can be heard clearly on the opposite side of the room.

When sound waves enter the ear, they strike the eardrum and cause it to vibrate. Tiny bones in the ear amplify and transmit these vibrations to the fluid in the cochlea, creating pressure waves that travel along a narrowing canal in the coiled tube-like organ. The canal is one of two main chambers that are created by an elastic membrane that runs the length of the cochlea. The mechanical properties of this "basilar"

membrane vary from very stiff at the broad, outer end to increasingly flexible toward the inner end as the chambers narrow. The basilar membrane's graded properties cause the waves to grow and then die away. Different frequencies peak at different positions along the membrane.

Sensory cells are attached to the basilar membrane and have tufts of tiny hairs called stereocilia that stick up into adjacent structures in the canal. As the basilar membrane moves it tilts the sensory cells, causing the stereocilia to bend. The motion generates electric signals that travel along the auditory nerve to the brain. As a result, the sensory cells near the outer end of the cochlea detect high-pitched sounds, like the notes of a piccolo, while those at the inner end of the spiral detect lower-frequency sounds, like the booming of a bass drum.

This mechanical ordering of response from high to low frequencies works in the same fashion whether the cochlear tube is laid out straight or coiled in a spiral. But Manoussaki's calculations predicted that the spiral shape causes the energy in the low-frequency waves to accumulate against the outside edge of the chamber. This uneven energy distribution, in turn, causes the membrane to move more toward the outer wall of the chamber, enhancing the bending of the stereocilia. The enhancement is strongest at the apex of the spiral, where the lowest frequencies are detected. Manoussaki and her collaborators calculated that the increase in the sound pressure level can be as much as 20 decibels, equivalent to the difference between the aural ambience of a quiet restaurant and a busy street. "The idea that the cochlea's curvature has a significant effect on hearing has been quite controversial for many years," says Darlene R. Ketten, a senior scientist at Woods Hole Oceanographic Institution and assistant professor at the Harvard Medical School, who participated in the current study. "Curvature was often dismissed or, when examined, the theories were not entirely satisfactory. Now we have a theory that we have confirmed with a number of concrete examples using real ear shapes and hearing abilities."

Ketten provided Manoussaki and her collaborators with high-resolution CT scans of the cochleae of a number of different species of land and marine mammals. Together with her biophysicist colleagues, Manoussaki analyzed these shapes and found that low- frequency hearing limits of species ranging from mice to cats to cows to whales varied in step with the ratio of the radii of curvatures at their cochlea's base to that of its apex. This ratio varies from about two to nine: The larger it is the lower the frequencies that the animal can hear. "This makes sense because the bigger the ratio, the tighter the spiral is wound and more of the sound wave energy in the low-frequency waves is forced against the cochlea's walls," Manoussaki says.

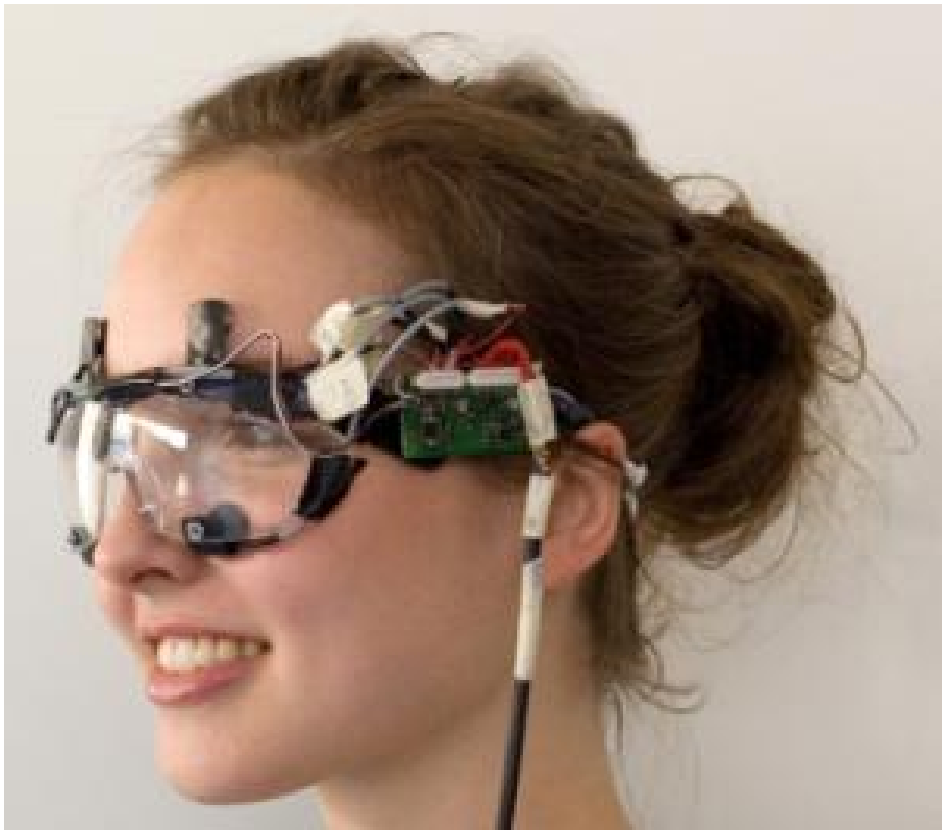
Animals like mice, which have a radii ratio of about two, can't hear much below 1000 hertz (Hz). Species like cows and elephants, which have a ratio of about nine, hear sounds as low as 20 Hz. The power of this approach is illustrated by the cat, guinea pig and sea lion. The cochlea of the cat is longer than that of the guinea pig, but the guinea pig has a ratio of 7.2 and can hear down to 47 Hz, while the cat, with a smaller ratio of 6.2, has a higher threshold of 55 Hz. Similarly, the sea lion has a basilar membrane three times as long as that of the guinea pig. But its radii ratio is 5.2, lower than either the cat or the guinea pig, and it cannot make out sounds below 180 Hz. (This limit is for the sea lion's hearing in air; under water it can hear down to 200 Hz.) "What I like about this is that a macroscopic feature of the ear has such a major effect on our hearing," says Manoussaki. "As colleagues have pointed out, so much research today is done at the genetic and cellular level that you don't often see cases like this where simple geometry proves to be so important."

Other contributors to the research are Emilios K. Dimitriadis, National Institute of Biomedical Imaging and Bioengineering; Julie Arruda of Woods Hole Oceanographic Institution and Jennifer T. O'Malley of the Massachusetts Ear and Infirmary. The research was supported by the National Institutes of Health, Office of Naval Research, Technical University of Crete and Vanderbilt University.

Adapted from materials provided by Vanderbilt University.

http://www.sciencedaily.com:80 /releases/2008/04/080425151819.htm

Wearable Computing: Special Goggles Analyze Eye Movements To Diagnose Disease



The prototype Wearable Eye Tracker. (Credit: Image courtesy of ETH Zurich)

ScienceDaily (Apr. 28, 2008) — Sometimes the diagnosis of episodes of illness in schizophrenia, rotatory vertigo, or reading and writing deficits needs electro-oculography (EOG), performed using a special medical apparatus. Andreas Bulling, a doctoral student at the Wearable Computing Lab of ETH Zurich, has developed spectacles that could in future make this technique portable.

The expression Wearable Computing includes portable computer systems that a person wears on their body, for example as spectacles, a wristwatch, belt or piece of clothing. However, these portable computers are not operated actively and directly by the wearer as is usual with computer systems. Instead, they support everyday activities, rather in the sense of an intelligent navigation system, an easy-to-operate user interface or long-term medical monitoring.

Potential changes during eye movements

Andreas Bulling is developing a Wearable Eye Tracker in the context of his doctoral thesis. The special spectacles fitted with additional sensors record the wearer's eye movements. This recording is based on the principle of electro-oculography (EOG), a technique that has been known for more than 30 years and in which eye movements are measured using electrodes – similar to an electrocardiogram (ECG). Currently, the recording takes place in a doctor's surgery or in a clinic, using static apparatus, and usually needs to be assessed manually by the doctor.

The ETH Zurich researcher has now developed the Wearable Eye Tracker, which might some day replace conventional EOG and could allow for additional applications. The Wearable Eye Tracker can record eye movements while the wearer is moving. This involves using electrodes built into a spectacle frame to measure changes in electrical potential caused by eye movements. However, in contrast to a static EOG, the spectacles can do this for a period of up to eight hours without being connected to mains electricity.

The data is also stored directly in the instrument. In addition, the wearer can completely undertake normal everyday life. The plan in the future is for the spectacles also to recognise automatically the environment in which a person is situated at the time, and what activity he/she is carrying out. To be able to recognise these activities and surroundings, the spectacles must refer back to data already recorded and analysed.

Additional sensors for signal correction

The potential changes generated by the eye movements are transmitted via cables, also built into the spectacles, to a device about the size of a credit card that can be worn on the arm or carried in the trouser pocket for example. Andreas Bulling explains that "The development of the Eye Tracker required first of all the hardware design of the spectacles and the portable equipment to record the EOG signals. Then the next step necessitated the development of software that can process and analyse these signals immediately in real time."

He says the device must also be able to correct the signals at the same time when necessary. For example ambient light changes the pupil diameter, which affects the EOG signal. Movements of the body, such as walking or running, change the signal as well. This is why the spectacles also contain a built-in light sensor and acceleration sensor, with which appropriate corrections can be made to the signals.

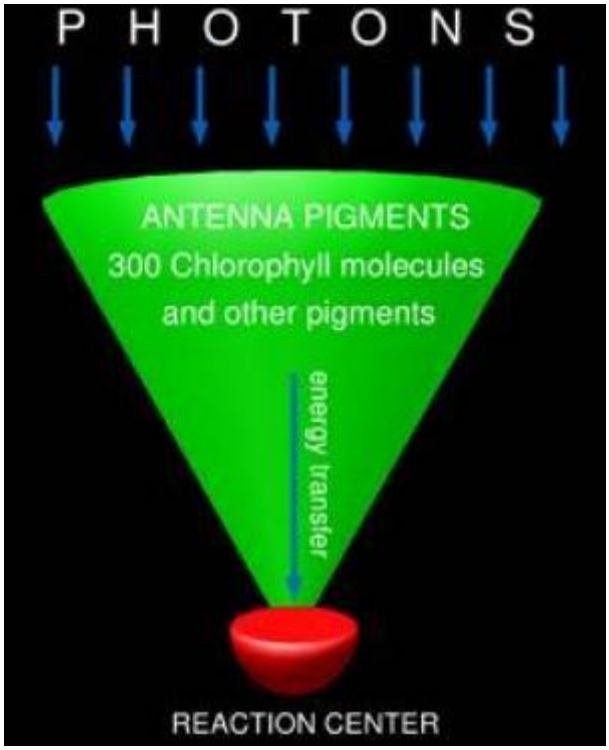
An initial functioning prototype of the Eye Tracker exists and is currently being tested and expanded with new functionalities. A Zurich industrial design company is working in parallel on a further development of the spectacles. The ETH Zurich researcher filed a patent application for his invention at the European Patent Office last October, and is now looking for licensees in the medical or games industries.

An interactive computer game requiring the imitation of eye gestures of various difficulty levels represented on a computer screen has been developed for demonstration purposes. If these are performed correctly, the player moves to the next level of the game.

Adapted from materials provided by ETH Zurich.

http://www.sciencedaily.com:80 /releases/2008/04/080428083418.htm

Artificial Photosynthesis Moves A Step Closer



This simplified schematic depicts the harvesting of sunlight (photons) and the transfer of this energy via pigment-protein complexes to a photosynthetic reaction center. (Credit: Image from the National Energy Research Scientific Computing Center)

ScienceDaily (Apr. 28, 2008) — Imagine a technology that would not only provide a green and renewable source of electrical energy, but could also help scrub the atmosphere of excessive carbon dioxide resulting from the burning of fossil fuels. That's the promise of artificial versions of photosynthesis, the process by which green plants have been converting solar energy into electrochemical energy for millions of years. To get there, however, scientists need a far better understanding of how Nature does it, starting with the harvesting of sunlight and the transporting of this energy to electrochemical reaction centers.

Graham Fleming, a physical chemist who holds joint appointments with the U.S. Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) and the University of California (UC) at Berkeley, is the leader of an ongoing effort to discover how plants are able to transfer energy through a network of pigment-protein complexes with nearly 100-percent efficiency. In previous studies, he and his research group used a laser-based technique they developed called two-dimensional electronic spectroscopy to track the flow of excitation energy through both time and space. Now, for the first time, they've been able to connect that flow to energy-transferring functions by providing direct experimental links between atomic and electronic structures in pigment-protein complexes.

