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April Fool! The Purpose of Pranks

By BENEDICT CAREY

Keep it above the belt, stop short of total humiliation and, if possible, mix in some irony, some drama, maybe even a bogus call from the person's old flame or new boss. A good prank, of course, involves good stagecraft. But it also requires emotional intuition.

"You want to play on people's weaknesses or dislikes, but not go too hard," said Tommy Doran, a fireman and paramedic in Skokie, Ill., who as a rookie in Montgomery County, Md., was lured into the station's kitchen and blasted with multiple cream pies. "For me it's just the sort of dark humor we use to cope with the job and each other. Nothing dangerous or illegal."

Psychologists have studied pranks for years, often in the context of harassment, bullying and all manner of malicious exclusion and prejudice.

Yet practical jokes are far more commonly an effort to bring a person into a group, anthropologists have found — an integral part of rituals around the world intended to temper success with humility. And recent research suggests that the experience of being duped can stir self-reflection in a way few other experiences can, functioning as a check on arrogance or obliviousness.

The 1960s activist and prankster Abbie Hoffman reportedly divided practical jokes into three categories. The bad ones involve vindictive skewering, or the sort of head-shaving, shivering-in-boxers fraternity hazing that the sociologist Erving Goffman described as "degradation ceremonies." Neutral tricks are more akin to physical punch lines, like wrapping the toilet bowl in cellophane, depositing a massive pumpkin on top of the student union building, or pulling some electronic high jinks on a co-worker's keyboard (though on deadline this falls quickly into the "bad" category).

What Hoffman called the good prank, which humorously satirizes human fears or failings, is found in a wide variety of initiation rites and coming-of-age rituals. The Daribi of New Guinea, for example, have children make a small box and bury it in the ground, telling them that after a while a treasure will appear inside but they must not peek, according to Edie Turner, a professor of anthropology at the University of Virginia.

Invariably the youngsters succumb to curiosity — only to find a sample of human feces.

The Ndembu of Zambia have an adult in a monstrous mask sneak and scare the wits out of boys camping outside the village as part of a coming-of-age ritual in which they are showing their bravery.

"These kind of tricks are very common," Dr. Turner said, "and they are really a way to put a person down before raising them up. You're being reminded of your failings even as you're being honored."

Jonathan Wynn, a cultural sociologist at Smith College, said pranks served to maintain social boundaries in groups as various as police departments and sororities. "And you gain status by being picked on in some ways," he said. "It can be a kind of flattery, if you're being brought in."

In a paper published last year, three psychologists argued that the sensation of being duped — anger, self-blame, bitterness — was such a singular cocktail that it forced an uncomfortable kind of self-awareness. How much of a dupe am I? Where are my blind spots?

"As humans, we develop this notion of fairness as a part of our self-concept, and of course it's extremely important in exchange relationships," said Kathleen D. Vohs, a consumer psychologist at the Carlson School of Management at the University of Minnesota. Dr. Vohs and her co-authors, Roy F. Baumeister of Florida State University and Jason Chin of the University of British Columbia, propose that the fear of being had is a trait that varies from near-obliviousness in some people to hypervigilance in others.

The researchers had 55 men and women play a computerized cooperation game and demonstrated that participants who felt they had been burned would go over the experience in their heads, playing out alternative versions of how they might have behaved.

“Being duped holds up this mirror to people,” Dr. Vohs said, “and may in fact show them where they are on the scale” — too trusting or too vigilant. Paranoia, too, has its costs, and it can sour relationships.

Running back the tape mentally, in this case meditating on how an embarrassing event might have turned out otherwise, is known to psychologists as counterfactual thinking. “The feeling of ‘I should have known better’ is the sort of counterfactual that serves to highlight your own shortcomings,” said Neal Roese, a psychologist at the University of Illinois. “A good deal of research has shown that these counterfactual insights can kick-start new behaviors, new self-exploration and, ultimately, self-improvement.”

Those observations may not leap to mind if you just showed up in go-go boots and an Elizabeth Taylor wig to a bogus 1970s cross-dressing party. Or if you fell for the e-mail message announcing you had won an award and should forward a draft of your acceptance speech to a supervisor.

But a good prank is, in the end, a simulation of a crisis and not the real thing. And it serves as a valuable reminder that not every precious box contains precisely the treasure you might expect.

http://www.nytimes.com/2008/04/01/health/01mind.html?_r=1&nl=8hlth&emc=hltha1&oref=slogin

CPR Can Help, Even With No Training

By NICHOLAS BAKALAR

Even people without CPR training can save the life of an adult whose heart stops, and the American Heart Association has issued an advisory urging everyone, trained or not, to act immediately in such an emergency.

The procedure is simple: if you see an adult collapse after having a heart attack, immediately call 911 and then push hard and fast in the middle of the chest continuously, until emergency medical personnel arrive or an external defibrillator can be used.

Dr. Michael R. Sayre, the lead author of the recommendations, said in a telephone interview that the ideal would be 100 pushes a minute with enough force to make the chest go down two inches, but, he added, "there is no need to use a metronome and a ruler." Dr. Sayre is an associate professor of emergency medicine at Ohio State University.

CPR, or cardiopulmonary resuscitation, can more than double the survival rate in cardiac arrest, but only about a third of people who collapse get CPR from bystanders.

The advice does not apply to cardiac arrest in children, or that due to drowning or drug overdose, which usually require rescue breathing. Nor does it apply when the bystander does not see the collapse, since it might not have been cardiac arrest.

But the exceptions, Dr. Sayre said, are only about a quarter of all cardiac arrests. "We want people to act no matter what," he said, "and one of the reasons it's important to take a CPR class is because of this other 25 percent.

"But doing chest compressions alone in these situations is better than doing nothing," he said. "Even for children, the procedure would be the same."

Chest compression keeps blood flowing, but it does not reoxygenate the blood, as mouth-to-mouth resuscitation does.

The recommendations, being published in the April issue of Circulation, are based on new studies of CPR techniques. They update advisories published in 1997 and 2005.

Numerous studies in animals, and five others in humans, have convinced experts that hands-only CPR from an untrained bystander is usually as effective as CPR with mouth-to-mouth resuscitation performed by a person trained in the technique.

There may be several reasons. Rescuers performing traditional CPR take longer to start than those who use hands only, maybe because it takes more time to prepare, intellectually and emotionally, for the more complex and intimate procedure. Studies have also shown that bystanders performing conventional CPR interrupted chest compressions for longer than the recommended 10 seconds while doing mouth-to-mouth resuscitation, resulting in fewer compressions.

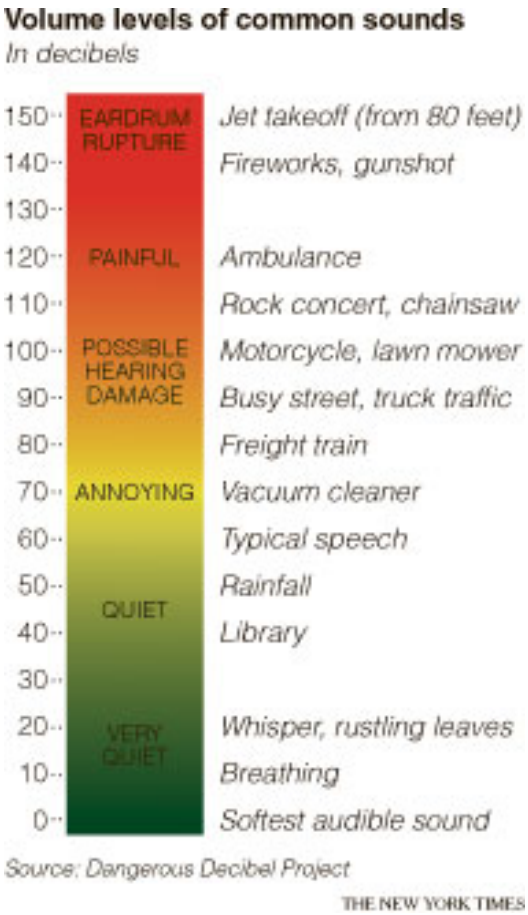
Surveys suggest there may be reluctance to perform mouth-to-mouth resuscitation because of fear of infection, but this is probably a minor barrier. More commonly, CPR-trained bystanders cite panic and fear of causing further harm as reasons for inaction. Such fears are unwarranted.

“If you do nothing, the person will die,” Dr. Sayre said. “And you can’t make them worse than dead.”

http://www.nytimes.com/2008/04/01/health/research/01heart.html?nl=8hlth&emc=hltha1

New Therapies Fight Phantom Noises of Tinnitus

By KATE MURPHY



Modern life is loud. The jolting buzz of an alarm clock awakens the ears to a daily din of trucks idling, sirens blaring, televisions droning, computers pinging and phones ringing — not to mention refrigerators humming and air-conditioners thrumming. But for the 12 million Americans who suffer from severe tinnitus, the phantom tones inside their head are louder than anything else.

Often caused by prolonged or sudden exposure to loud noises, tinnitus (pronounced tin-NIGHT-us or TIN-nit-us) is becoming an increasingly common complaint, particularly among soldiers returning from combat, users of portable music players, and aging baby boomers reared on rock 'n' roll. (Other causes include stress, some kinds of chemotherapy, head and neck trauma, sinus infections, and multiple sclerosis.)

Although there is no cure, researchers say they have never had a better understanding of the cascade of physiological and psychological mechanisms responsible for tinnitus. As a result, new treatments under investigation — some of them already on the market — show promise in helping patients manage the ringing, pinging and hissing that otherwise drives them to distraction.

The most promising therapies, experts say, are based on discoveries made in the last five years about the brain activity of people with tinnitus. With brain-scanning equipment like functional magnetic resonance imaging, researchers in the United States and Europe have independently discovered that the brain areas responsible for interpreting sound and producing fearful emotions are exceptionally active in people who complain of tinnitus.

"We've discovered that tinnitus is not so much ringing in the ears as ringing in the brain," said Thomas J. Brozoski, a tinnitus researcher at Southern Illinois University School of Medicine in Springfield.

Indeed, tinnitus can be intense in people with hearing loss and even those whose auditory nerves have been completely severed. In the absence of normal auditory stimulation, the brain is like a driver trying to tune in to a radio station that is out of range. It turns up the volume trying but gets only annoying static. Richard Salvi, director of the Center for Hearing and Deafness at the State University of New York at Buffalo, said the static could be "neural noise" — the sound of nerves firing. Or, he said, it could be a leftover sound memory.

Adam Edwards, a 34-year-old co-owner of a wheel repair shop in Dallas, said he developed tinnitus four years ago after target shooting with a pistol. "I had all the risk factors," he said. "I grew up hunting, I played drums in a band, I went to loud concerts, I have a loud work environment — everything but living next to a missile launch site." His tinnitus, which he described as a "computer beeping" sound, was so intense and persistent that he needed sedatives to sleep at night.

Mr. Edwards says he has gotten relief from a device developed by an Australian audiologist, which became widely available in the United States last year. Manufactured by Neuromonics Inc. of Bethlehem, Pa., it looks like an MP3 player and delivers sound spanning the full auditory spectrum, digitally embedded in soothing music.

Similar to white noise, the broadband sound, tailored to each patient's hearing ability, masks the tinnitus. (The music is intended to ease the anxiety that often accompanies the disorder.) Patients wear the $5,000 device, which is usually not covered by health insurance, for a minimum of two hours a day for six months. Since completing the treatment regimen last year, Mr. Edwards said his tinnitus had "become sort of like Muzak at a department store — you hear it if you think about it, but otherwise you don't really notice."

A small, company-financed study in the journal Ear & Hearing in April 2007 indicated that the Neuromonics method was 90 percent successful at reducing tinnitus. A larger study is under way to determine its long-term effectiveness.

Anne Howell, an audiologist at the Callier Center for Communication Disorders at the University of Texas at Dallas, said the Neuromonics device was a big improvement over older sound therapies that required wearing something that looked like a hearing aid all the time and took 18 to 24 months.

"The length of time was discouraging for many patients," she said. "And a lot of them told me that wearing something that looks like a hearing aid would cause a problem in their professional life."

Other treatments showing promise include surgically implanted electrodes and noninvasive magnetic stimulation, both intended to disrupt and possibly reset the faulty brain signals responsible for tinnitus. Using functional M.R.I. to guide them, neurosurgeons in Belgium have performed the implant procedure on several patients in the last year and say it has suppressed tinnitus entirely.

But the treatment is controversial. "It's a radical option and not proven yet," said Jennifer R. Melcher, an assistant professor of otology and laryngology at Harvard Medical School.

The magnetic therapy, similar to treatments used for depression and chronic pain, involves holding a magnet in the shape of a figure eight over the skull. Clinicians use functional M.R.I. to aim the magnetic pulses so they reach regions of the brain responsible for interpreting sound. Patients receive a pulse every second for about 20 minutes. "It works for some people but not for others," said Anthony Cacace, professor of communication science and nerve disorders at Wayne State University in Detroit. Since tinnitus has so many causes, Dr. Cacace said, the challenge now is to find out which "subsets of patients benefit from this treatment."

Researchers in Brazil have published a study indicating that a treatment called cranial-sacral trigger point therapy can relieve tinnitus in some head and neck trauma cases by releasing muscles that constrict hearing and neural pathways.

And drugs intended to treat alcoholism, epilepsy, Alzheimer's and depression that alter levels of various neurotransmitters in the brain like serotonin, dopamine and gamma-aminobutyric acid have quieted tinnitus in some published animal and human studies.

"We've never been so hopeful," said Dr. Salvi, of SUNY Buffalo, "of finding treatments for a disorder that haunts people and follows them everywhere they go."

http://www.nytimes.com/2008/04/01/health/research/01tinn.html?nl=8hlth&emc=hltha2

Oldest Known Gold Artifacts In The Americas Discovered

Jiskairumoko necklace. (Credit: Photo courtesy of Mark Aldenderfer)

ScienceDaily (Apr. 1, 2008) — Gold has long been more than a fashion statement, and wearing jewelry and other adornments made of it often connotes prestige. And it did not take long for ancient people to figure that out.

A team of scientists led by an archaeologist from The University of Arizona has unearthed what is, to date, the oldest collection gold artifacts found in the Americas.

The finding suggests that even early groups with limited resources recognized the value of status symbols. Mark Aldenderfer, a professor of anthropology at the UA, and his team excavated a site in the Peruvian Andes of South America, near Lake Titicaca. The site, Jiskairumoko, is located in a drainage basin where groups of hunters and gatherers were beginning to make the transition to a more settled existence.

Dates for the Archaic period, when Jiskairumoko was inhabited by these people, are as early as 5,400 years ago and ending about 4,000 years ago.

The site Aldenderfer and the others excavated included a burial that contained a necklace made of turquoise and native gold that had been hammered into shape, and may have belonged to someone with an elevated rank in the community.

Carbon-14 dates for Jiskairumoko range from 2155 to 1936 B.C., making the necklace about 4,000 years old, and some 600 years older than the previous earliest known gold artifacts in South America, or anywhere else in the Americas.

Gold metallurgy is almost exclusively associated with societies with the expertise to create agricultural surpluses and hereditary elite members. Jewelry requires time and skill to create, as well as sufficient capital required to acquire raw materials, a tall order for anyone who survives by subsistence. The surprise of finding gold artifacts at Jiskairumoko is that this site was a simple village.

The artist who created the Jiskairumoko necklace hammered gold until it was flat enough to roll into small cylindrical beads. The nine gold beads were interspaced with several smaller green stones and a turquoise bead in the center.

The materials were not available from the Titicaca Basin, requiring either a trade or a trip of some distance to acquire the gold and turquoise, or the finished necklace.

Evidence from Jiskairumoko supports the hypothesis that the earliest metal industry in the Andes was with native gold. It also offers some insights into ways in which wealthier people in society competed for and acquired power and prestige, pointing the way for generations of rule by hereditary leaders.

This research was recently published in the Proceedings of the National Academy of Sciences.

Adapted from materials provided by University of Arizona.

http://www.sciencedaily.com/releases/2008/03/080331200242.htm

Huge Amounts Of Data Storage May Be Possible Using Ultra-small Needles

Dutch researcher Alexander le Fèbre has demonstrated that a field-emission current signal can be used to arrange the position of thousands of nanometre-sharp needles. (Credit: Image courtesy of Netherlands Organization for Scientific Research)

ScienceDaily (Apr. 1, 2008) — Dutch researcher Alexander le Fèbre has demonstrated that a field-emission current signal can be used to arrange the position of thousands of nanometre-sharp needles. These probes can be applied to write and read in new storage media with an extremely high density, using bits on a nanometre scale. The development of the hard disk is now reaching its technical limits because the entire disk is served by just a single head. Consequently, the capacity of the disk and the reading and writing speed cannot expand much more in the future.

Therefore research into a memory based on probes is being carried out at the University of Twente's MESA+ research institute. Being able to control the position of each separate probe is essential for realising a system with extremely high densities. Le Fèbre's measurements show that a field-emission current signal can be used to adjust the position of the probes without these making direct contact with the storage medium. If a constant current is maintained and the applied voltage is varied, the distance between the probe apex and the storage medium can be adjusted from several nanometres to about 100 nanometres. The resolution is sufficient for a probe-based storage system. However for practical applications, the current stability and the lifetime of the probes will need to be improved further so that the accuracy and reproducibility of positioning can be increased.

Adapted from materials provided by Netherlands Organization for Scientific Research.

http://www.sciencedaily.com/releases/2008/03/080331111031.htm

Two-photon Nanoparticles For The Improved Detection Of Tumor Cells

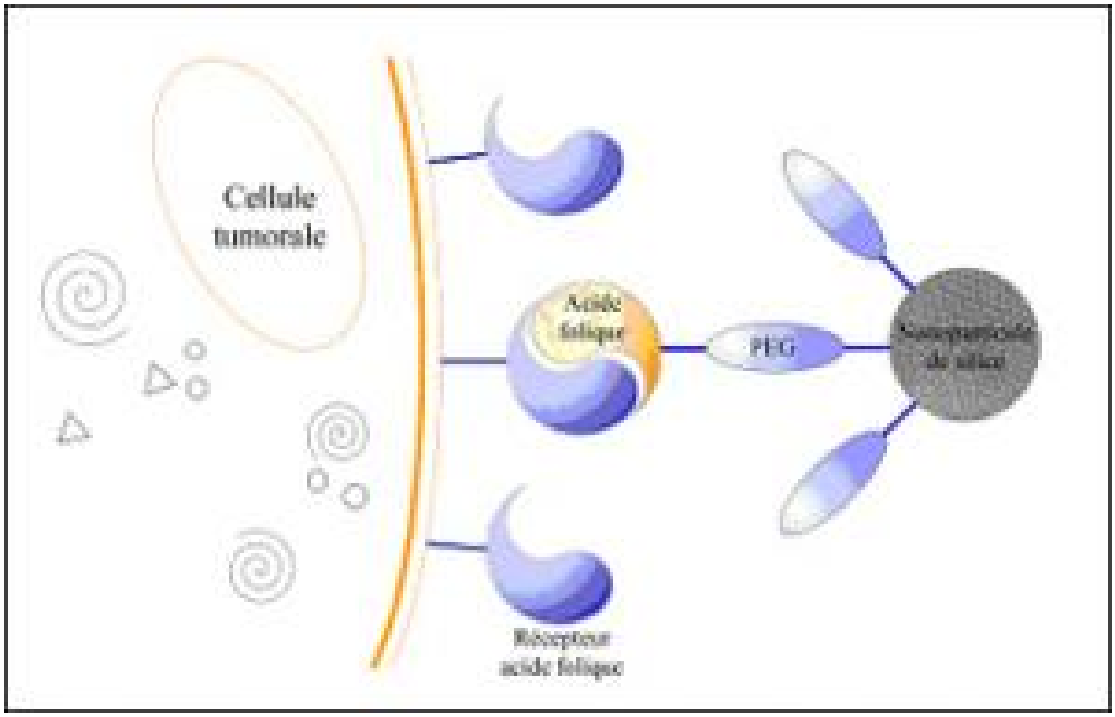


Diagram explaining the recognition of tumor cells by nanoparticules. (Credit: Copyright ICGM)

ScienceDaily (Apr. 1, 2008) — Researchers from several CNRS-associated laboratories have succeeded in synthesizing porous nanoparticles that are capable of absorbing the energy of two photons in the near infrared spectrum, and then re-emitting radiation used for medical imaging by fluorescence. These two-photon nanoparticles should enable the more precise detection of tumor cells and, in the longer term, better-targeted therapy.

Currently, the medical imaging of tumor cells is based on the fluorescence emitted by chemical groups that can absorb the energy of a photon. These molecules, called fluorophores, are excited in the visible ultraviolet spectrum. Single-photon imaging thus remains relatively imprecise. This obstacle should soon be overcome thanks to work by scientists from CNRS-associated laboratories(1).

These researchers have succeeded in developing organic, two-photon fluorophores (aromatic molecules) that are able simultaneously to absorb two photons in the near infrared spectrum. These were then encapsulated in porous nanoparticles to enable their circulation in a biological medium. The originality of this work resides in the fact that unlike ultraviolet wavelengths, infrared wavelengths penetrate more deeply into tissues and are less energetic, the advantage being that they can explore tumors more profoundly without damaging the tissues.

Furthermore, the use of two-photon fluorophores favors access to a 3D spatial resolution, which in the longer term will enable the detection and more targeted treatment of tumor cells. One of the options envisaged may be to encapsulate in the pores of silicon nanoparticles not only the fluorescent agent but also drugs that can locally treat the cancer cells.

The scientists have also been focusing on the functionalization of these nanoparticles in order to create new biological markers capable of interacting with breast and cervical cancer cells.To achieve this, they grafted on the nanoparticles a monolayer made up of a hydrophilic polymer (PEG: polyethylene glycol) and folic acid. The latter forms the ligand (molecule binding to the active site of a protein: This binding generally triggers a biological response) recognized by the receptors of HeLa cells (cervical cancer) and

MCF7 cells (breast cancer). These results should enable the 3D targeting and imaging of the tumor. Other functionalizations could be envisaged, enabling the detection of other tumors.

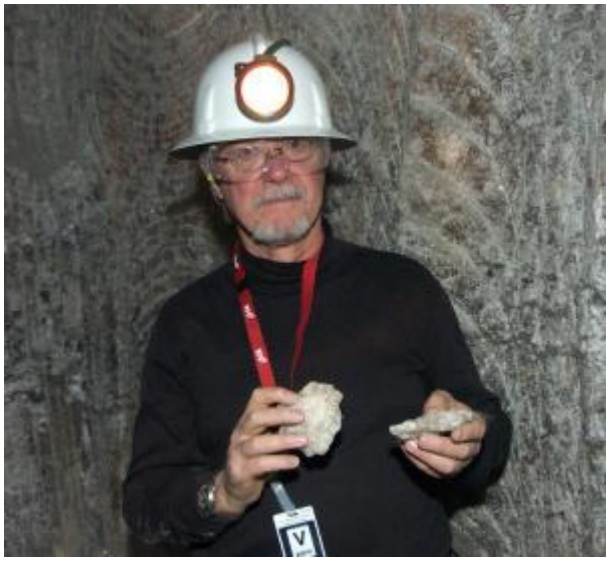
Laboratories involved in the research: 1) Institut Charles Gerhardt Montpellier (CNRS / Université de Montpellier 2); Institut européen des membranes (CNRS / Université de Montpellier 2); Laboratoire de chimie et photonique moléculaires (CNRS / Université de Rennes 1); Institut de chimie de la matière condensée de Bordeaux (CNRS) (*) and Laboratoire physico-chimie, pharmacotechnie et biopharmacie (CNRS / Université de Paris 11 Paris-Sud) (**). (*) David N'Guyen, Etienne Duguet (**) Catherine Dubernet, Delphine Méthy-Gonnod.

Journal reference: Synthesis and characterisation of fluorescently doped mesoporous nanoparticles for two-photon excitation, Valérie Lebret, Laurence Raehm, Jean-Olivier Durand, Corine Gerardin, Monique Smaïhi, Nicolas Nerambourg, Martinus H. V. Werts, Mireille Blanchard-Desce, Chemistry of Materials, 25 March 2008.

Adapted from materials provided by Centre National De La Recherche Scientifique.

http://www.sciencedaily.com/releases/2008/03/080330211108.htm

For The Paper Trail Of Life On Mars Or Other Planets, Find Cellulose



Griffith and the ancient salt samples in the WIPP chambers. (Credit: Image courtesy of University of North Carolina at Chapel Hill)

ScienceDaily (Apr. 1, 2008) — Looking for evidence of life on Mars or other planets? Finding cellulose microfibers would be the next best thing to a close encounter, according to new research from the University of North Carolina at Chapel Hill.

The cover story for the April issue of the journal Astrobiology, the new research also pushes back the earliest direct evidence of biological material on Earth by about 200 million years.

Cellulose is the tough, resilient substance best-known as the major structural component of plant matter. It is one of the most abundant biological materials on Earth, with plants, algae and bacteria generating an estimated 100 gigatons each year. Prehistoric forms of cellulose were made by cyanobacteria, the blue-green algae and bacteria still found in almost every conceivable habitat on land and in the oceans, which is known to have been present on Earth 2.8 billion years ago.

Jack D. Griffith, Ph.D., Kenan Distinguished Professor of microbiology and immunology at the UNC School of Medicine, found cellulose microfibers in samples he took from pristine ancient salt deposits deep beneath the New Mexico high desert.

"The age of the cellulose microfibers we describe in the study is estimated to be 253 million years old. It makes these the oldest native macromolecules to date to have been directly isolated, visualized and examined biochemically," said Griffith, who is also a virology professor at the UNC Lineberger Comprehensive Cancer Center.

Until now, the oldest evidence of biological material from fragments of ancient protein -- found in Tyrannosaurus Rex dinosaur fossils -- was dated at 68 million years.

According to Griffith, the most primitive life forms likely developed means of polymerizing glucose -- the energy currency of all known carbon-based life forms -- into cellulose as a structural molecule. "Cellulose is like the bacteria's house, the biofilm surrounding them. Plants adopted cellulose as their structural entity, and insects changed cellulose slightly to make kitin of which their exoskeletons are formed," he said.

Griffith's study took him to the U.S. Department of Energy's Waste Isolation Pilot Plant (WIPP), the world's first underground repository licensed to safely and permanently dispose of radioactive waste left over from nuclear weapons research and production, which is located near Carlsbad, N.M.

The waste is placed more than 2,000 feet below the surface in rooms excavated from the salt deposits that were laid more than 200 million years ago. The site was chosen to hold the waste because salt is somewhat plastic and will flow to seal any cracks that develop.

The salt samples Griffith retrieved from the WIPP were studied in his transmission electron microscopy lab at the Lineberger Comprehensive Cancer Center. In examining the content of fluid "inclusions", or microscopic bubbles, in the salt and in solid halite ("rock salt") crystals, he and his team found abundant cellulose microfibers that were "remarkably intact."

Their examination clearly revealed the cellulose was in the form of microfibers as small as five nanometers in diameter, as well as composite ropes and mats. "The cellulose we isolated from the ancient salt deposits is very much like real, modern day cellulose: it looks like cellulose, behaves like cellulose, it's chopped up by the same enzymes that cut modern day cellulose and it's very intact," Griffith said.

As to evidence of ancient DNA, Griffith said it was observed, but in much lesser amounts than cellulose.

"So in looking for evidence of life on Mars, for bacteria or higher plants that existed on Mars or other planets in the solar system, then looking for cellulose in salt deposits is probably a very good way to go. Cellulose appears to be highly stable and more resistant to ionizing radiation than DNA. And if it is relatively resistant to harsh conditions such as those found in space, it may provide the ideal 'paper trail' in the search for life on other planets."

Co-authors along with Griffith include Smaranda Willcox, research analyst, Lineberger Comprehensive Cancer Center; Dennis W. Powers, Ph.D., geology and geological engineering department, University of Mississippi; Roger Nelson, U.S. Department of Energy, Carlsbad, N.M.; and Bonnie Baxter, Ph.D., biology department, Westminster College, Salt Lake City, Utah.

The study was supported in part by grants from the National Institute of Environmental Health Sciences and the National Institute of General Medical Sciences.

Adapted from materials provided by University of North Carolina at Chapel Hill.

http://www.sciencedaily.com/releases/2008/03/080331084134.htm

Global Warming Bringing Early Spring Seasons To Eurasian Forests

The boreal forest, Siberia. (Credit: Copyright CESBIO)

ScienceDaily (Apr. 1, 2008) — With the help of satellite data, researchers from laboratories in France(1), the UK, Japan and Russia have completed the accurate and large-scale mapping of leaf appearance dates in boreal forests. Their work has revealed a remarkable trend towards earlier foliation, which occurred between 1987 and 1990, over a large part of northern Eurasia, caused by the unprecedented increase in spring temperatures since 1921. By comparing these results with the previous studies available, they were able to reconstruct the foliation trend over the whole 20th century. Their work, published the journal Global Change Biology, enables the effects of global warming on these forests to be measured.

Phenology studies the climate-dependent variations of seasonal phenomena of plant life. In this study, the researchers particularly focused on the date of leaf appearance in boreal forests. In the northern hemisphere at high latitudes, foliation depends essentially on temperature. It is, therefore, considered direct evidence of the warming of the climate observed during the 20th century, which is especially marked in these regions. In addition, it also sets the pace for exchanges of carbon between vegetation and the atmosphere, which have an impact on the climate.

Before 1982, two techniques were used to analyze temporal variations in foliation: modeling based on meteorological measurements, which is not very precise, and measurements in the field, which make for a more precise analysis, but only at the local level. 1982 saw the beginning of observations from space (remote sensing), which are necessary for this type of study. Since then, a considerable amount of research based on these observations has shown that leaves in deciduous forests in boreal regions have tended to appear earlier and earlier due to warming. However, these measurements only provided rough trends, which were averaged out considerably over space and time.

In their work published in Global Change Biology, the researchers refined their interpretation of satellite data(2), especially by taking into account the effect of snow on the radiometric signal(3). They also calibrated their model for leaf appearance based on temperature, thus enabling remote sensing observations and modeling to be in close agreement.

They were able to show that foliation had generally occurred at an increasingly early date from 1982 until the present, on average around 5 days earlier for the Eurasian boreal forest. Variations in leaf appearance dates since 1982 have not been linear over time, and have not been identical for the whole of boreal Eurasia: the trend to increasingly early foliation dates accelerated between 1987 and 1990, and was more marked in Central Siberia.

Besides improved methods, the novel feature of this work consisted in studying foliation trends over the whole 20th century, by comparing the new results with those for the period before 1982 (with the help of field and modeling data).

The major trend observed in Central Siberia was connected to two events:

1. abnormally high spring temperatures in the 1990s, with leaf appearance in Central Siberia at its earliest since 1921,
2. especially low spring temperatures in the region in 1983 and 1984, with leaf appearance during these two years at its latest since 1921; results which confirm that the trends observed by remote sensing should be analyzed with great care.

Earlier this century, boreal Eurasia was affected by other periods of warming during which leaves appeared earlier and earlier (for instance from 1936 to 1944 in Central Siberia and on several occasions in Western Russia), as well as cooler periods which gradually led to increasingly late leaf appearance (especially between 1945 and 1960 in central and eastern Siberia. However these trends always occurred on a local or regional scale.

The recent trend towards increasingly early foliation observed by remote sensing is therefore striking when compared to similar events which have occurred since 1921, in that it has simultaneously affected the greater part of boreal Eurasia and has given rise to the earliest leaf appearance dates in the region for almost a century. With regard to global warming, it shows that there has been a large-scale increase of spring temperatures during this period.

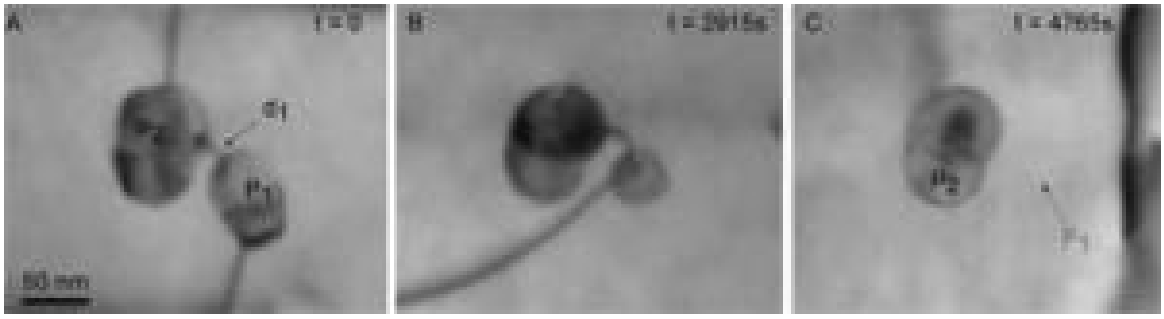
Notes:

1) Center for the study of the biosphere from space (Centre d'études spatiales de la biosphère) (CESBIO/OMP, CNRS, Université Toulouse 3, IRD, CNES), Laboratory for Environmental Geophysics and Glaciology (Laboratoire de glaciologie et géophysique de l'environnement) (LGGE/OSUG, CNRS and Université Grenoble 1), JAMSTEC-Frontier research center for global change (Yokohama, Japan), Centre for terrestrial carbon dynamics (Sheffield, GB), University of Sheffield (Sheffield, GB) and Komarov institute of botany (St Petersburg, Russia)
2) Data from CNES's SPOT VEGETATION satellite and NOAA's AVHRR satellite.
3) Snow melt can be erroneously interpreted as the beginning of foliation.

Adapted from materials provided by Centre National De La Recherche Scientifique.

http://www.sciencedaily.com/releases/2008/03/080330213008.htm

Why Some Electronics, And Their Component Alloys, Age More Quickly Than Others



Observation of a film of aluminum at 420°C by transmission electronic microscopy. The smallest nanoparticle of silicon (P1) drains through the dislocation (d1) abnormally rapidly to expand the nanoparticle (P2), until it disappears. (Credit: Copyright CEMES-CNRS, Marc Legros)

ScienceDaily (Apr. 1, 2008) — Why do certain electronic components undergo spontaneous, irreversible breakdown? Why do certain mechanical parts, without any apparent wear, suffer failure? An initial, empirical answer to such questions has been provided by observations and measurements made by French researchers(1) (CEMES / CNRS), associated with foreign research teams(2). In fact, for the first time, they have succeeded in directly monitoring one of the processes that accelerates the ageing of alloys. Their results clearly show that the presence of certain defects in alloys causes their components to separate more rapidly. This discovery should enable the lifetime of electronic components to be predicted with more accuracy.

Electronic components and mechanical parts fail because, over time, the alloys they are made of undergo ageing. All metals and alloys have defects, known as dislocations, responsible for most of their mechanical properties. For the last fifty or so years, it has been suspected that these very defects are the cause of premature ageing of alloys. Thanks to observations made by a CEMES-CNRS team in Toulouse, the researchers have recently demonstrated that the presence of such defects actually accelerates the ageing process of alloy based materials.

They studied a material widely used in electronics for metal connections in microprocessors. Constituted of a film of aluminum and inclusions of silicon nanoparticles, this alloy is like a mayonnaise (fine droplets of oil emulsified in water).

Certain defects in the aluminum crystalline structure create microscopic channels that interconnect the silicon nanoparticles. This configuration allows the silicon atoms to move rapidly from one particle to another; Marc Legros even goes so far as describing these defects as “atom slides”. Over time, the smaller particles dissolve and the atoms composing them swell the largest particles. Whereas before they were intimately mixed, the silicon and aluminum separate, just like the oil and water of a mayonnaise that de-emulsifies. This dynamic phenomenon then leads to the destruction of the alloy and the loss of its properties.

Using transmission electronic microscopy, CEMES-CNRS researchers directly monitored the very rapid disappearance of a small “drop of silicon” to the benefit of a larger drop, the first time this has been done. This phenomenon is known as “pipe-diffusion.”

Although the silicon atoms can move about slowly in the aluminum, the researchers showed, by repeating the experiment at different temperatures, that the presence of a crystalline dislocation increases one thousand fold the rate of transfer of silicon atoms from one nanoparticle to another. Therefore, the “mayonnaise” separates more rapidly when defects are present.

This research adds a piece to the puzzle of understanding the ageing of alloys and has enabled the modeling of this very complex phenomenon to be improved. In particular, the researchers hope to be able

to control the ageing of aluminum based interconnections in microprocessors and acquire a better understanding of the mechanical behavior of alloys used, for example, in airplane engines.

Notes:

1) Marc Legros, CEMES-CNRS, Toulouse

2) Gerhard Dehm, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Department Materials Physics, University of Leoben, Austria, Eduard Arzt, INM-Leibniz Institute for New Materials , Saarbrücken, Allemagne

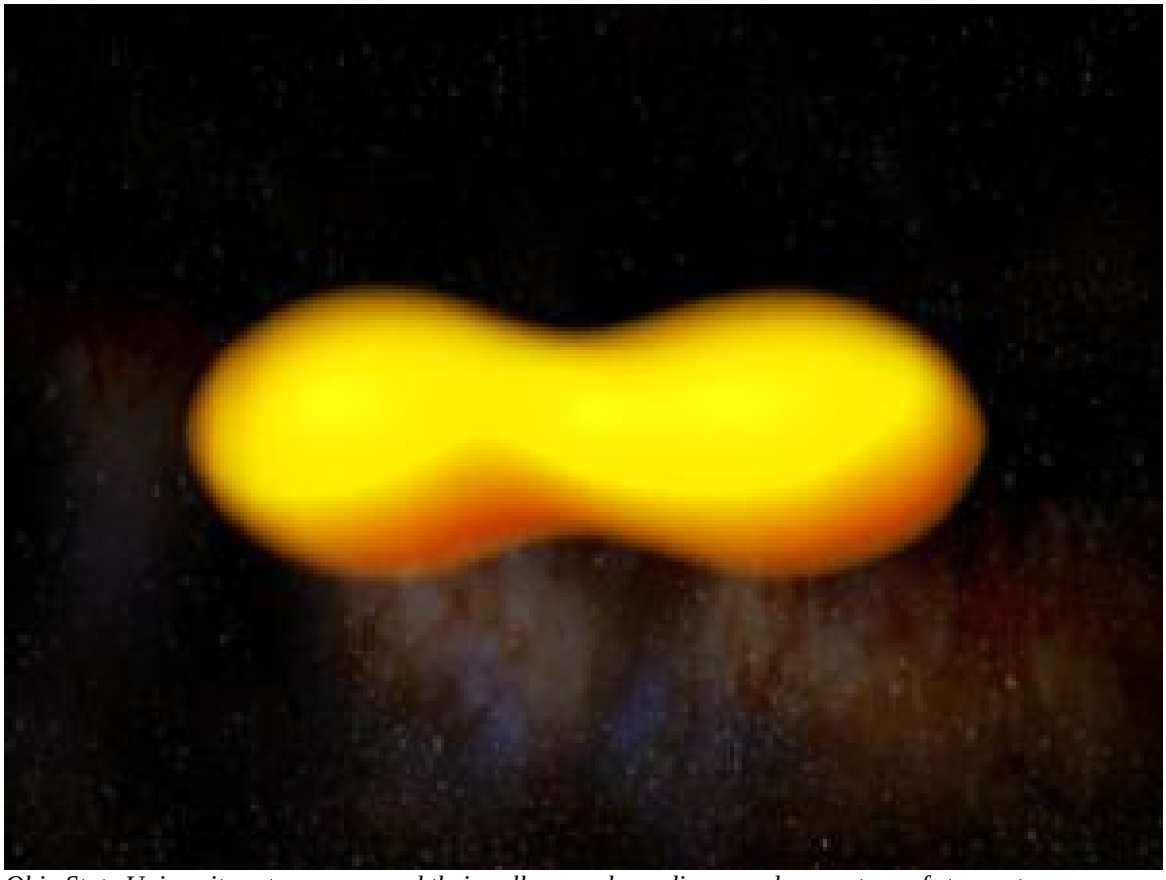
T. John Balk, Department of Chemical and Materials Engineering, University of Kentucky, Lexington, United States.

Journal reference: Giant diffusivity along dislocation cores, Marc Legros, Gerhard Dehm, Eduard Arzt, T. John Balk, Science, 21 March 2008.

Adapted from materials provided by Centre National De La Recherche Scientifique.

http://www.sciencedaily.com/releases/2008/03/080330211630.htm

Two Yellow Supergiant Eclipsing Binary Systems Discovered: First Of Their Kind Ever Found



Ohio State University astronomers and their colleagues have discovered a new type of star system, one that may be the progenitor of a rare type of supernova. The star system is called a "yellow supergiant eclipsing binary" -- it contains two very bright, massive yellow stars that are very closely orbiting each other. In fact, the stars are so close together that a large amount of stellar material is shared between them, so that the shape of the system resembles a peanut. (Credit: Image by Kevin Gecsi, courtesy of Ohio State University)

ScienceDaily (Apr. 1, 2008) — Astronomers have spied a faraway star system that is so unusual, it was one of a kind -- until its discovery helped them pinpoint a second one that was much closer to home.

In a paper published in a recent issue of the Astrophysical Journal Letters, Ohio State University astronomers and their colleagues suggest that these star systems are the progenitors of a rare type of supernova.

They discovered the first star system 13 million light years away, tucked inside Holmberg IX, a small galaxy that is orbiting the larger galaxy M81. They studied it between January and October 2007 with the Large Binocular Telescope (LBT) on Mt. Graham in Arizona.

The star system is unusual, because it's what the astronomers have called a "yellow supergiant eclipsing binary" -- it contains two very bright, massive yellow stars that are very closely orbiting each other. In fact, the stars are so close together that a large amount of stellar material is shared between them, so that the shape of the system resembles a peanut.

In a repeating cycle, one star moves to the front and blocks our view of the other. From Earth, the star system brightens and dims, as we see light from two stars, then only one star.

The two stars in this system appear to be nearly identical, each 15 to 20 times the mass of our sun.

José Prieto, Ohio State University graduate student and lead author on the journal paper, analyzed the new star system as part of his doctoral dissertation. In his research, he scoured the historical record to determine whether his group had indeed found the first such binary.

To his surprise, he uncovered another one a little less than 230,000 light years away in the Small Magellanic Cloud, a small galaxy that orbits our own Milky Way.

The star system had been discovered in the 1980s, but was misidentified. When Prieto re-examined the data that astronomers had recorded at the time, he saw that the pattern of light was very similar to the one they had detected outside of M81. The stars were even the same size -- 15 to 20 times the mass of the sun -- and melded together in the same kind of peanut shape. The system was clearly a yellow supergiant eclipsing binary.

“We didn’t expect to find one of these things, much less two,” said Kris Stanek, associate professor of astronomy at Ohio State. “You never expect this sort of thing. But I think this shows how flexible you have to be in astrophysics. We needed the 8.4-meter LBT to spot the first binary, but the second one is so bright that you could see it with binoculars in your back yard. Yet, if we hadn’t found the first one, we may never have found the second one.”

“It shows that there are still valuable discoveries hidden in plain sight. You just have to keep your eyes open and connect the dots.”

The find may help solve another mystery. Of all the supernovae that have been studied over the years, two have been linked to yellow supergiants -- and that’s two more than astronomers would expect.

Prieto explained why. Over millions of years, a star will burn hotter or cooler as it consumes different chemical elements in its core. The most massive stars swing back and forth between being cool red supergiants or hot blue ones. They spend most of their lives at one end of the temperature scale or the other, but spend only a short time in-between, where they are classified as yellow. Most stars end their life in a supernova at the red end of the cycle; a few do at the blue end. But none do it during the short yellow transitional phase in between.

At least, that’s what astronomers thought.

Prieto, Stanek, and their colleagues suspect that yellow binary systems like the ones they found could be the progenitors of these odd supernovae.

“When two stars orbit each other very closely, they share material, and the evolution of one affects the other,” Prieto said. “It’s possible two supergiants in such a system would evolve more slowly, and spend more time in the yellow phase -- long enough that one of them could explode as a yellow supergiant.”

The discovery of this yellow supergiant binary system is just the first result of a long-term LBT project to monitor stellar variability in the nearby universe. That project is led by Ohio State professor of astronomy, Chris Kochanek. He and Rick Pogge, also a professor of astronomy, are coauthors on the paper in Astrophysical Journal Letters.

Their collaborators were from the University of Minnesota, the Osservatorio Astronomico di Padova, Steward Observatory, the Max-Planck-Institut für extraterrestrische Physik, the Osservatorio Astronomico di Roma, the University of Notre Dame, and the Large Binocular Telescope Observatory. They used observations from the 8.4-meter LBT and from the 2.4-meter telescope at the nearby MDM observatory.

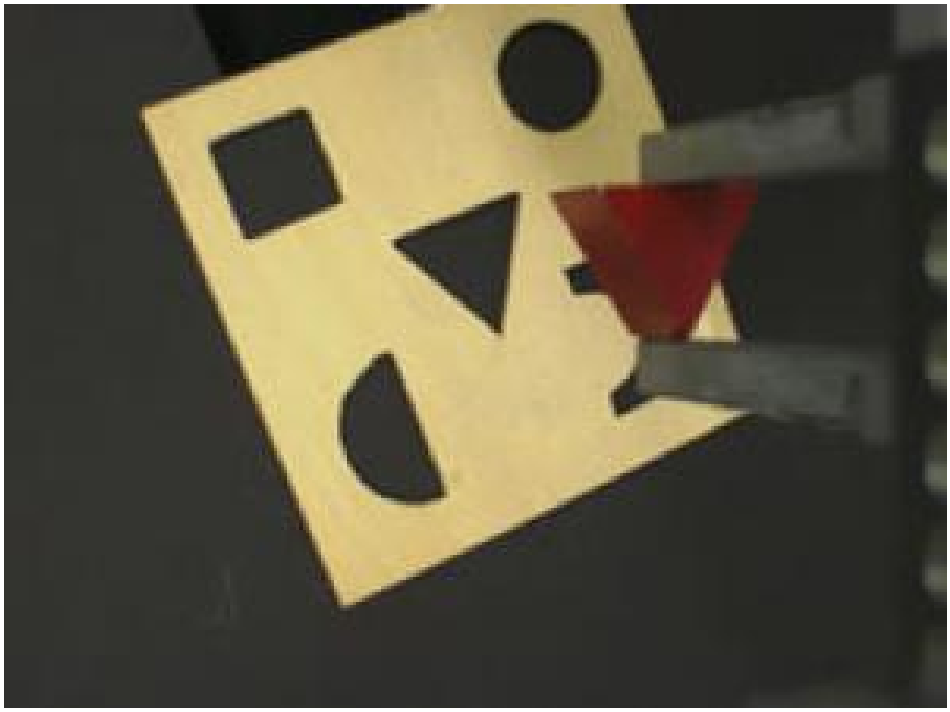
The LBT is an international collaboration among institutions in the United States, Italy and Germany. The LBT Corporation partners are: the University of Arizona on behalf of the Arizona university system; Istituto Nazionale di Astrofisica, Italy; LBT Beteiligungsgesellschaft, Germany, representing the Max Planck Society, the Astrophysical Institute Potsdam, and Heidelberg University; Ohio State University; The Research Corporation, on behalf of The University of Notre Dame, University of Minnesota, and University of Virginia.

This research was funded by the National Science Foundation.

Adapted from materials provided by Ohio State University.

http://www.sciencedaily.com/releases/2008/03/080331135542.htm

New Breed Of Cognitive Robot Is A Lot Like A Puppy



A new robot is able to learn by itself and can solve increasingly complex tasks with no additional programming. (Credit: Image courtesy of ICT Results)

ScienceDaily (Mar. 31, 2008) — Designers of artificial cognitive systems have tended to adopt one of two approaches to building robots that can think for themselves: classical rule-based artificial intelligence or artificial neural networks. Both have advantages and disadvantages, and combining the two offers the best of both worlds, say a team of European researchers who have developed a new breed of cognitive, learning robot that goes beyond the state of the art.

The researchers' work brings together the two distinct but mutually supportive technologies that have been used to develop artificial cognitive systems (ACS) for different purposes. The classical approach to artificial intelligence (AI) relies on a rule-based system in which the designer largely supplies the knowledge and scene representations, making the robot follow a decision-making process – much like climbing through the branches of a tree – toward a predefined response.

Biologically inspired artificial neural networks (ANNs), on the other hand, rely on processing continuous signals and a non-linear optimisation process to reach a response which, due to the lack of preset rules, requires developers to carefully balance the system constraints and its freedom to act autonomously.

"Developing systems in classical AI is essentially a top-down approach, whereas in ANN it is a bottom-up approach," explains Michael Felsberg, a researcher at the Computer Vision Laboratory of Linköping University in Sweden. "The problem is that, used individually, these systems have major shortcomings when it comes to developing advanced ACS architectures. ANN is too trivial to solve complex tasks, while classical AI cannot solve them if it has not been pre-programmed to do so."

Beyond the state of the art

Working in the EU-funded COSPAL project, Felsberg's team found that using the two technologies together solves many of those issues. In what the researchers believe to be the most advanced example of such a system developed anywhere in the world, they used ANN to handle the low-level functions based

on the visual input their robots received and then employed classical AI on top of that in a supervisory function.

"In this way, we found it was possible for the robots to explore the world around them through direct interaction, create ways to act in it and then control their actions in accordance. This combines the advantages of classical AI, which is superior when it comes to functions akin to human rationality, and the advantages of ANN, which is superior at performing tasks for which humans would use their subconscious, things like basic motor skills and low-level cognitive tasks," notes Felsberg.

The most important difference between the COSPAL approach and what had been the state of the art is that the researchers' ACS is scalable. It is able to learn by itself and can solve increasingly complex tasks with no additional programming.

"There is a direct mapping from the visual precepts to performing the action," Felsberg confirms. "With previous systems, if something in the environment changed that the low-level system was not programmed to recognise, it would give random responses but the supervising AI process would not realise anything was wrong. With our approach, the system realises something is different and if its actions do not result in success it tries something else," the project coordinator explains.

"Like training a child or a puppy"

This trial-and-error learning approach was tested by making the COSPAL robot complete a shape-sorting puzzle, but without telling it what it had to do. As it tried to fit pegs into holes it gradually learnt what would fit where, allowing it to complete the puzzle more quickly and accurately each time.

"After visual bootstrapping, the only human input was from an operator who had two buttons, one to tell the robot it was successful and another to tell it that it had made a mistake. It is much like training a child or a puppy," Felsberg says.

Though a learning, cognitive robot of the kind developed in COSPAL constitutes an important leap forward toward the development of more autonomous robots, Felsberg says it will be some time before robots gain anything close to human cognition and intelligence, if they ever do.

"In human terms, our robot is probably like a two or three year old child, and it will take a long time for the technology to progress into the equivalent of adulthood. I don't think we will see it in our lifetimes," he says.

Nonetheless, robots like those developed in COSPAL will undoubtedly start to play a greater role in our lives. The project partners are in the process of launching a follow-up project called DIPLECS to test their ACS architecture in a car. It will be used to make the vehicle cognitive and aware of its surroundings, creating an artificial co-pilot to increase safety no matter the weather, road or traffic conditions.

"In the real world you need a system that is capable of adapting to unforeseen circumstances, and that is the greatest accomplishment of our ACS," Felsberg notes.

Adapted from materials provided by ICT Results.

http://www.sciencedaily.com/releases/2008/03/080329122121.htm

Documenting China's Higher Ed Explosion

In many discussions about the international standing of American higher education, China is the 800-pound gorilla — the emerging scientific and technological superpower whose newfound focus on building a first-class postsecondary system poses a major threat to the national economic competitiveness and individual well being in the United States. Although some commentators have pooh-poohed the seriousness of the "China threat," warnings about the Asian giant's push to better educate its citizenry have become standard fare in reports like "Rising Above the Gathering Storm" and other warnings about America's declining scientific and economic advantage.

For all the hyperbole, facts about what's actually happening on the ground in China can be hard to come by. A new study by economists at universities in Canada, New Zealand and China aims to document what its title calls "the higher educational transformation of China and its global implications," collecting in one place statistics and other information about enrollments, demographic changes, numbers of colleges and faculty publishing, among other categories.

Taken together, the evidence appears to support the conventional view of a postsecondary system very much on the move, with potentially significant implications for colleges and higher education leaders elsewhere in the world. But it is too early in China's higher education explosion to fully justify the tremulous reactions it is provoking around the world, suggests the study, which was published by the National Bureau of Economic Research. (Its authors are Yao Li and John Whalley, of the economics department at the University of Western Ontario's Social Science Centre; Shunming Zhang, of the School of Economics and Finance at Victoria University of Wellington; and Xiliang Zhao, of the department of economics at China's Xiamen University.)

In pure bulk, the numbers behind China's expansion are startling. Between 1999, shortly after the country's leaders decided to focus on expanding access to and improving the quality of higher education as tools to propel the former Third World economy into the leading ranks of the world's powers, and 2005, the number of undergraduate and graduate students earning degrees from China's colleges and universities quadrupled, rising to 3.1 million from 830,000. Enrollments grew even faster over that period, with the number of new entering students growing to nearly 5 million in 2005.

Much of the growth has occurred in scientific and engineering fields, prompting much of the concern that has gripped the American technology community and stimulated calls for heightened federal investment in the sciences. China has also taken significant strides in recent years to shrink the educational gap that separates its urban centers from its enormous rural populations, with rural students making up 53 percent of newly admitted students in 2005, up from below 47 percent in 1998.

Although China's higher education system has continued to expand, growing to nearly 1,800 institutions in 2005 from about 1,000 in the late 1990s, much of that growth has occurred among short-term colleges and vocational schools. Among universities, the more pervasive trend in recent years, according to the NBER study, has been in consolidation, shifting away from an emphasis on having all institutions increase their enrollments to havinvg a smaller number of elite universities. "In many of China's major cities there has ... been consolidation of universities, with, say, 4 or 5 small universities in the city consolidated into a large single entity as a way of improving their ranking," the report notes.

That shift from quantity to quality (or at least quality-based quantity) has also revealed itself in Chinese universities' expectations for faculty members in terms of scholarly publishing, dramatically changing the relationships between institutions and professors, with significantly heightened stakes. "Indicators of educational attainments in terms of international rankings across countries, publications of papers, and citations feed directly into annual performance indicators for Chinese faculty in an ongoing process which goes substantially beyond the once in a lifetime tenure system outside China," the authors write. "It is not uncommon for an annual target of three international publications to be set for faculty members, with termination of employment to occur on non-fulfillment."

Those heightened expectations have changed the global playing field in scholarly publishing, particularly in the sciences, where expansion of China's higher education system has been particularly focused. The country's share of all published Asian science and engineering articles grew from 14.54 percent in 1998 to 22.43 percent in 2003, accelerating an an average annual rate of 9 percent. And in

2004, according to another recent study cited in the NBER report, "China is now one of the largest producers of scientific output as measured by its share in the world total of peer reviewed scientific articles, ranking fourth, with 6 percent of the world's output, in 2004. That trailed the European Union (at 38.1 percent) and the United States, at 32.8 percent, but China's output had doubled from 1997 while the others declined. China is also a growing presence in terms of patent activity, though it still trails the United States, Europe and Japan by huge proportions.

The elevated demands on professors' publishing isn't the only major change in the relationship between China's universities and its teaching faculty. After generations of Chinese academics worked on the equivalent of lifelong employment contracts, some of the country's elite institutions have abandoned tenure for all but full professors, with "associate professors in arts and sciences and lecturers in all subjects ... offered employment contracts up to 12 years," the authors write. Beyond the top institutions, "it is now common for researchers and scholars in many Chinese universities to receive only 3-year contracts," often receiving quotas in terms of minimum scholarly publication in specific journals within precise time periods.

Such a structure, the article speculates, "will likely produce pressures in the wider international community outside China for changes elsewhere because of the competitive pressures which will be created.... Institutions in the OECD and elsewhere will likely have to react and eventually adapt."

Whether China ultimately sets the agenda for the United States and other countries on faculty productivity and other accounts, the Asian nation is already mimicking certain aspects of the American higher educational experience, some of which it may come to rue.

The NBER study reports that a 2005 survey by the Chinese Academy of Social Sciences found that Chinese households were spending more on education than on any other consumption category, overwhelming pension and housing expenditures, and that for rural families, the proportion of per capita income had doubled, to a full third, from 1996 to 2003.own student loan problems.

And it appears that the Chinese have their own problems with the increasingly nettlesome American subject of student loans. According to the study, China has focused on student loans to help ensure access for lower income students, but there have been "difficulties in implementation," the authors write. "Chinese banks have been reluctant to lend money to poor students, and often ask them to return the loan before they graduate. If poor students cannot return funds before they graduate, they are not authorized to receive certificates of graduation and degrees and their chance of finding good jobs is small."

— Doug Lederman

The original story and user comments can be viewed online at
http://insidehighered.com/news/2008/04/01/china.

Ph.D. Completion — and Content

The quandary is complex, but can be simply stated. "The problem is many students who begin Ph.D. programs do not complete them," said William Russel, dean of the graduate school at Princeton University. And so far, he continued, "Our traction on this issue is still limited."

A group of people involved in managing and funding graduate education gathered to grapple with that issue and others Monday at a "A Fresh Look at Ph.D. Education," an all-day workshop sponsored by the Council of Graduate Schools and the National Science Foundation at NSF's headquarters in Arlington, Va. The workshop began with a presentation on the council's data, released in December, on Ph.D. completion and attrition rates, showing that over all, only about 57 percent of students who start their Ph.D.'s complete them within 10 years, though there are significant variations by discipline.

Robert Sowell, vice president of programs and operations for the council, also provided a preview of preliminary data on completion rates by race and gender — which find, for instance, that male students are completing their degrees at higher rates than females in all broad fields except the social sciences and humanities. And, interestingly, while African-Americans generally have lower Ph.D. completion rates than white students in engineering and the sciences, they complete life sciences degrees at about the same rate — potentially a significant finding in terms of identifying interventions that work, as one participant emphasized.

Speakers subsequently switched to just that topic, offering perspectives on the relative successes of interventions on degree completion rates on particular campuses. And the day concluded with presentations on the content of the Ph.D. degree itself, and what basic skills could or should be taught across disciplines.

Talking about increasing completion rates, graduate administrators from Duke University and the University of California at Los Angeles told of interventions that their universities put in place in the 1990s — and changes in the completion and attrition data on their campuses since that time.

Lewis Siegel, vice provost at Duke and the CGS-NSF dean in residence, began by identifying some of the issues at Duke: that many students didn't know what they were getting into relative to the differences between undergraduate and graduate education and also the nature of the academic job market; that faculty relied too heavily on Graduate Record Examination scores and college grade point averages in considering applicants; and that student funding was tied to departmental needs, "designed to achieve maximum service at lowest cost."

"Some students taught three courses a semester for a stipend that did not meet the cost of living in Durham, North Carolina," Siegel said. "It was unbelievable."

In response, Siegel said interventions introduced after 1995 included reducing the emphasis on GREs and GPAs in selecting students, and publicly posting data on placement rates, time to degree, and completion, all in the name of transparency. For its arts and science disciplines, Duke increased per-student funding, Siegel said, while cutting some programs in size by half. The university also changed the budget formula, he explained. Rather than fund graduate students based on departmental needs for teaching assistantships, they devised a new formula, Siegel said, that didn't take a department's teaching needs into account at all.

Instead, the formula considers factors like the number of faculty who have supervised Ph.D. dissertations in recent years and relative completion rates, and it rewards departments that garner external recognition and funding with extra internal monies. Departments that found themselves without sufficient numbers of graduate students to fill their teaching needs could apply for funding to hire temporary faculty or postdoctoral fellows — *not* graduate students.

The university also began subsidizing child care for graduate students, based on financial need, Siegel said. Comparing groups of students that began their degrees before and after the interventions were put in place (those that began in 1992-94 compared to 1998-2000), Duke's Ph.D. completion rates within seven years rose from 35 to 46 percent in the humanities, and in the social sciences, from 51 to 63 percent. Duke had more mixed results in the sciences, with rates increasing in some disciplines, and

decreasing in others.Claudia Mitchell-Kernan, vice chancellor for graduate education at UCLA, also reported significant increases after interventions were introduced in the 1990s there, including a doubling of fellowship funding. The university also built a database to track time to degree in various departments, and incorporated items on time to degree and completion rates among the performance indicators that departments judge themselves by and are judged upon. “Most faculty members did not a have a clue what time to degree was in their respective departments,” she said.

“Shining light on these programs really seemed to make a difference.”Mitchell-Kernan stressed that it’s difficult to determine what particular interventions, if any, caused the changes in completion rates. “You can’t isolate the effects of the interventions from all the other things in our environment,” she said. Lewis Pyenson, dean of the graduate college at Western Michigan University, was skeptical of the significance of the changes reported Monday, saying that the level of analysis relative to other parallel events happening in (recent) history was “pretty thin.” But, beyond that, he pointed out that many of the interventions described Monday require significant investments of money — and so are not applicable to the majority of institutions in the United States, like his own, that are producing Ph.D.s under intense budgetary pressures.

Questions of Content

After lunch Monday, the conversation shifted for awhile away from completion rates and toward content. Yehuda Elkana, president and rector of Central European University, in Budapest, stressed the need to train students to embrace contradictions in science, and to ask students epistemological questions. Why, for instance, in creating a particular statistical model, did students choose the parameters they chose? Can they answer that question? (From his experience, it seems that the best and brightest by and large cannot.)And Mary Ritter, pro-rector of postgraduate and international affairs at Imperial College, London, described its relatively newfound focus on teaching doctoral students and postdocs “transferable skills,” with the support of a government initiative and associated funding. Imperial College now requires that all of its graduate students complete a certain number of workshops offered within seven broad skills areas: research skills and techniques, the research environment (covering topics like peer review, pressure for results, and obligation to the public), research management, personal effectiveness, communications skills, networking and team working, and career management. The college offers more than 40 different workshops in topics like science and the media, the commercialization of research, negotiation skills, writing skills, thesis writing and stress management. Imperial College also sponsors intensive three-day residential workshops on transferable skills that each of its approximately 500 first-year Ph.D. students complete in groups of 30 to 35 at a time.

“This is a useful addition, and it helps to enhance the research training,” Ritter said of transferable skills and the doctoral degree.

In a final presentation intended to portray the student and postdoc’s point of view, Crispin Taylor, executive director of the American Society of Plant Biologists, returned to many of the themes of the morning relative to attrition and completion. “Particularly when we’re talking in a fairly blasé way about 7, 10, 11-year completion rates, these are not good for bringing people into graduate programs,” Taylor said. “It takes a long time before you’re going to have a ‘real job,’ particularly if you’re going to stay in the academy.”

“It just seems to be absolutely crystal clear that the Ph.D. takes too long,” added UCLA’s Mitchell-Kernan. And while graduate schools have “fiddled around the edges,” the core doctoral curriculum has largely remained static, without critical questions being asked about what needs to be included and what could be eliminated — saving student time. What about courses, she asked, that students rank as unhelpful year after year in their evaluations? Why do they still stay in the curriculum?

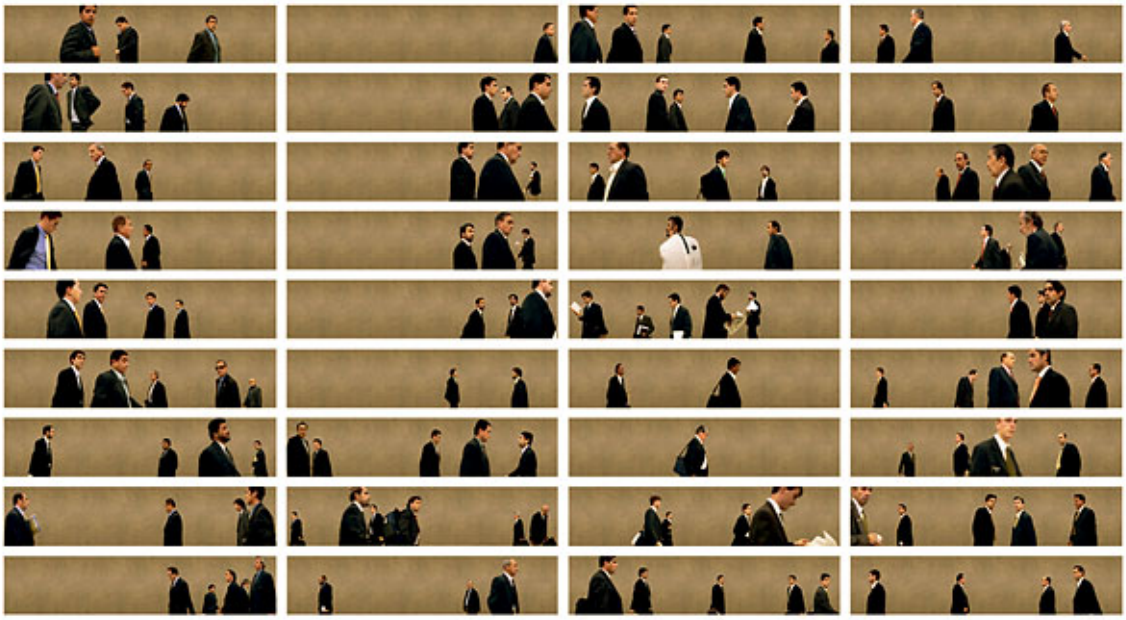
“That kind of focus, really on the content of the program, is really needed. But it’s really hard to do from the graduate dean’s office.”

— Elizabeth Redden

The original story and user comments can be viewed online at http://insidehighered.com/news/2008/04/01/graduate.

The Case for Fitting In

By DAVID BERREBY



When Eliot Spitzer resigned his governorship for committing the very crimes he'd publicly denounced only a few months before, he seemed mystifyingly inconsistent. Yet one character trait does shine through the separate, supposedly incompatible compartments of his life. A self-described "steamroller," he had that self-confident drive to do what he'd decided needed doing, never mind others' expectations, never mind who or what gets hurt. In politics, and in his sexual life, he embodied nonconformity. Voters ate it up when he ran for governor, because Americans have a prejudice in favor of lone wolves. Moral superiority, we like to think, belongs to the person who stands alone.

Until recently, social science went along with this idea. Lab-based research supposedly furnished slam-dunk evidence that, as the social psychologist Solomon Asch put it, "the social process is polluted" by "the dominance of conformity." That research, though, was rooted in its time and place: The United States in the aftermath of World War II, when psychologists and sociologists focused on the conformity that made millions give in to totalitarian regimes.

Lately, however, some researchers have been dissenting from the textbook version. Where an earlier generation saw only a contemptible urge to go along, revisionists see normal people balancing their self-respect against their equally valuable respect for other people, and for human relationships. For evidence, revisionists say, look no further than those very experiments that supposedly proved the evils of conformity.

The psychologists Bert Hodges and Anne Geyer recently took a new look at a well-known experiment devised by Asch in the 1950s. Asch's subjects were asked to look at a line printed on a white card and then tell which of three similar lines was the same length. The answer was obvious, but the catch was that each volunteer was sitting in a small group whose other members were actually in on the experiment. Asch found that when those other people all agreed on the wrong answer, many of the subjects went along with the group, against the evidence of their own senses.

But the question (*Which of these lines matches the one on the card?*) was not posed just once. Each subject saw 18 sets of lines, and the group answer was wrong for 12 of them. Examining all the data, Hodges and Geyer found that many people were varying their answers, sometimes agreeing with the

group, more often sticking up for their own view. (The average participant gave in to the group three times out of 12.)

This means that the subjects in the most famous "people are sheep" experiment were not sheep at all — they were human beings who largely stuck to their guns, but now and then went along with the group. Why? Because in getting along with other people, most decent people know, as Hodges and Geyer put it, the "importance of cooperation, tact and social solidarity in situations that are tense or difficult."

In a similar spirit, others have taken a new look at the famous experiments on "obedience to authority" conducted by Asch's student Stanley Milgram. Milgram's subjects, assuming they were part of a memory test, were asked to administer what they thought were increasingly strong electric shocks to another person (who was, in reality, another experimenter pretending to be pained). Encouraged only by an occasional "Please go on" and the like, every one went well beyond "Very Strong Shock," and the majority went to the 450-volt end of the scale, which was two notches above the one labeled "Danger: Severe Shock."

Horrifying, in most retellings. But, as the University of Chicago law professor Cass Sunstein has argued, Milgram's "subjects were not simply obeying a leader, but responding to someone whose credentials and good faith they thought they could trust." Without that kind of trust society would fall apart tomorrow, because most of what we know about the world comes to us from other people. Milgram's experiment, then, doesn't prove that people are inclined to obey any nut job in a white coat. It shows instead that in difficult situations, when they wrestle with the line between trust and skepticism, trust often wins. Much of the time, that's a good thing.

In other words, the interesting data in the Asch and Milgram studies have been distorted into a simple takeaway: "Call it like you see it"; never mind others' feelings, opinions or traditions. Of course, no society should ask for knee-jerk obedience to any command. But, as the dissenters point out, there are dangers in a knee-jerk refusal to get in line. For example, in a version of the Milgram experiment in which the dupe is seated in a group of three, he will defy the "experimenter" and behave humanely — if the other two people refuse to inflict further shocks. That kind of conformity is, to put it mildly, desirable.

David Berreby is the author of "Us and Them: Understanding Your Tribal Mind," which will be published in paperback in the fall.

http://www.nytimes.com/2008/03/30/magazine/30wwln-idealab-t.html?ex=1364529600&en=4dda9ef8be4690fe&ei=5088&partner=rssnyt&emc=rss

The Art of Literature and the Science of Literature

The delight we get from detecting patterns in books, and in life, can be measured and understood

By Brian Boyd

Stories can offer so much pleasure that studying them hardly seems like work. Literary scholars have often sought to allay unease at being paid to enjoy the frissons of fiction by investigating literature as a form of history or moral education. And since the late 1960s, academic literature departments have tried especially to stress criticism as critique, as an agent of social transformation.

For the last few decades, indeed, scholars have been reluctant to deal with literature as an art—with the imaginative accomplishment of a work or the imaginative feast of responding to it—as if to do so meant privileging elite capacities and pandering to indulgent inclinations. Many critics have sought to keep literary criticism well away from the literary and instead to arraign literature as largely a product of social oppression, complicit in it or at best offering a resistance already contained.

Literary academics have also been reluctant to deal with science, except to fantasize that they have engulfed and disarmed it by reducing it to "just another narrative," or to dismiss it with a knowing sneer as presupposing a risibly naïve epistemological realism. They have not only denied the pleasure of art and the power of science, but like others in the humanities and social sciences, they have also denied that human nature exists, insisting against the evidence that culture and convention make us infinitely malleable.

I and others want literature to return to the artfulness of literary art and to reach out to science, now that science has at last found ways to explore human nature and human minds. Since these are, respectively, the subject and the object of literature, it would be fatal for literary study to continue to cut itself off from science, from the power of discovery possible through submitting ideas to the rule of evidence.

There are many ways in which science can return us to and enrich the art of literature. We could consider human natures and minds as *understood* by science and as represented in literature, not just as seen through the approved lenses of race, gender, and class, but in terms, for instance, of the human life history cycle, or social cognition, or cooperation versus competition. Or we could develop multileveled explanations that allow room for the universals of human nature, and for the local in culture and history, and for individuality, in authors and audiences, and for the particular problem situations faced in this or that stint of composition or comprehension.

One way to use science to approach literature (and art in general) is to view it as a behavior in evolutionary terms. Why do art in general and storytelling in particular exist as cross-species behaviors? Asking the question in these terms makes possible a genuinely theoretical literary theory, one that depends not on the citation of purportedly antiauthoritarian authorities, but on the presence of evidence and the absence of counterevidence, on examining human behavior across time and space and in the context of many cultures and even many species.

The humanities have always accepted the maxim that biologist D'Arcy Thompson stated with sublime simplicity: "Everything is what it is because it got that way." How it got that way starts not with the *Epic of Gilgamesh* but much further back: with our evolving into art-making and storytelling animals. How did our capacities for art and story build and become ingrained in us over time? How do we now produce and process stories so effortlessly: what aspects of the mind do we engage, and how?

To consider art and story in evolutionary terms we have to decide whether they are biological adaptations:

are they features that natural selection has designed into humans over time because they led to higher rates of survival and reproduction? I argue in a book I've recently written, On the Origin of Stories: Evolution, Cognition and Fiction, that art and storytelling are adaptations. These behaviors are species-wide, engaged in spontaneously by all normal individuals and spontaneously encouraged in infants by their parents.

Art is a form of cognitive play with pattern. Just as communication exists in many species, even in bacteria, and human language derives from but redirects animal communication along many unforeseen new routes, so play exists in many species, but the unique cognitive play of human art redirects it in new ways and to new functions.

Play exists even in the brightest invertebrates, like octopi, and in all mammals in which it has been investigated. Its self-rewarding nature means that animals with flexible behavior—behavior not genetically programmed—willingly engage in it again and again in circumstances of relative security, and thereby over time can master complex context-sensitive skills. The sheer pleasure of play motivates animals to repeat intense activities that strengthen and speed up neural connections. The exuberance of play enlarges the boundaries of ordinary behavior, in unusual and extreme movements, in ways that enable animals to cope better with the unexpected.

Humans uniquely inhabit "the cognitive niche." We have an appetite for information, and especially for pattern, information that falls into meaningful arrays from which we can make rich inferences. We have uniquely long childhoods, and even beyond childhood we continue to play more than other species. Our predilection for the patterned cognitive play of art begins with what developmental psychologists call protoconversation, exchanges between infants and caregivers of rhythmic, responsive behavior, involving sound and movement, in playful patterns described as "more like a song than a sentence" and as "interactive multimedia performances." Without being taught, children engage in music, dance, design, and, especially, pretend play.

Our adult compulsion for the cognitive play of art—from tribal work songs to tradesmen's transistors to urbanites' iPods—allows us to extend and refine the neural pathways that produce and process pattern in sonic, visual, and kinetic modes, and especially in sociality.

Humans have not only a unique predilection for open-ended pattern but also a unique propensity to share attention (long before we learn language) and for that reason a unique capacity for learning from others. Our inclination for sharing attention and for social learning ensures that we readily master the rudiments of local artistic traditions. Participating in these traditions amplifies the pleasure we gain from social living. By helping to reduce the costs in tension and raise the rewards of sociality, art helps us to cooperate on a scale far beyond that of any other highly individualized animal.

The *OED* defines *pattern* as "an arrangement or order of things or activity . . . order or form discernible in things, actions, ideas, situations, etc." Pattern usually signals regularities in the world rather than mere chance: the pattern that my head and my feet turn up not far from one another is not coincidence but part of the regularity that is me.

Until very recently computers have fared dismally at pattern recognition, but living organisms have long been expert at it. Pattern turns the data of the senses into information that can guide behavior. The more an organism depends on intelligence, the more it seeks pattern of multiple kinds at multiple levels. Frogs respond to the pattern of small objects flying across their field of vision by flicking out their tongues. That makes them more efficient than you or me at catching insects, but frogs cannot respond to new kinds of patterns. Humans can. In addition to the patterns evolution has programmed us to track, like the shapes or locations of objects, we search for patterns of many kinds. The chemical patterns of insecticides can, for instance, make us more efficient killers of insects than even frogs have evolved to be.

Because the world swarms with patterns, animal minds evolved as pattern extractors, able to detect the information meaningful to their kind of organism in their kind of environment and therefore to predict and act accordingly. Pattern occurs at multiple levels, from the stable information of spatial conditions

and physical processes to highly volatile information about individuals and their moods, actions, and intentions. Pattern recognition allows us to distinguish animate from inanimate, human from nonhuman, this individual from any others, this attitude or expression from another. Identifying not only individuals but also the higher-order patterns in their behavior, personality, and powers allows for far more accurate social prediction.