"To fully understand how the energy-transfer system in photosynthesis works, you can't just study the spatial landscape of these pigment-protein complexes, you also need to study the electronic energy landscape. This has been a challenge because the electronic energy landscape is not confined to a single molecule but is spread out over an entire system of molecules," Fleming said. "Our new 2D electronic spectroscopy technique has enabled us to move beyond the imaging of structures and to start imaging functions. This makes it possible for us to examine the crucial aspects of the energy-transfer system that enable it to work the way it does.

Fleming and his group report on a study of the energy-transferring functions within the Fenna-Matthews-Olson (FMO) photosynthetic light-harvesting protein, a pigment-protein complex in green sulfur bacteria that serves as a model system because it consists of only seven well-characterized pigment molecules.

"The optical properties of bacteriochlorophyll pigments are well understood, and the spatial arrangement of the pigments in FMO is known, but this has not been enough to understand how the protein as a whole responds to light excitation," said Read. "By polarizing the laser pulses in our 2D electronic spectroscopy set-up in specific ways, we were able to visualize the direction of electronic excitation states in the FMO complex and probe the way individual states contribute to the collective behavior of the pigment-protein complex after broadband excitation."

Fleming has compared 2D electronic spectroscopy to the early super-heterodyne radios, where an incoming high frequency radio signal was converted by an oscillator to a lower frequency for more controllable amplification and better reception. In 2D electronic spectroscopy, a sample is sequentially flashed with light from three laser beams, delivered in femtosecond timescale bursts, while a fourth beam serves as a local oscillator to amplify and phase-match the resulting spectroscopic signals.

"By providing femtosecond temporal resolution and nanometer spatial resolution, 2D electronic spectroscopy allows us to simultaneously follow the dynamics of multiple electronic states, which makes it an especially useful tool for studying photosynthetic complexes," Fleming said. "Because the pigment molecules within protein complexes have a fixed orientation relative to each other and each absorbs light polarized along a particular molecular axis, the use of 2D electronic spectroscopy with polarized laser pulses allows us to follow the electronic couplings and interactions (between pigments and the surrounding protein) that dictate the mechanism of energy flow. This suggests the possibility of designing future experiments that use combinations of tailored polarization sequences to separate and monitor individual energy relaxation pathways."

In all photosynthetic systems, the conversion of light into chemical energy is driven by electronic couplings that give rise to collective excitations - called molecular or Frenkel excitons (after Russian physicist Yakov Frenkel) - which are distinct from individual pigment excitations. Energy in the form of these molecular excitons is transferred from one molecule to the next down specific energy pathways as determined by the electronic energy landscape of the complex. Polarization-selective 2D electronic spectroscopy is sensitive to molecular excitons - their energies, transition strengths, and orientations - and therefore is an ideal probe of complex functions.

"Using specialized polarization sequences that select for a particular cross-peak in a spectrum allows us to probe any one particular electronic coupling even in a system containing many interacting chromophores," said Read. "The ability to probe specific interactions between electronic states more incisively should help us better understand the design principles of natural light-harvesting systems, which in turn should help in the design of artificial light-conversion devices."

The paper, entitled "Visualization of Excitonic Structure in the Fenna-Matthews-Olson Photosynthetic Complex by Polarization-Dependent Two-Dimensional Electronic Spectroscopy," was co-authored by Elizabeth Read, along with Gabriela Schlau-Cohen, Gregory Engel, Jianzhong Wen and Robert Blankenship. It was published in the Biophysical Journal.

Adapted from materials provided by DOE/Lawrence Berkeley National Laboratory.

http://www.sciencedaily.com:80 /releases/2008/04/080428085757.htm

Gene Therapy Improves Vision In Nearly Blind Patients

The new gene therapy method was able to improve patients' vision from detecting hand movements to reading lines on an eye chart. (Credit: iStockphoto/Sharon Dominick)

ScienceDaily (Apr. 28, 2008) — In a clinical trial at The Children's Hospital of Philadelphia, researchers from The University of Pennsylvania have used gene therapy to safely restore vision in three young adults with a rare form of congenital blindness. Although the patients have not achieved normal eyesight, the preliminary results set the stage for further studies of an innovative treatment for this and possibly other retinal diseases.

An international team led by The University of Pennsylvania, The Children's Hospital of Philadelphia, the Second University of Naples and the Telethon Institute of Genetics and Medicine (both in Italy), and several other American institutions reported their findings today in an online article in the New England Journal of Medicine.

"This is the first gene therapy trial for a nonlethal pediatric condition," said Albert M. Maguire, M.D., Associate Professor, Department of Ophthalmology, University of Pennsylvania School of Medicine and a physician at The Children's Hospital of Philadelphia. Maguire, together with his wife, Jean Bennett, M.D., Ph.D., Professor of Ophthalmology at Penn and Senior Investigator at the F.M. Kirby Center for Molecular Ophthalmology at Penn's Scheie Eye Institute, have been researching inherited retinal degenerations such as Leber congenital amaurosis (LCA), for 18 years. LCA is a group of inherited blinding diseases that damages light receptors in the retina. It usually begins stealing sight in early childhood and causes total blindness during a patient's twenties or thirties. Currently, there is no treatment for LCA.

"Patients' vision improved from detecting hand movements to reading lines on an eye chart," Maguire added. In 2001, Bennett and Maguire were part of a team which reported successfully reversing blindness using gene therapy on dogs affected by the same naturally occurring form of congenital blindness.

The current study is sponsored by the Center for Cellular and Molecular Therapeutics at The Children's Hospital of Philadelphia, directed by Katherine A. High, M.D. High, a study leader and an Investigator of the Howard Hughes Medical Institute, has been a pioneer in translational and clinical studies of gene therapy for genetic disease, and in 2005 initiated a collaboration with Bennett and her group to translate their exciting animal findings into a clinical study.

The scientists used a vector, a genetically engineered adeno-associated virus, to carry a normal version of the gene, called RPE65, that is mutated in one form of LCA. Three patients, ages 19, 26 and 26, received the gene therapy via a surgical procedure performed by Maguire between October 2007 and January 2008 at The Children's Hospital of Philadelphia, where the gene vector was manufactured at the hospital's Center for Cellular and Molecular Therapeutics (CCMT).

Starting two weeks after the injections, all three patients reported improved vision in the injected eye. "Standard vision tests showed significantly improved vision in the patients," said Alberto Auricchio, M.D., a study leader from the Telethon Institute of Genetics and Medicine and University of Naples Federico II. The researchers also reported that each injected eye became approximately three times more sensitive to light, and each was improved compared to the uninjected, previously better functioning eye.

The LCA gene therapy vector showed no signs of causing inflammation in the retina or other toxic side effects. One of the three patients had an adverse event, a hole in the retina that did not affect eyesight and may have been surgery-related, rather than related to biological effects of the therapeutic gene or the vector used to carry it.

The patients enrolled in the study to date were identified at the Department of Ophthalmology at the Second University of Naples, an institution with long-standing experience in collecting and studying patients with inherited retinal diseases, under the supervision of Francesca Simonelli, M.D.

Testing continued over a period of six months following the gene therapy vector administration. One patient was better able to navigate an obstacle course compared to before the injection. The patients also had less nystagmus, an involuntary movement of the eyes that is common in LCA. In the patient who experienced better vision even in the uninjected eye, the researchers suggest that the reduced nystagmus benefited both eyes.

"The current clinical trial will continue with more patients and with ongoing follow-up to monitor results," said Bennett. "We expect improvements to be more pronounced if treatment occurs in childhood, before the disease progresses."

"This result is important for the entire field of gene therapy," notes High, a past president of the American Society of Gene Therapy. "Gene transfer has been in clinical trials for over 15 years now, and although it has an excellent safety record, examples of therapeutic effect are still relatively few. The results in this study provide objective evidence of improvement in the ability to perceive light, and thus lay the groundwork for future studies in this and other retinal disorders," said High.

The pace of moving from pre-clinical discoveries into clinical trials has typically been slow in the field of gene therapy due to the breadth of expertise required, ranging from in-depth knowledge of the disorder to detailed understanding of vector design, manufacture, and pre-clinical evaluation. The complexities of regulatory oversight at both the federal and local levels also present challenges. Through the Center for Cellular and Molecular Therapeutics, The Children's Hospital of Philadelphia has developed concentrated expertise and substantial resources to facilitate the "bench to bedside" translation of gene therapy.

The clinical trial was sponsored and primarily funded by the Center for Cellular and Molecular Therapeutics at The Children's Hospital of Philadelphia. Research support was received from The Department of Ophthalmology at the University of Pennsylvania, the F.M. Kirby Foundation, the Foundation Fighting Blindness, Research to Prevent Blindness, the Macula Vision Foundation, the Paul and Evanina Mackall Foundation Trust at the Scheie Eye Institute, the Rosanne H. Silbermann Foundation, the Italian Telethon Foundation, the Associazione Italiana Amaurosi Congenita di Leber, the National Center for Research Resources, the Howard Hughes Medical Institute, the National Eye Institute of the National Institutes of Health, private philanthropy, and an anonymous donor who is committed to advancing pediatric medicine through maximizing the potential of gene therapy.

Adapted from materials provided by Children's Hospital of Philadelphia.

http://www.sciencedaily.com:80 /releases/2008/04/080427194726.htm

New Hybrid Hearing Device Combining Advantages Of Hearing Aids, Implants

The DUET Electric-Acoustic System, or EAS, is worn behind the ear and implanted by special surgical techniques to preserve natural hearing. (Credit: UT Southwestern Medical Center)

ScienceDaily (Apr. 28, 2008) — A new hybrid hearing aid/cochlear implant device designed for patients who can benefit from both is being evaluated by UT Southwestern Medical Center otolaryngologists, as part of a multisite, national study.

The cross-breed device, called the DUET Electric-Acoustic System, or EAS, is already used in Europe, but not yet approved for use in the U.S. It targets a population currently falling through the cracks -- borderline cases for which hearing aids don't adequately distinguish sounds, but for who some natural hearing remains. For these individuals, cochlear implants that entirely replace natural hearing aren't recommended either.

Hearing aids are typically worn on the outside of the ear by people who still have some natural hearing. Cochlear implants are surgically implanted into the ear and pick up lost middle- and higher-frequency sounds. They replace lost natural hearing by digitizing electrical impulses sent to the brain via wires implanted in the ear. The brain then interprets that as sound.

Most people with hearing difficulties have one or the other device, but not both.

Initial studies on the hybrid device suggest there is a synergistic effect achieved by maintaining the natural hearing and coupling it with the cochlear implant, particularly for distinguishing speech in noisy environments. The device both amplifies low frequencies and electronically stimulates middle and high frequencies.

The implant is specifically designed with a thin electrode to occupy less space in the inner ear. It is implanted by special surgical techniques to preserve natural hearing.

"What patients can hope to get from the investigational device is a significant improvement in the ability to understand speech, especially in a noisy situation," said Dr. Peter Roland, chairman of otolaryngology-head and neck surgery at UT Southwestern.

The device is made by MED-EL Corp., which conducts the initial patient screening for the trial. The device is still investigational, so all of the potential risks are not known, Dr. Roland said. The most common serious complication is loss of what hearing is left in the ear that receives the implant. The opposite ear is unaffected. Significant hearing loss has occurred in 10 percent to 15 percent of recipients to date.

UT Southwestern is among about a dozen sites participating in the national trial. UT Southwestern researchers are seeking about a dozen participants, said Dr. Roland.

Potential study participants must be at least 18 years old, have moderate sloping to severe profound hearing loss, and have had minimal results from traditional hearing aids. Patients appropriate for the study will still have some natural hearing left but find themselves struggling to understand loud speech, particularly in noisy, crowded situations, even while wearing high-quality hearing aids. The target patient has hearing loss in high frequencies, but also requires a hearing aid to boost low-frequency sound.

"We need people who are not getting enough benefit from their hearing aids to live normal lives, but who are not quite deaf enough for a regular cochlear implant," explained Dr. Roland.

Adapted from materials provided by UT Southwestern Medical Center.

http://www.sciencedaily.com:80 /releases/2008/04/080417100013.htm

Mammography May Be Beneficial To All Women, Regardless Of Age

ScienceDaily (Apr. 28, 2008) — According to researchers at The University of Texas M. D. Anderson Cancer Center, mammography, the gold-standard for breast cancer screening and early detection, has shown to significantly reduce the risk of being diagnosed with advanced stage breast cancer in women over the age of 80, an age group currently without clear guidelines recommending regular screenings.

The study, published online today (April 21) in the Journal of Clinical Oncology (JCO), is the first to specifically assess the screening modality in women older than 80. It's estimated that approximately 17 percent of breast cancers are diagnosed in women older than 80, and only about one-fifth of women in this age group have routine mammograms.

According to the study's senior author, Gildy Babiera, M.D., the need for this study evolved as she began to notice a growing number of women who were 80-years-old and older in her clinic.

"With an increasing number of people living longer, there's a real dilemma regarding how best to manage the care of breast cancer patients 80 years of age and older, taking into account both their comorbidities and their account their quality of life," said Babiera, associate professor in the Department of Surgical Oncology.

This research follows other M. D. Anderson studies looking at complications associated with surgery and treatment tolerability in elderly patients.

The American Cancer Society recommends annual mammography screening for women starting at age 40 with no age limit for women in good health. Other organizations that recommend screening guidelines differ both in age ceilings as well as how often mammograms should be conducted in older women.

Babiera, Brian Badgwell, M.D., a fellow in M. D. Anderson's Department of Surgical Oncology, and their colleagues used information from the National Cancer Institute SEER (Surveillance, Epidemiology, and End Results) database, the authoritative source of information on cancer incidence and survival in the United States. The researchers analyzed SEER data for the years 1996-2002, and looked at mammography rates in the five years prior to diagnosis.

In total, 12,358 women over age 80 were analyzed. Patients were stratified into nonusers (women who did not have mammograms), 49 percent; irregular users (women who had one or two mammograms), 29 percent; and regular users (women who had three or more mammograms.), 22 percent.

Sixty-eight percent of regular users were more likely to be diagnosed with early disease, stage I while nonusers and irregular users more often were diagnosed with stages II, III or IV, 56 percent and 33 percent respectively.

Five-year survival rate was 94 percent in regular users, compared to 88 percent in irregular users and 82 percent in nonusers. Despite these rates, the researchers were not able to find an increase in overall survival because those getting mammograms were healthier and, therefore, more likely to live longer, said Badgwell, the study's first author.

"For example, in our study, we showed a 12 percent decrease in the risk of breast cancer death for each mammogram. However, in the women who received mammograms, we also showed a 12 percent decrease in non-breast cancer death, thereby showing the bias for women who were healthy and receiving mammograms," said Badgwell.

Babiera and Badgwell acknowledge their studies limitations but feel this type of retrospective data may be the best that can be obtained because it's unlikely a randomized control trial could ever be conducted.

"Now that we have this data and we know that mammography improves survival in the younger population, it would be difficult to conduct a randomized trial and stratify women of any age to a control group to not receive mammography," said Badgwell.

Instead, the researchers stress that physicians should review each woman's situation personally to determine if a mammogram is in her best interest, and if she is found to have breast cancer, could her quality of life be managed appropriately.

"Finding breast cancer early in this age group may not result in survival benefit and it may even increase unnecessary angst in elderly women with other ailments. On the other hand, if the woman is otherwise healthy and could be a surgical candidate, should breast cancer be found by a routine mammogram, perhaps she could be offered less invasive treatment and spared from toxic therapies given to women diagnosed with advanced breast cancer," said Babiera.

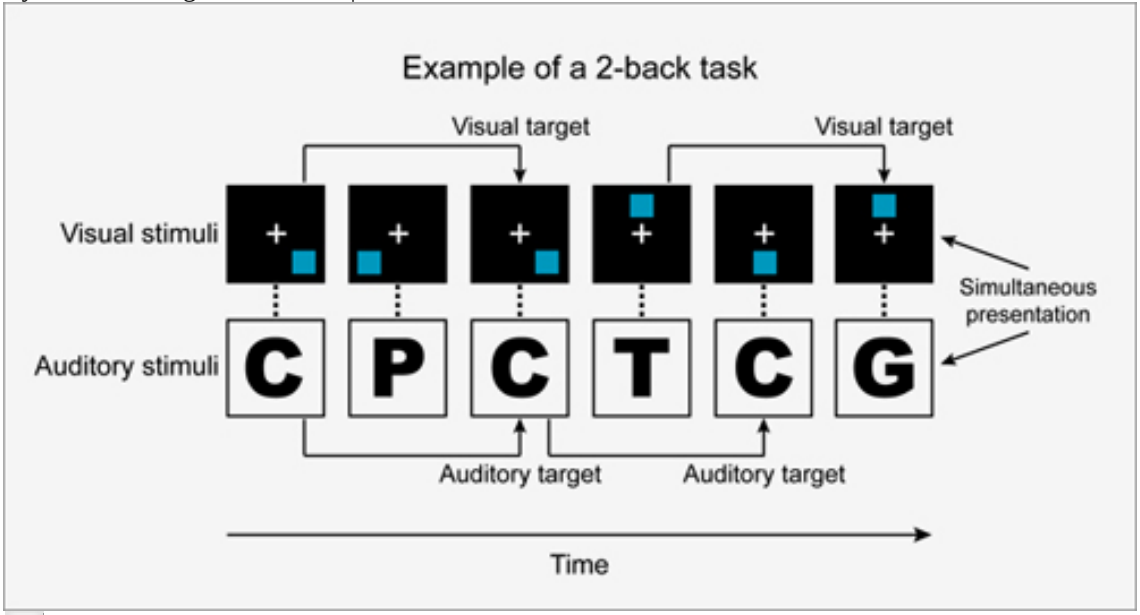
In addition to Badgwell and Babiera, other authors on the all-M. D. Anderson study include: Gabriel Hortobagyi, M.D., Sharon Giordano, M.D., Shenying Fang and Zhigang Z. Duan all in the Department of Breast Medical Oncology; Isabelle Bedrosian, M.D., Henry Kuerer, M.D., Ph.D., and Kelly Hunt, M.D., all in the Department of Surgical Oncology.

Adapted from materials provided by University of Texas M. D. Anderson Cancer Center.

http://www.sciencedaily.com:80 /releases/2008/04/080421180946.htm

Forget *Brain Age*: Researchers Develop Software That Makes You Smarter

By Alexis Madrigal ✉04.28.08 | 3:00 PM



Scientists used a modified version of the n-back test, which is schematized above, to achieve gains in fluid intelligence previously thought impossible. The image shows how users were forced to remember both visual and auditory information streams.
Courtesy Martin Buschkuehl

Brain researchers for the first time claim to have found a method for improving the general problem-solving ability scientists call fluid intelligence, otherwise known as "smarts." Fluid intelligence was previously thought to be genetically hard-wired, but the finding suggests that with about 25 minutes of rigorous mental training a day, healthy adults could improve their mental capacities.

The method, if commercialized, could be a boon to the growing, multimillion-dollar market for "brain fitness" software like Nintendo's *Brain Age*.

"The most important point of our work is that we can show that it is possible to improve fluid intelligence," said Martin Buschkuehl, a psychology researcher based at the University of Bern, Switzerland. "It was assumed that fluid intelligence was immutable." Fluid intelligence measures how people adapt to new situations and solve problems they've never seen before. Fluid intelligence differs from crystallized intelligence, which takes into account skills and knowledge that have been acquired -- like vocabulary, grammar and math.

It's not hard, for example, for students to improve their IQ scores by taking lots of IQ tests.

Trouble is, learning how to take IQ tests doesn't improve the underlying smarts. The students just get better at taking tests. In practical terms, people can get better at taking tests, but in daily life, don't have a blazingly quick new brain. And that's where Buschkuehl's research, which appears today in the journal *Proceedings of the National Academy of Sciences*, claims to be groundbreaking.

In a limited trial, he and his team were able to make 34 test subjects significantly better at answering IQ test questions after training them on a completely separate memory task.

David Geary, a professor at the University of Missouri and author of *The Origin of Mind*, who was not involved with the study, said training in one test generally doesn't generate gains on a different test.

"Transfer is tough to get," Geary said. "Training in task A doesn't typically improve performance on task B."

But in this case, subjects trained on a complex version of the so-called "n-back task" -- a difficult visual/auditory memory test -- improved their scores on a set of IQ questions drawn from a German intelligence measure called the Bochumer Matrizen-Test. (The Bochumer Matrizen-Test is a harder version of the well-known Ravens Progressive Matrices).

Initially, the test subjects scored an average of 10 questions correctly on the IQ test.

But after the group trained on the n-back task for 25 minutes a day for 19 days, they averaged 14.7 correct answers, an increase of more than 40 percent. (A control group that was not trained showed only a very slight performance increase.)

Buschkuehl's team postulates that the n-back task improves working memory -- how many pieces of information subjects can keep in their head -- as well as the ability to control the brain's attention. Fluid intelligence tests require those types of thinking, and the training improved performance in these underlying skills. "These are intriguing results," Geary said. However, Geary noted that to claim actual increases in fluid intelligence, the subjects would have to show the performance gains over a long-term period -- or even permanently.

The Michigan researchers are now engaged in studying the long-term effects of training. They are also working to increase the amount of training that users undergo. In the experiment reported in *PNAS*, the researchers did not find the upper-limit for improvement, suggesting that more training could yield even better mental performance gains.

"The improvement seems to be dosage dependent," Buschkuehl said. "We saw a linear increase in performance with increase in training time." In the simplest version of the n-back task, a sequence of images is presented every few seconds and subjects are asked to match a picture to an identical one that came previously, say two pictures before it. (For example, in the picture above, the blue square should be in the same location.)

Buschkuehl's subjects, however, also heard a second stream of letters and had to match the sounds at the same time as they matched the visuals. This makes the task very challenging. And as the subjects got better, the gap between matching pictures and letters got bigger, making the task progressively more difficult. The team has developed a new n-back computer program called Brain Twister, which they have translated into English, but is not available online.

They do not plan to commercialize the software, but with mental gyms like Vibrant Brains in San Francisco springing up, and brain training software companies like Posit Science drawing big-name investors, you can bet you'll be seeing the n-back task on sale sooner rather than later.

In fact, revenue from "brain-fitness software" reached $225 million in 2007, according to SharpBrains, a market-research firm. In the meantime, a very simplified, DIY version of the n-back is described here.

Neurobehavioral Sciences also offers a 45-day free trial of their neuroscience stimuli program presentation, which is primarily a research tool, and only available for the PC.

http://www.wired.com/science/discoveries/news/2008/04/smart_software

A Literary Critic Drops His Ax and Picks Up His Pen

By DAVE ITZKOFF

AFTER a touch football game on a recent Saturday in Prospect Park, and an impromptu post-game salon on Don DeLillo, Keith Gessen warily brought up the subject of his own debut novel, "All the Sad Young Literary Men."

Having scored three touchdowns for his victorious squad, Mr. Gessen, an author and editor, announced that this game would be his last of the season, as he was about to resume his book tour.

Some of the athletes — a literary agent, a blogger, Mr. Gessen's roommate — already knew of this impending departure; others were surprised by the news and its implication that Mr. Gessen's literary pursuits were actually serious.

"I didn't even know he had this whole thing," said Dan Lichtenberg, a bond trader who met Mr. Gessen in January. "We just played football."

Mr. Gessen, 33, boyishly handsome and possessing the self-assurance of a writer twice his age, has never had an easy relationship with literary fame, even as he has gradually amassed it.

In confident, forceful criticism written for publications like The Nation and The New Yorker, Mr. Gessen has been unsparing in his assessments of which authors deserve their glossy reputations (Philip Roth) and which do not (Ian McEwan).

As a founding editor of n+1, the literary magazine whose vocal fan base belies its twice-yearly 7,500-copy print run, Mr. Gessen and his colleagues have assailed other publications they believe have squandered their eminence (The New Republic) or never merited it (McSweeney's and anything else associated with the writer Dave Eggers).

And the idea of literary fame is central to "All the Sad Young Literary Men." In rotating chapters, the book tells of three young strivers who are frustrated in ambitions great and small: they bungle sexual conquests, struggle to finish writing books and dissertations, and are buffeted by larger historical forces. Tantalized by the potential of greatness, they fear it will perpetually elude them.

"What if it was happening, in New York, not a few blocks from them," Mr. Gessen writes, "what if they knew someone to whom it was happening, or who was making it happen — what if they were blind to it? What if it wasn't them?"

In a way, Mr. Gessen's novel is an extended dark joke on his literary career. At the football game, he admitted to monitoring his novel's Amazon.com sales obsessively. And he lamented the fact that more visitors to his novel's Amazon page chose to buy Sloane Crosley's essay collection, "I Was Told There'd Be Cake," than his book.