If information is chaotic, it lacks meaningful pattern and can't be understood. If on the other hand it is completely patterned, we need not continue to pay attention, since the information is redundant: indeed the psychological process of habituation switches attention off if a stimulus remains, if the pattern of information can be predicted. The most patterned novel possible would repeat one letter, say q, over and over again—a queue no reader would want to wait in. But an unpredictable combination of patterns repays intense attention and can yield rich inferences, although it may not be easy finding how to ascertain what forms a meaningful pattern and what meaning the pattern implies.

Committed to the cognitive niche, humans crave pattern because it can tell us so much. The more our minds can handle multiple patterns at multiple levels, the more successfully we can predict and act. We therefore have what physicist Edward Purcell calls an "avidity for pattern." As Stephen Jay Gould notes: "The human mind delights in finding pattern. . . . No other habit of thought lies so deeply within the soul of a small creature trying to make sense of a complex world not constructed for it." Extreme informational chaos, the absence of pattern, as in whiteout or dense fog, can even cause distress and loss of sensory function.

Art offers the opposite of chaos. It concentrates and plays with the world's profusion of patterns, with its patterns of interrelated or intersecting patterns. Our perception of pattern and of deviation from it produces strong emotional reactions. Art engages us by appealing to our appetite for pattern at multiple levels, in producing or perceiving bodily movement, shapes, surfaces, or sounds, words or miniature worlds. Like play, art therefore provokes us to continue the activities it offers long enough and to resume them often enough to modify our neural circuitry over time.

Our compulsion to engage in the behaviors we call art, in cognitive play with high-density pattern, enables us over many repetitions to produce or at least to process patterns in the perceptual and cognitive areas that matter most to us: movement, sound, sight, and sociality. And as in other primate species, the capacity to command attention correlates with status, which correlates in turn with access to resources and therefore with survival and reproduction rates. Those with an exceptional talent in some art can therefore earn status.

For both artists and audiences, art's capacity to ensnare attention is crucial: for the artist, to accrue status; for the audience, to motivate engagement. Exposure to a single story told once will not transform a mind substantially, but many repetitions, or many different stories, can improve our capacities for social cognition and scenario construction so valuable to us in the nonstory world.

One conclusion I draw from this analysis of the origin of art and story is that attention—engagement in the activity—matters before meaning. Aristotle understood this. So do artists, authors, and audiences. Even children under the age of three grasp the crucial role of catching and holding the attention of listeners. At this age their stories are as much poems as narratives, focusing on striking characters and effects that violate expectations, but in a structure that resembles theme and variation, a simpler kind of pattern, rather than the event continuity that adults expect of stories:

The monkeys
They went up sky
They fall down
Choo choo train in the sky
The train fell down in the sky
I fell down in the sky in the water
I got on my boat and my legs hurt
Daddy fall down in the sky.

The two-and-a-half-year-old boy who concocts this "story" has no idea yet that stories incorporate not just settings, characters, and events, but also aims, goals, and outcomes. He cannot develop a story but seems to intuit the need to surprise, with his unusual characters in unusual places defying the principles of gravity he began to understand before he was three months old. Repetition is the simplest form of elaboration, but since pure repetition holds little interest, repetition of a bold idea with variation offers him the best prospects of holding the attention of listeners with the imaginative resources he has.

A four-year-old boy made up this story:

Once there was a dragon who went poo poo on a house and the house broke
then when the house broke the people died
and when the people died their bones came out and broke and got together again and turned into a skeleton
and then the skeletons came along and scared the people out of the town
and then when all the people got scared out of the town then skeleton babies were born
and then everyone called it skeleton town
and when they called it skeleton town the people came back and then they got scared away again
and then when they all got scared away again the skeletons died
no one came to the town
so there was no people ever in that town ever again.

This story and others by young children are not plotless, but unplanned and episodic, a series of opportunistic riffs, each aimed at catching attention: from the dragon as a conventional category-breaching monster to the decorum-breaching "poo poo" on the house, and so on.

Yet if we normally engage in art simply because it can command our attention, meaning, in academic contexts, elbows its way to the fore, because the propositional nature of meaning makes it so much easier to expound, circulate, regurgitate, or challenge than the fluid dynamics of attention.

Let us turn to an example, Vladimir Nabokov's *Lolita* (1955), and consider it in terms of cognitive play with pattern and its means for securing and refreshing attention.

Stories can earn attention through subject matter. Although house buying has become a stressful preoccupation in modern life, we have no genre of real-estate novels. But we do have stories about romantic love. An evolutionist can note the significance of reproduction and survival in the transmission of genes and the evolution of species. This can explain why, over countless generations, our emotions have been designed to respond so intensely to love and death, and why romance stories so often focus on finding love or that thrillers, mysteries, and adventure tales focus on avoiding death.

Precisely because who will partner whom matters so much to us, love stories have always flooded the story pool. Any new romance therefore runs the risk of neglect through habituation, the fading of interest in repeated stimuli. But the passionate sexual love of a mature man for a girl is not an overfamiliar love story. As a novel about an unusual love and an unusual murder, *Lolita* appeals to immemorial interests but from unexpected angles. It surprised and shocked the public when it was first published, and it still does. At over 50 million copies sold, it is surely the most demanding novel ever to sell so well.

Let's dive into the details of Humbert Humbert's story to see if they bear out the idea of art as cognitive play with pattern, and to see how Nabokov eliminates habituation and animates attention. Humbert begins:

1

Lolita, light of my life, fire of my loins. My sin, my soul. Lo-lee-ta: the tip of the tongue taking a trip of three steps down the palate to tap, at three, on the teeth. Lo. Lee. Ta.

She was Lo, plain Lo, in the morning, standing four feet ten in one sock. She was Lola in slacks. She was Dolly at school. She was Dolores on the dotted line. But in my arms she was always Lolita.

Did she have a precursor? She did, indeed she did. In point of fact, there might have been no Lolita at all had I not loved, one summer, a certain initial girl-child. In a princedom by the sea. Oh when? About as many years before Lolita was born as my age was that summer. You can always count on a murderer for a fancy prose style.

Ladies and gentlemen of the jury, exhibit number one is what the seraphs, the misinformed, simple, noble-winged seraphs, envied. Look at this tangle of thorns.

2

I was born in 1910, in Paris. My father was a gentle, easy-going person, a salad of racial genes: a Swiss citizen, of mixed French and Austrian descent, with a dash of the Danube in his veins. I am going to pass around in a minute some lovely, glossy-blue picture-postcards. He owned a luxurious hotel on the Riviera. His father and two grandfathers had sold wine, jewels and silk, respectively. At thirty he married an English girl, daughter of Jerome Dunn, the alpinist, and granddaughter of two Dorset parsons, experts in obscure subjects—paleopedology and Aeolian harps, respectively. My very photogenic mother died in a freak accident (picnic, lightning) when I was three, and, save for a pocket of warmth in the darkest past, nothing of her subsists within the hollows and dells of memory, over which, if you can still stand my style (I am writing under observation), the sun of my infancy had set: surely, you all know those redolent remnants of day suspended, with the midges, about some hedge in bloom or suddenly entered and traversed by the rambler, at the bottom of a hill, in the summer dusk; a furry warmth, golden midges.

No other novel that I can recall starts with more patterned prose than Lolita. And its initial patterns themselves form parts of other patterns, like Humbert's self-projection as an artist, a poet, an adoring lover, or his aestheticizing Lolita. But pattern and tantalizing hints of pattern saturate the text. Humbert's mother is "the granddaughter of two Dorset parsons, experts in obscure subjects—paleopedology and Aeolian harps." That in itself may be coincidence, or perhaps meaningful pattern; what are the odds of these two subjects containing the adjacent letters *a, l, e, o?* Is that accident or design, and if design, why?

Nabokov has been called the greatest prose stylist in English, and not, I think, for the likes of Humbert's patterned prose, but for his mastery of the psychology of attention, his capacity to shift our imaginations so quickly. Lolita's name supplies the first word of Humbert's text, and the last; his attention is obsessively on her, and he cannot introduce her name without caressing each syllable with lips and tongue. But even as he lingers on her in the second paragraph, the sudden images of Lo with different names and in different circumstances flash her into our mind's eye: "Lo, plain Lo, in the morning, standing four feet ten in one sock. . . . Lola in slacks. . . . Dolores on the dotted line." Nabokov knows how to catch our attention and fire our imagination by unexpected details and shifts.

Or notice the saccadic jump in attention, without sensory detail but with the surprise revelation of "You can always count on a murderer for a fancy prose style." Or the shift again from summary to "I am going to pass around in a minute some lovely, glossy-blue picture postcards." Everyone sits up here, because Humbert suddenly breaks frame, as it were, and because of the sudden concreteness: the mere idea of passing around these polished postcards activates motor, tactile, and visual areas of the brain—as neuroscientists have only recently established.

The average shot length in Hollywood movies has been shrinking as viewers have learned to assimilate film faster and to cope with the information rush of the modern world. Nabokov has influenced writers from acclaimed oldsters (Italo Calvino, W. G. Sebald, Salman Rushdie, Martin Amis, Orhan Pamuk) to feisty youngsters (Zadie Smith, Marisha Pessl) by introducing into fiction something akin to modern film's reduction in shot length, its rapidity of changes of subject or perspective. I suspect that storytelling in general has speeded up our capacity to shift attention from one perspective to another. Homer generally moves from subject to subject slowly compared with modern storytelling, let alone Nabokov, but even Homer can swiftly shift level and focus when he suddenly backgrounds a warrior dying on the battlefield.

The intense patterns of sound in Humbert's opening words may be unusual in fiction, but a high density of meaningful multiple patterns occurs everywhere in stories, even without Nabokovian alliterative play.

Character is one kind of pattern particularly significant for social animals: identifying individuals and discerning consistent differences of personality (even animals as simple as guppies distinguish the personalities of others of their kind, and interact with them accordingly). Character clues come thick and fast in fiction. That combination of Humbert's obsessive focus on Lolita and his capacity to shift attention so rapidly in the opening paragraphs of the novel arouses our interest in his lively, highly self-conscious mind—even if we soon find ourselves uneasy about what that mind intends.

Events can be unique and unprecedented in trivial details, but we understand them because they are similar enough in pattern to other situations we experience directly or indirectly: we recognize romantic love, for instance, as clearly in Humbert's first lines as we hear the pattern of his words.

In fiction we often find the compounding of event patterns: Humbert's love for his childhood sweetheart Annabel Leigh, the "certain initial girl-child. In a princedom by the sea," for instance, prefigures (and, as he wants to suggest, explains, and intensifies the romanticism of, and helps excuse) his love for the girl-child Lolita. In Nabokov and many other authors, the relationship of life and art forms another kind of pattern: here, the relationship between the girl whom Humbert calls "Annabel Leigh" and Poe's poem "Annabel Lee," whose "kingdom by the sea" he also echoes. Such a pattern of characters' lives echoing art runs through the novel as a genre from *Don Quixote* to *Northanger Abbey* and *Madame Bovary* and into modernism, postmodernism, and beyond.

Expectations are possible because the world and its objects and events fall into patterns. But we learn more from the surprising than from the expected, since surprise signals something new worth notice. Stories fall into patterns of patterns, which storytellers can play with to arouse, satisfy, defeat, or surprise expectations—and no wonder that expectation and surprise drive so much of our interest in story. When Humbert discloses that he is a murderer, certain patterns of events instantly spring to our minds, and as we realize when we read on, our storyteller wishes to toy with storytelling expectations. The usual whodunit pattern of a murder mystery gives way to a whocoppedit pattern, as Humbert parades one possible victim after another before us, and then finds out the name of the person he wishes to kill, but refuses to tell us, although he unhelpfully notes he has sprinkled clues to the victim's identity throughout the story so far.

The most powerful patterns in fiction tend to be those associated with plot: with goals, obstacles, and outcomes, with expectations and surprises. Humbert's goal of obtaining Lolita powerfully shapes expectations and ironies throughout part 1 of the novel; his goal of venting his murderous hatred on the rival who took Lolita from him shapes much of part 2. These intensely human, albeit in Humbert's case perverse, goal patterns shape the narrative impetus of the novel. But Nabokov builds in other patterns, like those of Lolita's relationship to the stranger pursuing Humbert and Lolita out west: on a first reading we wonder with Humbert whether these signs signal a rival, a detective on his trail, or a paranoid projection of his fears or guilt. Quilty, the stranger, himself weaves a different set of elusive patterns into the hotel and motel ledgers along the way for the express purpose of tantalizing and taunting Humbert and us. And Humbert in telling his story then weaves into his manuscript the patterns pointing to Quilty's presence to tantalize and taunt us so that we cannot immediately identify the patterns he can now see, comprehend, and control.

In my book *On the Origin of Stories*, I note two examples of the "early" story: one early in human history, Homer's *Odyssey*; the other early in individual development, Dr. Seuss's *Horton Hears a Who!* I do not stress pattern in these two stories, but the openings of both books swarm with form. The *Odyssey* opens with the metrical pattern of dactylic hexameter, the structural pattern of the invocation to the muse and the proem, the focus on one hero amid larger events, and the verbal pattern of *poly*-adjectives surrounding Odysseus, even twice within the first line. In the opening four lines of *Horton Hears a Who!* we find verbal pattern play at least as intense—alliteration, anaphora, anapestic tetrameter, antithesis, assonance, consonance, end rhyme, internal rhyme —usually in multiple doses, and compounded by visual and narrative patterns.

Writers of fiction, from Homer, Dante, or Shakespeare to Dickens, Joyce, Nabokov, Beckett, and Dr. Seuss, produce patterns at many levels. Others produce fewer kinds of pattern, but focus intensely on those that matter most to us in human terms, character and event, plus their own particular predilections: in Austen's case, for instance, generalizations about human conduct and character, in Tolstoy's, the

patterns of an acutely observed physical and physiological world.

As “The monkeys / They went up sky” or dragons poo-pooing or Homer or Dr. Seuss show in their different ways, pattern saturates story from the start. But *Lolita*, a sophisticated late instance of story, not only proliferates patterns but also problematizes them. It protrudes pattern but sometimes provokes by suggesting significant implications it nevertheless withholds. The hotel name, The Enchanted Hunters, obtrudes in a first reading of *Lolita*, especially because it is the goal of Humbert’s quest to possess Lolita, because of the ecphrastic fresco at the hotel, whose enchanted hunters Humbert reimagines in terms of orgiastic incandescence, and because Humbert, although the hunter, feels enchanted when Lolita turns on him and suggests that they make love. A year and a half later Lolita is about to star in a school play called *The Enchanted Hunters* when she suggests to Humbert that they leave Beardsley and travel west together. In Elphinstone, a gem of a western state, as we later discover, she has an assignation with Quilty, the play’s author, who also happened to be staying at The Enchanted Hunters the night Humbert tried to possess Lolita in her sleep and *did* possess her when she awoke.

The pattern seems charged with significance, yet it remains elusive, unlike the overt implications of, say, the motifs in *Ulysses*, such as the outsider Throwaway, the horse that wins the Ascot Gold Cup on Bloomsday and is associated with Bloom, and the ousted favorite, Sceptre, associated with Bloom’s seemingly favored rival, Blazes Boylan.

One aspect of the Enchanted Hunters pattern I noticed many years ago was a series of covert links between the attempted rape of Lolita at the hotel and the killing of Quilty at his manor, where, as he stalks his prey, Humbert calls himself “an enchanted and very tight hunter.” Despite this arch echo, Humbert fails to realize that fate (or Nabokov) has constructed a whole system of parallels between the Enchanted Hunters episode and the episode of the murder. In my biography of Nabokov I ask: What are we to make of this pointed pairing of ostensibly unrelated scenes?

And I answer: Humbert carefully places after the murder that haunting and famous scene on the mountain trail overlooking the valley filled with the sound of schoolchildren at play: “I stood listening to that musical vibration from my lofty slope, to those flashes of separate cries with a kind of demure murmur for background, and then I knew that the hopelessly poignant thing was not Lolita’s absence from my side, but the absence of her voice from that concord.” In the position Humbert has given it, this becomes the last distinct scene of the novel. Even a fine reader like Alfred Appel Jr. can treat this moment of epiphany for Humbert as his “moral apotheosis,” a final clarity of moral vision that almost redeems him. Humbert does indeed feel profound and sincere regret here, albeit it too late, but that is only one part of a complex whole. He places this image of himself to stand in contrast to Quilty, whom he has just murdered, though the vision itself occurred not then but three years earlier, when Quilty took Lolita from him. What difference does the timing make? For two years Humbert had been lucidly aware that he was keeping Lolita a prisoner and destroying her childhood and her spirit, but he continued to hold her in his power. So long as he could extract sexual delight from her, he could remain deaf to his moral sense. Only after her disappearance, when she was no longer available as the thrice-daily outlet for his lust, did he allow his moral awareness to overwhelm him as he looked down into that valley.

But that was a very selective insight. Humbert places the scene at the end of the novel to leave the closing impression that he can be selflessly concerned for Lolita, and his rhetorical strategy persuades many readers. Nabokov assesses things differently, and although he gives Humbert complete control over his pen, he finds a way to inscribe his own judgment within and against what Humbert writes. By the covert parallels he constructs between the climaxes of the novel’s two parts, he indicates that both scenes reflect the same romantic sense of the imperious dictates of desire, the same quest for self-satisfaction even at the expense of another life.

The links between the scenes at The Enchanted Hunters and at Pavor Manor, where the murder occurs, are inconspicuous until noticed but insistently precise and pointed once noticed. Whether others agree with my interpretation of why Nabokov inscribed this particular covert pattern is another question. But the Enchanted Hunters pattern shows how Nabokov can continue to amplify the effects of the patterns of character and event that we register at once by planting further complementary patterns we can discover

only on careful re-rereadings.

Another related pattern I noticed only recently. Ironies that ripple through the novel pervade the early scene at Hourglass Lake, where Humbert bathes with his new wife, Charlotte, Lolita's mother, thinks of drowning her in what seems like ideal seclusion, but decides against it. Sunbathing with Charlotte afterward, he is surprised when her friend Jean Farlow emerges from the bushes. The brief passage below, though funny in its own right, seems primarily preparation for other ironies:

Charlotte, who was a little jealous of Jean, wanted to know if John was coming.

He was. He was coming home for lunch today. He had dropped her on the way to Parkington and should be picking her up any time now. It was a grand morning. She always felt a traitor to Cavall and Melampus for leaving them roped on such gorgeous days. She sat down on the white sand between Charlotte and me. She wore shorts. Her long brown legs were about as attractive to me as those of a chestnut mare.

Notice the names of Jean Farlow's dogs, casually dropped in here, referred to once earlier as "two boxer dogs" but never mentioned again after the lines above. Cavall was not only King Arthur's favorite hound, but the first of his hounds to turn the stag in a hunting episode in *The Mabinogion*. Melampus is the name of the first hound of Actaeon, in Ovid's telling of the story of Diana and Actaeon in his *Metamorphoses*.

The precision of these allusions startles: two hounds from different literary traditions that are the first to chase or turn a stag. Actaeon, remember, is the hunter who spies Diana, the virgin goddess of hunting, naked. Diana, enraged, transforms him into a stag, and his hounds pursue him, Melampus leading, and tear him to pieces. He still feels as a man, but he can express himself only as a deer, so his own hounds and his fellow hunters cannot respond to his strangled voice pleading for them to stop tearing him apart.

This leads us back to the Enchanted Hunters motif, and the idea of the hunter hunted, and of sex and chastity as linked with hunting and pursuit. Humbert, stalking Lolita, finds himself hunted by Charlotte and "captured" in marriage. Wanting to end Charlotte's life, but not daring to, he finds her suddenly killed, after a dog chases a car that swerves and kills her, as if his deadly plans have met with enchanted success. Closing in on Lolita at The Enchanted Hunters, Humbert finds himself "hunted" by her when she proposes they try out what she discovered at camp. But Quilty, already at the hotel, witnesses Humbert and recognizes his designs on Lolita. This recognition inspires him to write the play *The Enchanted Hunters*, revolving around a character called Diana, whose role Lolita will take. The play itself turns out to be an enchanted device for Quilty's hunting down Lolita and then for stalking and hounding Humbert, now very much the hunted rather than the hunter, all the way across America. Just after Humbert gives up his hunt for Lolita's "kidnapper," he passes through Briceland (echoing Brocéliande, the home of Merlin the Enchanter) and The Enchanted Hunters Hotel, before writing a poem about Diana and the Enchanted Hunters. When he hears from Lolita about her marriage to a young American, Humbert resumes the hunt but finds himself chasing the wrong prey; and when at last Lolita gives him the scent he needs, he heads straight off to kill the man who had hunted and hounded him.

Nabokov was a scientist and had spent most of the decade before writing *Lolita* in charge of butterflies and moths at Harvard's Museum of Comparative Zoology. He was fascinated by pattern in nature, like the patterns of butterfly wings, the patterns of matching patterns in natural mimicry, and the complex patterns of relationships a scientist has to disentangle to work out the taxonomic relatedness within a genus or a family of butterflies. As a novelist he was also a shrewd intuitive psychologist, aware of how the mind processes pattern. He realized that the profusion of patterns in nature may obscure or distract us from other significant patterns. Beside Hourglass Lake, the character patterns of Charlotte's jealousy (of Lolita, of Jean) and of Humbert's scornfulness of adult women, and the wry verbal patterns of free indirect speech, here ironically maximizing the mental distance between Humbert and Jean—all seem much more prominent than the incidental Cavall and Melampus.

Even if we track down Cavall and Melampus, and link them to the Enchanted Hunters, and through Cavall as King Arthur's dog link to the Arthurian pattern that Nabokov seems to have attached from the first to the Lolita theme, I am not satisfied with what we can interpret of either the Enchanted Hunters or

the Arthurian (and Merlinesque) pattern. Nabokov's patterns have powerful implications, once we trace them far enough, and in the case of Lolita I don't think I or anyone else has yet reached that point.

What do these examples from *Lolita* suggest? A writer can capture our attention before, in some cases long before, we reach what academic critics would accept as the "meaning" or "meanings" of works. The high density of multiple patterns holds our attention and elicits our response—especially through patterns of biological importance, like those surrounding character and event, which arouse attention and emotion and feed powerful, dedicated, evolved information-processing subroutines in the mind.

Patterns in fiction, as in life, may proliferate and obscure other patterns. They can yield rich but sometimes far-from-evident implications. They may be open-ended: they and their implications often do not come preannounced and predigested. Sometimes they feed into efficient, evolved pattern-detection systems, but often they have to be discovered through attention and curiosity, and sometimes in ways that neither audiences nor authors fully anticipate.

At a more general level, humans are extraordinary open-ended pattern detectors, because we so compulsively inhabit the cognitive niche. Art plays with cognitive patterns at high intensity. The pleasure this generates is an essential part of what it is to be human and matters both at the individual level, for audiences and artists, and at the social level, for the patterns we share (in design, music, dance, and story). The pleasure art's intense play with patterns affords compels our engagement again and again and helps shape our capacity to create and process pattern more swiftly. Perhaps it even helps explain the so-called Flynn effect, the fact—and it seems to be one—that IQs have risen with each of the last few generations: perhaps as a consequence of the modern bombardment of the high-density patterns of art through television, dvds, music and iPods, computer games, YouTube and the like.

And with their high intensity of pattern and their fixed form, works of art should provide ideal controlled replicable experiments for the study of both rapid and gradual pattern recognition in the mind.

Literary studies have no need to feel embarrassed at the art of literature or the pleasure we derive from it. Literature and other arts have helped extend our command of information patterns, and that singular command makes us who we are.

Brian Boyd, professor English at the University of Auckland, New Zealand, is the author of Vladimir Nabokov: The Russian Years and Vladimir Nabokov: The American Years, and has edited Nabokov's fiction, verse, memoirs, letters, and scientific prose.

http://www.theamericanscholar.org/sp08/literature-boyd.html

Excavation starts at Stonehenge

The first excavation inside the ring at Stonehenge in more than four decades gets under way on Monday.

The two-week dig will try to establish, once and for all, some precise dating for the creation of the monument.

It is also targeting the significance of the smaller bluestones that stand inside the giant sarsen pillars.

Researchers believe these rocks, brought all the way from Wales, hold the secret to the real purpose of Stonehenge as a place of healing.

The excavation at the 4,500-year-old UK landmark is being funded by the BBC. The work will be filmed for a special Timewatch programme to be broadcast in the autumn.

'Magical stones'

The researchers leading the project are two of the UK's leading Stonehenge experts - Professor Tim Darvill, of the University of Bournemouth, and Professor Geoff Wainwright, of the Society of Antiquaries.

> **We believe that this dig has a chance of genuinely unlocking part of the mystery of Stonehenge**
> John Farren, BBC Timewatch editor

They are convinced that the dominating feature on Salisbury Plain in Wiltshire was akin to a "Neolithic Lourdes" - a place where people went on a pilgrimage to get cured.

Some of the evidence supporting this theory comes from the dead, they say.

A significant proportion of the newly discovered Neolithic remains show clear signs of skeletal trauma. Some had undergone operations to the skull, or had walked with a limp, or had broken bones.

Modern techniques have established that many of these people had clearly travelled huge distances to get to south-west England, suggesting they were seeking supernatural help for their ills.

But Darvill and Wainwright have also traced the bluestones - the stones in the centre of Stonehenge - to the exact spot they came from in the Preseli hills, 250km away in the far west of Wales.

Neolithic inscriptions found at this location indicate the ancient people there believed the stones to be magical and for the local waters to have healing properties.

'Scientific proof'

Darvill and Wainwright hope the dig will demonstrate such beliefs also lay behind the creation of Stonehenge, by showing that the make-up of the original floor of the sacred circle at the monument is dominated by bluestone chippings that were purposely placed there.

The dig will also provide a more precise dating of the Double Bluestone Circle, the first stone circle that was erected at Stonehenge.

The original setting for this circle is no longer visible. The bluestones seen by visitors today are later re-erections.

Archaeologists tried to date the first circle in the 1990s and estimated that it was put up at around 2,550BC; but a more precise dating has not been possible.

Principally, this is because materials removed in earlier excavations were poorly recorded and cannot be attributed with any certainty to specific features and deposits.

The 3.5m by 2.5m trench that will be excavated in the new effort will aim to retrieve fragments of the original bluestone pillars that can be properly dated.

Cannot play media. Sorry you need to have JavaScript enabled on your browser.

The BBC's Jon Kay talks to Geoff Wainwright about the dig

The BBC-funded excavation goes ahead with the full support of English Heritage, which manages the site for the nation.

"Theories about Stonehenge are cheap; proof is precious," commented BBC Timewatch editor, John Farren.

"I'm delighted that Timewatch, the BBC's flagship history programme, is able to offer the possibility for some hard scientific proof to further our knowledge of the dating of Stonehenge and to bolster this remarkable new theory.

"It's taken us 18 months' hard work to get all the elements for the dig in place."

Professor Wainwright added: "This small excavation of a bluestone is the culmination of six years of research which Tim and I have conducted in the Preseli Hills of North Pembrokeshire and which has shed new light on the eternal question as to why Stonehenge was built.

"The excavation will date the arrival of the bluestones following their 250km journey from Preseli to Salisbury Plain and contribute to our definition of the society which undertook such an ambitious project. We will be able to say not only why but when the first stone monument was built."

Dr Simon Thurley, chief executive of English Heritage, commented: "Very occasionally, we have the opportunity to find out something new archeologically - we are at that moment now.

"We believe that this dig has a chance of genuinely unlocking part of the mystery of Stonehenge."

BBC Timewatch will follow the progress of the Stonehenge dig over the course of the next two weeks. Catch daily text and video reports on the programme's

. A BBC Two documentary will be broadcast in the autumn and will detail the findings of the investigation
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7322134.stm

Published: 2008/03/31 11:03:57 GMT

Spam blights e-mail 15 years on

By Darren Waters
Technology editor, BBC News website

Spam continues to blight e-mail exactly 15 years after the term was first coined and almost 30 years since the first spam message was sent.

The term is thought to have been coined by Joel Furr, an administrator on the net discussion system Usenet, to refer to unsolicited bulk messages.

More than 90% of all e-mail is spam, according to anti-spam body Spamhaus.

"Spam is a real life arms race," said Mark Sunner, chief analyst at online security firm Message Labs.

Billions of spam e-mails are sent each day, blocking mail servers, slowing down networks, infecting people's computers with viruses, helping hijack machines and generally making the internet a painful experience for many.

Mr Furr told BBC News that the anniversary of his first use of the term was no cause for celebration.

"I prefer commiseration," he said.

Mr Furr first used the term to refer to bulk postings on discussion boards on the internet but in the years to come spam became associated with e-mail.

"But even today there are many discussion groups that are unusable because of the amount of spamming," he said.

'Increasing risk'

Richard Cox, chief information officer of anti-spam body Spamhaus, said: "Spam means there is an increasing risk to e-mail; it cannot become a reliable vehicle for getting messages across."

Mr Furr said: "In recorded human history as communcation barriers drop and as communication becomes easier civilisation progresses.

"We have this awesome tool to make it possible for people in any part of the planet to exchange ideas with one another and yet people are going out of their way to not use it because of the spammers, because of the jerks.

"It's holding back innovation."

"When e-mail was designed the internet was largely used by people you could trust," said Mr Cox.

"Unfortunately not only did bad people start to use the internet, the gates to the internet were transferred from fairly prudent technologists to people who wanted to make money out of it.

The bad guys at the sharp end are using these botnets to do some really clever stuff
Mark Sunner, Message Labs

"That's when spam caught on and ever since it has been a rear-guard action."

The term spam was inspired by the Monty Python sketch, first shown in 1970, in which a restaurant only serves the processed meat product.

In the sketch, a group of Vikings start singing: "Spam, lovely spam, wonderful spam."

The term was picked up in internet chat rooms in the early 1970s and used in a variety of contexts until it became best-known as a reference to unsolicited bulk e-mail, according to research carried out by Brad Templeton, who is chairman of the board at the Electronic Frontier Foundation.

'Bulk e-mail'

The first unsolicited bulk e-mail was sent by a marketing representative at computer firm Dec on 3 May 1978, when he e-mailed every West Coast user on the Arpanet, the original building block of the internet.

The e-mail was inviting users to attend an open day in which the firm would be showing off its latest range of computers.

Mr Cox said years had been taken up trying to persuade government to ban spam.

"The Chinese and Russians are a major problem and probably always will be," he said.

Mr Cox said the two countries' governments were apathetic about dealing with spam because although it originates in their countries, its effect is felt largely outside their borders.

According to the Spamhaus Project, about 200 spammers worldwide are responsible for about 80% of all spam.

Household computers

Much of spam is sent from ordinary household computers that have been hijacked by hackers, and turned into what is known as botnets, which automatically spew out messages. Mark Sunner said spam was a problem that was constantly evolving.

"The bad guys are at least as technically proficient as the security services trying to stop them."

I don't think it's realistic to believe we will never receive spam

Richard Cox, Spamhaus

He added: "The bad guys at the sharp end are using these botnets to do some really clever stuff."

In the past, botnets could be taken down by finding the central server controlling the machines. But the latest variants of botnets are using a technique called fast-flux domain name service which shifts the location of servers every three minutes.

"There are still a number of spam factories in the US which are bulk sending spam," said Mr Cox.

Spamhaus maintains a register of known spammers and spam gangs, many of whom are based in China and Russia.

Minimal activity

The body also maintains a list of internet service providers that are failing to deal with computers that have been hijacked.

Mr Cox said UK service providers like BT, Bulldog, Wanadoo and Tiscali were failing to tackle the problem of botnets.

"There has been minimal activity by many internet service providers, all of whom are blaming the dubious legal situation of spam," he said.

Mr Cox said the battle against spam was being scuppered due to lack of government and law enforcement co-operation across borders.

"The spam may come from Bulgaria but if its controlled by somebody in Russia and paid for by someone in the US - who do you prosecute, and in which country?

"How do you get the evidence into the right country? We're building on this but it's a very slow process."

Mr Cox said it was unlikely spam would ever be defeated completely.

"I don't think it's realistic to believe we will never receive spam," he said.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/technology/7322615.stm

Published: 2008/03/31 15:52:46 GMT

Late Grades? Pay Up, Professor

Many professors hate grading, and like most human beings, they often put off what they don't like. So at many colleges, the end of a term results in some proportion of the faculty turning their grades in late, much to the dismay of the registrars whose job it is to process the grades and make them available to students. The outcome can be more than just annoying to the registrars; late grades can delay diplomas, disrupt the awarding of financial aid, or get students into academic trouble.

Various institutions have tried various measures to crack down on the problem – sending nasty notes, putting warnings in instructors' personnel files, even delaying the paychecks of faculty members who turn in their grades late, as the University of Iowa's College of Liberal Arts and Sciences threatens to do.

Florida State University once had a major problem with late grades, Kimberly Barber, the interim registrar there, told a large group of interested registrars and deans Wednesday at the annual meeting of the American Association of Collegiate Registrars and Admissions Officers. About a decade ago, instructors in an average of 10 to 15 percent of the 8,000 course sections Florida State offered each semester at the time missed the deadline for turning in student grades, driving registration officials there nuts. Processing grades after the end of the normal process (which formerly involved scanning, and is now entirely electronic) was costly, and forced administrators to spend significant time telling students (and parents) why they couldn't have their transcripts or financial aid or, in extreme cases, diplomas.

Registration officials complained to senior administrators there, prompting a scolding memo to the entire faculty from the university's provost. Like many a memo, that one was largely ignored, Barber said.

The next year, when Barber says the provost, Lawrence G. Abele, was frustrated about the faculty's reaction to something else, Florida State's registrar at the time told him that professors were still consistently turning their grades in late. Together the registrar and Abele came up with an idea that they thought might drive home the seriousness of the late grade syndrome.

As Barber explained to a somewhat incredulous audience Wednesday: Florida State is what she believes to be the only institution in the country that fines its professors when they turn grades in late at semester's end. The tab: $10 per grade.

"We charge for every grade for every student that is not turned in by our deadline," Barber said, adding, slowly for emphasis: "I'll say that again: *Every grade* for *every student* that is not turned in by our deadline."

With that, the crowd broke into a wave of spontaneous applause. (Perhaps not surprisingly, when Barber asked for a show of hands about who was in the audience, it was dominated by administrators. If there were any faculty members there, they didn't dare raise their hands.)

It was clear from their reaction and from the questions they posed that a lot of audience members were intrigued by the prospect of a solution that, as Barber put it, many have told her "would never fly at *my* institution."

It did not go over well at first at Florida State, Barber said. The first term, there was little change in the traditional behavior, and when the registrar's office sent bills to the dean of each FSU college with some eye-popping dollar figures — well into five figures in some cases, when you consider a survey course with 1,000 students, say – there was a "hue and cry on campus," she said. "Even though we said we were going to do it, they didn't believe it." Strong support from senior administrators, including Abele, the provost, was essential, Barber said.

It took several years for the submission of late grades to "really taper off," Barber said. But by the spring of 2007, instructors in just 59 of the more than 13,000 sections turned their grade rosters in late, and just 21 did so last fall. At this point, most of the laggards are graduate seminars or small courses with a new instructor or people who have forgotten to hit the "submit" button in Florida State's now Web-based grading system; gone are the days of late rosters for 1,500 people, she said.

"Money's not the important thing — money's the vehicle that forces grades to come in," Barber said. She clearly relishes being able to call a dean, as she did recently, and ask him where the grade rosters were for a large humanities class with multiple course sections. "You better get 'em in or you're writing me a check for $17,000," Barber recalled saying. "They were there, on my desk, in an hour and a half."

The registrar sent its bills to the deans of Florida State's various colleges and made them pay up; some deans have historically paid the tab out of the colleges' budgets, while others have passed the costs on to departments or even to the faculty members themselves, which can take a particularly heavy toll on less-well-paid teaching assistants and beginning instructors.

Many of the questions after Barber's presentation focused on the kinds of practical issues, such as the need for an appeals process (a must), how often faculty members cite technological problems ("the browser ate my grades"), etc.

But ultimately, what most of the officials in the audience were clearly wondering was: Could I possibly pull this audacious idea off on my campus?

Yes you can, Barber suggested, but only with the right kind of support and preparation. Support not only from senior administrators like the provost or the deans, but also from key faculty members who get it, and lots and lots of preparation that explicitly explains the rules and makes the deadlines unequivocal. "Go to every faculty meeting, publish it in every newsletter you can, write in the sky, whatever you need," she said. "When that first bill comes out, you're going to have to deal with the aftermath, so be very clear in defining your terms."

Most professors want to do the right thing, Barber said, and in her experience, even those who have missed a deadline have "gotten it" when she put it in terms they understood: "Don't give me an excuse that you would not accept from your own students."

— Doug Lederman

The original story and user comments can be viewed online at
http://insidehighered.com/news/2008/03/28/grades.

The Bold and the Bad and the Bumpy Nights

By TERRENCE RAFFERTY

BETTE DAVIS, born 100 years ago this week, made her first appearance on film in 1931 and her last in 1989, and like every star of her generation she was always ready for her close-up. The difference with Davis — part of what makes her, I think, the greatest actress of the American cinema — was, she didn't need it. You could tell what she was thinking and feeling from across the room, even a very large one like the ballroom she swoops into, wearing a red dress, in William Wyler's "Jezebel" (1938), scandalizing the haut monde of 1852 New Orleans; unmarried young women like her character, Julie Marsden, are expected to wear white. But Julie wants to make an impression, and she does; and as she takes a turn on the dance floor with her stiff-backed escort, you can see, although most of the sequence is long shots, her growing awareness that she has made a terrible mistake, that she has gone, for once, too far.

Her dancing is limp, reluctant; her shoulders sag; and her head is bowed a little, as if she were trying to hide from the disapproving gaze of the assembled revelers: a shocking sensation for Julie, who, like most every character Davis ever played, is accustomed to looking people straight in the eye. There are close-ups in the scene, but it's in the long shots that you sense most powerfully the burden of that unfortunate dress on this suddenly humiliated woman, feel the depth of her regret and the strength of her desire to be wearing something, anything, else. Bette Davis could make you see red in black and white.