Of course, Mr. Gessen's book is also the latest articulation of his belief, much expressed, that legitimacy and fame need not go hand in hand. "If you're going to be a writer, you have to not make a living," he said over a recent dinner at a pizza parlor near the ascetic n+1 offices in Dumbo.

"You have to be prepared to live on $20,000, which is not impossible, even in New York." (Mr. Gessen, who lives in Prospect Heights with two roommates, said he never earned more than $25,000 a year until he was 30.)

His comic novel has also elicited a serious — and seriously polarized — response. In The New York Review of Books, Joyce Carol Oates called it "mordantly funny, and frequently poignant," while New York magazine, which previously published Mr. Gessen's criticism, wrote that the novel delivers "the ecstasy of watching a much-hyped young littérateur fall flat on his face."

THAT bitter glee may be payback for Mr. Gessen's own acts of critical savagery. In the past, he has dispatched, with equal fervor, crowd-pleasing veterans (a Stephen King essay was "annoyingly philistine") and highbrow newcomers (Jonathan Safran Foer's debut novel "Everything Is Illuminated" was nothing but "a work of Jewish kitsch").

Mr. Gessen, who emigrated from Moscow at the age of 6, has his own literary achievements to buttress his convictions. His translation of "Voices From Chernobyl," a nonfiction account of the nuclear disaster by Svetlana Alexievich, won a 2005 National Book Critics Circle award. And since 2004, he has been editing n+1, along with his fellow Harvard alums Mark Greif and Benjamin Kunkel, and a fourth friend, Marco Roth, a graduate of Columbia.

They had invested $2,000 each to start the magazine, intending to publish the kinds of writing they said were unavailable in more established literary and political journals.

"A lot of the best intellectual magazines are oriented toward the past," Mr. Gessen said, "and we wanted to be oriented more toward the present."

Beyond the simple red cover of its first issue, n+1 defined itself by the magazines it denounced, and all but challenged them to a duel. A front section sneered at the cultural criticism of The New Republic and The Weekly Standard. But n+1 held special contempt for Mr. Eggers and his cohort ("Eggersards") who publish McSweeney's, which to n+1 represented irony in the extreme ("an end-run around a class-based problem of sentimentality"), and The Believer, which pleaded for a snark-free approach to literature ("its overt criterion for inclusion is not expertise, but enthusiasm").

In his first feature for n+1, Mr. Gessen wrote about Gary Baum, a young blogger whose admiration for Mr. Eggers turned to disdain as Mr. Baum chronicled how Mr. Eggers's fame was supposedly enhanced and amplified by his connections in the New York publishing industry. Mr. Gessen's piece did not romanticize Mr. Baum (whom the author tries to talk out of pursuing a career in journalism) nor pull its punches against Mr. Eggers (who, he wrote, "handled fame admirably, but it handled him more").

With its well-timed attacks on old-guard stodginess as well as young-Turk mawkishness, n+1 quickly made itself heard. “It seemed like a necessary, Oedipal clearing of the undergrowth,” said James Wood, the New Yorker literary critic and occasional sparring partner of n+1. “We all have to make ourselves orphans at some point.”

The magazine also yielded its first authentic literary star, Mr. Kunkel. His semiautobiographical first novel, “Indecision,” a comic tale about a young man paralyzed by the world’s possibilities, was published in 2005 to largely positive reviews.

It is against this backdrop that Mr. Gessen has published his novel, “All the Sad Young Literary Men,” a distillation of his own years in the wilderness: a youthful marriage soon followed by divorce, and his inability to finish an M.F.A. program at Syracuse University. (Mr. Gessen said he completed the course work, but never turned in a final original work of fiction.) The book is also a further unpacking of Mr. Gessen’s personal philosophy on the proper function of the novel: to hold up an honest mirror to society, no matter how frivolous and unserious that society may be. Young people in big cities like New York, Mr. Gessen said: “are willing to acknowledge that they’re a class only ironically. So they’ll have their ironic kickball games. Their ironic magazines.”

“They’re willing to have the privileges of their class,” Mr. Gessen added, “to go to a good college, and be subsidized in their New York lives by their parents, but maybe not willing to be written about.”

The result, Mr. Gessen said, is that the everyday lives of young urban adults are no longer considered appropriate subjects for ambitious novels. To the extent that his novel has been criticized for a solipsistic fixation on characters much like himself, Mr. Gessen blamed the Eggersards for fostering this literary bias. “The idea that you should not write about educated people in big cities, that’s a McSweeney’s idea,” he said. “That idea is crazy to me.” (A publicist for McSweeney’s said its editors would not comment.)

But even admirers of Mr. Gessen say he and his n+1 colleagues cannot defend their work by condemning other publications. “They’re so defined by their opposition to a kind of flabby literary crowd,” that n+1 has cultivated its own reputation for taking itself too seriously, said Eric Banks, the former editor of Bookforum magazine and a member of the National Book Critics Circle board. “They can come off sometimes as sore winners.”

Perhaps the larger dilemma facing Mr. Gessen and his n+1 colleagues is whether their quest for a proper literary life is different from their predecessors. Give or take the odd arcane literary reference, Mr. Wood said, n+1 “doesn’t seem that different from the Partisan Review.” Plenty of people, he said, “just look at something like n+1 and think, what’s the big deal?”

Mr. Gessen seemed uninterested in explaining his literary pursuits to such critics.

“People who are older than we are find the idea of n+1 very sympathetic and very recognizable,” Mr. Gessen said. “They say, ‘This is like these things that we knew, way back when.’ ”

But the tone of the magazine, he said, is very strange to them.

“They can’t tell if we’re kidding,” he said. “They can’t tell how much of it is in earnest.

“It’s all in earnest.”

http://www.nytimes.com/2008/04/27/fashion/27gessen.html?_r=1&ex=1366948800&en=07f29e8a19849904&ei=5088&partner=rssnyt&emc=rss&oref=slogin

On Architecture: What Seattle buildings to save
It's worth preserving some of modernism's mistakes

Modernism often worked better in small buildings, like this delightful glass-box office on Eastlake Avenue East. (Grant M. Haller / P-I)

Tuesday, April 29, 2008
Last updated 8:31 a.m. PT

By LAWRENCE CHEEK
SPECIAL TO THE P-I

What shall we do with the buildings now pushing 50 and deemed "historic"? How do we sort through the midden of midcentury modernism, which many people see as the most desolate, aloof and dislikable period in the history of architecture, and rescue the jewels?

It's time to start making some decisions, even though there may be a generational dissonance in the debate. Here's a basic truth about architecture: A style is almost always held in contempt by the children of the generation that produced it. It's the grandchildren who finally begin to treasure it.

That might explain why Abby Martin, a University of Washington architecture student, has filed a National Register nomination to try to save the UW's 1961 Nuclear Reactor Building, whose atomic guts were decommissioned in 1988. A review is scheduled for June. It's the most bizarre and anomalous building on campus, a structure that vaguely resembles a '60s swoop-roof diner with fins flying out from under the eaves -- all executed in concrete. To some of us, it's the bastard love child of Brutalism and Burger King.

But to Martin, "It's a rare combination of architectural value and historic value. The shape is really dynamic, it's very expressive of the possibilities of concrete, and it also embodies the ideology of the time, where architects were rejecting so many historical conventions."

This is an example of what's now happening with midcentury modernism. There's just enough cultural distance between the assorted styles of the '50s and '60s and today that they're beginning to acquire the

faint whiff of exoticism. In some cases, that attraction is overcoming their essential repugnance or silliness.

The Ballard Denny's is an example. The Seattle Landmarks Preservation Board granted it local landmark status in February, and the property owners promptly filed suit, calling the decision "sentimental and capricious." That's at least half right; arguments for preserving Daffy Duck architecture are necessarily based on sentiment. It's like keeping a dog-eared comic book as a memento of long-ago childhood.

The bizarre Nuclear Reactor Building, built in 1961 on the UW campus, has been proposed for the National Register.

But is it important to preserve such buildings for the sake of cultural memory? There's no sweeping answer. The route to making good decisions is to look at the whole spectrum of reasons for preserving each building, case by case.

If the Denny's had been an honest effort to develop an authentic Northwest regional style -- and there are good contemporary examples, such as Paul Hayden Kirk's Magnolia Branch Library of 1964 -- the argument for preservation would be solid. But the Denny's is pure California, a cheap carnival of look-at-me design that says little about Seattle's character or the Northwest's natural environment.

An equally quirky oddment from the late '50s is the tiny Egan House on Lakeview Boulevard East overlooking Lake Union. It's pure geometry, a white wedge chiseling into a forested hillside like an alien starship's landing shuttle. Historic Seattle acquired and rehabbed it 10 years ago, and has been leasing it to assorted residential tenants for the past several years.

Does anything make it more worth preservation than the Denny's? Although its nonprofit savior wouldn't dare put it this way, it's a valuable illustration of midcentury modernism's attitude that architecture had a divine right to trump nature. This is one of the reasons for architectural conservation -- keeping a record of civilization's cycles of thinking, including those that now appear foolish, arrogant or even destructive.

The Egan House has the added advantage of being extremely small and cute. That's another principle that's now becoming apparent: Most forms of modernism worked better as small buildings than big ones.

There's a tiny, 1960, glass-box office building at 1264 Eastlake Ave. E. that's almost pure Mies van der Rohe, and it's sheer delight. But scale Mies' puritanical minimalism into something the size of the late and unlamented 1959 Central Library, and you had mind-numbing banality.

Seattle Center, recently thrust into debate by the Century 21 Committee's renovation proposals, presents a more complicated problem. The park comprises several different shoots of modernism, assorted levels of quality, a history that's intertwined with Seattle's emergence on the world stage, and a prime location that begs for updated uses -- including more architecture-free open space.

Juggling all the demands within the Seattle Process may mean that these buildings get saved by default: The studies, hearings and referendums might roll on forever.

But here's one possibility: Preserve the center as an open-air museum of 1960s architecture. The Northwest Rooms are decent if not superlative examples of the International Style. KeyArena is a demonstration of Architecture Power, a serious example of how technological virtuosity can translate into a sculptural structure of surprising emotional impact.

The Pacific Science Center is cloying, but its forest of neo-Gothic arches is as delicate and lacy as Formalism ever managed. Even the 2000 Experience Music Project fits the '60s circle in a way, as an inadvertent temple to acid-tripping.

Most of these midcentury movements led to dead ends. The minimalist International Style offered too few possibilities in form, surface and decorative detail to sustain interest, and Formalism buckled under the dead weight of its own empty pretensions. Brutalism never enjoyed any affection outside the architectural journals.

But their disgrace is actually a reason in itself to preserve some monuments of modernism.

Architecture, like art and literature, encapsulates our history, mistakes included. Modernism's sweeping error was to believe that abstract ratiocination -- its practitioners were always busy building intellectual arguments for their cold, arrogant or silly buildings -- could replace the qualities people had always treasured in architecture: surprise, mystery, emotion, texture, color, ornament and human scale.

We don't need another period like it, so we should probably keep some reminders.

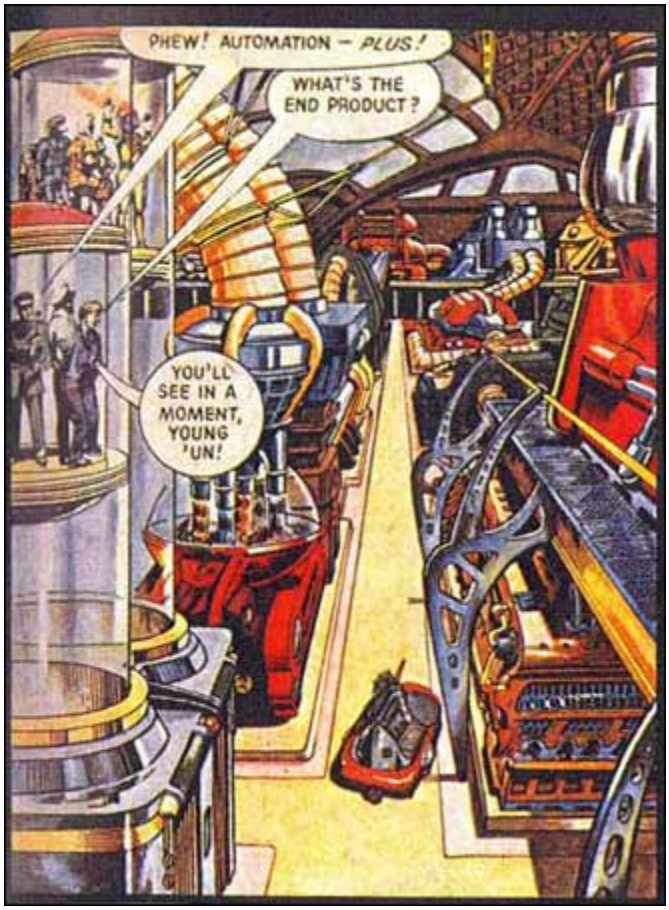
Lawrence W. Cheek is a freelance writer on architecture and author of "Frank Lloyd Wright in Arizona." Contact him at wetscape48@yahoo.com.

SEATTLE POST-INTELLIGENCER
http://seattlepi.nwsource.com/ae/360904_arch29.html

Sufferin' satellites! We've built the future!

Jonathan Glancey
Monday April 28, 2008

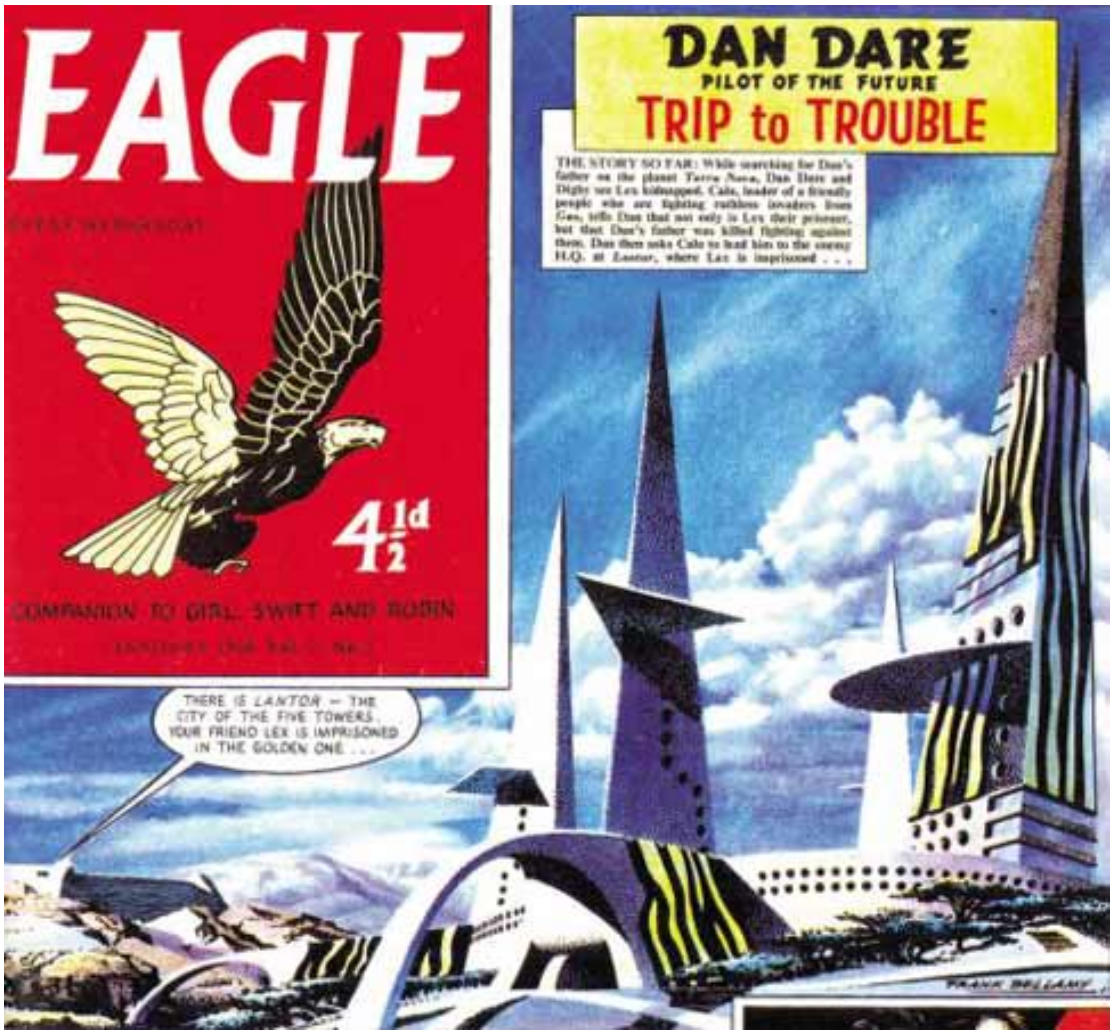
Guardian



Dan Dare was no ordinary Manchester lad. Born there in 1967, he studied at Cambridge and Harvard before joining Space Fleet and leading the first manned mission to Venus in 1996. It was there he first set eyes on Mekonta, the futuristic city where the Mekon, a Venusian Hitler type with a giant head, ruled over the unfeeling, raygun-happy Treens.

Colonel Dare - "Pilot of the Future" - had countless thrilling adventures in which he liberated oppressed peoples and beings, whether on Venus, under the sea on Earth, or on distant planets, many featuring persuasive futuristic architectural backdrops. His exploits appeared in the colourful pages of the Eagle, the hugely successful boys' adventure comic founded in 1950 by a Lancashire vicar, the Reverend Marcus Morris, with Fleet Street's Hulton Press. The first issue sold a staggering 900,000 copies and, during the 1950s and early 60s, its influence on the younger generation - many of whom would go on to be designers, engineers and architects - was huge.

Drawn and scripted by Manchester-born Frank Hampson, the comic strip may have been set in the then-distant 1990s, but it was very much the story of Britain in the 1950s, battling its way in the postwar world, still optimistic about its global clout, bolstered by technological prowess and cutting-edge design savvy. Dan Dare was really a second world war pilot, a plucky RAF chap exporting decency, fair play and exclamations like "Sufferin' satellites!" across the universe.



Although the Eagle folded in 1969, the dashing, lantern-jawed hero has now returned for a new adventure: Dan Dare and the Birth of Hi-Tech Britain, an intriguing exhibition at London's Science Museum that examines how Hampson's drawings, together with the contemporary hi-tech ethos they evoked, affected both domestic life and scientific endeavour in 1950s Britain. Yet it was architecture - not the main concern of the Science Museum show - that was actually most influenced by the Dan Dare dream of a futuristic Britain. Not only were the strips pacy, patriotic reads, they were astonishing in terms of their architectural prescience. Hampson pushed design boundaries, showing how a bowler-hat, pinstripe Britain could endure quite happily in a future world of atomic-era design. His imaginings were eagerly lapped up by some of the youngsters who would go on to create Britain's highly regarded school of hi-tech, space-age influenced architecture.

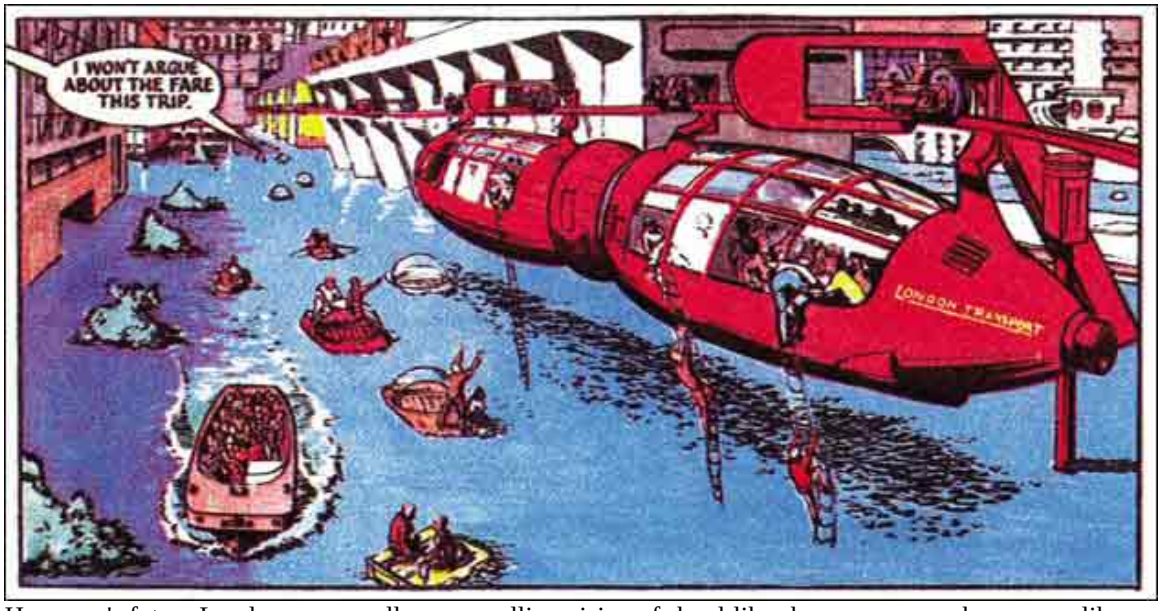
Born in Manchester in 1935, Norman Foster was educated there and at Yale. He was a trained pilot and, although he never joined Space Fleet, he did have more than a passing resemblance to Dan Dare, especially when he was working on his first internationally celebrated hi-tech masterpiece, the Sainsbury Centre for Visual Arts at the University of East Anglia in the mid-1970s. Foster has done more than any other architect to bring to life some of the spirit, and even the fabric, of the optimistic, technologically underpinned world celebrated in Dan Dare. When I first met him in London in the early 1980s, Foster doodled spaceships as we spoke. These were, he happily recalls today, pure Frank Hampson.

Foster is in no doubt that Dan Dare has been a genuine influence on his work. In 1983, he even commissioned John Batchelor, a former Eagle artist, to draw the new Renault Distribution Centre in Swindon as a pullout poster for the Architectural Review, which ran a feature on Foster's approach under the headline: The Eagle has landed.

"I loved the coloured, cross-sectional, technical drawings that appeared in the middle of the Eagle after Dan Dare," says Foster. He still does.

Nigel Coates, born in 1949 and now professor of architecture at the Royal College of Art, is another fan. "I loved Dan Dare," he says. "I remember lots of amazingly coloured drawings of cities full of Foster-style 'gherkins', pinnacle-like skyscrapers and soaring, loopy-swoopy structures. There was so much going on, so many levels of ideas. Of course, it's all very subconscious, but the Mixtacity installation I made for the Global Cities show at Tate Modern last year was a kind of Dan Dare world, a way of showing how contemporary city-making can be a real adventure, and even enjoyable."

Although made of biscuits, toys, novelty souvenirs and other unlikely stand-ins, Coates's exhibit did indeed have the appearance of Hampson's Mekonta. "I was very young when the Eagle was big," says Coates. "I was just as much influenced by the Beano and by Thunderbirds - although Thunderbirds, come to think of it, was very Dan Dare."



Hampson's future London was usually a compelling vision of shard-like skyscrapers - each one very like Renzo Piano's up-and-coming 1,000ft London Bridge Tower, known as the Shard. One comic strip features Big Ben housed in a Perspex sheath, shaped exactly like Foster's gherkin. Hampson even drew what looks like Richard Rogers' Millennium Dome half a century before the real thing opened. There were also red London Transport monorail trains running through what looked like the Barbican, years before that urban mountain range was dreamed up.

Laurie Chetwood, born in 1957, is one of Britain's leading architects. His most recent proposal is a $300m space-age sanctuary for world leaders in the Nevada desert. It looks exactly like something Dan Dare would manoeuvre his rocket around. "Architects don't often seem to have had childhoods," says Chetwood. "Or at least, they pretend they can't remember them, in case they appear to be less than earnest. My cousins handed me down their Eagle annuals, and I became a Dan Dare fan. I drew loads of space rockets and strange machines. I guess set designers for Star Wars, and even Blade Runner, must have been aware of Dan Dare - although Dan Dare was never as rough-edged or as punky."

British hi-tech buildings tended to go down one of two routes when they emerged in the late 1970s. One path led to Foster's Sainsbury Centre, a building as sleek as a spaceship; the other to the let-it-all-hang-out Pompidou Centre by Rogers and Piano. Certainly, it is easy to imagine the pilot of the future engaged in a thrilling shoot-out with the Mekon's hordes on the glass-wrapped escalators fronting the Pompidou.

That building had been strongly influenced by the zany drawings of Archigram, a group of avant-garde young British architects. Theirs was a world in which Dan Dare clearly played a part: the group's "plug-in

city" would have looked perfectly at home in a Hampson strip. From 1961, Archigram even published its own comic book-style magazine, which featured work by young architects and engineers such as Nicholas Grimshaw, whose bubbly Eden Project in Cornwall is Dan Dare design incarnate.