Davis certainly knew how to make an impression, though her boldness, like Julie Marsden's, sometimes had unintended consequences. Moviegoers familiar with her only from late horror films like "What Ever Happened to Baby Jane?" (1962) and "Hush ... Hush, Sweet Charlotte" (1964) — the most substantial hits of the last four decades of her career — may think of her as a campy grotesque, a cartoon diva. That's perhaps partly her own fault, for attacking those ludicrous roles with such unseemly comic gusto. And her

performer's soul must have been gratified by the attention they brought: better to be noticed, for whatever reason, than ignored. ("Baby Jane" even earned her an Oscar nomination, her last of 10.)

But on the occasion of her centennial, it's worth remembering Davis as she was in her prime, in the 1930s and '40s, when she commanded the screen with something subtler and more mysterious than the fierce, simple will that carried her through the mostly grim jobs of work that followed. (Though the will was there from the start, and her formidable technique never wholly deserted her.) In her heyday, as the reigning female star at Warner Brothers, she was as electrifying as Marlon Brando in the '50s: volatile, sexy, challenging, fearlessly inventive. She looked moviegoers straight in the eye and dared them to look away.

Usually they kept looking, even when she was putting on display, as she frequently did, the unlovelier aspects of human nature. Her breakthrough role, after three years of more or less routine assignments, came in John Cromwell's 1934 adaptation of the W. Somerset Maugham novel "Of Human Bondage," in which she plays the coldhearted Cockney temptress Mildred Rogers, a vile specimen who cruelly — and protractedly — abuses the affections of a sensitive, artistic, clubfooted young medical student.

It was a part Davis had campaigned for. At that point in her career she had nothing to lose by taking on a juicy role that the better-established actresses in town wouldn't touch for fear of damaging their images. But even after she was a star herself, and had plenty to lose, Davis persisted in playing women who were frankly, unapologetically bad: characters like Stanley Timberlake in John Huston's odd, disturbing Southern melodrama "In This Our Life" (1942); Rosa Moline in King Vidor's overheated "Beyond the Forest" (1949); and especially Leslie Crosbie and Regina Giddens, the heroines of two further collaborations with William Wyler, "The Letter" (1940) and "The Little Foxes" (1941).

There's no mystery, really, about why she would choose to portray so many selfish, conniving, amoral, downright malevolent human beings: any actor who doesn't know that, say, Lady Macbeth and Iago are pretty good parts should probably consider a different line of work. It's also perfectly clear why other stars of her stature were less keen to dirty their hands with such unattractive characters: in the studio era actors were brand-name products, and audiences tended to identify them with the parts they played. Late in life Davis ruefully told an interviewer, "The more successful an actor, the less he or she gets to act." She added, "People come to expect a personality, and that's the kind of parts you get offered, ones to suit audience expectations of your star's persona."

Bette Davis, God knows, could supply some personality. Versatile though she was, she was never an empty-vessel sort of actor like Daniel Day-Lewis. Part of the strange thrill of watching her perform is the tension you feel between the demands of the role and the demands of her outsize self, constantly threatening to breach the boundaries of the character.

In her bad movies, and there are many, you can always sense her impatience with the material she's been given. She'll start working her huge eyes a little more, bulging them out for emphasis or hooding them like a snake about to strike. Or she'll pace restlessly, her clicking heels punctuating every clipped, spit-out

line. Or she'll do something tricky with her (ever-present) cigarette, holding it in an unusual way or stubbing it out abruptly or amusing herself by varying the rhythm of her exhalations. She's like a kid with too much energy; when she's bored, she fidgets and colors outside the lines.

As a moviegoer you can't help being grateful for that nervous ingenuity. Her endless bits of business may not always be, strictly speaking, necessary for her characters, but the truth is that most of the dozens of movies she appeared in her long career — 45 in the first 10 years alone — were, strictly speaking, junk. The women she portrayed wouldn't be any more believable if she'd played them straight; just duller.

And when she got a part worthy of her gifts, she had the wit to put the lab work done in her lesser pictures to good use. In Lloyd Bacon's terrific "Marked Woman" (1937), for instance, in which she plays a nightclub hostess (read prostitute), you see a kind of distillation of all the tramps, gun molls and shady dames she'd played as an eager young nonstar under contract to studios that didn't know what to do with her. Her character in "Marked Woman," is a wonderfully complex creation, a wary survivor who's both proud of her sex appeal and slightly uncomfortable with it: not a hooker with a heart of gold, exactly, but a hooker who prefers to keep her heart as much to herself as possible.

And in one of her most celebrated roles, as the panicky aging actress Margo Channing in Joseph L. Mankiewicz's "All About Eve" (1950), Davis trots out every bad habit she'd developed over the years, every "Bette Davis" mannerism, and makes them all seem, strictly speaking, necessary: real aspects of an unmistakably real woman. It helps, obviously, that Margo happens to be an actress. (This was a specialty of Davis's. She played actresses in no fewer than five of her pictures, including "Dangerous," for which she won her first Academy Award in 1935. The other was for "Jezebel.") She can get away with gestures and intonations that might be considered somewhat over the top in, say, a real-estate lawyer; theatricality is part of who she is, maybe the largest part.

But — and this is the beauty of the performance — it isn't all she is. It would have been easy for Davis to play Margo as a pathetic drama queen. What she does is much more interesting: the performance is dry-eyed and free of camp posturing, the portrait of a woman whose theatricality is natural, both as an expression of her self and as a tool of her peculiar trade. It's something she's learned to live with, and to make a living from. Bouts of insecurity and emotional neediness are occupational hazards, as is a certain inability to resist the dramatic moment — standing on a staircase at a party, for example, to announce, "Fasten your seat belts, it's going to be a bumpy night" — but on balance Margo, mannerisms and all, seems a surprisingly level-headed woman. In the end she's a trouper.

So was Davis, who never retired from acting and lasted, improbably, to 81, after a lifetime of abusing alcohol, nicotine and, often, her directors. Her best director was Wyler, who abused her back, productively. The three movies they made together represent one of the great collaborations of a filmmaker and an actor in the history of movies, because Wyler's theatrical intelligence was a match for hers. (She once referred to him, admiringly, as "the male Bette Davis.")

They fell out during “The Little Foxes,” perhaps because both realized, on some level, that they couldn’t hope to surpass the intimate anatomy of evil they had together managed to get on the screen in “The

Letter.” That picture’s heroine, a Singapore planter’s wife, is, like so many of Davis’s most vivid characters, a creature of urgent need, but she’s cooler, more controlled than most. She kills her lover and lies to her husband (and the court) with remarkable equanimity. And because Wyler persuaded Davis — “persuaded” may be too mild a word — to mute her mannerisms, her every glance and movement seems to register with particular force, passion straining to burst free of its confinement. Watching the first scene of “The Letter” is as good a way as any to remember Davis on her birthday. She strides out, with that fast, purposeful walk of hers, onto the veranda, pumps some lead into her prone paramour, then pauses, lowering her gun hand slowly, to contemplate what she’s done, striking a pose (in medium long shot) that looks both melancholy and defiant. That’s Bette Davis as she was at her best: first in furious motion, then eerily, eloquently still. She was no drama queen. She was drama in the flesh.

http://www.nytimes.com/2008/03/30/movies/30raff.html?th&emc=th

February 28, 2008

February 29, 2008

Ice shelves are thick slabs of ice that are attached to coastlines and extend out over the ocean. In the natural course of events, ice shelves often calve large icebergs. Beginning in the mid-1990s, however, some ice shelves began exhibiting a new behavior: rapid disintegration into small pieces, likely as the result of warming temperatures. On February 28, 2008, the Wilkins Ice Shelf on the Antarctic Peninsula exhibited such a phenomenon.

The Moderate Resolution Imaging Spectroradiometer (MODIS) sensors on NASA's Terra and Aqua satellites provided some of the earliest evidence of the Wilkins Ice Shelf disintegration. Aqua acquired the February 28 image (top, taken at 21:10 UTC), and Terra acquired the February 29 image (bottom, 13:05 UTC). In both images, intact ice shelf appears white, and disintegrating shelf appears blue.

The disintegration of the Wilkins Ice Shelf was announced by the National Snow and Ice Data Center, the British Antarctic Survey, and the Earth Dynamic System Research Center at Taiwan's National Cheng Kung. According to the institutions' joint press release, an iceberg measuring 41 by 2.5 kilometers (25.5 by 1.5 miles) broke off from the Wilkins Ice Shelf on February 28, leading to uncontrolled disintegration. Separated by just under 16 hours, these MODIS images show the rapid rate of disintegration; the growing region of pale blue on the ice shelf is crumbling, water-saturated ice.

The Earth Observatory's feature article Disintegration: Antarctic Warming Claims Another Ice Shelf has additional images and details about how and why ice shelves collapse and explains why the Wilkins Ice Shelf collapse is unlikely to raise sea level.

You can download a 250-meter-resolution KMZ file of the ice shelf disintegrating suitable for use with Google Earth.

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NASA images by Jesse Allen and Robert Simmon, based on MODIS data. Caption by Michon Scott and Rebecca Lindsey.

http://earthobservatory.nasa.gov:80/Newsroom/NewImages/images.php3?img_id=17977

GM seeds can 'last for 10 years'

By Richard Black
Environment correspondent, BBC News website

Seeds of some genetically modified crops can endure in soil for at least 10 years, scientists have discovered.

Researchers in Sweden examined a field planted with experimental oilseed rape a decade ago, and found transgenic specimens were still growing there.

This was despite intensive efforts in the intervening years to remove seeds.

No GM crop has been found to endure so long; and critics say it shows that genetically modified organisms cannot be contained once released.

Tina D'Hertefeldt from Lund University led the team of scientists that scoured the small field, which had hosted the GM trial 10 years ago, looking for "volunteers" - plants that have sprung up spontaneously from seed in the soil.

"We were surprised, very surprised," she told BBC News. "We knew that volunteers had been detected earlier, but we thought they'd all have gone by now."

Eradication effort

Presenting their findings in the journal Biology Letters, the researchers note that after the trial of herbicide-resistant GM rape, the Swedish Board of Agriculture sprayed the field intensively with chemicals that should have killed all the remaining plants.

And for two years, inspectors looked specifically for volunteer plants and killed them.

This is much more effort than would usually be deployed on a normal farmer's field.

We should assume that GM organisms cannot be confined, and ask instead what will become of them when they escape
Professor Mark Westoby

But even so, 15 plants had sprung up 10 years later carrying the genes that scientists had originally inserted into their experimental rape variety to make them resistant to the herbicide glufosinate.

Non-GM varieties were used in the 10-year-old study as well, and some of these had also survived.

"I wouldn't say that the transgenic varieties are able to survive better," said Dr D'Hertefeldt. "It's just that oilseed rape is a tough plant."

Jeremy Sweet, a former head of the UK's National Institute of Agricultural Botany and now an independent consultant on biotech crops, agreed.

"It's been known for some time that oilseed rape is a bit of a problem because of the survival of its seed," he told BBC News.

"It means that if farmers want to swap [from growing GM rape] to conventional varieties, they will have to wait for a number of years."

Growth industry

Rapeseed - often known by its Canadian name canola - is the fourth most commonly grown GM crop in the world, after soya beans, maize and cotton.

An industry organisation, the International Service for the Acquisition of Agri-biotech Applications (ISAAA), calculated recently that more than one million square kilometres of land across the world are now dedicated to growing GM plants.

Europe accounts for only about 0.1% of that total, with a single maize variety the single transgenic food plant being grown.

Many European countries, including the UK, have yet to implement legislation on the thorny issue of how fields of genetically modified crops could co-exist with others that farmers are keen to keep free of transgenic material.

Two years ago, the UK government published a consultation paper (which refers to England only - Wales, Scotland and Northern Ireland regulations are dealt with by the devolved administrations) including proposals on issues such as minimum distances between fields growing biotech and conventional varieties, compensation, and labelling of GM foods.

Campaign groups say the proposals are too weak, notably that farmers would not be liable for environmental impacts of the crops they grow.

Clare Oxborrow, GM campaigner with Friends of the Earth (FoE) UK, said the Swedish research strengthened their case.

"Despite the best efforts by the researchers to eliminate GM oilseed rape, it appears that once it is planted, it is virtually impossible to prevent GM contamination of future crops," she said.

"The government must now tear up its weak proposals for the 'coexistence' of GM with organic and conventional crops, and put in place tough rules that protect GM-free food and farming."

Time to look

The Lund research does not deal with the flow of genes into neighbouring fields, or whether transgenes can transfer into wild plants growing nearby.

But Tina D'Hertefeldt believes legislators do need to take note of her findings.

"What we are saying is they also need to take into account the temporal aspect," she said.

Professor Mark Westoby, a plant ecologist from Macquarie University in Australia, had a more blunt assessment.

"This study confirms that GM crops are difficult to confine," he said.

"We should assume that GM organisms cannot be confined, and ask instead what will become of them when they escape."

Richard.Black-INTERNET@bbc.co.uk

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7324654.stm

Published: 2008/04/02 09:56:08 GMT

Concern over 'zero carbon' homes

By Mark Kinver
Science and nature reporter, BBC News

UK home-owners are not prepared to make the changes needed to live in "zero carbon" homes, according to a report.

People felt the eco-friendly buildings would require extra maintenance and that they would have to cut back on certain appliances, it added.

The National House-Building Council (NHBC) Foundation study said buyers also feared the homes would cost more.

The government has set a target that all new homes in England must have no net carbon emissions by 2016.

The findings of the report were based on more than 500 interviews with homeowners and nine focus groups, which were carried out by research organisation EPR.

Despite widespread media coverage of climate change, the study found that energy efficiency was not a major factor when it came to choosing a new home.

Instead, it said, most respondents would prefer a better kitchen or bathroom.

'Lack of understanding'

NHBC chief executive Imtiaz Farookhi said the results came as no surprise.

"What has happened since the Stern Review is that there has been a general understanding of global warming and carbon emissions," he told BBC News.

"But the debate about house building has largely been between government, regulators and the construction industry; in short, the supply side.

"The demand side - home-buyers and home-owners - actually haven't been involved in this process.

"Unless people actually understand and engage in this, they are not going to be willing to buy these homes and change their lifestyles."

From May 2008, new houses in England will have to be assessed against the new Code for Sustainable Homes.

The six-star rating system grades a building's environmental performance, which includes energy and water consumption.

In order for a property to be of a standard that is likely to meet the government's "zero carbon" definition, Mr Farookhi said it would have to receive a five- or six-star rating.

But he added that there was still a great deal of uncertainty and confusion among building firms about how the government would define "zero carbon".

"We still don't know what 'zero carbon' means," he said. "At one stage, the Treasury had said that a home could not have a gas connection if it wanted to qualify.

"It is not an easy period, and we need to have stability in definitions and regulations."

Existing emissions

The NHBC Foundation also expressed concern that ministers had focused their efforts on new homes and had overlooked the current housing stock, responsible for about 27% of the UK's total carbon emissions.

It is a concern shared by a committee of MPs, which said housing policy risked neglecting the impact of the UK's 25 million existing houses.

In its Existing Homes and Climate Change report, the Communities and Local Government Select Committee called on ministers to "engage fully" with cutting emissions in homes that were already built.

"The government's understandable desire to build improvements into future housing has led it to give insufficient priority to action on the vast bulk of the housing stock," said Phyllis Starkey, the committee's chairwoman.

The group of MPs warned that without addressing the issue, the government would not meet its 2050 target of cutting carbon emissions by 60% from 1990 levels.

"We need a much clearer focus on what must be done to bring existing housing up to required energy efficiency," Dr Starkey urged.

"The point will come when all the 'low-hanging fruit' has been picked, by which I mean cavity walls filled, windows draught-proofed and boilers lagged.

"We need the government to go further and do much more to help householders radically cut carbon emissions from their homes, whether they were built in 2007 or 1707."

Recently, Housing Minister Caroline Flint announced that home-owners would no longer need planning permission to install microgeneration technologies, such as solar panels, provided it had "no impact on others".

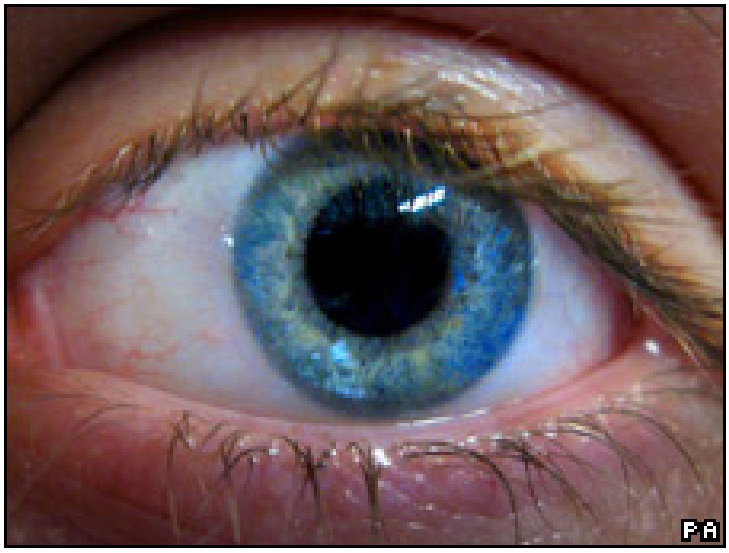
However, the relaxation of the planning rules did not include micro wind turbines, which first had to be cleared by the European Union.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7324234.stm

Published: 2008/04/02 03:32:57 GMT

Sight-saving injection approved

Thousands of patients in England and Wales will soon be getting the sight-saving drug Lucentis on the NHS.



The injection treats age-related macular degeneration (AMD), the leading cause of sight loss in the UK.

Some Primary Care Trusts in England and Wales only made treatment available to patients who had already lost their sight in one eye.

The drug, which is already available in Scotland, will be part funded by the manufacturer Novartis.

The National Institute for Clinical Excellence (Nice) is publishing its final appraisal document, to ensure that all trusts fund the drug.

The disease destroys the central region of the retina - the macula - leading to gradual loss of sight.

> **With this decision, it means that patients are no longer put in a situation where they have to choose between their sight and their life savings**
> Barbara McLaughlan
> RNIB

It comes in two forms - wet and dry - with the dry form being much more common. However, the wet type is more aggressive and is responsible for about 90% of blindness caused by the condition.

If there are no appeals, Nice's final guidance will be published in June and the NHS is then expected to implement its recommendation for using Lucentis, which is also called ranibizumab.

Some 19,000 of the 26,000 people diagnosed with wet AMD every year live in England and Wales.

Costs covered

Nice also announced that the NHS would only fund a course of 14 injections, with the cost of any more being met by the manufacturer Novartis.

This scheme, labelled as "dose-capping", was recommended by Novartis, which will reimburse the NHS for any additional jabs.

The two-year cost of Lucentis is about £10,700, for a course of eight injections in the first year and six injections in the second year.

Barbara McLaughlan, of the Royal National Institute for the Blind, has been campaigning on behalf of patients.

She said: "This is really a huge step, because we've been fighting for two years to make sure that people get access to the treatment.

"At the moment, if you develop wet AMD, you're most likely to be told you'll just have to lose your sight in one eye before you can get treatment on the NHS, and in some areas you may be told that you cannot be treated unless you can pay yourself.

"With this decision, it means that patients are no longer put in a situation where they have to choose between their sight and their life savings."

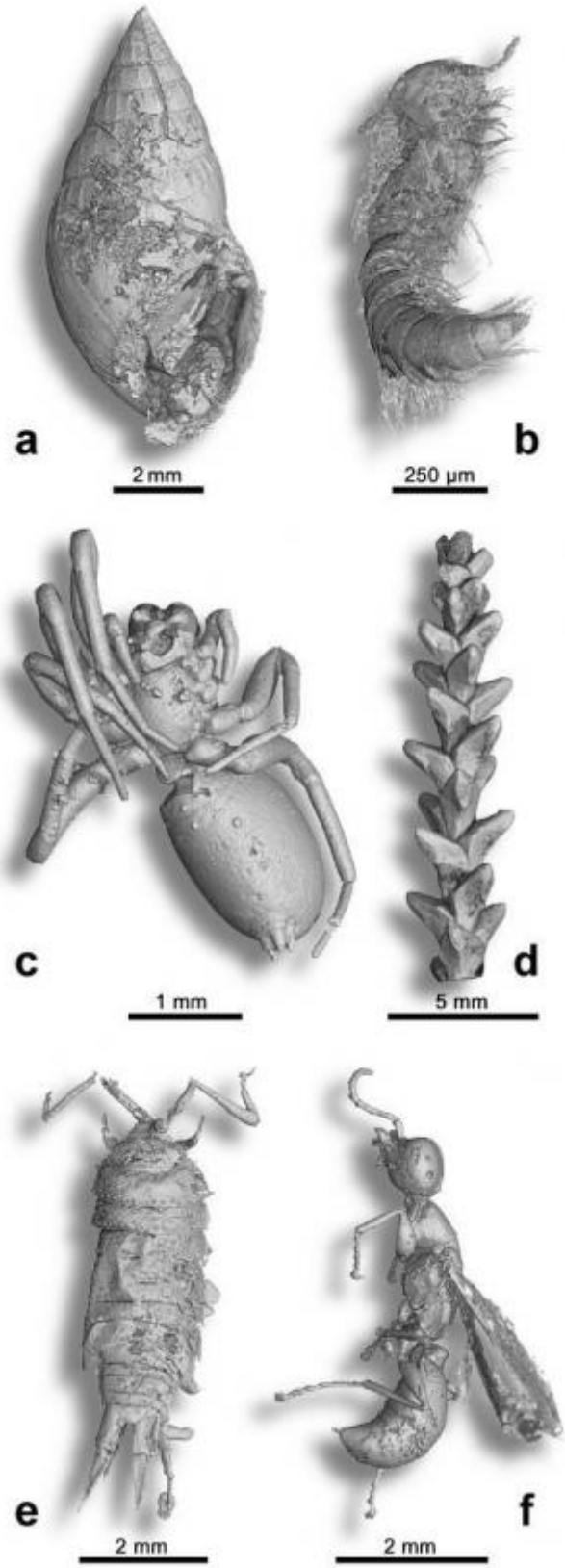
A spokeswoman for the Department of Health said: "The dose capping scheme put forward by Novartis, and which Nice has endorsed, means the NHS will be reimbursed for the cost of Lucentis if a patient requires more than 14 doses per eye.

"This benefits both patients and the NHS. This scheme will come into effect when Nice issues its final guidance, and will remain in place until the next review of Lucentis by Nice."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7325765.stm

Published: 2008/04/02 04:21:02 GMT

Scientists Discover 356 Animal Inclusions Trapped In Opaque Amber 100 Million Years Old



Examples of virtual 3D extraction of organisms embedded in opaque amber: a) Gastropod Ellobiidae; b) Myriapod Polyxenidae; c) Arachnid; d) Conifer branch (Glenrosa); e) Isopod crustacean Ligia; f) Insect hymenopteran Falciformicidae. (Credit: M. Lak, P. Tafforeau, D. Néraudeau (ESRF Grenoble and UMR CNRS 6118 Rennes))

ScienceDaily (Apr. 2, 2008) — Paleontologists from the University of Rennes (France) and the ESRF have found the presence of 356 animal inclusions in completely opaque amber from mid-Cretaceous sites of Charentes (France). The team used the X-rays of the European light source to image two kilogrammes of the fossil tree resin with a technique that allows rapid survey of large amounts of opaque amber. This is the only known method to discover inclusions in detail in fully opaque amber.

Opaque amber has always been a challenge for paleontologists. Researchers cannot study it because the naked eye cannot visualize the presence of any fossil inclusion inside. In the Cretaceous sites like those in Charentes, there is up to 80% of opaque amber. It is like trying to find, in complete blindness, something that may or may not be there.

However, the paleontologists Malvina Lak, her colleagues from the University of Rennes and the ESRF paleontologist Paul Tafforeau, together with the National Museum of Natural History of Paris, have applied to opaque amber a synchrotron X-ray imaging technique known as propagation phase contrast microradiography. It sheds light on the interior of this dark amber, which resembles a stone to the human eye. “Researchers have tried to study this kind of amber for many years with little or no success. This is the first time that we can actually discover and study the fossils it contains”, says Paul Tafforeau.

The scientists imaged 640 pieces of amber from the Charentes region in southwestern France. They discovered 356 fossil animals, going from wasps and flies, to ants or even spiders and acarians. The team was able to identify the family of 53% of the inclusions.

Most of the organisms discovered are tiny. For example, one of the discovered acarians measures 0.8 mm and a fossil wasp is only 4 mm. “The small size of the organisms is probably due to the fact that bigger

animals would be able to escape from the resin before getting stuck, whereas little ones would be captured more easily", explains Malvina Lak.

Water to see tiny fossils better

The surface features of amber pieces, like cracks, stand out more in the images than the fossil organisms in the interior when using synchrotron radiation. In order to solve this problem, scientists soaked the amber pieces in water before the experiment. Because water and amber have very similar densities, immersion made the outlines of the amber pieces and the cracks almost invisible. At the same time, it increased overall inclusion visibility, leading to better detection and characterization of the fossils.

Classification of species

Once discovered on the radiographs, some of the organisms were imaged in three dimensions and virtually extracted from the resin. The high quality of these 3D reconstructions enables paleontologists to precisely study and describe the organisms. The success of this experiment shows the high value of the ESRF for the study of fossils. "Opaque amber hosts many aspects of past life on our planet that are still unknown, and the use of third generation synchrotron sources will continue to play an important role in unveiling them", asserts Malvina Lak.

Reference: M. Lak, D. Néraudeau, A. Nel, P. Cloetens, V. Perrichot and P. Tafforeau, Phase Contrast X-ray Synchrotron Imaging: Opening Access to Fossil Inclusions in Opaque Amber, Microscopy and Microanalysis, Forthcoming article doi:10.1017/S1431927608080264.

Adapted from materials provided by European Synchrotron Radiation Facility.

http://www.sciencedaily.com:80/releases/2008/04/080401120513.htm

Chloroform Provides Clue To 150 Year Old Medical Puzzle

ScienceDaily (Apr. 2, 2008) — One of the earliest general anaesthetics to be used by the medical profession, chloroform, has shed light on a mystery that's puzzled doctors for more than 150 years -- how such anaesthetics actually work.

A discovery described as "true serendipity" made by Leeds University PhD student Dr Yahya Bahnasi, has provided a clue that may unravel the enigma of general anaesthesia -- and offer the opportunity to design new generations of anaesthetics without harmful side effects.

"We take general anaesthesia for granted nowadays, but it's still true to say that we don't know exactly how it works on a molecular level," says Dr Bahnasi, a qualified medical doctor on an Egyptian Ministry of Higher Education Scholarship at the University's Faculty of Biological Sciences.

"However, I was examining the relationship between lipids and atherosclerosis [the furring up of arteries] and it just so happened that the lipids I was using were supplied already dissolved in chloroform. I noticed that the chloroform inhibited, or blocked, the calcium ion channel TRPC5 -- it was quite a striking effect."

Ion channels are pathways that allow electrically charged atoms to pass across cell membranes to carry out various functions such as pain transmission and the timing of the heart beat. TRPC5 calcium ion channels are found in many tissues around the body but are predominant in the brain.

"We know that this ion channel plays a signalling role in the central nervous system, which regulates the conscious and unconscious states, so I was left wondering whether inhibiting this calcium ion channel was one mechanism by which anaesthesia works," says Dr Bahnasi.

Dr Bahnasi then carried out further experiments with several other modern anaesthetic compounds, both intravenous and inhaled, and found that the blocking effect on the TRPC5 ion channel was the same.

He says that the discovery opens up the opportunity to design and develop new generations of anaesthetics which directly target TRPC5, but with minimised side effects.

"Of course there are multi-molecular events that work together in anaesthesia, and inhibiting the TRPC5 ion channel may just be one of them. But it's a great start in piecing together the underlying mechanisms and providing a novel molecular target for new drug design," he says. "And it's particularly fitting that this evidence was revealed by chloroform, the 'grandfather' of modern anaesthetics."

Adapted from materials provided by University of Leeds.

http://www.sciencedaily.com/releases/2008/03/080331110104.htm

Tai Chi Exercises Improve Type 2 Diabetes Control, Study Suggests

ScienceDaily (Apr. 2, 2008) — Tai Chi exercises can improve the control of type 2 diabetes, suggests a small study, published ahead of print in the British Journal of Sports Medicine.

Tai Chi Chuan is a traditional Chinese martial art, which combines deep diaphragmatic breathing and relaxation with gentle movement.

The research team assessed the impact of a 12 week programme of Tai Chi exercises on the T helper cell activity of 30 patients with type 2 diabetes and 30 healthy people of the same age.

T cells are a key component of the body's immune system, producing powerful chemicals, including interleukins, which alter the immune response.

Type 2 diabetes is associated with chronic inflammation, caused by excessive glucose in the blood (hyperglycaemia).

After the 12 week programme glycated haemoglobin (when excess blood sugar combines with the oxygen transporter in red blood cells) levels fell significantly from 7.59% to 7.16 in the diabetic patients. And levels of interleukin-12, which boosts the immune response, doubled. Levels of interleukin-4, which suppresses the immune response, fell. T cell activity also significantly increased.

Strenuous physical activity depresses the immune system response, but moderate exercise seems to have the opposite effect, say the authors. Tai Chi is classified as moderate exercise.

Previous research has shown that it boosts cardiovascular and respiratory function, as well as improving flexibility and relieving stress, they add.

Tai Chi may prompt a fall in blood glucose levels, or improve blood glucose metabolism, sparking a drop in the inflammatory response. Alternatively, the exercise may boost fitness levels and the feeling of wellbeing, which may then boost the health of the immune system, they suggest.

In a separate study, also published ahead of print, a 12 week programme of Tai Chi and Qigong (another Chinese exercise) prompted a significant fall in blood glucose levels and significant improvements in other indicators of the metabolic syndrome in 11 middle aged to older adults.

The metabolic syndrome is a cluster of symptoms, including high blood pressure and high blood glucose that is associated with increased risks of cardiovascular disease and diabetes. The 13 participants exercised for up to 1.5 hours, up to three times a week, and were also encouraged to practice the exercises at home.

At the end of the 12 weeks, they had lost an average of 3 kg in weight and their waist size had dropped by an average of almost 3 cm. Their blood pressure also fell significantly, and by more than would have been expected from the weight loss alone, say the authors.

Insulin resistance-whereby cells stop responding to insulin, a condition preceding full diabetes-also improved significantly. Three people no longer met the criteria for metabolic syndrome. Participants said they slept better, had more energy, felt less pain and had fewer food cravings while on the programme.

Journal references:

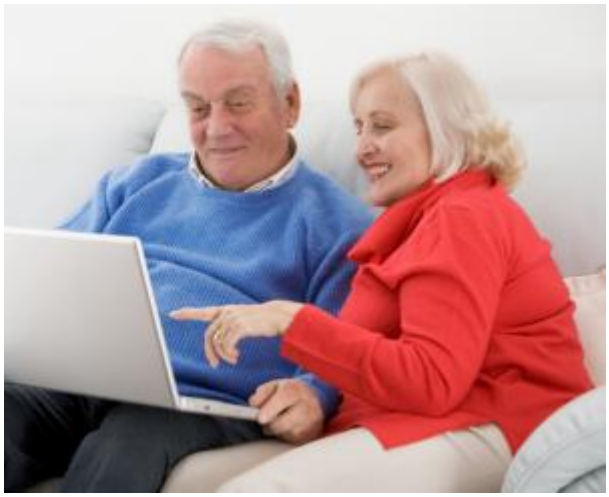
Regular Tai Chi Chuan exercise improves T cell helper function of patients with type 2 diabetes mellitus with an increase in T-bet transcription factor and IL-12 production Online First Br J Sports Med 2008; doi 10.1136/bjsm.2007.043562

Preliminary study of the effect of Tai Chi and Qigong medical exercise on indicators of metabolic syndrome and glycaemic control in adults with raised blood glucose levels Online First Br J Sports Med 2008; doi 10.1136/bjsm.2007.045476

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

http://www.sciencedaily.com/releases/2008/03/080331220843.htm

Techniques To Help Retired People Feel Comfortable Using Computers



How can retirees with little if any computer skills successfully cope with a digital information system? (Credit: iStockphoto/Luca di Filippo)

ScienceDaily (Apr. 2, 2008) — How can pensioners (retired people) with little if any computer skills successfully cope with a digital information system? According to Dutch researcher Henk Herman Nap, the design of an accessible system needs to incorporate large letter types and keys, the mother language, and a touch screen and ABCDE keyboard as input devices.

Furthermore, positive feedback is important to reduce the stress experienced by pensioners whilst using the computer.

All age groups are making increasing use of the Internet but in terms of skills, pensioners continue to lag behind the younger generations. Therefore the design of an accessible system must give due consideration to the skills and capabilities of pensioners.

Yet if pensioners are to work with digital information systems in a successful and pleasant manner, they must also experience little stress. Nap has analysed if the complexity of a system and the expected performance of pensioners exert an influence on acute stress.

The study revealed that the stress experienced increases if pensioners receive negative performance feedback and decreases if they receive positive performance feedback. However, the complexity of a system does not affect the stress experienced, although it does exert an influence on the expectations pensioners have about their future task performance and the efficiency and effectiveness with which tasks are performed.

Adapted from materials provided by Netherlands Organization for Scientific Research.

http://www.sciencedaily.com/releases/2008/03/080331111029.htm

Will We Soon Be Producing Skin Or Blood Vessels?

Example of the multimembrane spheroid structure (chitosan hydrogel), observed from a circumferential section, showing the separation of membranes in the structure. (Credit: Copyright Unité IMP/Laboratoire des matériaux polymères et des biomatériaux, Sébastien Ladet)

ScienceDaily (Apr. 1, 2008) — The production of complex, multicellular tissues such as skin or blood vessels can now be envisaged, thanks to the development of a bioreactor with a "decoy effect", by scientists in the "Ingénierie des matériaux polymères" Unit$_{(1)}$ (CNRS / University of Lyon 1/ University of Saint-Etienne / Insa Lyon). This novel, patented bioreactor enabling the culture and co-culture of cells of different types is a world first. The team's work was published in Nature on March 6, 2008.

Living materials can be considered as complex physical hydrogels.This means that they are mainly made up of a network of polymer chains imprisoning a very high proportion of water (80% of net weight, for example, in joint cartilage) and living cells which generate this polymer network. Furthermore, many living tissues comprise several layers of gels containing different cells, and the latter cannot move freely within a layer, and still less from one layer to another.

Using this observation as their starting point, a team in the "Ingénierie des matériaux polymères" Unit, IMP, (CNRS /University of Lyon $_1$/ University of Saint-Etienne/ Insa Lyon) has developed novel, physical, multi-membrane hydrogels that act as "decoys" for biological media. These biomaterials can adopt many different shapes (spheres, disks, tubes, etc.) and may have numerous biomedical applications. They could be used directly as implants, but also constitute new-generation bioreactors because of their multi-membrane structure.

Unlike those commonly used at present, these new materials enable the cultivation of different cell types in several inter-membrane spaces, so that the production of complex, multi-cellular and multilayer tissues – such as skin or blood vessels – can be envisaged. The "decoy" effect means that advantage can be drawn from the specific biological activity of hydrogels, as the membrane degradation process can be slowed down. Indeed, when membranes are only made up of the "bricks" present in mammalian tissues, cells in the latter recognize the entire biomaterial and produce enzymes to destroy it rapidly and prematurely.

This then leads to the inter-penetration of cells that were initially compartmentalized, which is detrimental to the construction of complex multilayer and multi-cellular tissues such as skin. However, if membranes are endowed with entities that are absent in mammals, their biodegradation will be markedly slower, thus enabling separation of the culture of cells of different types but not preventing their communication. This innovative bioreactor has recently been patented.

Collaboration with cell biology specialists(2) has already made it possible to prove the efficacy of these new bioreactors. Indeed, the biologists cultivated chondrocytes (cartilage cells) in several successive intermembrane spaces for eight months. The results were excellent: the chondrocytes proliferated without becoming transformed into fibroblasts(3) and produced a large quantity of tissue that was very similar to cartilage. The early results of studies on the co-culture of endothelial cells(4) and osteoprogenitor cells(5) have also been very promising, and it is likely that bone tissues could be generated in vitro. In any case, the cells or tissues thus formed remained clearly compartmentalized between the membranes. These bioreactors may therefore be able to respond to the increasing need for graft materials.

Notes :

1. A. Domard, L. David, S. Ladet. M.T. Corvol, laboratoire Pharmacologie, toxicologie et signalisation cellulaire (Université Paris 5 / Inserm) and L. Bordenave, laboratoire Biomatériaux et réparation tissulaire (Inserm / Université Bordeaux 2.).

3. Cells present in the dermis.

4. Endothelial cells cover the surfaces of all blood vessels. They are thus strategically positioned to influence blood flow and the development of new vessels.

5. Osteoprogenitor cells are cells that enable the generation of bone tissue.

Journal reference: Multi-membrane hydrogels, Sébastien Ladet, Laurent David, Alain Domard, Nature, March 6 2008.

Adapted from materials provided by Centre National De La Recherche Scientifique.

http://www.sciencedaily.com/releases/2008/03/080330213945.htm

Climate Change And Human Hunting Combine To Drive The Woolly Mammoth Extinct

Woolly mammoths were driven to extinction by climate change and human impacts. (Credit: Mauricio Anton)

ScienceDaily (Apr. 1, 2008) — Does the human species have mammoth blood on its hands? Scientists have long debated the relative importance of hunting by our ancestors and change in global climate in consigning the mammoth to the history books. A new paper uses climate models and fossil distribution to establish that the woolly mammoth went extinct primarily because of loss of habitat due to changes in temperature, while human hunting acted as the final straw.

It has been particularly difficult to untangle these two potential causes of extinction, as climate change and increased human hunting are linked. When the climate in mammoth territory started to become too warm for the furry beast, it allowed humans--who couldn't handle the lower, mammoth-friendly temperatures--to move into the area.