And what of the Eagle artists themselves? What were their architectural influences? Don Harley, now in his 80s, joined the Eagle after Hampson came to Epsom College of Art to give a talk after the launch of the comic. "My fellow students looked down at me for bringing a comic into class," he says. "But after Frank had been down, it was Dan Dare and the Eagle all the way."

So where did Hampson get it all from? "A lot of it came from his head," says Harley. "He must have known a lot about architecture. You can see the influence of Frank Lloyd Wright. We looked at magazines from Life and National Geographic to, well, anything really. We sat on the roof of the old Hulton Press overlooking Fleet Street at lunchtimes, watching new buildings going up around old, bombed-out ones. I think you can see those influences in the drawings. Frank had also seen V2 rockets close up, during the Allied push into Germany."

Although Dan Dare parked his spaceship for the last time nearly 40 years ago, the pilot of the future's adventures continue to be played out in the architectural fabric of Britain and beyond. Hampson died in 1985, yet his vision of a genuinely decent, exciting and even noble future - set in thrilling vistas made possible by science and daring design - remains an inspiration even in our own knowing, clever age.

· **Dan Dare and the Birth of Hi-Tech Britain** is at the Science Museum, London SW7, from Wednesday until October 25. Details: sciencemuseum.org.uk

http://arts.guardian.co.uk/art/architecture/story/0,,2276543,00.html

Miami Art Machine

Can a free (and rather free-form) art school make the art world think of Miami as more than its playground?

By Brett Sokol

- Published Apr 27, 2008

Eingang and Deborah Thomas chandelier.

If the glory, freneticism, excess, and sunny evanescence of the current contemporary-art boom has a symbolic home, it's Miami Beach. Thanks to the appearance of an exponentially more fabulous Art Basel Miami Beach fair each December since 2002, the once-tattered resort town has gained a new sense of itself as an aesthetic destination that goes beyond the mere appreciation of a set of well-wrought silicone implants. Now members of the local Establishment, enamored with their smart new friends—collectors, artists, and curators from around the world—want to see if they can get them to stick around. It's partly about wishing to be taken seriously as a cultural alternative to New York and Los Angeles. But it's also a bet that fertilizing the creative class is good economic-development policy—especially in a city hit hard by the real-estate meltdown. Which is why a local developer and collector, Craig Robins, is starting a free postgraduate art program in Miami.

He's not alone in this municipal-improvement gambit: Terry Riley, a former Museum of Modern Art curator, moved down two years ago to be director of the Miami Art Museum and oversee building its $220 million Herzog & de Meuron–designed home. Riley cites the example of Spain and its Guggenheim Bilbao as a model: "They wanted to catch up, join the European Union, and transform the country. They realized that to do that, they had to go from being a cheap vacation destination of sangría, sand, and sun to a place that could compete with the rest of Europe as a major cultural destination."

That's what Robins, a mam trustee, wants most of all, too. "Miami is on the verge, but we need to keep stimulating creativity," he says, rising from his office desk and passing a John Baldessari painting—a dead plant emblazoned with the credo that always happens. ("Looking at it keeps me sharp.") "I felt that

the only thing missing was a graduate school. Our artists get to the next level and have to leave Miami if they want to continue their education. Why should we lose them to Yale?" In fact, the current Whitney Biennial features three Miami artists—William Cordova, Adler Guerrier, and Bert Rodriguez—more than any other city except New York and L.A.

The son of a local developer, Robins is a Miami Beach native who's always had an interest in art (he wanted to trade in his graduation Rolex for a Salvador Dalí print). He learned that there's added value in a cleaned-up bohemia. "Everybody thought these properties were useless," he recalls of South Beach's cheaply purchased Art Deco buildings, many of which his company restored as boutique hotels and chic retail strips. Artists were a key part of the mix that revived the area: Courtesy of Robins, many found themselves with subsidized studio spaces or special commissions—enough that in 1992, this magazine christened the resort "SoHo in the Sun." Art has been part of his real-estate strategy ever since, from the $250 million Aqua residences, bedecked with work by Guillermo Kuitca and Richard Tuttle, to Miami's design district, where the Robins-founded Design Miami fair (in partnership with the owner of Art Basel) has drawn crowds to otherwise deserted streets. Not coincidentally, Robins is the district's biggest landlord.

This area will also be home to his new program, headily named Art + Research. If all goes according to plan, it'll open in September 2009 with eight-to-twelve "resident artists"—who will receive full scholarships, studio space, housing, and stipends. They hope to expand it later. The University of Miami–operated venture already has an impressive roster of New Yorkers onboard. Founding faculty include artists Liam Gillick and Rirkrit Tiravanija, both of whom teach in Columbia's M.F.A. program; Yale instructor Steven Henry Madoff; and White Columns gallery director Matthew Higgs (they will all squeeze Miami tutorials into their current gigs). Former Columbia art-school dean Bruce Ferguson consulted on it. And for added star power, sitting on the board of Robins's nonprofit Anaphiel organization to guide the school are former Whitney director (and Robins's cousin) David Ross, John Baldessari, and ex–Art Basel director Sam Keller. Robins will kick in $2 million to help fund Art + Research for its first four years, and the University of Miami has promised to help raise another $2 million.

Unlike at Columbia and Yale, there won't be any formal M.F.A. degrees awarded to those who complete the two-year program, which will revolve around a topical theme that changes with each entering biannual class. Accordingly, don't expect to see the "resident artists" hunker down in front of easels and live models. "Most art is conceptually based now. It's art based on an idea," says Madoff. "It didn't turn out that the twentieth century's most influential artist was Picasso. It turned out it was Duchamp … We don't need to do foundation courses, how to draw, how to sculpt … You don't need three credits for American Art History From 1945 to the Present."

Such an approach, loosely akin to the Whitney's Independent Study Program, has its detractors. "I like Steven very much, but I think he's dead wrong," says Robert Storr, dean of Yale's School of Art. "The idea that somebody who has read all the critical literature on art can suddenly have an idea and make it is just nuts." In fact, Storr thinks knowledge of technique is central to an artist's effectiveness. "Yes, you should teach ideas. But you shouldn't teach theory and then send people off to subcontract the work to somebody else. I don't know how many times I've been in situations curatorially where somebody's had a great idea and an absolutely lousy work comes out of it because they don't know how to talk to the people who are the superior technicians in their field."

The thing is, the University of Miami already has a conventional M.F.A. program, and many of its professors wonder why Robins doesn't just support them. "To have $2 million given to this rich man's fantasy camp is more than annoying; it's a complete kick in the teeth to the art department," says UM painting professor Darby Bannard. "We are hurting so bad over here for basic facilities. I spent two years just trying to get the floor in the wood shop fixed—it was so rotted out you could put your foot through it." Bannard's own pedagogical style eschews theoretical discussions. "It's very simple," he cracks. "I teach people to paint. Inspiration is fine, but if you don't have the skills, it's not going to go anywhere."

Madoff groans out loud at that complaint. His role? "It's not classes and it's not teaching. It's advising. The founding faculty will be hovering presences. We're just going to give you a ton of information and

allow you to live free in a place, have a free studio, and get to meet with other artists. Unless you're a millionaire already, who wouldn't want a two-year grant?" Indeed, Art + Research is so determined to be innovative that it's amorphous. At a certain point, Robins waves off further questions on the details of its structure. "It's not exactly clear how it's all going to work," he offers with a bright, knowing smile. "But everybody's always happy to spend time in Miami."

Lichtenstein on the Beach

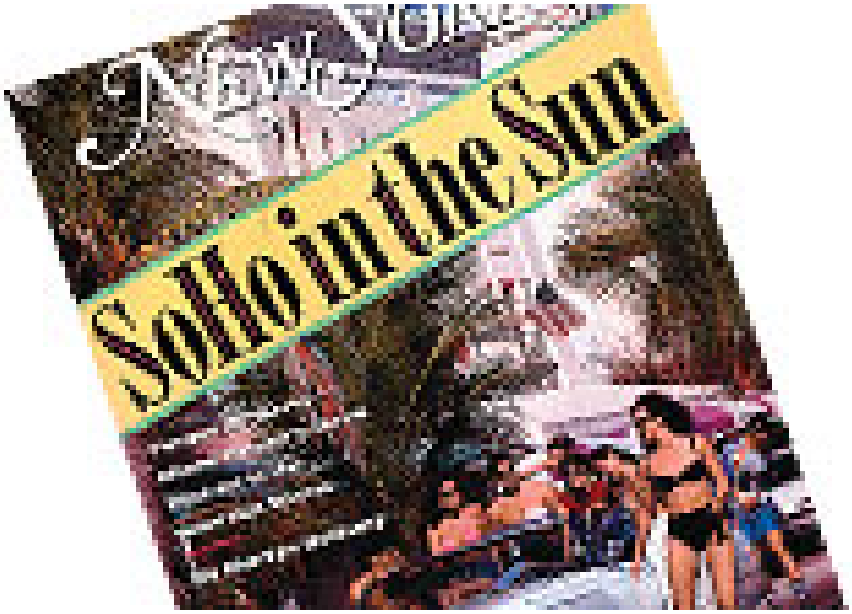
How a faded resort transformed itself into a global art destination.

Laif
Redux)

1983
Christo and Jeanne-Claude surround eleven Biscayne Bay islands with six and a half million square feet of pink fabric.

South Florida)

1984
Stylish *Miami Vice* premieres. The South Florida Art Center opens in the heart of crime-ridden South Beach, offering subsidized studios to local artists.



1992
South Beach attracts Gianni Versace, Roy Lichtenstein, Kenny Scharf, Jack Pierson, and Felix Gonzalez-Torres.

1993
New Yorkers Mera and Don Rubell relocate to Miami and purchase a 45,000-square-foot former DEA warehouse to house their collection.

Courtesy of Brook Dorsch Gallery)

2001
The first year of the Art Basel fair is canceled after 9/11, but the Wynwood gallery area begins to take off, with Locust Projects and the Dorsch Gallery.

2006
Local grandees raid MoMA to hire curator Terry Riley to head up the new, $220 million Herzog & de Meuron–designed Miami Art Museum.

Courtesy of Art Basel Miami Beach)

2007
Art Basel draws 43,000 visitors, 1,600 journalists, 24 satellite fairs, and general debauchery. Wynwood is home to nearly 70 art spaces.

Find this article at:
http://www.nymag.com/arts/art/features/46423

Studying (Sign) Languages Abroad

SHEILA YODER/GOSHEN COLLEGE
Goshen College senior Amber Hollinger at the Maypen School for the Deaf in Jamaica.

Studying Spanish, French or German? Your study abroad options are obvious and ample.

Learning the fourth-most commonly taught language (other than English) at American colleges and universities – American Sign Language?

Well, your options are more limited.

But not nonexistent. College-level enrollments in American Sign Language – dramatically up, according to a Modern Language Association survey, from 11,420 in 1998 to 78,829 in 2006 – have risen parallel to interest in international education. And, while formal study abroad programs specifically for students of sign language are still few and far in between, a couple programs launched last summer offer opportunities to study a foreign sign language – and a deaf culture – overseas.

"It's a very unique opportunity to actually go abroad and get a further specialization, go abroad and continue in such a niche direction," Miriam Grottanelli de Santi, director of the Siena School for Liberal Arts, says of her institution's new offerings. The nearly decade-old school, which also offers semester- and year-long study options, started two new short-term summer programs last year. The first is a twist on the traditional short-term study abroad option — a three-week long program in Italian Sign Language and Italian deaf culture for American students of ASL, interpretation or special education. And the second is a three-week long language program for deaf Americans and deaf Italians, who live together while the Americans study Italian Sign Language and written Italian, and the Italians study American Sign Language and written English.

Siena is home to the Istituto Pendola, formerly a school that now serves as a social center for the deaf community, Grottanelli de Santi says. Her own Siena school is now evolving into a center for deaf culture of sorts, with plans in place for a storytelling workshop for deaf Italians this summer and a deaf poetry festival in November. A Ph.D. student from Gallaudet University is currently based at the institution while conducting research on a Fulbright Grant. "The Siena school is a perfect place for Fulbright students to go," says Ceil Lucas, chair of Gallaudet's linguistics department and the Fulbright coordinator.

The various deafness-related initiatives, says Grottanelli de Santi, who taught history in study abroad programs before starting her own school, grew from the contacts she made at the Istituto combined with her growing interest in encouraging service learning. "I thought this would be an amazing opportunity for students to look at a city that is so interesting and so beautiful from a completely different

perspective and a perspective that would force them to ask questions and therefore put them in a more receptive situation as they were studying abroad," she says.

The programs started small last year but are growing, with the program for American ASL students increasing in size from four or five students last year to 25 this summer. "It's obviously an approach that students are looking for," Grottanelli de Santi says.

"Just because [students] are interested in ASL doesn't mean they can't be interested in other languages, other spoken languages, too. And we've always wanted an opportunity for them to learn other sign languages." says Sherman Wilcox, chair of the department of linguistics at the University of New Mexico, where about 1,400 students per year take courses in ASL and deafness. New Mexico is now sending a handful of students to study abroad on the Siena program in summers and last fall hosted an Italian interpreter and Siena program instructor on campus.

Generally speaking, Wilcox continues, "There really are not great opportunities" for ASL students interested in study abroad. "Part of this is because the United States sort of leads the world in sign language instruction at a university level, so you often don't see French Sign Language or Italian Sign Language having very solid positions in universities."

Also, he adds, even in the United States, with its rapid growth in sign language instruction at the university level, adjuncts and lecturers are still largely carrying the teaching loads – meaning faculty generally lack the structural support available to a tenured French professor, say, hoping to start a program in Paris.

And starting a program is not an easy task. Sheila S. Yoder, an assistant professor of American Sign Language at Goshen College, a Mennonite institution in Indiana, says it took her and her husband, Myron Yoder, a couple years to set up a 13-week, study-service program on sign language and deaf culture in Jamaica. In addition to an orientation, students spend six weeks studying Jamaica's deaf and hearing cultures and Jamaican Sign Language (which, unlike Italian Sign Language — which is significantly different than ASL — is similar enough to ASL that students are immediately able to communicate, Sheila Yoder says). For the other six weeks, students live at one of eight different schools for the deaf, primarily residential schools, to be of use.

"They'll assist in a variety of ways. We really do want to be of assistance to the schools, so we don't say,' Here we have students who can serve in your classroom.' We say, 'What kind of help do you need?'" Yoder says.

Fifteen students participated in the inaugural term last summer, and 17 are enrolled for a second installment this coming fall.

"In the evenings we would go to the dorms and they had a little lounge area where they [the kids] would watch TV in the evenings. I would just sit there with them. They'd all want attention and they'd all want to sit on our laps wanting to talk," says Katie Boss, a Goshen social work major who worked at the Maranatha School for the Deaf, which is associated with the Mennonite Church.

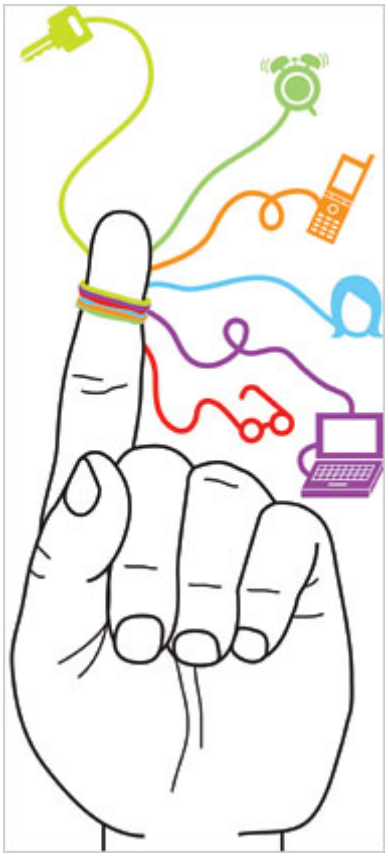
"When I think of the memories that I made there, that's what I think of, the evenings with the kids."

— Elizabeth Redden

The original story and user comments can be viewed online at http://insidehighered.com/news/2008/05/05/signlanguage.

Exercise Your Brain, or Else You'll ... Uh ...

By KATIE HAFNER



SAN FRANCISCO — When David Bunnell, a magazine publisher who lives in Berkeley, Calif., went to a FedEx store to send a package a few years ago, he suddenly drew a blank as he was filling out the forms.

"I couldn't remember my address," said Mr. Bunnell, 60, with a measure of horror in his voice. "I knew where I lived, and I knew how to get there, but I didn't know what the address was."

Mr. Bunnell is among tens of millions of baby boomers who are encountering the signs, by turns amusing and disconcerting, that accompany the decline of the brain's acuity: a good friend's name suddenly vanishing from memory; a frantic search for eyeglasses only to find them atop the head; milk taken from the refrigerator then put away in a cupboard.

"It's probably one of the most frightening aspects of the changes we undergo as we age," said Nancy Ceridwyn, director of educational initiatives at the American Society on Aging. "Our memories are who we are. And if we lose our memories we lose that groundedness of who we are."

At the same time, boomers are seizing on a mounting body of evidence that suggests that brains contain more plasticity than previously thought, and many people are taking matters into their own hands, doing brain fitness exercises with the same intensity with which they attack a treadmill.

Decaying brains, or the fear thereof, have inspired a mini-industry of brain health products — not just supplements like coenzyme Q10, ginseng and bacopa, but computer-based fitter-brain products as well.

Nintendo's $19.99 Brain Age 2, a popular video game of simple math and memory exercises, is one. Posit Science's $395 computer-based "cognitive behavioral training" exercises are another. MindFit, a $149 software-based program, combines cognitive assessment of more than a dozen different skills with a personalized training regimen based on that assessment. And for about $10 a month, worried boomers can subscribe to Web sites like Lumosity.com and Happy-Neuron.com, which offer a variety of cognitive training exercises.

Alvaro Fernandez, whose brain fitness and consulting company, SharpBrains, has a Web site focused on brain fitness research. He estimates that in 2007 the market in the United States for so-called neurosoftware was $225 million.

Mr. Fernandez pointed out that compared with, say, the physical fitness industry, which brings in $16 billion a year in health club memberships alone, the brain fitness software industry is still in its infancy. Yet it is growing at a 50 percent annual rate, he said, and he expects it to reach $2 billion by 2015.

From Hula Hoops to Corian countertops, marketers have done very well over the six decades guessing the desires of the generation born after World War II. Now they are making money on that generation's fears, and it is not just computerized flash card makers with the money-making ideas. Doctors and geneticists have also tapped into the market.

Boomers believe they have ample reason to worry. There is no definitive laboratory test to detect Alzheimer's disease. Doctors rely on symptoms to make the diagnosis, and most think that by the time symptoms show up the brain damage is already extensive.

By 2050, according to the Alzheimer's Association, 11 million to 16 million Americans will have the disease.

"Most people when they turn 50 begin to look at forgetfulness with more seriousness," said Dr. Gene Cohen, the director of the Center for Aging, Health and Humanities at George Washington University.

"When you misplace your keys when you're 25, you don't pay any attention to it," he said. "But when you do the identical thing at 50 or older, you raise an eyebrow."

Lisa C., 47, a clinical psychologist in the San Francisco Bay area, who preferred not to disclose her last name for fear that friends and colleagues would question her mental faculties, misplaced her cellphone one day a few years ago.

She called it from her home phone but heard nothing. Finally, while making dinner a few hours later, she found it — in the freezer.

She was so unnerved, not just by that but also by the poor results of a subsequent mental status test, that she had an MRI done on her brain. The diagnosis: perfectly normal. Dr. Cohen said people can also overreact, attributing absent-minded actions to failing brains, when it is actually simple distractibility that is to blame.

Nancy Cutler, 51, a publication designer in Piedmont, Calif., grew worried about her brain a few years ago when she drove her car to work one day, then, forgetting she had done so, took the bus home.

"It was pretty embarrassing to have my kid call me and say, 'what do you mean you're on the bus?' "

Ms. Cutler reminded herself that she was preparing for her son's bar mitzvah, going through a stressful period and was very distracted. But she was concerned enough to report the incident to her physician, and ask if there were certain supplements she should be taking. The doctor told her to take up activities that challenged her mind. (Ms. Cutler said she had not done anything yet, because it is "a real time commitment.")

Dr. Cohen, who recently conducted a study of people born from 1946 to 1955, the first half of the baby boom, said he was struck by the number of respondents who believe they can do things on their own to enhance the vitality of their brains.

“There is a gradual growing awareness that challenging your brain can have positive effects," Dr. Cohen said. He said the plasticity of the brain is directly related to the production of new dendrites, the branched, tree-like neural projections that carry electrical signals through the brain “Every time you challenge your brain it will actually modify the brain,” he said. “We can indeed form new brain cells, despite a century of being told it’s impossible.”

In pursuit of his own dendritic growth, Dr. Cohen plans to take up the piano again after years of not playing. He is also sketching out a science-fiction novel he hopes to write.

Dr. Cohen says that although he understands the fear of Alzheimer’s, many people are unduly anxious about it.

“The bottom line question to ask is, Is your forgetfulness fundamentally interfering with how you function?” said Dr. Cohen. “If it doesn’t fundamentally mess up your work or social life, it’s among the normal variants.”

Relief — or heightened anxiety — can come with a better sense of one’s genetic risk. Start-ups like Navigenics, 23andMe and deCODE genetics are charging around $1,000 to test an individual’s DNA for various risk factors, including Alzheimer’s.

Mr. Bunnell, whose magazine, Eldr, is aimed at aging boomers, took the 23andMe test and learned that his genetic risk is below average. Still, Mr. Bunnell is not sure he trusts the report, as one of his grandparents had dementia, and his mother may have had Alzheimer’s although no diagnosis was made.

To keep such moments as his FedEx embarrassment to a minimum, Mr. Bunnell now does regular brain calisthenics, largely avoiding expensive software in favor of simpler solutions. He works at memorizing the numbers that swirl around his daily life — credit cards, PINs and phone numbers — and devises mnemonics for remembering people’s names. “Smart people find new ways to exercise their brains that don’t involve buying software or taking expensive workshops," he said.

http://www.nytimes.com/2008/05/03/technology/03brain.html?em&ex=1210046400&en=9a10e08bc500a50b&ei=5087%0A

This Is His Life: A Blue Whale and Hello Kitty

By HILARIE M. SHEETS

THE artist Tom Sachs has a bad-boy reputation and a long track record of provocation, including when he substituted a Hello Kitty character for the baby Jesus in a 1994 Barneys Christmas window, and when he used Prada packaging to build a model of a German death camp shown in a 2002 exhibition at the Jewish Museum.

If his wry, subversive comments on commercialization have offended some viewers, there's no arguing with his sheer talent for making just about anything. Using salvaged materials like police barricades or architectural foam core, Mr. Sachs has pieced together toilets, shotguns, a refrigerator and a grand piano — all functional enough to do their jobs. He has made convincing copies of Mondrians from duct tape and Knoll furniture from phone books.

Such boyish wizardry — rather than acts of rebellion — seems to be what now most interests Mr. Sachs, 41, whose work from the last three years goes on view Thursday at Lever House and at the Sperone Westwater Gallery.

"I tried for nothing in these shows to be exotic, but for things that are connected with my life and my history," said Mr. Sachs, who could have passed for an impish teenager one recent morning in his studio at the edge of Chinatown.

He has, for instance, made a six-foot-long foam-core model of the blue whale in the American Museum of Natural History, which he says he has loved since his childhood visits from Westport, Conn. "In the past I've made so many objects that are either nefarious or deal with the cynical parts of our consumer culture," he said. "But the whale was interesting as something to make that was just pure good."

At Sperone Westwater, in a show titled “Animals,” the whale will be poised atop a black Bösendorfer grand piano — an exceptional musical instrument here reduced to a brand-name pedestal for the whale, the same function pianos covered with silver-framed photographs serve in many affluent homes. In an adjacent room will be his surrogate of the piano, handmade from plywood but actually playable.

Another animal-inspired sculpture in the show, a tower called “La Guardia,” was custom designed for the cat that slinks around Mr. Sachs’s studio. A litter box with revolving parts, to reduce cleaning tasks, is topped by a small McDonald’s that serves cat food; this rises to a Japanese Zen garden with a video of clouds and birds chirping, which graduates to a penthouse based on the control tower at La Guardia Airport, where the push of a paw produces catnip atomizing spray.

“Everything is directly or indirectly an animal, with all the metaphors about animals used to describe aspects of ourselves,” Mr. Sachs said of the pieces in “Animals.”

To reinforce the intimate qualities of this eclectic collection, Mr. Sachs reconfigured the loftlike gallery space by building a series of small rooms with foam-core walls. The project drew on his early training at the Architectural Association in London and a yearlong apprenticeship in Frank Gehry’s architectural office. (That’s when he learned to use a table saw.)