Therefore, the mammoth faced the heat and predation pressure from hunting in the same regions at approximately the same times, making it difficult to test the importance of the two factors independently. It had also been argued that, as the mammoth had survived many temperature fluctuations previous to those that coincided with its demise, it was only human hunting that was a substantially different condition that could have caused the extinction of the species.

Work by David Nogues-Bravo and colleagues has ended the debate, by using mathematical modelling to separate the two factors. They predicted climate and species distribution at different times in mammoth history--126,000, 42,000, 30,000, 21,000, and 6,000 years ago--considering temperature and rainfall simulations alongside the age and locations of fossils. The results show that the mammoth suffered a catastrophic loss of habitat, with the species 6,000 years ago relegated to 10% of the habitat available to it 42,000 years ago (when the glaciers were at their biggest).

In fact, things were much worse for the mammoth 126,000 years ago when globally high temperatures restricted its habitat even more than at 6,000 years ago. At both of these times, the climate-related habitat loss would have forced the species to the brink of extinction. The nail in the mammoth's coffin 6,000 years ago was that, during the later extinction crisis, the mammoth also faced evolutionarily modern

humans. Nogues-Bravo et al. estimate that, for an optimistic estimate of mammoth numbers 6000 years ago, humans would only have had to kill one mammoth each every three years to push the species to extinction. If they are pessimistic about mammoth-climate survival, that figure reaches one mammoth per human every 200 years.

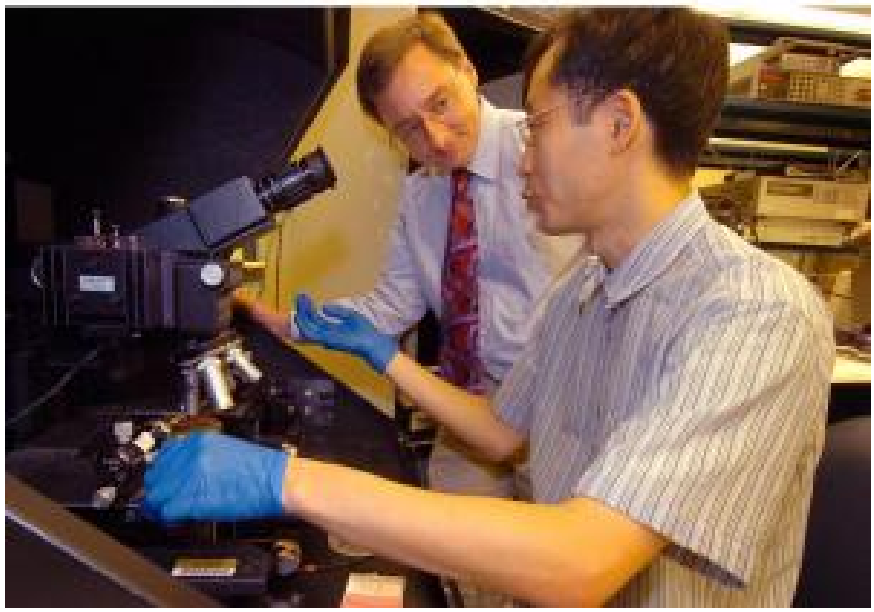
Thus, it seems that, in the case of the mammoth, it was the climate that forced the species to the point of extinction, and it was mankind that gave the woolly beast the last shove into oblivion.

Journal reference: Nogués-Bravo D, Rodríguez J, Hortal J, Batra P, Araújo MB (2008) Climate change, humans, and the extinction of the woolly mammoth. PLoS Biol 6(4): e79. doi:10. 1371/journal.pbio.0060079

Adapted from materials provided by PLoS Biology, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/03/080331223843.htm

Transparent Computer Monitors? Engineers Make First 'Active Matrix' Display Using Nanowires



Purdue postdoctoral research associate Sanghyun Ju, sitting, and professor David B. Janes work at a "micro-manipulation probe station" in research using nanotechnology to create transparent transistors and circuits. The innovation represents a step that promises a broad range of applications, from e-paper and flexible color screens for consumer electronics to "smart cards" and "heads-up" displays in auto windshields. The transistors are made of single "nanowires," or tiny cylindrical structures that were assembled on glass or thin films of flexible plastic. Some of the research is being conducted at Purdue's Birck Nanotechnology Center at the university's Discovery Park. (Credit: Purdue News Service photo/David Umberger)

ScienceDaily (Apr. 1, 2008) — Engineers have created the first "active matrix" display using a new class of transparent transistors and circuits, a step toward realizing applications such as e-paper, flexible color monitors and "heads-up" displays in car windshields.

The transistors are made of "nanowires," tiny cylindrical structures that are assembled on glass or thin films of flexible plastic. The researchers used nanowires as small as 20 nanometers - a thousand times thinner than a human hair - to create a display containing organic light emitting diodes, or OLEDS. The OLEDS are devices that rival the brightness of conventional pixels in flat-panel television sets, computer monitors and displays in consumer electronics.

"This is a step toward demonstrating the practical potential of nanowire transistors in displays and for other applications," said David Janes, a researcher at Purdue University's Birck Nanotechnology Center and a professor in the School of Electrical and Computer Engineering.

The nanowires were used to create a proof-of-concept active-matrix display similar to those in television sets and computer monitors. An active-matrix display is able to precisely direct the flow of electricity to produce video because each picture element, or pixel, possesses its own control circuitry.

Findings will be detailed in a research paper featured on the cover of the April issue of the journal Nano Letters. The paper was written by researchers at Purdue, Northwestern University and the University of Southern California.

"We've shown how to fabricate nanowire electronics at room temperature in a simple process that might be practical for commercial manufacturing," said Tobin J. Marks, the Vladimir N. Ipatieff Research

Professor in Chemistry in Northwestern's Weinberg College of Arts and Sciences and a professor of materials science and engineering.

OLEDS are now used in cell phones and MP3 displays and prototype television sets, but their production requires a complex process, and it is difficult to manufacture OLEDs that are small enough for high-resolution displays.

"Nanowire-transistor electronics could solve this problem," said Marks, who received a 2005 National Medal of Science. "We think our fabrication method is scalable, possibly providing a low-cost way to produce high-resolution displays for many applications."

Unlike conventional computer chips - called CMOS, for complementary metal oxide semiconductor chips - the nanowire thin-film transistors could be produced less expensively under low temperatures, making them ideal to incorporate into flexible plastics that would melt under high-temperature processing.

Conventional liquid crystal displays in flat-panel televisions and monitors are backlit by a white light, and each pixel acts as a filter that turns on and off to create images. OLEDS, however, emit light directly, eliminating the need to backlight the screen and making it possible to create more vivid displays that are thin and flexible.

The technology also could be used to create antennas that aim microwave and radio signals more precisely than current antennas. Such antennas might improve cell phone reception and make it more difficult to eavesdrop on military transmissions on the battlefield.

Electronic displays like television screens contain millions of pixels located at the intersections of rows and columns that crisscross each other. In the new findings, the researchers showed that they were able to selectively illuminate a specific row of active-matrix OLEDS in a display about the size of a fingernail.

"Displays in television sets are able to illuminate a particular pixel located, say, in the 10th row, fifth column," Janes said. "We aren't able to do that yet. We've shown that we can select a whole row at a time, not a single OLED, but we're getting close."

Future research is expected to include work to design displays that can control individual OLEDs to generate images, Janes said.

"A unique aspect of these displays is that they are transparent," he said. "Until the pixels are activated, the display area looks like lightly tinted glass."

The nanowire transistors are made of a transparent semiconductor called indium oxide, a potential replacement for silicon in future transparent circuits. The OLEDS consist of the transistors, electrodes made of a material called indium tin oxide and plastic capacitors that store electricity. All of the materials are transparent until activated to emit light.

"This could enable applications such as GPS navigational displays right on the windshield of your car," Janes said. "Imagine having a local map displayed on your windshield so that you didn't have to take your eyes off the road."

The new OLEDs have a brightness nearly comparable to that of the pixels in commercial flat-panel television sets. The OLEDS have an average brightness of more than 300 candelas per square meter, compared with 400-500 candelas per square meter for commercially available liquid-crystal display televisions.

"Even in this first demonstration, we are fairly close to the brightness you'd see in an LCD television," Janes said.

The researchers also demonstrated they could create OLEDS of the proper size for commercial displays, about 176 by 54 microns, or millionths of a meter. OLEDS that size would be ideal for small displays in cell phones, personal digital assistants and other portable electronics.

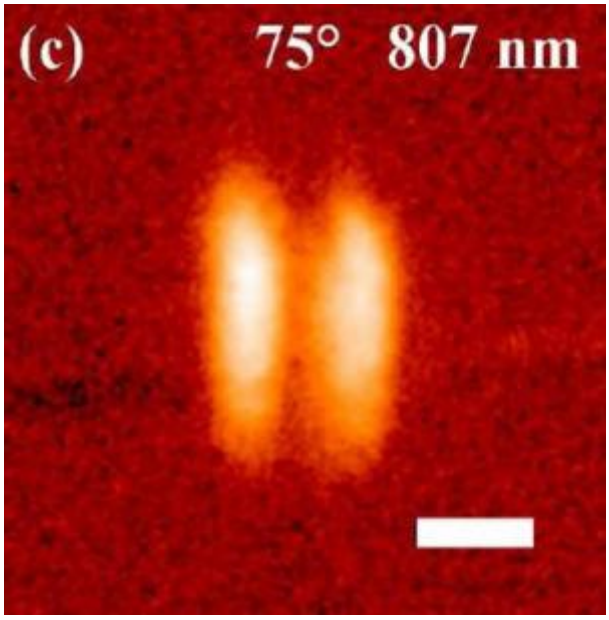
The research has been funded by NASA through the Institute for Nanoelectronics and Computing, based at Purdue's Discovery Park.

The Nano Letters paper was authored by Sanghyun Ju, a postdoctoral research associate in Purdue's School of Electrical and Computer Engineering; doctoral students Jianfeng Li and Jun Liu at Northwestern; doctoral students Po-Chiang Chen, Hsiaokang Chang and Fumiaki Ishikawa at the University of Southern California; graduate student Young-geun Ha at Northwestern; Chongwu Zhou, an associate professor of electrical engineering at USC; Antonio Facchetti, a research associate professor in the Department of Chemistry at Northwestern University; and Marks and Janes.

Adapted from materials provided by Purdue University.

http://www.sciencedaily.com/releases/2008/03/080331172507.htm

Nanoelectronics: Compression Of Light Directly Observed By Scientists



PEEM observation of the excitation of the plasmon mode of a 100 mm long rod by light at 807 nm. (Credit: CNRS)

ScienceDaily (Apr. 1, 2008) — A team of researchers from $CEA_{(1)}$ and the Université de Technologie de Troyes associated with $CNRS_{(2)}$ has observed, through a microscope, plasmons on the surface of conductors measuring 30 nanometers. The use of such plasmons, signals that are at the limit of electronics and optics, is becoming, on this scale, an important issue for the much sought-after miniaturization of electronic circuits.

This is the first time that images of such high resolution have been obtained for these phenomena, which have been studied for the last ten or so years. This observation is the subject of an article published in Nano Letterson 12 March 2008.

In electronics, there is continuing technological effort to produce smaller and smaller circuits capable of processing information at higher and higher frequencies. Although electronic devices are becoming both more compact and more complex (computer micro-processors), they are still limited to the usual frequencies of about a gigahertz. Optical frequencies are one million times higher (10^{15} Hz), but the spatial limits imposed by the wavelength of light (around one micron) prevent further miniaturization.

To reduce the wavelength further and, as it were, compress light, one solution consists in converting the light signal into a plasmon. The plasmon is a phenomenon that has all the characteristics of a light wave, except that it remains confined within the walls of a metal conductor. When the diameter of the metal object is reduced to 30 nm, the plasmon develops a mode known as “slow” (referred to as slow plasmon mode). However, this slow mode has the property of oscillating at the frequency of the light wave while possessing a wavelength well below that of light.

Researchers are interested in this slow plasmon mode because it is on this same scale, approaching 30 nm, that the limits of miniaturization in electronics will soon be set.

Although the principles were already known, they had not yet been experimentally observed. When a plasmon excited by light propagates along a conductor, different secondary effects appear, including the emission of electrons. The researchers therefore used a PEEM (Photo Emission Electron Microscopy) microscope to obtain these images.

The first figure shows the emission from a gold wire. The intensity modulations result from the interference between the slow plasmon and the excitation light wave.

The very high resolution image shows a slow plasmon excitation mode of a 100 nm long "rod" by light with a wavelength of 807 nm. The wavelength compared to the wavelength of light (between 250 and 300 nm) may here be compressed threefold.

By converting the information from an optical signal to a slow plasmon, it is therefore possible to envisage, for structures close to 30 nm, reconciling high optical frequencies with the "classical" dimensions of silicon electronics.

Notes :

1. CEA-Iramis : Institut rayonnement matière Saclay.
2. CNRS – Institut Charles Delaunay.

Adapted from materials provided by Centre National De La Recherche Scientifique.

http://www.sciencedaily.com/releases/2008/03/080330212029.htm

The Foundations of General Education

At one point during class Minerva San Juan stopped short. A student in the front row had successfully volunteered the link — and leap — between an assumption in an article and an inference drawn from it, and the professor wanted a second to savor, even celebrate, the occasion.

"That moment of abstraction is what they're not used to doing in high school at all," San Juan explains after class, Philosophy 103: Reasoning and Argumentation, in a hallway of the old, stately Main Hall at Trinity University, in Washington, D.C. The building dates to the college's opening in 1900 and its heritage through much of the 20th century as an elite Catholic women's college, a sister to Georgetown University across town. Under pressure to change after suffering intense enrollment declines in the 1970s and '80s wrought (in part) by expanded coeducation, today Trinity is an institution transformed, with its largest freshman class this fall since 1967 — and a very different class at that. Nearly half its students are D.C. residents, more than 85 percent are black and Hispanic, and 62 percent receive federal Pell Grants (a proxy for low-income status).

"Trinity has gone through this radical and exciting transformation and while I think our faculty have done an amazing job of developing pedagogies to reach out and be successful with this new student body, the curriculum hadn't kept pace," says Elizabeth Child, dean of Trinity's College of Arts and Sciences. This fall, the 631-student women's undergraduate college introduced a revamped general education curriculum, built on the bedrock of first-year classes emphasizing "foundational skills" — critical reading, written communication, oral communication, critical reasoning, and quantitative reasoning.

"I think it would be fair to say that the driving impetus behind our discussions and the way that we crafted this curriculum was that, for the student body that we serve, the student demographic that we serve, there are a lot of discussions about their deficiencies," Child says. So-called urban learners "tend to come from big urban public high schools where they've been educated in chaotic and unsatisfactory ways. They have lots of educational deficiencies. They know that; there's a lot of press about that, about the Washington, D.C. high school systems."

"What we wanted to do was craft a curriculum that speaks to and takes advantage of the amazing assets of these students. In particular, we wanted to recognize the resilience of our students and the persistence of our students, the kind of survival skills that they have learned in order to get to the point that they would even aspire to go to college" — while, at the same time, Child says, recognizing that many students come in unprepared for college-level work in some subjects.

"There were things which were implicit in the old curriculum which now we have simply made explicit. Instead of expecting our students to infer how you read critical theory by simply giving them examples and saying 'Read this, and come in and talk about this,' we're now much more explicit. 'Here's the

reading that you're going to need to be able to do. Here are some strategies for doing that reading successfully,' " says Child.

The new curriculum requires students to take classes in each of the five foundational areas, with an emphasis on delivering skills instruction through the disciplines. On a recent Wednesday in San Juan's philosophy class — which fulfills the critical reasoning requirement — San Juan, an associate professor, led students through an analysis of Baruch Brody's article on "Fetal Humanity and Brain Function," beginning with the article's purpose, the assumptions (and inferences!), information presented, etc., and ending with a set of questions about "How convincing is the article?"

"In [most other] classes, you read an article, you have to say what it's about, but you don't go into what is an argument," says Ana Schwartz, a freshman from the Maryland suburbs.

"Is it accurate, is it biased, in one way or another — the questions you should be asking but I don't think we ever thought about it in a formulaic way," adds Morgan Kellman, also a freshman from Maryland.

"You can use the formula basically for everything that you read," says Schwartz. "If I hadn't had this class, I probably would have been having a harder time."

The 'Urban Learner'

As students deconstruct and reconstruct articles and their arguments, faculty members at Trinity are doing the same for the term "urban learner," typically used in K-12 settings — evaluating the term's usefulness for college students, looking for biases and ultimately reframing it as a starting point for many of the conversations surrounding the new general education curriculum.

"We find the term a little limiting, quite frankly, but in the absence of anything else, we're using it as a springboard to craft a new agenda for higher ed," says Diane Forbes-Berthoud, the communication department chair. She and Carlota Ocampo, an associate professor of psychology and associate dean for the first-year experience at Trinity, are co-presenting a paper on their research of urban learners at the Caribbean Studies Association Conference in Colombia in May.

In their surveys of what faculty think about the term, "The responses are mixed," Forbes-Berthoud says. "Some people concur with the current definitions, which are persons who are at-risk, low-income.... Others have found it to be very limiting; some went so far to say racist. Some thought there was little difference between Trinity students and others."

"In many ways, we're challenging this discourse."

Data-Driven

An emphasis on developing the tools to build upon and challenge the dominant discourse is at the foundation of the new Trinity curriculum. "It's important that you look for inferences that do not seem to be well-founded in data," Saundra Oyewole, a professor of biology, tells students during her class on Critical Thinking About Disease. Between calculating body mass indexes (with one student ending up quite surprised and a bit disturbed to find out that using the index, her mother would be obese), Oyewole discusses the need to rigorously evaluate data and how it's presented, to examine the scale used on any graph, and to consider the sample size.

Data on the success of Trinity's curricular changes are only preliminary at this point. But faculty and administrators said they were pleased with what they describe as promising early results in critical reading and math — which, also new this fall, are taught at the lowest levels by specialists who offer extra lab sessions. Child, the dean of the college, cites data showing that among students who placed into the developmental math track this fall, those who completed the course with a C- or better scored an average of 17.1 on the post-test — significant because 17 is the benchmark for placement into college-level math. (Pass rates in two developmental math courses were 65 and 45 percent, respectively.)

And, in reading, where half the 45 students placed in a developmental course passed and half didn't, about 90 percent showed gains on their post-test scores, and half of those students improved their scores by more than 50 percent, Child says.

In terms of other support services, the Academic Services Center has moved from a somewhat "tucked away" corner of Main Hall's third floor known, tellingly, as "the maze," to an airy, open space in the library where stacks of periodicals used to live. Staff report increases in foot traffic — with use of the Writing Center up 200 to 300 percent this year.

The university is also in the midst of evaluating the cost of the curricular changes through a Lumina Foundation-funded project. "On a national level," says Cristina Parsons, an associate professor of economics and formerly an associate dean, "the conversation regarding better access for all students has really revolved around the explicit cost to the student of an education" ($18,250 in tuition at Trinity this year, with an average discount rate of 40 percent). "We want to have more universal access to higher education, so we've pretty much focused on how to best fund that education for students with modest means. But the other side of that question is these programs are staggeringly expensive to deliver."

At the same time, faculty describe the new curriculum as just the most recent, and logical, step in the institution's evolution. "A lot of this is not rocket science. It's just that we never did it before," says Ocampo, the associate dean for the first-year experience.

"What the founder of this place said," San Juan added, "is 'teach them what they need to know.' "

— Elizabeth Redden

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

What Is a Composition and Rhetoric Doctorate?

The discussion of graduate programs in composition and rhetoric was proceeding with a fair amount of politeness, with professors talking about their search for well rounded scholars, versed in the theory of rhetoric and the practicalities of managing writing programs.

But a graduate student forced the discussion to get more pointed. “I find it interesting that you are all talking about how you want a wide ranging person,” said that graduate student, who is early in his program. “What I find is that I’m being pressured, encouraged to get really specific now” in the program, picking either rhetoric or composition as a clear focus, he said. “You’ve got to pick,” is the way he phrased the pestering he’s receiving from faculty members. He described himself as “floored” by the contrast between what he’s hearing in his department and the way the discussion was proceeding at the annual meeting of the Conference of College Composition and Communication, in New Orleans.

The graduate student’s comments seemed to liberate participants in the group discussion to acknowledge that the field of composition and rhetoric is frequently faced with demands “to pick” — to identify more with one part or another. This turns up particularly in doctoral programs, where there is enough of a critical mass to focus on serious theory, but where many of the new Ph.D.’s will be getting jobs focused very much on teaching undergraduate writing. If anything, the tensions over definition could be increasing, as programs increasingly seek to name themselves in different ways.

Stuart C. Brown, a professor of English at New Mexico State University, kicked off the discussion by presenting preliminary information about a survey he recently conducted about the doctoral programs, the third survey he has conducted since 1993. Results came in from 67 programs, the vast majority of those that exist, and they enroll about 1,200 students in all — suggesting that the number of programs and total doctoral enrollments in them is relatively stable. At the same time, there are signs of changes in the field, he said.

First, the stability he noted may not last. While the job market has remained strong for new doctorates in the programs, Brown said that wasn’t a sure thing to last — especially with an economic downturn having an impact at many public universities. There are already signs, he said, that some programs may not be viable over the long run. While there are about 10 programs with 60 or more students each, he said, there are 14 that don’t have even 10 students each in their programs.

Women are increasingly doing the teaching in the programs, he said. Male faculty members were the healthy majority in the 1993 survey and the numbers were relatively equal seven years later. Now, female faculty outnumber male faculty 264 to 224.

Another shift that Brown noted was in the names (and presumed emphasis) of the programs. Some composition and rhetoric programs are parts of English departments and others are free standing. But names now include “rhetoric in professional communications,” “Ph.D. in English with professional writing in new media,” “English composition and rhetoric,” and many programs that have added “new media” or “digital” to their names. The proliferation of names, he said, is a challenge in terms of the field establishing more visibility in the graduate education world.

Audience members described a variety of feelings about the various parts of the field. Several said that the more theoretical rhetoric part of the field tends to appeal more to literature professors and builds ties to English departments. But Brown noted a flip side to such ties. Some of the graduates of his doctoral program end up at community colleges, he said, and he worries that the program doesn’t do enough to train them for such work. “Do we in doctoral programs know enough about what’s involved?” he said.

While plenty of people in the audience — a mix of graduate faculty and graduate students — pledged their mutual commitment to combining the various emphases, the difficulty of doing so was prevalent in the questions from those looking at the job market.

For example, one trend discussed was the “professionalization” of positions as writing program administrators. Many doctoral students are studying these jobs and their work for dissertations and putting themselves on a track to work there. Others focus on writing programs for freshmen — similarly doing coursework and dissertations on the topic. But one person in the audience reported that even

though there were job possibilities in managing writing programs, her professors strongly discouraged her from taking those jobs, seeing them as less research oriented as other positions.

Another person in the audience said she had worked for many years teaching writing to freshmen and liked it, but was afraid of getting labeled as someone who could only do such work. “You can get stuck in one area,” she said.

— Scott Jaschik

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

Global temperatures 'to decrease'

By Roger Harrabin
BBC News environment analyst

Global temperatures will drop slightly this year as a result of the cooling effect of the La Nina current in the Pacific, UN meteorologists have said.

The World Meteorological Organization's secretary-general, Michel Jarraud, told the BBC it was likely that La Nina would continue into the summer.

This would mean global temperatures have not risen since 1998, prompting some to question climate change theory.

But experts say we are still clearly in a long-term warming trend - and they forecast a new record high temperature within five years.

The WMO points out that the decade from 1998 to 2007 was the warmest on record. Since the beginning of the 20th Century, the global average surface temperature has risen by 0.74C.

While Nasa, the US space agency, cites 2005 as the warmest year, the UK's Hadley Centre lists it as second to 1998.

Researchers say the uncertainty in the observed value for any particular year is larger than these small temperature differences. What matters, they say, is the long-term upward trend.

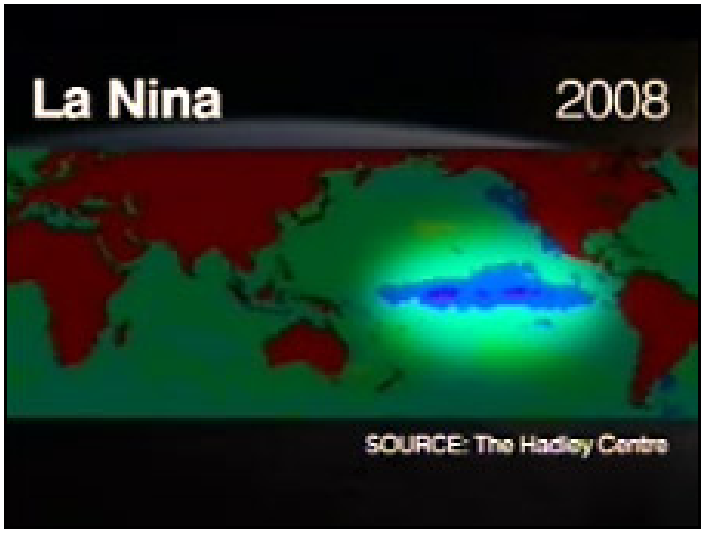
Rises 'stalled'

LA NINA KEY FACTS
La Nina translates from the Spanish as "The Child Girl"
Refers to the extensive cooling of the central and eastern Pacific
Increased sea temperatures on the western side of the Pacific mean the atmosphere has more energy and frequency of heavy rain and thunderstorms is increased
Typically lasts for up to 12 months and generally less damaging event than the stronger El Nino

La Nina and El Nino are two great natural Pacific currents whose effects are so huge they resonate round the world.

El Nino warms the planet when it happens; La Nina cools it. This year, the Pacific is in the grip of a powerful La Nina.

It has contributed to torrential rains in Australia and to some of the coldest temperatures in memory in snow-bound parts of China. Mr Jarraud told the BBC that the effect was likely to continue into the summer, depressing temperatures globally by a fraction of a degree.



This would mean that temperatures have not risen globally since 1998 when El Nino warmed the world.

Watching trends

A minority of scientists question whether this means global warming has peaked and argue the Earth has proved more resilient to greenhouse gases than predicted. But Mr Jarraud insisted this was not the case and noted that 2008 temperatures would still be well above average for the century.

"When you look at climate change you should not look at any particular year," he said. "You should look at trends over a pretty long period and the trend of temperature globally is still very much indicative of warming. "La Nina is part of what we call 'variability'. There has always been and there will always be cooler and warmer years, but what is important for climate change is that the trend is up; the climate on average is warming even if there is a temporary cooling because of La Nina."

China suffered from heavy snow in January

Adam Scaife, lead scientist for Modelling Climate Variability at the Hadley Centre in Exeter, UK, said their best estimate for 2008 was about 0.4C above the 1961-1990 average, and higher than this if you compared it with further back in the 20th Century. Mr Scaife told the BBC: "What's happened now is that La Nina has come along and depressed temperatures slightly but these changes are very small compared to the long-term climate change signal, and in a few years time we are confident that the current record temperature of 1998 will be beaten when the La Nina has ended."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7329799.stm

Published: 2008/04/04 00:42:26 GMT

Faeces hint at first Americans

Fossilised faeces found in a US cave may help solve the riddle of when and how humans came to the Americas.

The samples date back just over 14,000 years, before the time of the Clovis culture.

Clovis people dominated North and Central America around 13,000 years ago, and whether any groups came before them has been controversial.

In the journal Science, the researchers describe how their conclusion hinged on modern genetic analysis.

The 14 faecal fragments were discovered in caves near a lake in the north-western US state of Oregon, among other signs of ancient human occupation.

> **The first humans either had to walk or sail along the American west coast to get around the ice cap**
> Eske Willerslev
> Copenhagen University

These included threads made from animal sinew and plant fibre, baskets, animal hides and wooden pegs.

The presence of these artefacts at various depths in the cave floor indicated it was populated for extensive periods - but by whom?

"We found a little pit in the bottom of a cave," related Dennis Jenkins from the University of Oregon, whose team excavated the Paisley Caves in 2002 and 2003.

"It was full of camel, horse and mountain sheep bones, and in there we found a human coprolite."

'Convincing evidence'

This and 13 other coprolites - fossilised faeces - proved the star attraction, because they contained tiny quantities of human mitochondrial DNA - genetic material found outside the nuclei of cells which is passed down from each mother to her children.

Several kinds of genetic analysis performed at several different laboratories confirmed that the DNA was human, and suggested the ancient cave residents were closely related to ethnic groups indigenous to Siberia and East Asia.

This adds to other strands of evidence suggesting that the Americas were settled from Siberia - and the age of the samples indicates the migration happened before the emergence of the Clovis culture with its distinctive fluted stone blades.

"If this doesn't convince what's left of the 'Clovis first' people, it should," University of California scholar David Smith, who was not involved in the study, told Science journal.

In an era when the north of the Americas were heavily glaciated, the question then is: how did the pre-Clovis people make the journey?

"The first humans either had to walk or sail along the American west coast to get around the ice cap," contended Eske Willerslev, director of the Centre for Ancient Genetics at Copenhagen University, who led the DNA work on the new study.

"That is, unless they arrived so long before the last ice age that the land passage wasn't yet blocked by ice."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7329505.stm

Published: 2008/04/03 19:22:15 GMT

Art With Baggage in Tow

By ROBERTA SMITH

Who knew that the first Louis Vuitton boutique in Brooklyn would touch down smack in the middle of an exhibition in one of the borough's most venerable art institutions?

But there it is, at the Brooklyn Museum, bright and gleaming and blending seamlessly with its setting: a sleek, stylish and sometimes silly survey of the work of Takashi Murakami. Mr. Murakami, who is frequently called the Japanese Andy Warhol, is an astute manipulator of visual languages, artistic mediums and business models. The boutique will sell Vuitton bags, wallets and other accessories dotted with the signature Murakami jellyfish eyes, red cherries or pink cherry blossoms for the duration of the exhibition.

Guardians of museum purity were outraged by the Murakami-Vuitton boutique when the show made its debut last fall at the Museum of Contemporary Art in Los Angeles, where it was organized by Paul Schimmel, that museum's chief curator. The shop has been criticized for blurring the already fuzzed line between seemingly functional and nonfunctional luxury goods (i.e., art).

But actually it's an ingenious key to the Pandora's box of Mr. Murakami's art and stuffed with questions of art and commerce, high and low, public brand and private expression, mass production and exquisite craft. None of these, it turns out, are ever mutually exclusive. Fuzzing is the point. (And by the way, those who attack a store in an art exhibition might better protest the recent and quite awful redesigns of several of the Brooklyn Museum's permanent collection galleries.) The Vuitton shop is also one of the visual high points of this show, which has definite ups and downs. The bags, their shiny brass fittings and the impeccable white-enamel display cases achieve an intensity of artifice, tactility and visual buzz that Mr. Murakami's higher art efforts don't always muster.

Raised by parents who drummed Western art into him, Mr. Murakami studied traditional nihonga painting, and attempted a career in animation, before deciding to become a contemporary artist. Since emerging in the 1990s Mr. Murakami has often been seen as out-Warholing Warhol by giving back to popular culture, as well as borrowing from it and by excelling at branding. Not for nothing is this show titled "©Murakami."

But the more interesting comparison may be with hands-on artist-designers like Louis Comfort Tiffany or William Morris. After all, Mr. Murakami oversees a company, Kaikai Kiki (kaikaikiki means something both elegant and bizarre), that produces his art and its spinoffs. By now it employs around 100 artists, animators, writers and artisans and has an office in Tokyo, two studios in Tokyo suburbs and one in Long Island City, Queens. And of course he belongs to a long tradition of Japanese artists who lavished equal artistry on painted screens, ceramics, calligraphy or lacquerware boxes — which were in some ways the Vuitton bags of their time.

Mr. Murakami siphons motifs from Disney and Dalí, strategies from Pop Art, and sexual fantasies from Japan's anime (animation) and manga (comics) subcultures. His cast of variously cute, erotic or grotesque creatures and intense decorative pilings-on range across paintings, sculptures, animations and wallpaper, building at times to a hallucinatory intensity that has more than a touch of darkness.

One example is the riot of manically cheerful flowers created by the combination of wallpaper, paintings and one sculpture in a large gallery. The blooms look like petal-ringed smiley faces, only better — and crazier. The ensemble fulfills almost too completely Mr. Murakami's stated desire to make art "that makes your mind go blank, that leaves you gaping."

At the opposite pole of such relentless innocence are two life-size but hardly lifelike sculptures of anime-manga

derivation: “Hiropon,” a busty woman, and “My Lonesome Cowboy,” her well-endowed male consort. Both are mostly naked, with streams of bodily fluids spewing from various body parts. Like Mr. Murakami’s paintings of mushroom-cloud skulls, these renditions of Eve and Adam have been interpreted as comments on a collective Japanese psyche traumatized and infantilized by World War II, the dropping of the atom bombs and the lengthy American occupation. Whatever. They are sensationally sexy and sexist at the same time.

Most of Mr. Murakami’s creatures recur in an array of toys, T-shirts, pins and decals fabricated at Kaikai Kiki. Many of these are on display (but not for sale) one floor below the Vuitton boutique. The connecting staircase, covered with skulls-and-camouflage wall paper overlaid with big mushroom-cloud skulls, provides a “vanitas” moment to reflect on mortality. But there’s still time for worldly possessions: Nearly all the Kaikai Kiki items are on sale in the gift shop.

This show begins with work dating from 1991, but it doesn’t gain traction until the late 1990s. It defines Mr. Murakami, now 46, as a late-blooming talent with a steep learning curve. Interestingly, most of his best works were made after 2001, the year he started working with Vuitton.

The exhibition’s spine is formed by the demonic mutations of the artist’s signatory and most ubiquitous character, Mr. DOB, the Mickey Mouse derivative that is something of a self-portrait. (The name is a condensed version of the Japanese for “why?” — the eternal existential question.) Splitting, multiplying, flashing jagged teeth and shapeshifting almost beyond recognition, Mr. DOB appears here as an enormous inflatable, a sculpture menaced by colorful mushrooms, on flagstonelike floor covering and in way too many slick, brittle paintings. Luckily other experiences like the flower room and the Vuitton boutique balance things out.

One is the enchanting 23-foot-tall “Tongari-kun” (or “Mr. Pointy”), a space-alien, 18-armed Buddha on a lotus throne surrounded by four guardians that dominates the museum’s lobby. Its sinuous designs and rich colors evoke a fusion of Surrealism, Art Nouveau and Japanese kimonos. The label counters by pointing out that the palette and symbols are inspired by Maya art and Tibetan Buddhist imagery.

Even more spellbinding is a new animation dreamed up by Mr. Murakami and his Kaikai Kiki cohort (the credits take several minutes). “Planting the Seeds,” an instant classic, stars Kaikai and Kiki, two spirit guides in footy pajamas who are probably descended from Mr. DOB. They travel the world in a living spacecraft that gives new meaning to the term “mother ship.” Extraordinarily beautiful, with a deeply Japanese respect for nature, the tale suggests that there is no such thing as waste through a hilarious emphasis on manure — or as the three-eyed Kiki squeaks at the top of his/her tiny lungs, “Poop??!!”

And, finally, in the last two galleries of the exhibition, Mr. Murakami's painting explodes with a new complexity of color and meaning, matching the intensity of the flower room, but without the mind-blanking repetition. The combination of scale, rich detail and brilliant color and compositional and narrative drama is riveting. In "Tan Tan Bo" (2001) Mr. DOB is reincarnated in a kaleidoscope of color whose mixture of geometric and biomorphic forms is a kind of comic summation of modernist abstraction. "Tan Tan Bo Puking" (2002) is a Daliesque apocalypse: Mr. DOB in his death throes with globs of brilliant color spilling from his jagged teeth, and strange protrusions, at once foul and gorgeous, erupting all over his enormous head. One culminates in a golden hand that meets another hand in a flash of light. And in the lower right, the Kiki stands among four Shinto staffs dangling with sacred paper that signal the soul crossing to the afterlife. In the show's final four paintings, all from the last two years, different Japanese art forms, materials and styles create a great contrapuntal energy. In "727-727," Mr. DOB's snarling head bounces on an elegant unfurling wave, against layers of sanded colors that encompass the entire spectrum, and evoke ancient screens and Warhol's Oxidation paintings as well as atomic radiation.

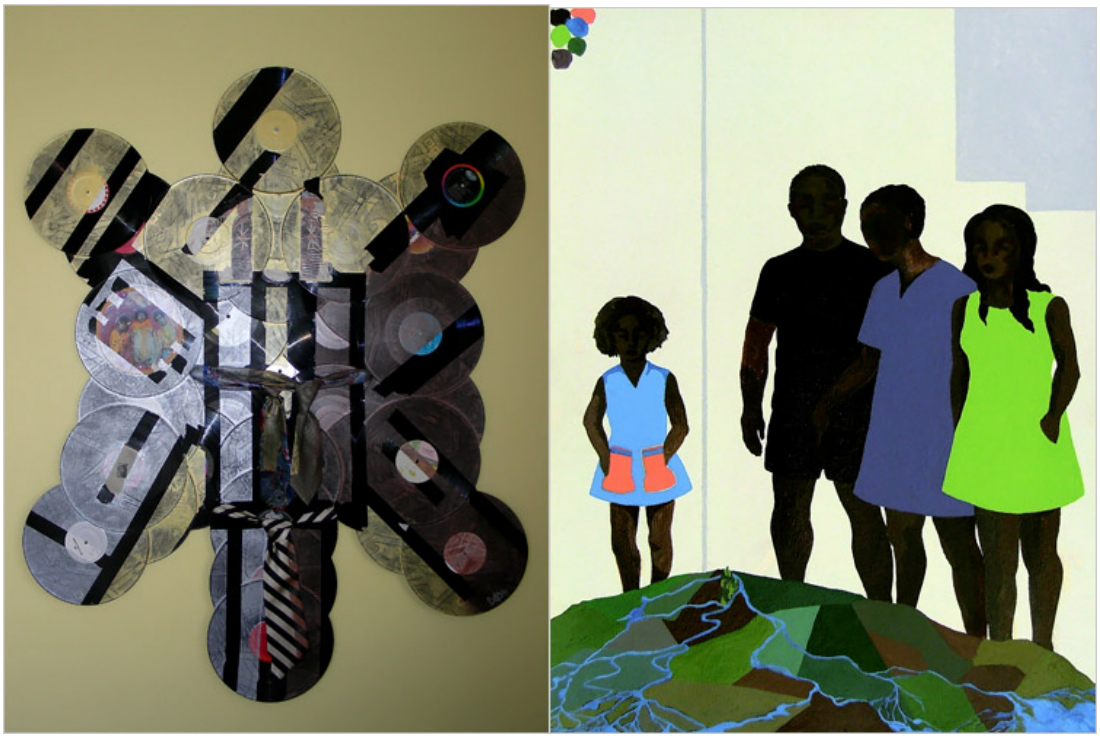
Two large portraits of Daruma, the revered sixth-century Indian monk who introduced Zen Buddhism to China, mimic the calligraphic flair of ink painting (writ very large) but on surfaces of gold, silver and titanium leaf customary for screen painting. The fourth painting introduces a new character, Chibi Kinoko, or Little Mushroom, a wan creature with some of the strangeness of the mushroom-cloud skull and seen against a shiny hard surface of pale green squares that suggest both digitalization and lacquer. One leaves this show feeling that Mr. Murakami has found a new benign Pandora's box: the richness of traditional Japanese art.

"©Murakami" is at the Brooklyn Museum through July 13; 200 Eastern Parkway, Brooklyn, (718) 638-5000.

http://www.nytimes.com/2008/04/04/arts/design/04mura.html?_r=1&th&emc=th&oref=slogin

Out of Africa, Whatever Africa May Be

By HOLLAND COTTER



Afropolitanism is the modish tag for new work made by young African artists both in and outside Africa. What unites the artists is a shared view of Africa, less as a place than as a concept; a cultural force, one that runs through the world the way a gulf stream runs through an ocean: part of the whole, but with its own tides and temperatures.

This idea, or something like it, lies behind “Flow” at the Studio Museum in Harlem, a fine-textured survey of 20 artists who, with a few exceptions, were born in Africa after 1970 but who now live in Europe or the United States.

Before the 1980s contemporary African artists had virtually no presence in the mainstream Euro-American art world. And on the rare occasions they were admitted to its precincts, they were required to show clear evidence of Africanness — Africanness as gauged by Western standards, that is — in their work, like a visa prominently displayed.

Multiculturalism, whatever its deficiencies, began to change this situation. It exposed art-world apartheid for what it was and forced open some long-locked gates. Not only did artists once excluded by color and class gain entry, they were also granted certain options as to how they might appear there. They could wrap themselves in evidence of their origins, or wear that evidence lightly, or not at all, the first option being preferred by the market.

The artists in “Flow” choose among these options, which means the show has no essential look, though there are broad patches of formal common ground. A lot of what’s here is based on an aesthetic of assemblage and fragmentation, the piecing together or taking apart of materials and ideas, including art-historical precedents.

Latifa Echakhch, born in Morocco and now living in France and Switzerland, has created her own version of Richard Serra's "Splash" pieces from the 1960s. Rather than throw molten lead against a wall as Mr. Serra did, she throws Moroccan tea glasses. Their smashed remains lie on a gallery floor like the aftermath of an explosion. The piece neatly pinpoints the aggression of the original, an aggression with many metaphorical and political ramifications. But is Ms. Echakhch's work topical? Polemical? Whimsical? Personal? It shifts from one to the other of these possibilities, which is, generally speaking, the "Flow" dynamic.

A second North African, Adel Abdessemed, Algerian by birth and now living in Paris, starts with many fragments and builds something from them. In this case the result is a toy-size model of the luxury liner Queen Mary II pieced together from cut-up bits of commercial packaging for olives and pepper, products exported from a continent that helped produce the immense wealth the ship represents.

Modou Dieng, a Senegalese artist now in the United States, evokes the exhilaration and misplaced optimism of 1960s Africa in his trio of wall ensembles made from secondhand vinyl records adorned with neckties and glitter. The names on the record labels range from Nat King Cole to Jimi Hendrix to Mos Def, suggesting that the high cultural moment, which also saw the ballooning of a market economy, extends into the present.

It does. It's there in the photographs of Nontsikelelo Veleko, known as Lolo, of fiercely chic young Johannesburgians, and in the heroically scaled portraits, culled from fashion magazines but resembling passport photos and mug shots, by Mustafa Maluka, a fine painter who was also one of the creators of africanhiphop.com, a music Web site and pop-cultural gold mine now a decade old.

The evidence of material richness continues where crafts traditions and modernist abstraction meet: in moss-green yarn reliefs by the Ethiopian artist Elias Sime; in Nicholas Hlobo's suturelike stitched pieces based on Zulu needlework; and in enigmatic collages by Moshekwa Langa, one of several artists in the show who were also in "Africa Remix," the grand contemporary survey in 2005 that never made it from Europe to the United States.

A few artists revisit and revise primitivist myths of Africa. Thierry Fontaine does this in photographs of his own body transformed by layers of natural materials — clay, sand, grass — into a series of freakish sculptures. So does Joël Andrianomearisoa in a video called "The Stranger" (2007), in which a naked man evolves from prowling the forest to settling down in a nice, neat house. It's worth noting that the "native" in this civilizing process appears to be white.

The show, organized by Christine Y. Kim, associate curator at the Studio Museum, has a fair amount of video. A short piece called "Back to Me 1" by the South African artist Thando Mama gives a sense of what it's like to be plugged into the world when the world isn't plugged into you. A young man (the artist) sits transfixed in front of a television that is broadcasting inaccurate accounts from abroad of the Africa he knows.

Grace Ndiritu, born in London of African parents, and Michèle Magema, from Congo and now living in Paris, both address liabilities of Afropolitanism, past and present. In a striking film called “Au Bord de la Loire,” one of a small number of pieces in the show to address race directly, Ms. Magema reminds us that a few centuries ago her relationship to France might have been as a West Indies slave. Ms. Ndiritu acknowledges her conflicted connection to Africa now: despite her heritage, she’s a tourist there.

For tourists and transplants, can any place be real? Ananias Léki Dago, born in Ivory Coast, photographs the slums of Paris as if through the haze of dreams. Mounir Fatmi turns the immigrant’s life into an obstacle course of bright-colored horse-jumping poles. In a mural by Dawit L. Petros views of Tanzania, California and Canada — all places where the artist has lived — merge. Monrovia, the strife-wracked capital of Liberia, becomes the heavenly city in Trokon Nagbe’s gilded painting of it. And in studio photographs by Otobong Nkanga, Africa’s grand landscape is reduced to a tabletop diorama, a Lilliputian thing.

So Africa is unreal. Or maybe it’s super-real: a place, or state, where present and future coexist. Ms. Veleko’s street dandies look futuristic enough. So do Olalekan B. Jeyifous’s marvelous architectural models, like materializations of cyberspace; and the imaginary faces, half human, half something else, that peer out of darkness in Lynette Yiadom-Boakye’s fictional portraits.

Some of the eight portraits in the show are more interesting than others. Some are almost too dark to see; put them in an art fair and they’d vanish in the visual noise. Yet as a group they work; they wrap you in a substantial if elusive sensibility. To some degree the same can be said of “Flow.”

Whether, or how, that sensibility can be defined as “African” is a question. There is no single Africa, and the continent’s multiple elements change all the time, art included. No wonder artists are resisting the idea of Africanness as a fixed identity, or are trying to tailor it to something they can pick up or lay aside at will, and layer under and over other identities.

At the same time they understand, it would seem, that their choices have weight. Postcolonial African art, wherever it is produced, is all but inseparable from politics. In Africa art has always played a social role, assumed moral status, a status that even physical distance — almost none of the work in “Flow” has been shown in Africa — can’t erase.

And so Afropolitanism, young and cool, comes with responsibilities. Maybe it is the awareness of this that gives a light-touch show heft and focus, a sense of thereness, geography-free but concrete, without which flow becomes drift.

"Flow" continues through June 29 at the Studio Museum in Harlem, 144 West 125th Street; (212) 864-4500, studiomuseum.org.

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

Wonder Bread and Curry: Mingling Cultures, Conflicted Hearts

By MICHIKO KAKUTANI

UNACCUSTOMED EARTH

By Jhumpa Lahiri

333 pages. Alfred A. Knopf. $25.

Jhumpa Lahiri's characters tend to be immigrants from India and their American-reared children, exiles who straddle two countries, two cultures, and belong to neither: too used to freedom to accept the rituals and conventions of home, and yet too steeped in tradition to embrace American mores fully. These Indian-born parents want the American Dream for their children — name-brand schools, a prestigious job, a roomy house in the suburbs — but they are cautious about the pitfalls of life in this alien land, and isolated by their difficulties with language and customs. Their children too are often emotional outsiders: having grown up translating the mysteries of the United States for their relatives, they are fluent navigators of both Bengali and American culture but completely at home in neither; they always experience themselves as standing slightly apart, given more to melancholy observation than wholehearted participation.

As she did in her Pulitzer Prize-winning collection of stories "Interpreter of Maladies" (1999) and her dazzling 2003 novel "The Namesake," Ms. Lahiri writes about these people in "Unaccustomed Earth" with an intimate knowledge of their conflicted hearts, using her lapidary eye for detail to conjure their daily lives with extraordinary precision: the faint taste of coconut in the Nice cookies that a man associates with his dead wife; the Wonder Bread sandwiches, tinted green with curry, that a Bengali mother makes for her embarrassed daughter to take to school. A Chekhovian sense of loss blows through these new stories: a reminder of Ms. Lahiri's appreciation of the wages of time and mortality and her understanding too of the missed connections that plague her husbands and wives, parents and children, lovers and friends.

Many of the characters in these stories seem to be in relationships that are filled with silences and black holes. In some cases this is the result of an arranged marriage that's never worked out; in others it is simply a case of people failing to communicate or failing to reach out, in time, for what they want.

In "Only Goodness" Sudha, who is working on her second master's degree at the London School of Economics, wonders at the bizarre "lack of emotion" in her parents' marriage, which was "neither happy nor unhappy" and seemingly devoid of both bitterness and ardor, but she finds her own marriage to an Englishman foundering upon her failure to tell him a family secret. In "Hell-Heaven" the narrator recounts the story of her parents' chilly marriage and her mother's passionate, unrequited love for a fellow Bengali and family friend, who gave her mother "the only pure happiness she ever felt." And in "A Choice of Accommodations" Amit realizes that the "most profound thing" in his life — the birth of his daughters — has already happened, that the rest of his life will be only "a continuation of the things" he

already knows. Increasingly he will come to regard solitude — a run in the park, a ride by himself on the subway — as "what one relished most, the only thing that, even in fleeting, diminished doses, kept one sane."

As for Ruma, the heroine of the title story, she realizes during a visit from her widowed father that they rarely talk about matters of real importance; they do not speak about her mother or her brother, they do not discuss her pregnancy or her marriage, or her father's new relationship with a woman he met on vacation. This has been their history as long as she can remember: "Somehow, she feared that any difference of opinion would chip away at the already frail bond that existed between them." Her marriage, Ruma realizes, is stilted too: she is increasingly aware that she and her husband, Adam, are "separate people leading separate lives," and that part of her is actually relieved when Adam leaves on one of his many business trips.

Like many children of immigrants Ms. Lahiri's characters are acutely aware of their parents' expectations; that they get into an Ivy League school, go to med school or grad school, marry someone from a good Bengali family. Deftly explicating the emotional arithmetic of her characters' families, Ms. Lahiri shows how some of these children learn to sidestep, even defy their parents' wishes. But she also shows how haunted they remain by the burden of their families' dreams and their awareness of their role in the generational process of Americanization.

Their parents often seem so exhausted just coping with the difficulties of surviving in a strange new world that talk about self-fulfillment or depression or happiness seems utterly irrelevant to them; they are strangely pragmatic and unsentimental — about their marriages, their work, the hardships of daily life. These characters' American-born children are, at once, more romantic about the possibilities of finding genuine love and rewarding careers and more cynical too about the trajectories of most people's lives. Often cast in the role of facilitator or fixer, they are accustomed to serving as their parents' go-betweens and to easing their younger siblings' way into full-fledged American lives.

Sudha, for instance, scavenged yard sales for the right toys for her little brother — "the Fisher Price barn, Tonka trucks, the Speak and Say that made animal sounds"; she read him books like "The Tale of Peter Rabbit" and "Frog and Toad," and "told her parents to set up sprinklers on the lawn for him to run through in the summer."

The last three overlapping tales in this volume tell a single story about a Bengali-American girl and a Bengali-American boy, whose crisscrossing lives make up a poignant ballad of love and loss and death. Hema and Kaushik get to know each other as teenagers, when Kaushik's family comes to stay with Hema's parents while they house-hunt in the Boston suburbs. Hema secretly nurses a crush on Kaushik, but he is oblivious to her schoolgirl antics and preoccupied with his mother's deteriorating health. His grief over her death and his rage at his father's hasty remarriage will propel him into a career as a photojournalist, who spends most of his time traveling to war zones in distant parts of the globe.

Hema, meanwhile, becomes a professor, a Latin scholar, who after a long, unhappy love affair impulsively decides to opt for a traditional arranged marriage; though she is conscious of the "deadness" of this proposed partnership, she tries to convince herself that the relationship will endow her life with a sense of certainty and direction. Then, against all odds, Hema and Kaushik run into each other in Rome — on the eve of Hema's departure for her wedding — and embark on an intense, passionate affair. And yet it is an affair that concludes not with a fairy-tale happy ending but with an operatic denouement that speaks of missed opportunities and avoidable grief.

In the hands of a less talented writer it's an ending that might have seemed melodramatic or contrived, but as rendered by Ms. Lahiri it possesses the elegiac and haunting power of tragedy — a testament to her emotional wisdom and consummate artistry as a writer.

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

Is DNA Repair A Substitute For Sex?

Philodina roseola, a type of rotifer. Rotifers seem to get along just fine without sex. (Credit: Image courtesy of Marine Biological Laboratory)

ScienceDaily (Apr. 4, 2008) — Birds and bees may do it, but the microscopic animals called bdelloid rotifers seem to get along just fine without sex, thank you. What's more, they have done so over millions of years of evolution, resulting in at least 370 species. These hardy creatures somehow escape the usual drawback of asexuality – extinction – and the MBL's David Mark Welch, Matthew Meselson, and their colleagues are finding out how.

In two related papers published recently in Proceedings of the National Academy of Sciences (PNAS), the team proposes an interesting hypothesis: Bdelloid rotifers have been able to give up sex and survive because they have evolved an extraordinary efficient mechanism for repairing harmful mutations to their DNA.

"We think, in the bdelloid rotifer, genomic changes together with environmental changes have conspired to create something that is able to exist in the absence of sex," says Mark Welch, an assistant scientist in the MBL's Josephine Bay Paul Center.

Their results have medical implications, because DNA repair capacity is an important factor in cancer, inflammation, aging, and other human conditions.

In animals that do have sex, DNA repair is accomplished during meiosis, when chromosomes pair up (one from the father, one from the mother) and "fit" genes on one chromosome can serve as templates to repair damaged genes on the other chromosome. The bdelloid, though, always seems to reproduce asexually, by making a clone of itself. How then, does it cope with deleterious mutations?

In the first PNAS paper, MBL adjunct scientist Matthew Meselson and Eugene Gladyshev, both of Harvard University, demonstrate the enormous DNA repair capacity of bdelloid rotifers by zapping them with ionizing radiation (gamma rays), which has the effect of shattering its DNA into many pieces. "We kept exposing them to more and more radiation, and they didn't die and they didn't die and they didn't die," says Mark Welch. Even at five times the levels of radiation that all other animals are known to endure, the bdelloids were able to continue reproducing.

"Because there is no source of such intense ionizing radiation on Earth, except if we make it, there is no way these organisms could have evolved to be radiation resistant," says Mark Welch. Instead, they propose that bdelloids' DNA repair capacity evolved due to a different environmental adaptation – tolerance of extreme dryness.

Bdelloids, which live in ephemeral aquatic habitats such as temporary freshwater pools and on mosses, are able to survive complete desiccation (drying out) at any stage of their life cycle. They just curl up and go dormant for weeks, months, or years, and when water becomes available, they spring back to life. Mark Welch and his colleagues showed that desiccation, like ionizing radiation, breaks up the rotifers' DNA into many pieces. Presumably, the same mechanisms they use to survive desiccation as part of their life cycle also protect them from ionizing radiation.

"That's the next thing we are looking at. How are the bdelloids able to repair this many double-stranded breaks in their DNA? Do they have better enzymes, more enzymes?" Mark Welch says.

One feature that may confer exceptional DNA repair capacity on the bdelloids is described in the team's second PNAS paper. Here, they give evidence that the bdelloid rotifer, like most animals, originally had two copies of each chromosome. But at some point in its evolution, it underwent a "whole-genome duplication," giving it four copies of each chromosome and hence of each gene. Normally, lineages that undergo whole-genome duplication lose the duplicate genes over time. The bdelloid, though, has kept most of its duplicate genes throughout its evolutionary history.

"We believe they have kept most of their duplicate genes because they are serving as templates for DNA repair," says Mark Welch. One possible result of DNA repair is gene conversion, in which the gene being repaired ends up having an identical DNA sequence to the gene repairing it. This can introduce the kinds of changes into the gene pool that sex usually does. (For example, a gene coding for brown eyes may repair a gene coding for blue eyes on its paired chromosome, and end up turning the blue-eye gene into a brown-eye one.)

"We think that gene conversion resulting from DNA repair resulting from adaptation to (desiccation in) its environment may provide enough of the advantages of sex that bdelloids can survive," Mark Welch says.

First journal reference: Gladyshev, E., and M. Meselson. 2008. Extreme Resistance of Bdelloid Rotifers to Ionizing Radiation. *Proc. Natl. Acad. Sci.* 105 (13): 5139-5144.

Second journal reference: Mark Welch, D.B., J.L. Mark Welch and M. Meselson. 2008. Evidence for degenerate tetraploidy in bdelloid rotifers. *Proc. Natl. Acad. Sci.* 105 (13): 5145-5149.

Adapted from materials provided by Marine Biological Laboratory.

http://www.sciencedaily.com:80/releases/2008/04/080402145746.htm

Spring Flooding In Mid-Western US Forecast, But People Still Build On Floodplains

Swirling water destroys this levee surrounding the Clarence Cannon National Wildlife Refuge in Missouri during the flood of 1993. Robert Criss, Ph.D., WUSTL professor of earth and planetary sciences, says that levees are not infallible, and he cites a number of reasons why they are problematic to communities. (Credit: Photo courtesy of USGS)

ScienceDaily (Apr. 4, 2008) — Midwesterners have to be wondering: Will April be the cruelest month? Patterns in the Midwest this spring are eerily reminiscent of 1993 and 1994, back-to-back years of serious flooding. The great flood of 1993 caused nearly $20 billion of economic damage, damaging or destroying more than 50,000 homes and killing at least 38 people.

Parallels this year include abnormally high levels of precipitation in late winter and early spring, and early flooding in various regions. In March, Missouri, Arkansas and Illinois and the Ohio River experienced flooding. A still-unknown factor is the effect of the snow melt from upstream states on river systems this spring and summer. Wisconsin, for example, had record amounts of snow this winter.

Despite the similarity in conditions and periods of flooding nearly every year after those flood years more than a decade ago, one thing Midwesterners have not learned is "geologic reality," says Robert E. Criss, Ph.D., professor of earth and planetary sciences in Arts & Sciences at Washington University in St. Louis.

"When people build commercial or residential real estate in flood plains, when they build on sink holes, when they build on fault lines, when they build on the hillsides in L.A. that are going to burn and burn, over and over again, they're ignoring geologic reality," Criss says. "They're asking for chronic problems."

Many homes in the St. Louis region along the Meramec River have suffered damage, and some are still not habitable, even as spring comes to the area.

"Yes, the loss of and damage to homes is heartbreaking, and tragic, but it wasn't that long ago, in 1994, that a flood of equal impact hit the region to inundate homes in the floodplain. And, there was even more severe flooding than that in 1982," Criss says. "Flooding is what a river does on its geomorphic flood plain. It's an obvious geologic mistake to build on a floodplain."

How about putting up more levees, such as the 500-year levee in the St. Louis suburbs of Valley Park and Chesterfield, constructed by the U.S. Army Corps of Engineers?

"Building a levee for a community simply 'certifies' that this is a great place to build more things," Criss says. "The Corps of Engineers will come in and claim it's a 500-year levee, which is a claim they cannot make, yet routinely do. That just encourages more infrastructure to move into these areas, when we should take the Times Beach and Valmeyer approach."

Criss refers to the Missouri community of Times Beach, Mo., which was abandoned following the flood of the Meramec River in 1982, and Valmeyer, Ill., which moved off the Mississippi floodplain and was rebuilt up on the river bluff after the flood of 1993.

"An additional problem is that this is a starving world with comparatively little arable crop land," he says. "I object, from an environmental and geological point of view, to converting some of the best crop land in the world to strip malls and commercial real estate. This is a bad swap and it's using the land for the wrong reasons."

Criss says that levees cause water to rise instead of spread out, and that the cumulative effect of levees and wing dykes on the large rivers north of St. Louis is beginning to manifest itself in flooding.

Criss says the claim that a levee will withstand floods for 500 years is "an absurd exaggeration. If some private company were making claims that they'll sell you a car that will run for 500 years, they'd be in jail. Somehow, the government feels justified making absurd claims that have no basis."

Criss says better zoning laws that encourage appropriate kinds of development for areas could be the solution to extreme flooding.

"Everyone screams for more levees, which only encourage more development," he says. "These structures are not infallible, and when the levees fail — and they will, carefully though they are built — we just have more infrastructure in harm's way. It's not a very thoughtful approach.

"We ignore the natural system in what we do. These are floodplains. What do we expect of floodplains? They're great places to farm or construct a park. Losing crops that most likely are insured is different than losing millions of dollars per acre of buildings and infrastructure and, in some cases, lives."

Adapted from materials provided by Washington University in St. Louis.

http://www.sciencedaily.com/releases/2008/04/080401141535.htm

Prebiotics -- The Key To Fewer Food Poisoning Stomach Upsets -- And Healthy Farm Animals

ScienceDaily (Apr. 4, 2008) — Natural sugars found in breast milk that are now included in prebiotic foods may help in the fight against Salmonella and other food poisoning bacteria, scientists heard April 2,2008 at the Society for General Microbiology's 162nd meeting.

The sugars, or oligosaccharides, are called galacto-oligosaccharides and are already known to improve the health of breast-fed infants. They may also reduce the chances of Salmonella bacteria damaging the gut during a food poisoning episode, reducing the overall damage and severity of the infection.

"Salmonella Typhimurium is a disease-causing bacterium capable of infecting a wide range of animals including humans. It is responsible for outbreaks of serious illness every year," says Laura Searle of the Department of Food and Environmental Safety at the Veterinary Laboratories Agency in Weybridge, Surrey, UK. "We are particularly concerned about it as we can trace people being infected through direct contact with animals or through the food chain."

Symptoms of Salmonella food poisoning in people include diarrhoea, nausea, vomiting, stomach cramps, fever and headaches and in rare cases the disease can attack the whole system and can be fatal.

"Antibiotics are used to treat particularly severe Salmonella infections," says Laura Searle. "But their effectiveness has been undermined by their systematic use both as growth promoters in animals and as therapeutic agents, which has been implicated in widespread antibiotic resistance. In an attempt to overcome this problem the European Union banned the use of antibiotics as growth promoters in 2006, so now alternatives are urgently being investigated."

One possibility is to use prebiotics made from natural complex sugars that are already known to improve gastrointestinal health. There have been many theories put forward about the way they actually work, including the suggestion that they may stimulate our natural gut bacteria to multiply, allowing them to fight off invading pathogens trying to colonise our guts.

The Veterinary Laboratories Agency has initiated a project to demonstrate the exact mechanism for the apparent success of a novel galacto-oligosaccharide mixture. Their studies have now shown that the specific galacto-oligosaccharide mixture protects animals from infection by reducing the invasion capabilities of Salmonella, and cutting the seriousness of the disease symptoms. After treatment with this mixture, fewer Salmonella bacteria were found in systemic and intestinal tissues.

"The next step will be to see if the novel galacto-oligosaccharide mixture can be used in farm livestock successfully, and whether it is still as effective when given before a Salmonella infection, protecting the animals in advance. We also need to see if it can protect against other pathogens," says Laura Searle.

The novel galacto-oligosaccharide prebiotic mixture used in the tests is already available for people as a commercial preparation. It is claimed to aid healthy people who eat it as part of their daily diet, and also to help people suffering from irritable bowel disease, stomach upsets and diarrhoea.

The veterinary scientists hope that their tests will prove whether it is actually successful in farm animals, reducing gastrointestinal infections, improving animal health and cutting economic losses. The scientists need to now discover the exact mechanisms by which the sugars work.

Adapted from materials provided by Society for General Microbiology, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/04/080401200444.htm

Carbon Dioxide Emission Reduction Assumptions Overly Optimistic, Study Says

Renewable energy sources, such as wind, could help society reduce emissions of carbon dioxide. (Credit: Photo by Bob Henson Copyright UCAR)

ScienceDaily (Apr. 4, 2008) — Reducing global emissions of carbon dioxide (CO_2) over the coming century will be more challenging than society has been led to believe, according to a new research commentary appearing April 3 in Nature.

The authors, from the University of Colorado at Boulder, the National Center for Atmospheric Research (NCAR) in Boulder, and McGill University in Montreal, say the Intergovernmental Panel on Climate Change (IPCC) has significantly underestimated the technological challenges of reducing CO_2 emissions. The study, "Dangerous Assumptions," concludes that the IPCC is overly optimistic in assuming that, even without action by policymakers, society will develop and implement new technologies to dramatically reduce the growth of future emissions.

"In the end, there is no question whether technological innovation is necessary--it is," write the authors in the Nature commentary. "The question is, to what degree should policy focus explicitly on motivating such innovation" The IPCC plays a risky game in assuming that spontaneous advances in technological innovation will carry most of the burden of achieving future emissions reductions, rather than focusing on those conditions that are necessary and sufficient for those innovations to occur."

Recent changes in "carbon intensity"--CO_2 emissions per unit of energy consumed--already are higher than those predicted by the IPCC because of rapid economic development, says lead author Roger Pielke Jr. of the University of Colorado. In Asia, for instance, the demands of more energy-intensive economies are being met with conventional fossil-fuel technologies, a process expected to continue there for decades and eventually move into Africa.

In estimating the emissions reductions required for CO_2 concentration stabilization, the IPCC divides future emissions changes into those that will occur spontaneously (such as in the absence of climate policies) and those that are policy driven. This division hides the full challenge associated with stabilizing the amount of carbon dioxide in the atmosphere. The Nature commentary points out, for example, that to stabilize CO_2 levels at around 500 parts per million (compared to the present level of about 390 ppm), the IPCC scenarios assume that 57 to 96 percent of the total carbon removed from the energy supply over the coming century would occur spontaneously.

"According to the IPCC report, the majority of the emission reductions required to stabilize CO_2 concentrations are assumed to occur automatically," says Pielke. "Not only is this reduction unlikely to happen under current policies, but we are moving in the opposite direction right now. We believe these kinds of assumptions in the analysis blind us to reality and could potentially distort our ability to develop effective policies."

Stabilization of atmospheric concentrations of CO_2 and other greenhouse gases was the primary objective of the 1992 United Nations Framework Convention on Climate Change approved by almost all countries, including the United States, notes co-author Tom Wigley of NCAR.

"Stabilization is a more daunting challenge than many realize and requires a radical 'decarbonization' of energy systems," Wigley says. "Global energy demand is projected to grow rapidly, and these huge new demands must be met by largely carbon-neutral energy sources--sources that either do not use fossil fuels or that capture and store any emitted CO_2."

Unlike the IPCC assumptions of large future "spontaneous" technological innovations, the Nature commentary authors began with a set of "frozen technology" scenarios as baselines--scenarios in which energy technologies are assumed to stay at present levels.

"With a frozen technology approach, the full scope of the carbon-neutral technology challenge is placed into clear view," says co-author Christopher Green of McGill University.

"In the end, our message should be viewed optimistically rather than pessimistically," Pielke notes, "because it is only with a clear-eyed view of the mitigation challenge that we can ever hope to adopt effective policies. We hope that our analysis is one step toward such a clear-eyed view."

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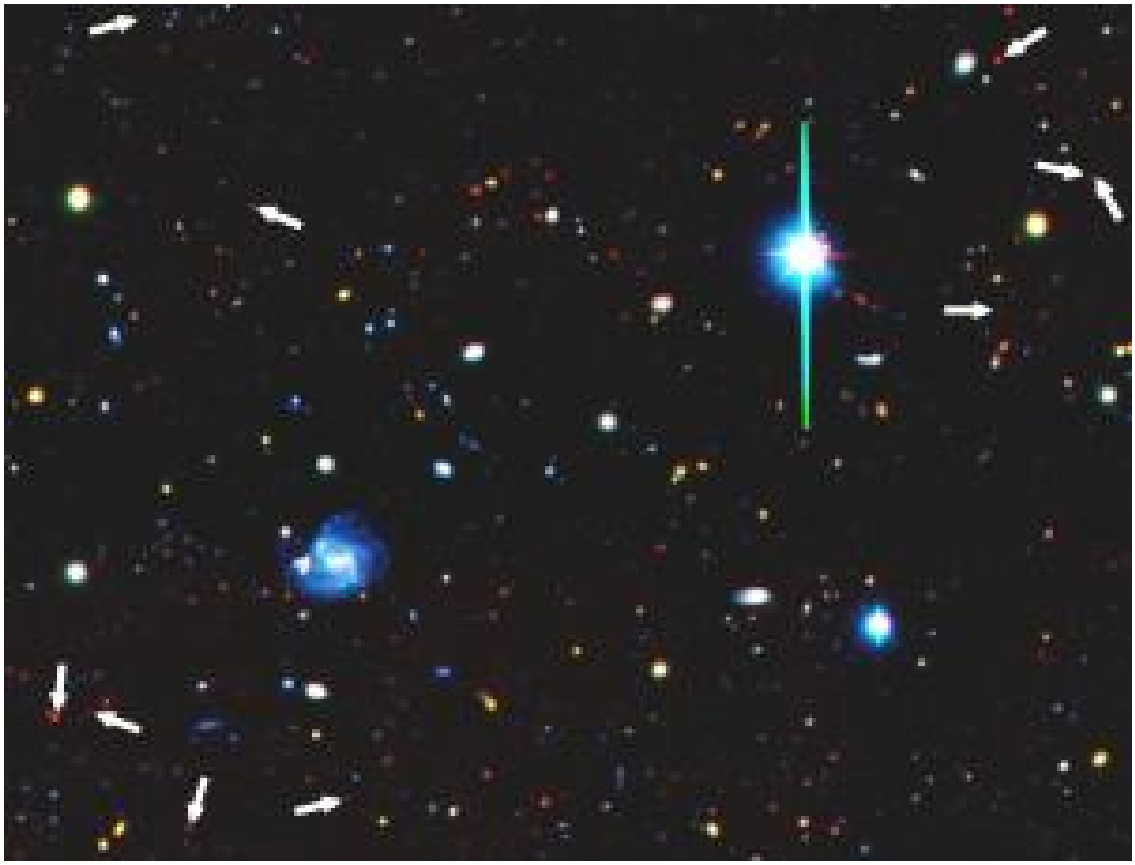
Adapted from materials provided by National Center for Atmospheric Research/University Corporation for Atmospheric Research.

http://www.sciencedaily.com/releases/2008/04/080402131140.htm

Old Galaxies Stick Together In The Young Universe



The white arrows point to a few of the old, massive galaxies at a distance of 10 billion light years, discovered in the UKIDSS Ultra-Deep survey. This cut-out image represents just 1/150th of the full survey. (Credit: UKIDSS UDS survey team)

ScienceDaily (Apr. 4, 2008) — Using the most sensitive images ever obtained with the United Kingdom Infra-Red Telescope (UKIRT), astronomers have found convincing evidence that galaxies which look old early in the history of the Universe reside in enormous clouds of invisible dark matter and will eventually evolve into the most massive galaxies that exist in the present day.

University of Nottingham PhD student Will Hartley, who led the study, described this research at the RAS National Astronomy Meeting in Belfast on Tuesday 1 April.

The distant galaxies identified in the UKIRT images are considered elderly because they are rich in old, red stars.However, because the light from these systems has taken up to 10 billion years to reach Earth, they are seen as they appeared in the very early Universe, just 4 billion years after the Big Bang. The presence of such fully evolved galaxies so early in the life of the cosmos is hard to explain and has been a major puzzle to astronomers studying how galaxies form and evolve.

Hartley and collaborators used the deep UKIRT images to estimate the mass of the dark matter surrounding the old galaxies by measuring how strongly the galaxies cluster together. All galaxies are thought to form within massive halos of dark matter which collapse under their own gravity from a smooth distribution of matter after the Big Bang.

These halos are invisible to normal telescopes but their mass can be estimated through analysis of galaxy clustering.

Hartley explains "Luckily, even if we don't know what dark matter is, we can understand how gravity will affect it and make it clump together. We can see that the old, red galaxies clump together far more strongly than the young, blue galaxies, so we know that their invisible dark matter halos must be more massive."

The halos surrounding the old galaxies in the early Universe are found to be extremely massive, containing material which is one hundred thousand billion times the mass of our Sun. In the nearby Universe, halos of this size are known to contain giant elliptical galaxies, the largest galaxies known.

"This provides a direct link to the present day Universe," says Hartley, "and tell us that these distant old galaxies must evolve into the most massive but more familiar elliptical-shaped galaxies we see around us today. Understanding how these enormous elliptical galaxies formed is one of the biggest open questions in modern astronomy and this is an important step in comprehending their history."

Adapted from materials provided by Royal Astronomical Society.

http://www.sciencedaily.com/releases/2008/04/080401160020.htm

Binge Drinkers Are Responsible For Most Alcohol-impaired Driving On American Roads

ScienceDaily (Apr. 4, 2008) — Self-reported alcohol-impaired (AI) driving has increased in the United States during the last decade. New findings show that most AI driving is due to binge drinkers rather than heavy or alcohol-dependent drinkers.

Motor-vehicle crashes that are alcohol-related in nature kill approximately 17,000 Americans per year and, in the year 2000, cost more than $51 billion in related damages. A new study of the drinking patterns of alcohol-impaired (AI) drivers in the United States has found that most AI driving is performed by binge drinkers.

"Previous research had found the number of self-reported AI driving episodes was increasing over the last eight years, especially among binge drinkers," said Nicole T. Flowers, medical epidemiologist at the Centers for Disease Control and Prevention and corresponding author for the study. "Many current policies have focused on discouraging people from operating a vehicle while intoxicated instead of trying to prevent people from becoming intoxicated. Furthermore, when people are arrested for driving under the influence of alcohol the punitive measures frequently involve alcohol-treatment programs suitable for alcoholics but not necessarily suitable for non-alcohol dependent binge drinkers."

"Although AI driving fatalities -- as one measure of AI driving -- have declined in the United States over the past 30 years, the reduction has been far less in the United States than in other highly motorized Western countries such as Canada, Australia, Japan, or Germany," added David E. Nelson, senior scientific advisor with the Alcohol Team at the Centers for Disease Control and Prevention.

Flowers and her colleagues analyzed data from the 2006 Behavioral Risk Factor Surveillance System (BRFSS), the largest telephone health survey in the world with more than 350,000 adults interviewed each year. Established in 1984, BRFSS data is collected monthly from all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands and Guam, and used to track tobacco use, cardiovascular disease, dietary habits, weight changes, immunization status, and screening for high blood pressure, high cholesterol and cancer.

For this study, alcohol-consumption patterns of self-reported AI-drivers among U.S. adults 18 years and older for all states were divided into four categories: non-binge/non-heavy, non-binge/heavy, binge/non-heavy, and binge/heavy. (Binge drinking was defined as 5+ drinks for men or 4+ drinks for women on one or more occasions in the previous month; heavy drinking was defined as more than two drinks per day for men or more than one drink per day for women.)

The results showed that approximately 84 percent of AI drivers were binge drinkers, and 88 percent of AI-driving episodes involved binge drinkers.

"We were surprised that binge drinkers who were not heavy drinkers made up 50 percent of all the self-reported AI drivers," said Flowers. "We thought it would be a large percentage but didn't know it would be that high."

Both Flowers and Nelson noted that these findings demonstrate the need for effective interventions to change their focus.

"AI driving is both a drinking problem and a driving problem," said Flowers. "A large number of AI drivers are probably not alcohol dependent, and the population of people who sit down once a month and have four or five drinks at one time must be taken into account when developing interventions to decrease the prevalence of impaired driving. Policies should deter both driving intoxicated and the behavior of becoming intoxicated."

Both Flowers and Nelson recommended strategies that include sobriety checkpoints, lowering blood alcohol concentrations, license-revocation laws to reduce AI driving, as well as policies to reduce

excessive drinking, such as an increase in alcohol-excise taxes, enforcement of the minimal legal drinking age, a reduction in alcohol-outlet density and business hours, and restriction of happy hours. "Both kinds of efforts should be widely distributed to decrease the excessive drinking behavior that is strongly associated with impaired driving," said Flowers.

The bottom line, added Flowers, is that drinking to get drunk is a risky behavior. "Although 2.6 million Americans may not identify themselves as problem drinkers, drinking more than four or five drinks at a time is contributing to over 56 million episodes of AI driving per year. Binge drinking is a wide-spread and dangerous behavior." She and her colleagues have plans to continue using BRFSS data to examine the demographics of people who drink certain types and quantities of alcohol, as well as the association between intimate partner violence and binge drinking.