The work in the Lever House show, by contrast, takes advantage of the very public ground-floor exterior space at Gordon Bunshaft’s Modernist Park Avenue tower. Working exclusively in bronze, Mr. Sachs has positioned two 10-foot-tall fountains — in the form of Hello Kitty and her equally cute friend Miffy — so that they face Park Avenue and are clearly visible from cabs whizzing by.

He has long been attracted to Hello Kitty, which he describes as a “merchandising icon” with “an almost Buddhist sense of nothingness.” With water spilling from their eyes, the fountain figures are weeping into pools of their own tears. In the moneyed canyons of Park Avenue, now facing difficult times, they may be appreciated as emblems of shared misery.

Inside the glass lobby of Lever House, Mr. Sachs is presenting more bronze sculptures that consciously echo the Modernist setting. A mini-Dumpster, for instance, recalls a Minimalist Donald Judd box, but it is another of the many waste management devices that populate Mr. Sachs’s work.

“It’s an important symbol of how there is respect and integrity to be had everywhere along the chain of the consumer cycle, even at the end,” he said.

Several towers of stacked car batteries — with titles that echo their virile brand names, like “Die Hard,” “Duralast” and “Trojan” — resemble sculptures by Isamu Noguchi, or Lever House itself. Yet they are direct casts of the dead batteries cluttering Mr. Sachs’s studio, taken from the temperamental former police car he drives.

Two quarterpipe skateboard ramps could also be Judd sculptures, but Mr. Sachs left the backs open to reveal how the struts hold up the curve of the ramps, the beauty in their making. “If it’s made in bronze, it’s no longer this menacing object of noise and liability but now something that has to be protected,” he said.

“Of course my original idea was to put it outside and make it start this fight,” added Mr. Sachs, a longtime skateboarder who said he knew that people trying to skate on it would come into conflict with Lever House security. “But I’ve been down that road and on all sides, and it’s not an interesting fight.”

If stirring up trouble is no longer a direction he wants to follow, Mr. Sachs remains a provocative study in contradictions. Growing up in the affluence of Westport, where Martha Stewart catered his bar mitzvah celebration, gave him a love-hate relationship with status.

"I started out doing work about brands as a way of investigating my feelings about luxury goods: wanting them, being offended by them, both at the same time," said Mr. Sachs, whose social critiques implicate himself as well.

Louis Grachos, director of the Albright-Knox Art Gallery in Buffalo, said: "Tom really is an interesting cultural commentator. His sculptures become metaphors for how manipulative corporate branding and marketing can be, and the meanings those things take on in our lives."

In 1999, when Mr. Grachos was director of Site Santa Fe, he showed Mr. Sachs's "Sony Outsider." Addressing the legacy of the atomic bomb in New Mexico, where it was first tested, Mr. Sachs created a replica of the bomb dropped on Hiroshima and then customized the interior with a lounge; performance artists listened to music and watched television there using Sony equipment, technology that came out of postwar Japan.

"Tom straddles that line somewhere between humor, good taste and bad taste," Mr. Grachos said, "but forces the viewer to really deal with these power structures that exist out there."

Still tapping those cultural fault lines, Mr. Sachs is now a seasoned midcareer artist with a dozen employees helping him pull off increasingly large projects. As he makes the rounds from his basement carpentry shop to a second-floor studio, he strikes a balance between exacting taskmaster and groovy Scout leader who wants to keep it fun for the kids.

"Even as an artist I get caught up in the grind of running a small business and keeping things going," he said, discussing a 21-foot-tall bronze Hello Kitty that rises up behind the fountains at Lever House. "This windup Hello Kitty is an expression of how automated my life can feel sometimes. Maybe that's why she's the biggest one in the show and looks like she's about to fall over."

http://www.nytimes.com/2008/05/04/arts/design/04shee.html?ref=design

PHILIP GUSTON

Primal Instincts Hooked to an Art Against Artifice

By KEN JOHNSON

Philip Guston, the Abstract Expressionist who late in life became a painter of dark, comic images, was a great as-if artist. He wanted, he said, "to paint things as if one had never seen them before, as if one had come from another planet." He aspired "to paint as a cave man would."

Of course Guston (1913-1980) was no troglodyte, with all due respect to the Geico cave men. He was an erudite cosmopolitan who revered Italian Renaissance painting and counted among his friends the novelist Philip Roth, the composer Morton Feldman and the poets Stanley Kunitz and Clark Coolidge, with whom he collaborated in the 1970s on drawings combining words and images.

Yet working from primal instinct was his driving fantasy. It animated both the abstraction of his 1950s and '60s work and the cartoon-style representations of the 70s. And as a continuing impulse it gives a powerful autobiographical momentum to a spellbinding survey of Guston's drawings at the Morgan Library & Museum.

The exhibition presents 100 drawings dating from 1946 to 1980 and was organized by Christoph Schreier, a curator at the Kunstmuseum Bonn, where it had its debut in March 2007, and Michael Semff, a curator at the Staatliche Graphische Sammlung in Munich, where it also appeared. Isabelle Dervaux, the Morgan's curator of modern drawings, organized the New York show and wrote an excellent essay for the exhibition catalog.

The show skips the first chapter of Guston's career, the politically charged, social-surrealist paintings and murals of the 1930s and '40s. In so doing it gives a clearer picture of the continual struggle with abstraction and representation that defined his mature art.

Its earliest drawings have fragmentary images in them: a boy who might have been drawn by Ben Shahn in a congested room in "Untitled" from 1946; a vaguely theatrical tableau in "Study for 'Tormentors' " from 1947-8.

Clocks, shoes, glasses and other objects can be discerned in drawings of the early '50s, but abstract, linear improvisation prevails. Here Guston's drive to eliminate artifice — to get rid of his abundant traditional skills — takes over.

Despite his efforts, however, the drawings look elegant. Skittery, scrawly and staccato lines in black ink with quill pen or brushes play on loosely gridded, Cubist scaffoldings, producing a kind of suavely roughed-up Chinese calligraphy. In the late '50s and the first half of the '60s, the lines become more willfully clumsy and irregular. The drawings parallel the trend in Guston's painting from atmospheric fields of colorful marks in the '50s, which earned him the label "Abstract Impressionist," to smudgy gray paintings of lumpy shapes in the '60s.

In 1966 Guston stopped painting and did nothing but draw for two years. He wanted, he said, "to clear the decks." Here the impulse to get down to basics asserts itself in rigorously spare, black ink compositions: a single vertical mark at the top of a page; two vertical lines from top to bottom; a horizontal line meeting a vertical line; a sagging, flat-bottomed circle made with short strokes as though by a careful child. In such drawings it does look as if Guston were going back to the prehistoric origins of drawing.

Then a surprising thing happened. He started making cartoonish images: a jar of brushes, pens and pencils; open books with texts represented by rows of dashes; three people in Ku Klux Klan hoods and robes.

For two years Guston oscillated between abstraction and representation, a process whose transformative flow can best be appreciated in studio photographs showing scores of drawings sequentially pinned to the walls. He finally decided in favor of representation, and so, at the end of the decade, his famous last chapter began. That final phase, from 1970 to 1980, the year he died, is given its own room at the Morgan, and it is thrilling. Suddenly all the ideas and preoccupations that abstraction had no use for come pouring out in almost 50 works of joyful graphic invention.

It begins with images of the mysterious yet funny, conspiratorial Klansmen, who are said to be symbols of political protest but are, more likely, surrogates for Guston's own enigmatic creative self. On the other hand, the monstrous caricature of Richard M. Nixon dragging a horribly swollen, phlebitis-afflicted leg is blatantly political. But if the drawings seem at first to open up to the world, they quickly shut us into the studio with his Guston mordant anxieties about art, eating, smoking, drinking and death. And then they open up again to visionary landscapes, dreams and nightmares.

Guston still drew like a cave man in these works, but instead of basic formal elements he made archetypal images in bold, wobbly lines and, in the case of a few paintings on paper or cardboard, colored them in dull reds, fleshy pinks, pale blues and dirty grays.

He told stories of Sisyphean ennui. The beat-up, bandaged head with the big sad eye gazing uphill; the boards with nails pounded into them; the empty shoes; the man smoking in bed, staring at the ceiling: these images exude that sense of futility that almost all artists must periodically endure. Sometimes there is the relief of simple pleasures: a pile of cherries, a sandwich, sitting with one's wife and looking out the window at the sunset. And then there is the junk-covered hillside with the gravestone at its foot presciently marked P. G. 1980.

Today the drawings don't look as shockingly crude as they did to critics in the 1970s. They look like the work of a brilliant cartoonist knowingly inspired by "Mutt and Jeff," "Krazy Kat" and other classic Sunday funnies. They may appear Neanderthal, but they are the products of a sophisticated performance, a kind of method acting. The mandarin playing the stumblebum with passionate, Brando-esque conviction.

"Philip Guston: Works on Paper" continues through Aug. 31 at the Morgan Library & Museum, 225 Madison Avenue, at 37th Street, (212) 685-5008, themorgan.org.

http://www.nytimes.com/2008/05/02/arts/design/02gust.href=design

What Can Be Done About Pollution In Ganges River?

People wash laundry in the Ganges River. (Credit: Steve Hamner)

ScienceDaily (May 3, 2008) — Montana State University research about pollution in the Ganges River has reached the Supreme Court of India, producing some optimism among MSU scientists who study the 1,500-mile river.

"It's nice to know that our work is being recognized by a government institute in India and being presented at the highest level," said Steve Hamner, research associate in microbiology. "Lots of things get done judicially in India."

The Ganges River is considered a goddess, but Tim Ford, head of MSU's microbiology department, said it has become a soup of pollution.

"It's a beautiful river. It's just really mucked up," he commented.

The river contains untreated sewage, cremated remains, chemicals and disease-causing microbes, the researchers said. Cows wade in the river. People wash their laundry in it and drink from it. Ford said the Ganges has become the kind of place where genetic material could transfer between pathogens and create new pathogens.

"Wastewater treatment is critical to protecting human health from waterborne diseases," Ford said. "The Ganges River is a major source of disease burden in that region."

Hamner said MSU and a government lab in India each sampled the Ganges and found enterohaemorrhagic E. coli (EHEC) bacteria. The bacteria known as 0157:H7 bacteria. It was first detected in the United States in 1982 after someone ate a tainted hamburger. The Centers for Disease Control and Prevention estimates that 0157:H7 now infects more than 73,000 people and kills about 60

people a year in the United States. The CDC said most of those illnesses have been associated with eating undercooked, contaminated ground beef, drinking unpasteurized milk, swimming in or drinking contaminated water and eating contaminated vegetables. The bacteria can cause dysentery and kidney failure. It occasionally kills.

Hamner learned this spring that a research institute in Lucknow, India reported its lab results to the Indian Supreme Court. In doing so, it referenced MSU's findings and echoed MSU's concerns. The Lucknow Institute tested a portion of the Ganges about 200 miles upstream from Hamner's sampling.

He doesn't expect to see a pure Ganges in his lifetime, but the Supreme Court involvement is encouraging, Hamner said, adding that he didn't think the Supreme Court of India would have been as open if the report had come from MSU alone.

"This is the best of things. It's wonderful," Hamner said.

Ford said, "Getting regulators and legislators to understand the importance of not discharging untreated human waste into the Ganges River is critical to moving forward."

Ford, a long-time researcher of environmental health, is planning to return to India in 2009 as chair of an American Academy of Microbiology Colloquium on Water and Health.

Hamner's involvement with the Ganges began about five years ago when he decided he wanted to introduce himself to scientists at the Sankat Mochan Foundation. The foundation is directed by Dr. Veer Bhadra Mishra, a retired engineering professor and head of a Hindu temple. Veer has been recognized by Time magazine as a hero of the planet. He's on the United Nations' honor roll for environmental activists.

In early 2003, Hamner traveled to the city of Varanasi in north central India to meet with members of the Sankat Mochan Foundation. Hamner returned to India in 2004 and conducted a health survey and sampled the Ganges in Varanasi. Hamner sent the river water samples to MSU where Susan Broadaway tested them in the microbiology lab and detected 0157:H7 almost immediately.

In 2006, Ford and Hamner presented their findings in Kolkata, India at a meeting organized by the CDC on water and sanitation issues.

A paper on their discovery was published in the April 2007 issue of Applied and Environmental Microbiology. The MSU authors besides Hamner, Broadaway and Ford were Elinor Pulcini in MSU's Center for Biofilm Engineering and Barry Pyle in MSU's microbiology department. The paper also had three Indian co-authors who work with the Sankat Mochan Foundation's Swatcha Ganga Research Laboratory.

Adapted from materials provided by Montana State University.

http://www.sciencedaily.com:80 /releases/2008/05/080501133444.htm