Co-authors of the ACER paper, "Patterns of Alcohol Consumption and Alcohol-Impaired Driving in the United States," were: Timothy S. Naimi and Robert D. Brewer at the National Center for Chronic Disease Prevention and Health Promotion Division of Adult and Community Health, Emerging Investigations and Analytic Methods Branch; Ruth Jiles of the Behavioral Surveillance Branch; Randy W. Elder at the National Center for Health Marketing , Division of Health Communications and Marketing Strategy, Community Guide Branch; Ruth A. Shults at the National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention; ... all of the Centers for Disease Control and Prevention. The study was funded by the Centers for Disease Control and Prevention

Adapted from materials provided by Alcoholism: Clinical & Experimental Research, via EurekAlert!, a service of AAAS

http://www.sciencedaily.com/releases/2008/04/080403183053.htm

Beware the New New Thing

By DAMIAN KULASH Jr.

Los Angeles

RECENTLY, the House Judiciary Committee's antitrust task force invited me to be the lead witness for its hearing on "net neutrality." I've collaborated with the Future of Music Coalition, and my band, OK Go, has been among the first to find real success on the Internet — our songs and videos have been streamed and downloaded hundreds of millions of times (orders of magnitude above our CD sales) — so the committee thought I'd make a decent spokesman for up-and-coming musicians in this new era of digital pandemonium.

I'm flattered, of course, but it makes you wonder if Nancy Pelosi and John Boehner sit around arguing who was listening to Vampire Weekend first.

If you haven't been following the debate on net neutrality, you're not alone. The details of the issue can lead into realms where only tech geeks and policy wonks dare to tread, but at root there's a pretty simple question: How much control should network operators be allowed to have over the information on their lines?

Most people assume that the Internet is a democratic free-for-all by nature — that it could be no other way. But the openness of the Internet as we know it is a byproduct of the fact that the network was started on phone lines. The phone system is subject to "common carriage" laws, which require phone companies to treat all calls and customers equally. They can't offer tiered service in which higher-paying customers get their calls through faster or clearer, or calls originating on a competitor's network are blocked or slowed.

These laws have been on the books for about as long as telephones have been ringing, and were meant to keep Bell from using its elephantine market share to squash everyone else. And because of common carriage, digital data running over the phone lines has essentially been off limits to the people who laid the lines. But in the last decade, the network providers have argued that since the Internet is no longer primarily run on phone lines, the laws of data equality no longer apply. They reason that they own the fiber optic and coaxial lines, so they should be able to do whatever they want with the information crossing them.

Under current law, they're right. They can block certain files or Web sites for their subscribers, or slow or obstruct certain applications. And they do, albeit pretty rarely. Network providers have censored anti-Bush comments from an online Pearl Jam concert, refused to allow a text-messaging program from the pro-choice group Naral (saying it was "unsavory"), blocked access to the Internet phone service (and direct competitor) Vonage and selectively throttled online traffic that was using the BitTorrent protocol.

When the network operators pull these stunts, there is generally widespread outrage. But outright censorship and obstruction of access are only one part of the issue, and they represent the lesser threat, in the long run. What we should worry about more is not what's kept from us today, but what will be built (or not built) in the years to come.

We hate when things are taken from us (so we rage at censorship), but we also love to get new things. And the providers are chomping at the bit to offer them to us: new high-bandwidth treats like superfast high-definition video and quick movie downloads. They can make it sound great: newer, bigger, faster, better! But the new fast lanes they propose will be theirs to control and exploit and sell access to, without the level playing field that common carriage built into today's network.

They won't be blocking anything per se — we'll never know what we're not getting — they'll just be leapfrogging today's technology with a new, higher-bandwidth network where they get to be the gatekeepers and toll collectors. The superlative new video on offer will be available from (surprise, surprise) them, or companies who've paid them for the privilege of access to their customers. If this model sounds familiar, that's because it is. It's how cable TV operates.

We can't allow a system of gatekeepers to get built into the network. The Internet shouldn't be harnessed for the profit of a few, rather than the good of the many; value should come from the quality of information, not the control of access to it.

For some parallel examples: there are only two guitar companies who make most of the guitars sold in America, but they don't control what we play on those guitars. Whether we use a Mac or a PC doesn't govern what we can make with our computers. The telephone company doesn't get to decide what we discuss over our phone lines. It would be absurd to let the handful of companies who connect us to the Internet determine what we can do online. Congress needs to establish basic ground rules for an open Internet, just as common carriage laws did for the phone system.

The Internet, for now, is the type of place where my band's homemade videos find a wider audience than the industry's million-dollar productions. A good idea is still more important than deep pockets. If network providers are allowed to build the next generation of the Net as a pay-to-play system, we will all pay the price.

Damian Kulash Jr. is the lead singer for OK Go.

http://www.nytimes.com/2008/04/05/opinion/05kulash.html?_r=1&th&emc=th&oref=slogin

FEIGENBAUM HALL OF INNOVATION

Attic-Like Museum's New Annex of Ideas

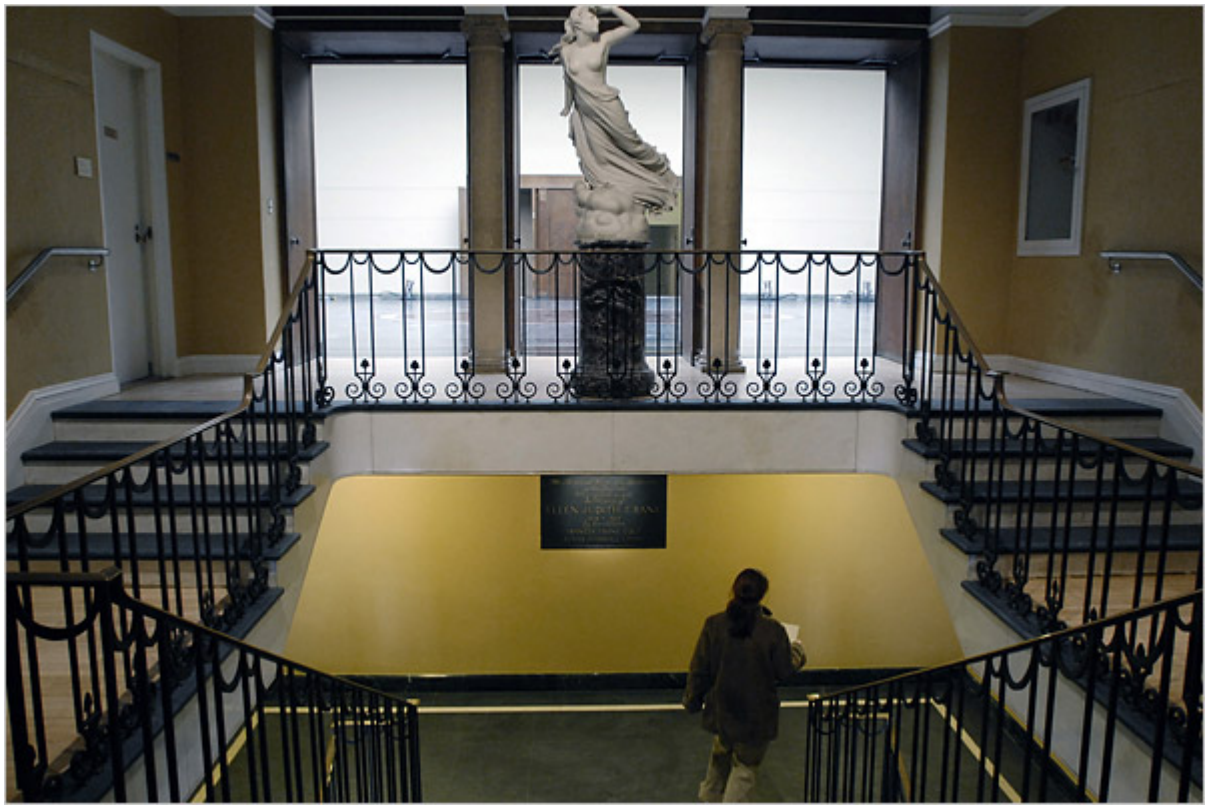
By EDWARD ROTHSTEIN

PITTSFIELD, Mass. — Among the many visionaries celebrated in the Feigenbaum Hall of Innovation, which opened here last weekend at the Berkshire Museum, one figure, Zenas Crane Jr., is not fully given his due.

It isn't that he was too local a figure to warrant notice. In fact, this 3,000-square-foot exhibition space in Berkshire County's oldest museum is explicitly devoted to local innovators, ranging from Herman Melville, who wrote "Moby-Dick" not far from the institution, to William Stanley Jr., the Great Barrington resident who used his revolutionary alternate current electrical generator to illuminate businesses on the town's main street in 1886.

Crane would not have been too eccentric a figure for the new hall either: the museum seems to define innovation as broadly as possible. So along with the Stockbridge native Cyrus W. Field, who succeeded in laying a trans-Atlantic cable in 1866, there is the minor figure Clarence J. Bousquet, known as Clare, a local businessman who created nighttime skiing in 1935. The intellectual and political achievements of the Great Barrington native and scholar W. E. B. Du Bois are celebrated, but so are the less compelling accomplishments of the Pittsfield-born artist Nancy Graves.

Even Crane's father, Zenas Marshall Crane, is given his due for turning the family-owned paper mill, Crane & Company, into a business of national importance by patenting bank note paper marked with identifying fibers in 1844; the company still produces the paper on which United States currency is printed.



So what was Zenas Crane Jr.'s innovation?

Step outside Feigenbaum Hall into the renovated lobby and see. Right now much of the Berkshire Museum is still a construction site, and will be until next Saturday, when the results of a $10 million capital campaign will be seen in an array of new galleries and exhibitions. But this is still recognizably the place that Crane created in 1903 as the Museum of Natural History and Art, providing $50,000 for the building's construction and an estimated $30,000 for its collections; hundreds of thousands of dollars later came to the museum from Crane bequests.

We have become so used to the founding of institutions during that era that we may not recognize their innovation or importance. In a region where wealthy families had constructed stunning "cottages," this museum was created by one of them for the growing urban public of Pittsfield. It was following a path mapped out by the Berkshire Athenaeum next door, with which the museum was initially affiliated. That great private library had become public in the 1870s.

The museum was meant to go further, placing the exotic, the aesthetic and the unaffordable within public grasp. It was also proselytizing, addressing local aspirants. It recognized no distinctions between the arts and sciences nor, for that matter, between the artistic heritage of Europe and nascent American art forms; it would combine world-class objects with local discoveries.

Over the years the institution's eccentric lineaments were deepened by donations. The museum was given Nathaniel Hawthorne's desk and a stuffed albino pheasant, a piece of the first trans-Atlantic cable and collections of local minerals. More recently, aquariums and terrariums joined the mix. When I began to visit the museum more than 25 years ago, I felt as if I were venturing into an enormous attic in which a wealthy collector was showing off his treasures.

Back then the display cases on the first floor looked as if they had been stocked by an obsessive taxidermist, pinning "woodland birds" and "upland meadow birds" on white matting, their adjacent numbers used to identify the species from a list below. There were mounted butterflies and beetles, along with arrays of "Berkshire rocks."

On the second floor one of Bierstadt's Yosemite paintings might be hanging a room away from an Egyptian mummy; a fifth-century Chinese vase might be found not far from a 19th-century plaster cast of the Venus de Milo; prime examples of the Hudson River School could be seen not far from regrettable recent acquisitions. The museum was an extraordinary "curiosity cabinet" — what the collectors of several centuries ago used to call their assembled objects — and it offered a kind of thrill that is difficult to find in larger museums.

Those objects and more (some 30,000, according to the museum's director, Stuart A. Chase, only a fraction of which are on display) are still here, and old impressions were revived during a recent walk through one gallery under construction. Antique chairs, a model Chinese junk and a sledge used by Robert Peary in 1909 to explore the North Pole were stacked, awaiting restoration to their rightful places.

The latest renovations may, of course, tempt the museum, with its $2.1 million annual budget, into more conventional approaches. Now that the single thermostat that once controlled the entire building has been replaced by a sophisticated climate-control system, loans from other museums will be possible; in turn, the museum's collections will get more exposure. Indeed, the process is already beginning.

But the curiosity cabinet tradition is too strong to be discarded. The natural history display cases, which will remain for at least a few years, are so quaintly old-fashioned that they have more impact than the more discursive and graphic displays dating from the last renovation. And three exhibitions opening next Saturday — focused on ancient artifacts; unusual American Indian objects; and American landscapes — retain in their variety a sense of the museum's past and its potential.

The tradition of the curiosity cabinet may have influenced the miscellaneous character of the Hall of Innovation as well. This could be the only place where 18th-century Shakers (whose nearby farm is still worth a visit) are as celebrated as the Pittsfield plastics industry, and where the dancer Ted Shawn, the founder of Jacob's Pillow Dance Festival, rubs conceptual shoulders with Elkanah Watson, the organizer of the nation's first agricultural fair, held in Pittsfield in 1810.

The hall was created with a $1.2 million donation from Armand and Donald Feigenbaum, brothers who have international reputations for their business philosophy of "total quality management" — a philosophy that presumably could have been at work here as well.

If only the processes behind innovation had been more thoroughly explored. Different sections have titles like "Overcoming Obstacles," "Unexpected Outcomes" and "Innovation Process." But these themes are treated in a cursory manner.

It is also difficult to understand the placement of certain case histories. It is possible to learn much about these figures' lives but why, say, are both the achievements of Du Bois and the skiing enterprise of Bousquet examples of "Motivation"? The laying of the trans-Atlantic cable involved "Overcoming Obstacles" in more ways than one, but is that how Melville's writing of "Moby-Dick" is best understood?

I like the linked metal puzzles visitors can play with, but the actual process of puzzle solving is never closely examined.That is one of the risks of a curiosity cabinet; distraction is part of the sensation. But Zenas Crane Jr.'s museum overcomes that potential weakness: in the mix of subject matter and the jumbling of the first-rate and second-rate, you are provoked into trying to make sense of the whole; that is the museum's universalizing power. Such an impulse isn't inspired by the new hall yet, but perhaps, with appropriate innovation, it could be.

The Berkshire Museum is at 39 South Street (Route 7), Pittsfield, Mass.; (413) 443-7171 or berkshiremuseum.org.

http://www.nytimes.com/2008/04/05/arts/design/05muse.html?th&emc=th

Past Catches Up With the Queen of Roads

By ELISABETTA POVOLEDO

ROME — In ancient times the Appian Way, which links Rome to the southern city of Brindisi, was known as the regina viarum, the queen of the roads. But these days its crown appears to be tarnished by chronic traffic congestion, vandalism and, some of its guardians grumble, illegal development.

“Look at this!” bristled Rita Paris, the Italian state archaeological official responsible for the Appian Way, peering through a weathered bamboo screen lining the road while bumpily maneuvering her car through a patch of uneven ancient stones. “You can bet that it was once a canopy that was walled in and transformed into a home.”

A bit farther on she fumed about a plant nursery that had become a restaurant (without planning permission), a cistern that had morphed into a swimming pool, and the new villas tacked on to ancient monuments. Several are rented out for wedding receptions or society balls, which makes for a steady stream of traffic — and occasionally, “fireworks,” Ms. Paris said with a shudder.

Considered prime real estate in ancient times, when the Romans buried their dead along tomb-lined roads outside the city walls, the Appian Way underwent a contemporary renaissance in the 1960s when Rome was known as the Hollywood on the Tiber. Italian film stars moved in en masse, although today it is mostly home to the moneyed.

But these days some residents seem indifferent to the roadway’s archaeologically rich past, said Livia Giammichele, an archaeologist who, like Ms. Paris, has been waging a campaign against denizens whom she describes as “neo-barbarians.” They “don’t always realize that they’re living in special conditions,” she said.

What especially galls the archaeologists who monitor the thoroughfare, which was begun in 312 B.C. by the censor Appius Claudius Caecus, is that several laws govern the Appian Way, at least on paper.

Although the idea of creating a public park along the roadway dates from Napoleonic times, it was only in 1965 that a 6,000-acre lot was designated for that purpose. In 1988 the Lazio region instituted the Regional Park of the Appia Antica, a crocodile-shaped green expanse in southeastern Rome.

Technically this means that the area is protected by strict laws to conserve this natural habitat. The abundance of ancient monuments, both seen (like the tomb of Cecilia Metella or the catacombs) and unseen (because they're on private property), should also preclude unregulated development under Italian law.

The reality is more complex. The park area is vast and difficult to monitor. (In tracts leading out of the city "there are acts of vandalism almost every night," Ms. Paris said.) And over 90 percent of the park is still private property.

Complicating the situation, three amnesties on illegal building have been approved by national governments since the early 1980s. Critics complain that condoning past abuses only encourages more illegal construction.

"You can't build a Berlin Wall around it — that's not the most modern solution," said Adriano La Regina, the president of the regional park, who was formerly Rome's top archaeologist.

Even if it could be roped off, that would not resolve the question of who's in charge. "There are a mass of administrations and institutions involved at municipal, regional and administrative levels that can make life very complicated because they each touch on some aspect of running the park," Mr. La Regina said. A unified purpose has yet to take shape.

If archaeologists ruled the ancient road, he declared, it would reclaim its royal status as "an extraordinary historical monument."

Over the last few years archaeological officials have successfully lobbied the Italian Culture Ministry to have the state acquire some of the properties that have come up for sale on the Appian Way. In 2002 the state bought a large villa in an area known as the Farmhouse of Capo di Bove. Excavations in the gardens revealed the foundations of a 54-room thermal bath complex. The villa itself was built in the 1950s, and the outside walls are coated with recovered archaeological artifacts like amphora lids, marble inscriptions and terra cotta tiles. "They shouldn't have been able to do it but they did it," Ms. Paris said with a shrug. It will soon house the archives of Antonio Cederna, a journalist and political activist who campaigned to preserve Italy's heritage and was a vociferous advocate of the Appia Antica park.

More recently, the Culture Ministry acquired and is now restoring the church of Santa Maria Nova, which abuts the spectacular second-century A.D. Villa of the Quintili, about five miles from Rome's city center. Near the church they found mosaics depicting gladiators. But work on the site stopped earlier this year when money ran out. The ministry's budget for the Appia is about $1.5 million a year, which never goes far enough, Ms. Giammichele said.Life on the Appian Way isn't always easy for residents either. Paolo Magnanimi, who manages the restaurant Hostaria Antica Roma, which he says opened on the Appia in 1796, suggests that while cultural officials are right to seek protection for the neighborhood, they should be more accommodating. "They can't always be looking at things with the eyes of a gendarme," he said.

When his father bought the restaurant in 1982, Mr. Magnanimi argued, he gave new life to something that had been abandoned. "Controls are fine, but keep in mind that we took a monument that could have ended up in a private home and opened it to the public," he said. "Anyone can come in and look at it — you don't have to eat a plate of pasta."

http://www.nytimes.com/2008/04/05/arts/design/05appi.html?ref=arts

Optimist Awash in the Tropics

By BEN BRANTLEY

Love blossoms fast and early in Bartlett Sher's rapturous revival of Rodgers and Hammerstein's "South Pacific," which opened Thursday at the Vivian Beaumont Theater at Lincoln Center. And while you may think, "But this is so sudden," you don't doubt for a second that it's the real thing.

I'm talking partly about the chemistry between the production's revelatory stars, Kelli O'Hara and Paulo Szot, in the opening scene of this tale from 1949 of men and women unmoored by war. But I'm also talking about the chemistry between a show and its audience.

For this "South Pacific" recreates the unabashed, unquestioning romance that American theatergoers had with the American book musical in the mid-20th century, before the genre got all self-conscious about itself. There's not an ounce of we-know-better-now irony in Mr. Sher's staging. Yet the show feels too vital to be a museum piece, too sensually fluid to be square.

I could feel the people around me leaning in toward the stage, as if it were a source of warmth on a raw, damp day. And that warmth isn't the synthetic fire of can-do cheer and wholesomeness associated (not always correctly) with Rodgers and Hammerstein. It's the fire of daily life, with all its crosscurrents and ambiguities, underscored and clarified by music.

During the past couple of decades directors have often felt the need to approach the Rodgers and Hammerstein classics with either a can of black paint or misted-up rose-colored glasses. (This has been especially true in London, with the National Theater's celebrated darkness-plumbing productions of "Carousel" and "Oklahoma!," and the current sugar-glazed cash-cow of a revival of "The Sound of Music" in the West End.) Mr. Sher, who heralded the return of full-blown lyricism to musicals with his exquisite production of Adam Guettel and Craig Lucas's "Light in the Piazza" several years ago, puts his trust unconditionally in the original material.

It's as if a vintage photograph had been restored not with fuzzy, hand-colored prettiness but with you-are-there clarity. Though Michael Yeargan's perspective-stretching beachscape of a set isn't photo-realist, you somehow accept it as more real than real, just as the score performed by the sumptuously full orchestra (with musical direction by Ted Sperling) feels from the beginning like thought made effortlessly audible.

Of all the Rodgers and Hammerstein hits "South Pacific" has in recent years seemed the least fit for revival, despite its glorious score. The show's book, by Hammerstein and Joshua Logan, was inspired by James A. Michener's "Tales of the South Pacific." Set during World War II on two Pacific islands, where American sailors were stationed, it is Rodgers and Hammerstein's most topical work, addressing a war that had ended only four years earlier.

It is also the show in which the creators wear their liberal consciences most visibly. In following two love stories, both between people of different cultures, "South Pacific" made an overt plea for racial tolerance. Few things in showbiz date more quickly than progressive politics.

It made sense that theater iconoclasts, including the Wooster Group (with its wry spoof "North Atlantic") and Anne Bogart (with a notorious deconstruction set in a mental ward), would see "South Pacific" as a natural demolition target. Even Trevor Nunn's generally generic restaging of the show for the National Theater had a gritty, sweaty style that brought out the frightened racism in the show's heroine.

That's Ensign Nellie Forbush, the Navy nurse from Little Rock whose romance with Emile de Becque, a French plantation owner, runs aground when she learns he had children with a Polynesian woman. The part was created by Mary Martin, playing opposite the opera star Ezio Pinza, and her avowed "cock-eyed optimism" became an emblem for postwar American hope and resilience.

Ms. O'Hara, who played very different incarnations of American womanhood in "Piazza" and the 2006 revival of "The Pajama Game," doesn't stint on Nellie's all-American eagerness. But in a superbly shaded portrait she gives the character a troubled, apprehensive guardedness as well. This self-described hick's Arkansas accent comes from the country club, not the mountains. And it's all too easy to imagine her returning to a world of white gloves and cautious good deeds.

Yet Nellie is receptive not just to the serious charms of Emile (the seriously charming Mr. Szot) but to those of the lush landscape in which she finds herself. Ms. O'Hara, whose lovely soprano is never merely lovely here, creates a study in ambivalence that is both subtly layered and popping with energy.

Even when she's singing that she's in love with a wonderful guy, she seems to be wrestling with complicated feelings that have surprised her. The same rich sincerity pervades the deep-reaching baritone of Mr. Szot, best known here for his work with the New York City Opera. When he delivers "Some Enchanted Evening" or "This Nearly Was Mine," it's not as a swoon-making blockbuster (though of course it is), but as a measured and honest consideration of love.

This reflective aspect infuses every number; nothing is performed as a clap-for-me showstopper. Mr. Sher and Christopher Gattelli, who did the musical staging, have reinvigorated the concept of the organic musical, in which song feels as natural as breathing.

Even crowd-rousers like "Nothin' Like a Dame," sung by the chorus of Seabees (led by Danny Burstein, exuberant and infectious as the wily Luther Billis), are made to feel ordinary, as if part of a daily routine. When the entrepreneurial islander Bloody Mary (the Hawaiian actress Loretta Ables Sayre in a terrific New York debut), sings the familiar "Bali Ha'i" and "Happy Talk," they feel new because they're rendered as systematic acts of seduction.

You're always conscious of the calculation in Bloody Mary's eyes as she tries to secure Lieutenant Cable (Matthew Morrison) as a husband for her daughter, Liat (Li Jun Li, heartbreakingly fragile). Like Ms. O'Hara, Mr. Morrison (who played opposite her in "Piazza") keeps us aware of just where his Ivy League marine comes from and how disoriented he is in a land of new and shifting rules.

The alluring and divisive shadows and light of the islands are beautifully accented by Mr. Yeargan's adroit use of slatted screens to define interior spaces that can never entirely shut out the bright world beyond. (The impeccable lighting is by Donald Holder.)

I know we're not supposed to expect perfection in this imperfect world, but I'm darned if I can find one serious flaw in this production. (Yes, the second act remains weaker than the first, but Mr. Sher almost makes you forget that.) All of the supporting performances, including those of the ensemble, feel precisely individualized, right down to how they wear Catherine Zuber's carefully researched period costumes.

Notice, by the way, how Mr. Sher implicitly underscores the theme of racism by quietly having the few African-American sailors in the company keep apart from the others. And the production never strains to evoke parallels between the then and now of the United States at war in an alien land.

Above all, though, what impresses about this "South Pacific" is how deeply, fallibly and poignantly human every character seems. Nearly 60 years ago Brooks Atkinson, writing in The New York Times, described the show as "a tenderly beautiful idyll of genuine people inexplicably tossed together in a strange corner of the world."

I think a lot of us had forgotten that's what "South Pacific" is really about. In making the past feel unconditionally present, this production restores a glorious gallery of genuine people who were only waiting to be resurrected.

RODGERS & HAMMERSTEIN'S SOUTH PACIFIC

Music by Richard Rodgers; lyrics by Oscar Hammerstein II; book by Mr. Hammerstein and Joshua Logan, adapted from "Tales of the South Pacific" by James A. Michener; directed by Bartlett Sher; musical staging by Christopher Gattelli; music director, Ted Sperling; sets by Michael Yeargan; costumes by Catherine Zuber; lighting by Donald Holder; sound by Scott Lehrer; orchestrations by Robert Russell Bennett; dance and incidental music arrangements by Trude Rittmann; production stage manager, Michael Brunner; associate producer, Ira Weitzman; general manager, Adam Siegel; production manager, Jeff Hamlin. Presented by Lincoln Center Theater under the direction of André Bishop and Bernard Gersten in association with Bob Boyett. At the Vivian Beaumont Theater, Lincoln Center; (212) 239-6200. Through June 22. Running time: 2 hours 50 minutes.

WITH: Kelli O'Hara (Ensign Nellie Forbush), Paulo Szot (Emile de Becque), Matthew Morrison (Lt. Joseph Cable), Danny Burstein (Luther Billis), Loretta Ables Sayre (Bloody Mary), Sean Cullen (Cmdr. William Harbison), Victor Hawks (Stewpot), Luka Kain (Jerome), Li Jun Li (Liat), Laurissa Romain (Ngana), Skipp Sudduth (Capt. George Brackett) and Noah Weisberg (Professor).

http://theater2.nytimes.com/2008/04/04/theater/reviews/04paci.html?em&ex=1207540800&en=f746c69efcae3dd2&ei=5087%0A

Hard-Hearted Dancers as Stravinsky's Puppets

By RACHEL SALTZ

Basil Twist understands a thing or two about the uses of enchantment. "Puppets are magic," he says in the notes to "Petrushka," his wondrous, visually opulent puppet version of the Stravinsky-Fokine ballet at the Clark Studio Theater at Lincoln Center. And he proceeds to show us why: puppets can fly or dance on their hands or float in midair, effortlessly ignoring the laws of gravity governing our too solid flesh.

First performed in 2001, this "Petrushka" also involves a conceptual sleight of hand. In the ballet dancers play puppets that come to life. In Mr. Twist's version, puppets play puppets, and when they come to life, they dance. It works perfectly, plunging us directly into the story's imaginative universe.

It's a spectacle but a deliberately miniaturized one. The characters, pared down to just three — the sad, striving Petrushka; the Ballerina he loves; and the Moor she seduces — inhabit a small black box of a world, circumscribed by a filigreed gilt frame.

Stravinsky's score, with its bright, stop-and-start melodies and dark undercurrents, has been downsized too. Adapted for two pianos, it's played by Julia and Irina Elkina, identical twins whose pianos are neatly fitted together like yin and yang. Mr. Twist probably couldn't resist the visual pun of twinning, an image that might put you in mind of Petrushka's problem of identity: do I have a self if I'm made of wood and glue?

In Mr. Twist's animist "Petrushka" the answer is yes; everything seems alive and in motion. Drums and stringed instruments appear and disappear out of the darkness. Sheer fabrics billow, and chickens scoot across the stage, linked like ducks in a shooting gallery. Even the onion-domed buildings are on the move.

And then there's the dancing. Petrushka, in his puffy white shirt and harlequin pants, flops around like a loose-limbed rag doll. The muscled Moor, with nipple rings and gold eyes that pick up the light, moves with languorous ease when not practicing his kung fu-ish scimitar moves. And the tutued Ballerina, with her neatly articulated limbs, does, well, ballerina things, hovering over Petrushka's head in an endless grand jeté or turning her body into a pencil — look, Ma, no hips! — in 180-degree vertical splits."Petrushka," part of "New Visions: Stravinsky Onstage" in the Great Performers series, uses nine puppeteers, and you can sometimes hear them moving around. It's homey and in keeping with the production's low-tech, handmade quality, which evokes other spectacles of wonder, like magic lantern shows and silent movies by Méliès, in which heads can separate from bodies, and trains can run without tracks.

At one point large, disembodied hands take a turn in the spotlight, forming odd patterns and birdlike shapes. The effect resembles the kind of elemental animation that made early movie audiences gasp. Beautiful, sometimes surreal and ungraspable, Mr. Twist's images work the same magic today.

"Petrushka" continues through April 13 at the Clark Studio Theater, 165 West 65th Street, Lincoln Center; (212) 721-6500, lincolncenter.org.

http://theater2.nytimes.com/2008/04/05/theater/reviews/05petr.html?ref=arts

American Children

By LIESL SCHILLINGER

UNACCUSTOMED EARTH

By Jhumpa Lahiri.

333 pp. Alfred A. Knopf. $25.

Quaint and antique, the cry for love of country that Sir Walter Scott made in his poem “The Lay of the Last Minstrel” is something schoolchildren quit memorizing a century ago. Its stirring theme rouses a patriot’s yearning: “Breathes there the man, with soul so dead, / Who never to himself hath said, / This is my own, my native land!”

It’s easy to forget, given the sensitivities that have been awakened in this country since 9/11, thrusting lifelong citizens under suspicion for having foreign-sounding names and subjecting visitors to the indignity of being fingerprinted, that America was conceived in a spirit of openness, as a land where people could build new identities, grounded in the present and the future, not the past. This dream, despite current fears, has in great part been made real. And the fact that America is still a place where the rest of the world comes to reinvent itself — accepting with excitement and anxiety the necessity of leaving behind the constrictions and comforts of distant customs — is the underlying theme of Jhumpa Lahiri’s sensitive new collection of stories, “Unaccustomed Earth.” Here, as in her first collection, “Interpreter of Maladies,” and her novel, “The Namesake,” Lahiri, who is of Bengali descent but was born in London, raised in Rhode Island and today makes her home in Brooklyn, shows that the place to which you feel the strongest attachment isn’t necessarily the country you’re tied to by blood or birth: it’s the place that allows you to become yourself. This place, she quietly indicates, may not lie on any map.

The eight stories in this splendid volume expand upon Lahiri’s epigraph, a metaphysical passage from “The Custom-House,” by Nathaniel Hawthorne, which suggests that transplanting people into new soil makes them hardier and more flourishing. Human fortunes may be improved, Hawthorne argues, if men and women “strike their roots into unaccustomed earth.” It’s an apt, rich metaphor for the transformations Lahiri oversees in these pages, in which two generations of Bengali immigrants to America — the newcomers and their hyphenated children — struggle to build normal, secure lives. But Lahiri does not so

much accept Hawthorne's notion as test it. Is it true that transplanting strengthens the plant? Or can such experiments produce mixed outcomes?

As her characters mature in their new environments, they carry with them the potential for upheaval. Geography is no guarantee of security. Lahiri shows that people may be felled at any time by swift jabs of chance, wherever they happen to live. Uncontrollable events may assail them — accidents of fate, health or weather. More often, they suffer less dramatic reversals: failed love affairs, alcoholism, even simple passivity — the sort of troubles that seem avoidable to everyone except the person who succumbs to them. Like Laura, the well-meaning narrator of "Brief Encounter," the men and women of Lahiri's stories often find themselves overwhelmed by unexpected passions. They share her refrain: "I didn't think such violent things could happen to ordinary people." Again and again, the reader is caught off-guard by the accesses of emotion and experience that waylay Lahiri's characters, despite their peregrinations, their precautions, their concealments.

Each of the five stories in the book's first section is self-contained. In "Hell-Heaven," the assimilated Bengali-American narrator considers how little thought she once gave to her mother's sacrifices as she reconstructs the tormenting, unrequited passion her young mother had for a graduate student during the narrator's childhood. In "Only Goodness," an older sister learns a sharp lesson about the limits of her responsibility to a self-destructive younger brother. "A Choice of Accommodations" shows a shift in power dynamics between a Bengali-American husband and his workaholic Anglo wife during a weekend away from their kids — at the wedding of the husband's prep-school crush. And the American graduate student at the center of "Nobody's Business" pines for his Bengali-American roommate, a graduate-school dropout who entertains no romantic feelings for him, spurns the polite advances of "prospective grooms" from the global Bengali singles circuit and considers herself engaged to a selfish, foul-tempered Egyptian historian.

In the title story, Ruma, a Bengali-American lawyer, repeats her mother's life pattern when she gives up her job and follows her husband to a distant city as they await the birth of their second child. "Growing up, her mother's example — moving to a foreign place for the sake of marriage, caring exclusively for children and a household — had served as a warning, a path to avoid. Yet this was Ruma's life now." The nurturing force field of pregnancy shields Ruma from the sting this reflection might be expected to provoke, but it doesn't protect her widowed father. When he visits her in Seattle from his condo in Pennsylvania, he asks her a very American question: "Will this make you happy?" Urging Ruma not to isolate herself, to look for work, he reminds her that "self-reliance is important." Thinking back on his wife's unhappiness in the early years of their marriage, he realizes that "he had always assumed Ruma's life would be different." But if his daughter chooses a life in Seattle that she could have led in Calcutta, who's to say this isn't evidence of another kind of freedom?

Ruma is struck by how much her father "resembled an American in his old age. With his gray hair and fair skin he could have been practically from anywhere." Seeing his daughter, Ruma's father has the opposite reaction: "She now resembled his wife so strongly that he could not bear to look at her directly." Ruma's identity, Lahiri suggests, is affected less by her coordinates on the globe than by the internal indices of her will. She is a creature of the American soil, but she carries her own emotional bearings within her. What are the real possibilities for change attached to a move? Lahiri seems to ask. What are the limits?

While tending Ruma's neglected garden, her father shows his grandson how to sow seeds. The boy digs holes, but plants Legos in them, along with a plastic dinosaur and a wooden block with a star. Emblems of the international, the prehistoric and the celestial, they are buried in one garden plot, auguries of an ideal future, a utopia that could be anywhere or nowhere. How can it grow?

Lahiri's final three stories, grouped together as "Hema and Kaushik," explore the overlapping histories of the title characters, a girl and boy from two Bengali immigrant families, set during significant moments of their lives. "Once in a Lifetime" begins in 1974, the year Kaushik Choudhuri and his parents leave Cambridge and return to India. Seven years later, when the Choudhuris return to Massachusetts, Hema's parents are perplexed to find that "Bombay had made them more American than Cambridge had." The next story, "Year's End," visits Kaushik during his senior year at Swarthmore as he wrestles with the

news of his father's remarriage and meets his father's new wife and stepdaughters. The final story, "Going Ashore," begins with Hema, now a Latin professor at Wellesley, spending a few months in Rome before entering into an arranged marriage with a parent-approved Hindu Punjabi man named Navin. Hema likes Navin's traditionalism and respect: "It touched her to be treated, at 37, like a teenaged girl." The couple plan to settle in Massachusetts. But in Rome, Hema runs across Kaushik, now a world-roving war photographer. "As a photographer, his origins were irrelevant," Kaushik thinks. But how irrelevant are Kaushik's origins — to Hema and to himself? And which suitor will Hema choose? The romantic who has no home outside of memory? Or the realist who wants to make a home where his wife chooses to live?

Except for their names, "Hema and Kaushik" could evoke any American's '70s childhood, any American's bittersweet acceptance of the compromises of adulthood. The generational conflicts Lahiri depicts cut across national lines; the waves of admiration, competition and criticism that flow between the two families could occur between Smiths and Taylors in any suburban town; and the fight for connection and control between Hema and Kaushik — as children and as adults — replays the tussle that has gone on ever since men and women lived in caves.

Lahiri handles her characters without leaving any fingerprints. She allows them to grow as if unguided, as if she were accompanying them rather than training them through the espalier of her narration. Reading her stories is like watching time-lapse nature videos of different plants, each with its own inherent growth cycle, breaking through the soil, spreading into bloom or collapsing back to earth.

Liesl Schillinger is a regular contributor to the Book Review.

http://www.nytimes.com/2008/04/06/books/review/Schillinger3-t.html?em&ex=1207540800&en=92a3035093816337&ei=5087%0A

Pamperers

By KATE ZERNIKE

PARENTING, INC.

How We Are Sold on $800 Strollers, Fetal Education, Baby Sign Language, Sleeping Coaches, Toddler Couture, and Diaper Wipe Warmers — And What It Means for Our Children.

By Pamela Paul.

307 pp. Times Books/Henry Holt & Company. $25.

Before a baby shower for the birth of my son last year, friends insisted I had to register for gifts, and enlisted my mother to escort me to Buy Buy Baby — two floors of everything you need for baby and a whole lot more you probably didn't know needed to exist. My mother, a child of the Depression, held her tongue while I pored over the store's list of must-buy products that she had somehow managed to do without while raising three children. We had spent 20 minutes trying to discern the difference between models of Diaper Genies when I came upon the Boppy Tummy Time pillow — which you apparently need in addition to the Boppy breast-feeding pillow, even though both are half-moon-shaped pieces of foam virtually indistinguishable from each other — and my mother began to giggle. We left without registering.

As Pamela Paul chronicles in her occasionally frightening account, "Parenting, Inc.," my generation of parents has fallen into the grips of Big Baby. Pushed by a host of factors — the guilt and exhaustion of working parents, the dispersion of family networks that once passed knowledge from generation to generation, the pressure of admissions from preschool to college, and a culture that worships all things celebrity (including its offspring) — we are intimidated or bamboozled into buying all sorts of goods and services that we not only don't need, but that may harm our children. Slaves to legions of professional advisers and predatory entrepreneurs, we are rendered unable to recall the advice Dr. Spock issued our parents: Trust yourself. You know more than you think you do.

Paul has tapped a real concern. An entire industry preys on parental anxiety, and succumbing to it, we risk raising children who don't know what to do with "free" time and who will measure their value by what they can buy. Most parents will recognize a bit of themselves in Paul's introductory complaint: "No matter what I do, someone else seems to be doing enviably more or improbably less, and either way, their child and family seem all the better for it."

It's not just the $800 strollers and fetal-education gizmos of her subtitle. It's inventions like the Splash Shield to keep bath water in the tub or the TP Saver to foil curious hands before they undo the entire roll of toilet paper. There are baby "faires" to rival auto shows in convention centers around America and children's country clubs in Manhattan, styled by the people who design the upscale Equinox Fitness Clubs, where children's blouses sell for $380 and tots learn that it's best to be exclusive when choosing playmates. (Just when I thought Paul might be reaching a bit, the PoshTots catalog arrived, offering a two-story Tumble Outpost for $122,730 — that is not a misprint — featuring a wraparound ramp, a tube

slide and, presumably, at that price, a six-burner Viking range and water views.) Clearly, there's a baby born to a rich sucker every minute.

Paul, the author of books on the pornography industry and "starter marriages," includes horrifying quotations from marketers. "Everything we do is academic, even for toddlers and babies," boasts one producer of computer software for children under 2. "There's nothing in there that's just purely for fun." My competitive anxiety surged when I read Paul's descriptions of the educational videos and software many parents buy, and it shot positively through the roof after reading the testimonials from those who insist that the "Your Baby Can Read!" videos allowed their child to read by age 1. But Paul nicely dismantles the claims of the "edutainment" industry, exposing the videos as little more than digital baby sitters. (Cancel my order!) Babies, one expert notes, simply filter out a lot of the stimulus from educational toys.

Paul tries to lead us out of the catastrophization of childhood but too often plays right into it. "It may sound like a leap to go from baby toys to the death of democracy, but it's a valid concern," she approvingly quotes a child advocate saying. "A democratic populace relies on people who know how to think critically, who are willing and able to take action." She overreaches with statements like "Any woman worth the cover price of InStyle fantasizes about an array of diaper bags to suit various outfits and occasions." Well, no. And, as she notes, the No. 1 registered-for item at Amazon's baby store is diapers.

Paul is right that for some parents, children have become status symbols. "Three is the new two when it comes to having kids," a Manhattan preschool admissions adviser tells her. (Or, as my sister-in-law, an Upper East Side obstetrician, says, "Three is the new Hummer.")

Paul also correctly notes that the frenzy she chronicles is most acute in New York City, where she lives. But she strains when she argues it exists beyond the coasts and in small-town America, and then identifies these places as Newton, Mass.; Bethesda, Md.; Falls Church, Va.; and New Canaan, Conn. — hardly Peoria, where the median price of a house is less than that PoshTots Tumble Outpost. And she backs her case with poll and survey results that convey a breezy certainty, but on reflection can seem a little thin. One online survey of mothers, she tells us, found that "18 percent wanted to spend less time doing housework and more time with their children." Only 18 percent?

Paul says she talked to parents, but I would have liked to hear more of their voices and less from the news stories and experts she quotes extensively. My guess is that most parents would share my panic in the face of Buy Buy Baby and then discover, as I did, that even the product that friends insist you must have is actually an encumbrance (and that all your lovingly selected toys pale when the kid discovers he can pull the saucepans out of the cupboard).

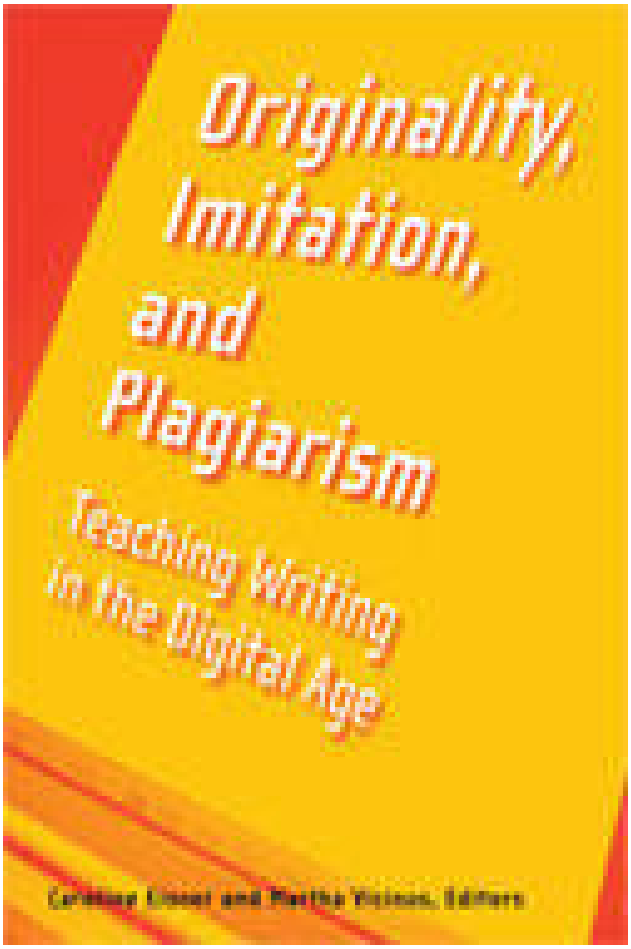
Most of us feel the pangs and then figure out some happy medium. We hyperventilate, we overbuy, and then we get a talking-to by a friend, a mother or a pediatrician (like the one who told me after we'd spent hundreds of dollars on a changing table that the only place to change the baby was on the floor), and we self-correct. Paul herself seems to come to this conclusion as she describes working out her son's feeding woes. She even finds some good in the parenting industry: Web sites have put experts and blogging parents at our fingertips, and make it "a snap" to buy toys from abroad or the latest baby gear from Amsterdam, Sweden and New Zealand.

I, sanctimommy, raise an eyebrow at that carbon footprint. But then, Paul frowns on my Stokke highchair. So see? Not all models look the same, but in the end, we each figure out a way to, yes, trust ourselves.

Kate Zernike is a national correspondent at The Times.

http://www.nytimes.com/2008/04/06/books/review/Zernike-t.html?em&ex=1207540800&en=ddcc87a40deb2cd3&ei=5087%0A

'Originality, Imitation and Plagiarism'



The fire and brimstone approach to preventing plagiarism has failed to promote either understanding of ideas of academic integrity or its practice, according to many essays in a new collection, *Originality, Imitation, and Plagiarism: Teaching Writing in the Digital Age.* The book, just published by the University of Michigan Press, features essays on how these issues play out in different disciplines and a mix of philosophical and practical approaches to analyzing the state of student writing.

The book's co-editors are Caroline Eisner, academic dean at Landmark College, and Martha Vicinus, director of the Sweetland Writing Center and the Eliza M. Mosher Professor of English and Women's Studies at the University of Michigan. Vicinus responded to e-mail questions about the themes of the new book.

Q: Plagiarism by students obviously isn't new. What's changed (and what's not changed) in the Internet era?

A: Plagiarism certainly isn't new — when I was an undergraduate in the early '60s our dorm had a filing cabinet of old papers, and as an English major I was frequently asked to write papers. What's changed is how easy it is now to buy a paper or to have one made-to-order from an on-line company. But equally, it's easy to check these papers via Google. We're really in a world of information overload these days, and we all need to learn how to be selective — that's an especially hard task for students who might have difficulty evaluating sources. When rushed, they can be tempted grab a piece of writing quickly off the Web and hand it in.

Q: Your book talks in several places about the judgmental way that many academics talk about theses issues. What concerns you? How would you advise people to talk about this?

A: We've all become more aware of how common plagiarism can be because of several high profile cases, as well as simple mistakes, such as politicians using someone else's eloquent phrases to pad out a speech. I'm most concerned about the simplistic way student writing has been labeled as either "original" or "plagiarized," and with the consequent belief that there's a simple solution. Many students do take short-cuts, especially in classes that seem irrelevant to their main interests, but they can also misquote and misattribute sources as they try to master new and complex ideas.

To enter into teaching with the idea of "catching" students and punishing them seems utterly counter-productive and truly destructive of a learning environment, yet all too often this is how the media frames the question of student writing and research.

When I talk with students and parents about plagiarism, I try to move the discussion away from the admonition "don't do it or you will suffer dire penalties" to a discussion about the process of learning, why imitation is often a necessary first step to learning a new discipline (think of the first lab report you prepared), and that thoughtful engagement with material leads to thoughtful papers.

When I talk with colleagues, we discuss how to construct thoughtful assignments that will engage students and that will be difficult to pull off the Web. For example, no one wants to read another paper that invites plagiarism, such as "Discuss the character of Gatsby in *The Great Gatsby*." Engaging with the character of Gatsby through the main themes of the course seems to me to be a far more interesting and challenging assignment. Moreover, if faculty include in-class peer reviewing of the rough drafts of papers and then submitting these drafts with the final papers, they both avoid last-minute work and the temptation to plagiarize. In addition, they model how most of us write important papers: we start with a rough draft, share it with a trusted friend, and then revise it fully before submission.

Q: How do these issues differ among disciplines?

A: They clearly do. As one of our contributors, Gilbert Omenn, points out, theft of *ideas* rather than *words* is far more serious in the sciences. Ironically, the policy of anonymous reviewing may make it easier for a senior reviewer to steal some of the best ideas from, say, an NIH proposal written by a junior researcher. Many years ago I was involved in the case of an MFA student who had used several phrases from another student's poem; in this case, a dozen words seemed to constitute plagiarism. Law school students are taught to use their own words when discussing legal cases and writing up briefs, but once they graduate and join a law firm, they turn to past precedents and use the wording from previous cases. These distinctions can be very confusing to students. I think we need to be much more explicit about the context and audience for whom we are writing; this will help students who often think that their only audience is their professor.

Q: What is your take on services colleges or professors use to detect plagiarism?

A: The best-known plagiarism detection service, Turnitin.com, is actually a phrase detection service. That is, its program detects sets of words written in the same way, rather than the actual theft of information, research, ideas and phrasing. Students who forget to close quotes when quoting, for example, would be caught, but is this an accurate interpretation of their work?

Journalists, perhaps dismayed at numerous recent examples of plagiarism committed under time pressures, have highlighted these detection services as a solution to all problems, as if the goal of teaching was to catch students. Good teaching depends upon mutual trust and shared work, not the adversarial notion that students' writing is guilty till proven innocent. All too many people are fooled by the quick technological fix.

Q: What is your advice to colleges that want to educate students about academic integrity, while not scaring people away from broad Web searches for information?

A: I think we should not assume that students know how to use the Web. Most students were warned against it in high school. One of my colleagues in Sweetland has his first-year students spend time evaluating different types of sites (commercial, educational, government run) in an area of interest (eg, nursing, dentistry, town planning). He's found that they find it very difficult to distinguish among the sites and often confuse those that are selling a product with those that are providing information to the public. This short exercise leads naturally into a discussion of how to use Web information, and how to supplement its sources with library sources. Fortunately our librarians also offer an excellent introductory tour of the library that includes hands-on advice about how to access and evaluate different sources of information.

I think we faculty are sometimes so enamored with our subject matter that we forget the importance of teaching the process of learning. A year after our course students may have forgotten many of the facts and ideas we have presented, but they won't forget the skills they have learned in writing a research paper or in gathering and evaluating different sources, or revising a paper that seemed finished. The hard work of thinking through a written project will stick with them — and give them the kind of skills we want for educated citizens.

— Scott Jaschik

The original story and user comments can be viewed online at
http://insidehighered.com/news/2008/04/03/writing.

The Lean Gene: Thinness Is An Inheritable Trait

New research suggests that a woman's waistline may have less to do with rigorous exercise and abstaining from sweets than it does with the genes of her parents. (Credit: iStockphoto/Alexander Novikov)

ScienceDaily (Apr. 3, 2008) — Your friend can eat whatever she wants and still fit into her prom dress, but you gain five pounds if you just look at that chocolate cake. Before you sign up for Weight Watchers and that gym membership, though, you may want to look at some recent research from Tel Aviv University and save yourself a few hundred dollars.

A woman's waistline may have less to do with rigorous exercise and abstaining from sweets than it does with the genes of her parents, according to a new study by Prof. Gregory Livshits from the Sackler Faculty of Medicine at Tel Aviv University and colleagues from King's College in London. Dr. Livshits and his colleagues have found a scientific link between the lean body mass of a woman and her genes. They've determined that thinness -- like your smile or the color of your eyes -- is an inheritable trait.

Bad News First, Then the Good

Prof. Livshits, whose findings were published in the Journal of Clinical Endocrinology and Metabolism (2007), says, "The bad news is that many of our physical features, including our weight, are dependent on our genes. The good news is that women still have an opportunity to go against their genetic constitution and do something about it."

Until now, scientists were not sure to what extent environmental influences and genetics played a role in a woman's body size. When controlling for the variance of age, the differences in womens' body sizes can be predicted in the genes more than 50 percent of the time, the researchers found.

Prof. Livshits conducted his study on more than 3,000 middle-aged women in the United Kingdom who belonged to either an identical or fraternal twin pair. He measured their "total lean mass," one of the three major components of body weight, and compared it to markers in their genes.

A Slim Chance?

Additional collaborative research between the two teams, which builds on the past study, is to be published in the next few months. It may help pave the way for a "skinny gene test," which one day may help women trying to lose weight understand what kind of battle they can expect.

Those without the lean genes, however, will always find it harder to stay slim, predicts Prof. Livshits. But before your diet falls by the wayside, consider Prof. Livshits' contention that genetics can be overcome.

Curb Your Enthusiasm

It's important to not have high expectations, he warns. "Women need to know that what they can do about their body weight -- especially when they age -- is relatively little, and they will do it only with much difficulty."

Very few studies to date have been able to associate a body's lean mass with genetics. The topic is a specialty at the Tel Aviv University lab, one of the top labs in the world to study the genetics of aging of body composition. This area includes the study of bone, fat and lean mass as it develops in a person over time.

Research on body composition components -- their growth, degradation and genes -- is part of Prof. Livshits' ongoing work on aging and health. Issues such as weight gain are complex, he says, especially when age is factored in.

So don't get too jealous of your friend's dress size. It may be mostly out of your hands -- and in your DNA.

Adapted from materials provided by Tel Aviv University.

http://www.sciencedaily.com:80/releases/2008/04/080401120505.htm

Actor-robots 'Staff' Part Of New Medical Simulation Training Center

Electronically outfitted mannequins have breath sounds and heart tones, palpable pulses, and a monitor that displays vital signs as students, physicians, nurses and other health care professionals practice everything from bag-mask ventilation, intubation, and defibrillation to chest tube placement and endoscopies. (Credit: Keith Weller)

ScienceDaily (Apr. 3, 2008) — A medical student places a chest tube in a patient lying on an operating table, while another student conducts a colonoscopy. Everything is just as it would be in a real OR or treatment room, except that the patients won't be harmed or complain if mistakes are made -- they're robots.

These high-tech, electronically outfitted mannequins are equipment in the new $5 million medical and surgical simulation training center at the Johns Hopkins Outpatient Center in East Baltimore that opened in March.

The "sim" center contains two fully operational ORs, two intensive care units (ICUs), high-fidelity computerized mannequins that mimic physiologic and behavioral response to procedures, and 12 examination rooms where students practice routine exams on actors posing as patients with particular complaints and symptoms.

The mannequins have breath sounds and heart tones, palpable pulses, and a monitor that displays vital signs as students, physicians, nurses and other health care professionals practice everything from bag-mask ventilation, intubation, and defibrillation to chest tube placement and endoscopies. Computer programs test decision making skills and knowledge on topics such as advanced cardiac life support and trauma management.

"The idea is to get it right before they treat real patients," says the center's director, Elizabeth Hunt, M.D., M.P.H., assistant professor in the Department of Anesthesiology and Critical Care Medicine.

The troupe of paid professional actors who are trained to portray patients submit themselves to trainees who practice taking histories, performing physical exams, breaking bad news and communicating in a compassionate manner.

"Students can learn the science of medicine in many different ways, but there is only one good way to learn good bedside manner, and that is with real people," says Hunt.

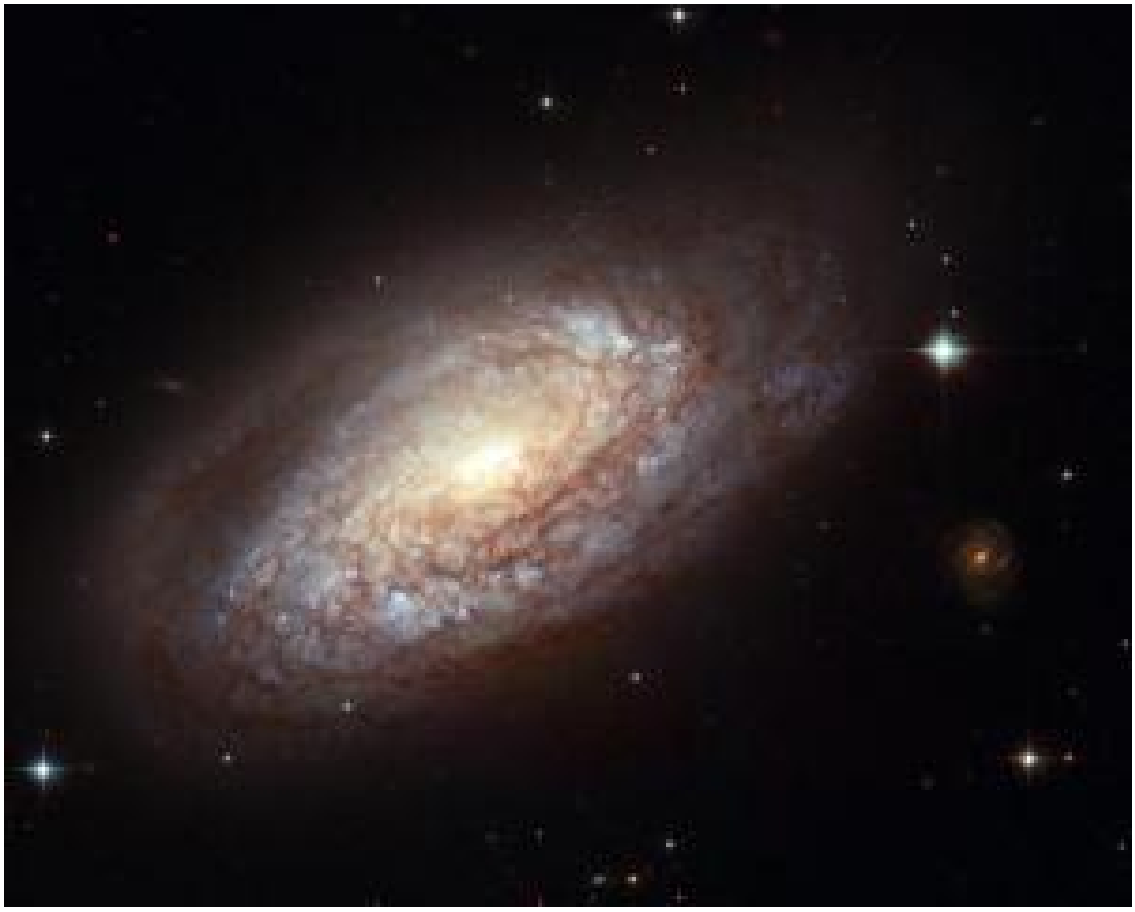
Each of the 15 simulation rooms in the center is equipped with adjustable cameras, microphones, one-way glass for observer viewing, and large flat-screen monitors so students and staff can quickly review their performance while it's still fresh in their minds.

In addition to training students and staff, Hunt says the center also will be used to train medical staff on new equipment, and for teaching emergency medical technicians and paramedics. Outside groups may also be welcome during continued medical education seminars.

Adapted from materials provided by Johns Hopkins Medical Institutions, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/03/080327172043.htm

Exploding Star Shows Rare View Of Early Stages Of A Supernova



Sharp view of the spiral galaxy NGC 2397 includes view of early stages of a supernova - SN 2006bc. (Credit: NASA, ESA & Stephen Smartt (Queen's University Belfast, UK))

ScienceDaily (Apr. 3, 2008) — The latest image from the NASA/ESA Hubble Space Telescope reveals a sharp view of the spiral galaxy NGC 2397. This image also shows a rare Hubble view of the early stages of a supernova - SN 2006bc, discovered in March 2006.

NGC 2397, pictured in this image from Hubble, is a classic spiral galaxy with long prominent dust lanes along the edges of its arms, seen as dark patches and streaks silhouetted against the starlight. Hubble's exquisite resolution allows the study of individual stars in nearby galaxies.

Located nearly 60 million light-years away from Earth, the galaxy NGC 2397 is typical of most spirals, with mostly older, yellow and red stars in its central portion, while star formation continues in the outer, bluer spiral arms. The brightest of these young, blue stars can be seen individually in this high resolution view from the Hubble's Advanced Camera for Surveys (ACS).

One atypical feature of this Hubble image is the view of supernova SN 2006bc taken when its brightness was on the decrease. Astronomers from Queen's University Belfast in Northern Ireland, led by Professor of Astronomy Stephen J. Smartt, requested the image as part of a long project studying the massive exploding stars — supernovae. Exactly which types of star will explode and the lowest mass of star that can produce a supernova are not known.

When a supernova is discovered in a nearby galaxy the group begins a painstaking search of earlier Hubble images of the same galaxy to locate the star that later exploded; often one of hundreds of millions

of stars in the galaxy. This is a little like sifting through days of CCTV footage to find one frame showing a suspect. If the astronomers find a star at the location of the later explosion, they may work out the mass and type of star from its brightness and colour. Only six such stars have been identified before they exploded and the Queen's team have discovered the nature of five of them.

In their latest work on Hubble images, to be presented at the UK National Astronomy Meeting 2008 in Belfast, the Queen's team reveals the results of their ten-year search for these elusive supernova precursor stars. It appears that stars with masses as low as seven times the mass of the Sun can explode as supernovae. The team have not found any very massive stars that exploded, suggesting that the most massive stars may collapse to form black holes either without producing a supernova or by producing one that is too faint to observe. This intriguing possibility will be discussed at the meeting. The Royal Astronomical Society National Astronomy Meeting (NAM) 2008 will take place at Queen's University Belfast from 31 March to 4 April.

The images were obtained on 14 October 2006 with Hubble's Advanced Camera for Surveys (ACS) through three different colour filters (blue, green and near-infrared).

Adapted from materials provided by ESA/Hubble Information Centre.

http://www.sciencedaily.com/releases/2008/03/080331112033.htm

Researchers To Develop Ocean Sanctuary 'Noise Budget' To Evaluate Potential Impact On Marine Life

A "pop-up" listening device is prepared for deployment. (Credit: Michael Thompson, Stellwagen Bank National Marine Sanctuary, NOAA)

ScienceDaily (Apr. 3, 2008) — Like sentinels at their posts, an array of buoys equipped with underwater microphones and other sensors will be on duty in the Stellwagen Bank National Marine Sanctuary off the coast of Massachusetts for the next 30 months, recording sounds from whales, fish, ships and other sources around the clock.NOAA marine mammal scientists will analyze the biological sounds to help develop a global monitoring network for ocean noise, an important step in effectively managing marine sanctuary resources and protecting endangered species like the North Atlantic right whale.

“The ocean is a noisy place,” said Sofie Van Parijs, marine mammal acoustician at NOAA’s Northeast Fisheries Science Center (NEFSC) and a project scientist. “It’s full of natural sounds and those from human activities, and there is substantial evidence that the level of man-made noise is rising. Marine mammals and many fishes are highly dependent on sound for communication, navigation, foraging and predator avoidance. We need to understand how these animals, especially endangered and protected species, are impacted by sounds from many sources to be able to better manage and protect these living resources.”

An ocean-observing system consisting of ten autonomous recording units will be deployed for periods of three months, each in different parts of the Sanctuary at different times of the year, to monitor low frequency sounds. The passive-acoustic buoys, moored to the ocean floor and fully submerged, continually record ocean sounds around the clock before they pop to the surface on command so the data can be retrieved and batteries refreshed.

The three-year project began in late December with funding from the National Oceanographic Partnership Program and a team of scientists and engineers from NOAA Fisheries, NOAA Sanctuaries, the

Bioacoustic Research Program at Cornell University and Marine Acoustics, Inc. Van Parijs and NEFSC colleague Denise Risch, also a marine mammal bioacoustician, will analyze the biological sounds collected during the study, while Sanctuary scientists Leila Hatch, Michael Thompson and Dave Wiley will focus on the anthropogenic or human-produced sounds. Project leader Chris Clark of Cornell University and colleagues provide scientific guidance, hardware and software, and are working with Bill Ellison of Marine Acoustics, Inc. on modeling ocean noise propagation within the sanctuary.

The Gerry E. Studds Stellwagen Bank National Marine Sanctuary is an urban marine sanctuary located in close proximity to Boston and a densely populated coastal zone. The area has commercial fishing fleets, heavy vessel traffic, is frequented by marine mammals like endangered Northern right whales, and forms a critical feeding ground for endangered fin and humpback whales. It is also home to acoustically-sensitive marine animals like commercially important haddock and other fishes, sharks and sea turtles.

Van Parijs says the Sanctuary is a perfect place to build a case study that can provide a benchmark to scientifically evaluate the impacts and interactions between various human-produced sounds and acoustically-sensitive marine animals.

The abundance of endangered whales and human activities in the Sanctuary will help the team address many of the recommendations made by the National Research Council's committee on the potential impacts of ambient noise in the ocean on marine mammals. The committee has cited the importance of sound in the lives of marine mammals, the potential for harm from excessive noise, and the lack of scientific data as to the amounts of noise introduced into the oceans by human activities and its potential impact on marine mammals.

"We need to ground-truth current sampling and analysis techniques and identify gaps that must be addressed prior to implementing a large-scale domestic or international monitoring program," Van Parijs said. "The products of this project will be a suite of tools designed to be transferable for use in other ecological regions or sanctuaries along with an extensive database of sounds. This project is a first step toward a much larger goal of establishing a global passive acoustic monitoring network to measure ambient noise levels in a variety of locations."

The first set of project buoys deployed in December were recently recovered from the northeast corner of the Sanctuary and were redeployed March 7 in the southwest corner, where endangered Northern right whales are congregating. The area is a primary nursing and feeding ground for the whales in the spring.

Ten similar buoys were used successfully in the Sanctuary in 2006 during a one-year pilot project in preparation for this study. This is the first project to record all types of sounds over a long time period in a relatively large area in an effort to characterize the marine acoustic environment and the health of an urbanized, highly productive ecosystem. One potential use of the information: scientists could track whale migration patterns and ship movements to help prevent collisions, a leading cause of whale mortality.

"Our goals are to map the low-frequency noise budget throughout the Sanctuary, identify and quantify the contributing sources of sounds, and determine whether or not these noises have the potential to impact endangered marine mammals and fishes," said David Wiley, the Sanctuary's research coordinator. "The results from this project will have local, national and international implications."

Adapted from materials provided by NOAA National Marine Fisheries Service.

http://www.sciencedaily.com/releases/2008/04/080401110221.htm

Algae Could One Day Be Major Hydrogen Fuel Source

Algae in a pond. Scientists are working toward chemically manipulating algae for the production of the next generation of renewable fuels -- hydrogen gas. (Credit: Michele Hogan)

ScienceDaily (Apr. 2, 2008) — As gas prices continue to soar to record highs, motorists are crying out for an alternative that won't cramp their pocketbooks.

Scientists at U.S. Department of Energy's Argonne National Laboratory are answering that call by working to chemically manipulate algae for production of the next generation of renewable fuels – hydrogen gas.

"We believe there is a fundamental advantage in looking at the production of hydrogen by photosynthesis as a renewable fuel," senior chemist David Tiede said. "Right now, ethanol is being produced from corn, but generating ethanol from corn is a thermodynamically much more inefficient process."

Some varieties of algae, a kind of unicellular plant, contain an enzyme called hydrogenase that can create small amounts of hydrogen gas. Tiede said many believe this is used by Nature as a way to get rid of excess reducing equivalents that are produced under high light conditions, but there is little benefit to the plant.

Tiede and his group are trying to find a way to take the part of the enzyme that creates the gas and introduce it into the photosynthesis process.

The result would be a large amount of hydrogen gas, possibly on par with the amount of oxygen created.

"Biology can do it, but it's making it do it at 5-10 percent yield that's the problem," Tiede said. "What we would like to do is take that catalyst out of hydrogenase and put into the photosynthetic protein

framework. We are fortunate to have Professor Thomas Rauchfuss as a collaborator from the University of Illinois at Champaign-Urbana who is an expert on the synthesis of hydrogenase active site mimics."

Algae has several benefits over corn in fuel production. It can be grown in a closed system almost anywhere including deserts or even rooftops, and there is no competition for food or fertile soil. Algae is also easier to harvest because it has no roots or fruit and grows dispersed in water.

"If you have terrestrial plants like corn, you are restricted to where you could grow them," Tiede said. "There is a problem now with biofuel crops competing with food crops because they are both using the same space. Algae provides an alternative, which can be grown in a closed photobioreactor analogous to a microbial fermentor that you could move any place."

Tiede admitted the research is its beginning phases, but he is confident in his team and their research goals. The next step is to create a way to attach the catalytic enzyme to the molecule.

Funding for the research was provided by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences.

Adapted from materials provided by DOE/Argonne National Laboratory.

http://www.sciencedaily.com/releases/2008/04/080401141539.htm

Specially-designed Soils Could Help Combat Climate Change

Answers beneath our feet? In this Canadian prairie soil, a brown organic layer overlies gravel containing natural calcium-bearing carbonates, which could aid the fight against global warming. (Credit: EPSRC)

ScienceDaily (Apr. 2, 2008) — Could part of the answer to saving the Earth from global warming lie in the earth beneath our feet?

A team from Newcastle University aims to design soils that can remove carbon from the atmosphere, permanently and cost-effectively. This has never previously been attempted anywhere in the world.

The concept underlying the initiative exploits the fact that plants, crops and trees naturally absorb atmospheric carbon dioxide (CO_2) during photosynthesis and then pump surplus carbon through their roots into the earth around them. In most soils, much of this carbon can escape back to the atmosphere or enters groundwater.

But in soils containing calcium-bearing silicates (natural or man-made), the team believe the carbon that oozes out of a plant's roots may react with the calcium to form the harmless mineral calcium carbonate. The carbon then stays securely locked in the calcium carbonate, which simply remains in the soil, close to the plant's roots, in the form of a coating on pebbles or as grains.

Calcium carbonate is a common, naturally occurring, completely stable mineral that would not be eroded by rain filtering through the soil. In many soils calcium carbonate occurs as coatings on pebbles and grains, and as grains associated with roots.

The scientists are investigating whether this process occurs as it may encourage the growing of more plants, crops etc in places where calcium-rich soils already exist. It would also open up the prospect that

bespoke soils can be designed (i.e. with added calcium silicates, or specific plants) which optimise the carbon-capture process. Such soils could play a valuable role in carbon abatement all over the globe.

The team will first try to detect calcium carbonate in natural soils that have developed on top of calcium-rich rocks or been exposed to concrete dust (which contains man-made calcium silicates). They will then study artificial soils made at the University from a mixture of compost and calcium-rich rock. Finally, they will grow plants in purpose-made soils containing a high level of calcium silicates and monitor accumulation of calcium carbonate there. Calcium silicates are minerals that occur naturally in many different rocks and also in artificial materials such as concrete.

The multi-disciplinary research team, including civil engineers, geologists, biologists and soil scientists, is led by David Manning, Professor of Soil Science at Newcastle University. "Scientists have known about the possibility of using soil as a carbon 'sink'* for some time," says Professor Manning. "But no-one else has tried to design soils expressly for the purpose of removing and permanently locking up carbon. Once we've confirmed the feasibility of this method of carbon sequestration, we can develop a computer model that predicts how much calcium carbonate will form in specific types of soil, and how quickly. That will help us engineer soils with optimum qualities from a carbon abatement perspective. A key benefit is that combating climate change in this way promises to be cheap compared with other processes."

Significant scope could exist to incorporate calcium-rich, carbon-locking soils in land restoration, land remediation and other development projects. Growing bioenergy crops on these soils could be one attractive option.

"The process we're exploring might be able to contribute around 5-10% of the UK's carbon reduction targets in the future," says Professor Manning. "We could potentially see applications in 2-3 years, including a number of 'quick wins' in the land restoration sector."

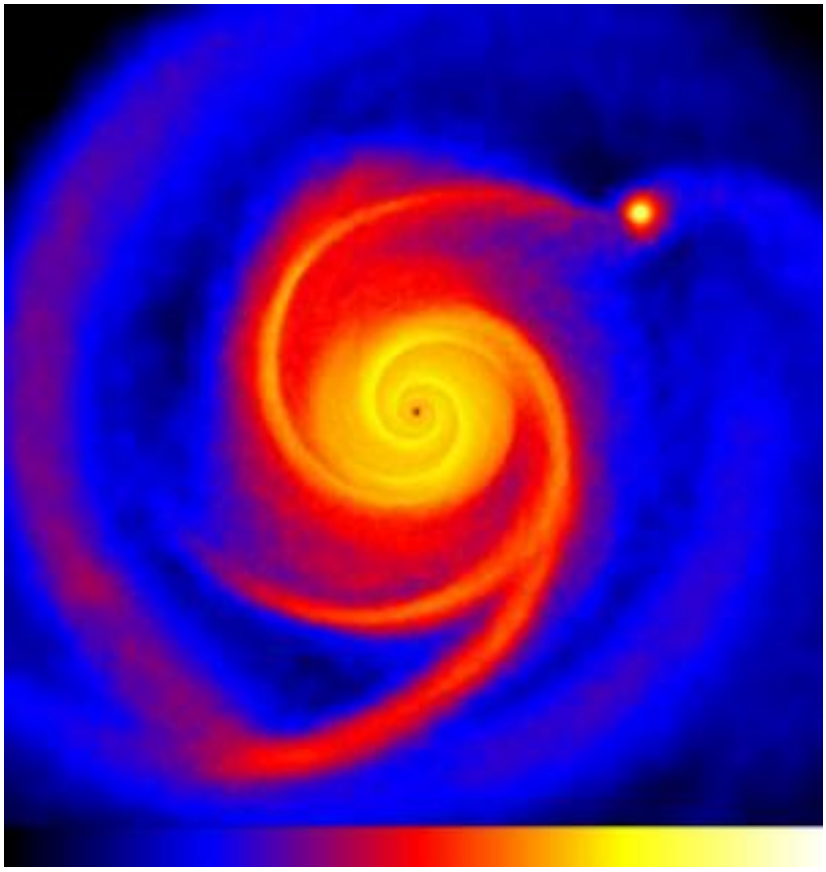
The research is being funded by the Engineering and Physical Sciences Research Council. The 18-month research project "Engineering the Soil Carbon Sink: A Novel Approach to Carbon Emission Abatement" began in September 2007. It is receiving total EPSRC funding of just under £240,000.

*A carbon 'sink' is any natural or human activity or mechanism that absorbs carbon dioxide and removes it from the atmosphere. Soils are the most significant sink for terrestrial carbon, containing twice as much as in the atmosphere and three times as much as is held in land plants. Soils can act as 'sinks' for carbon in more than one way -- carbon is held as organic matter derived from plants, and held as inorganic carbonate minerals whose carbon is derived from what are called plant root exudates. These exudates are the juices that plants ooze from their roots to corrode minerals and mobilise the nutrients they need -- and it is this process which the current project aims to exploit.

Adapted from materials provided by Engineering and Physical Sciences Research Council.

http://www.sciencedaily.com/releases/2008/03/080331110057.htm

Youngest Planet Ever Discovered Offers Unique View Of Planet Formation



This is an image from the computer simulation of HL Tau and its surrounding disk. In the model the dense clump (seen here at top right) forms with a mass of about 8 times that of Jupiter at a distance from the star about 75 times that from the Earth to the Sun. (Credit: Greaves, Richards, Rice & Muxlow 2008)

ScienceDaily (Apr. 2, 2008) — Using radio observatories in the UK and US and computer simulations, a team of astronomers have identified the youngest forming planet yet seen. Team leader Dr Jane Greaves of the University of St Andrews will discuss the 'protoplanet' in her talk at the RAS National Astronomy Meeting in Belfast on April 2.

Taking advantage of a rare opportunity to use the Very Large Array (VLA) of radio telescopes in the US with the special addition of an extra telescope 50 km away, the team studied the disk of gas and rocky particles around the star HL Tau. This star is thought to be less than 100000 years old (by comparison the Sun is 4600 million years old) and lies in the direction of the constellation of Taurus at a distance of 520 light years. The disk around HL Tau is unusually massive and bright, which makes it an excellent place to search for signs of forming planets.

The VLA gives very sharp images of HL Tau and its surroundings. The team studied the system using radio emission at a wavelength of 1.3 cm, specifically chosen to search for the emission from super-large rocky particles about the size of pebbles. The presence of these pebbles is a clue that rocky material is beginning to clump together to form planets.

In the UK, scientists used the MERLIN array of radio telescopes centred on Jodrell Bank in Cheshire, to study the same system at longer wavelengths. This allowed the astronomers to confirm that the emission is from rocks and not from other sources such as hot gas. Jodrell Bank scientists Dr Anita Richards and Dr Tom Muxlow analysed the data.

The big surprise was that, as well as detecting super-large dust in the disk around HL Tau, an extra bright 'clump' was seen in the image. It confirms tentative 'nebulosity' reported a few years earlier at around the same position, by a team lead by Dr Jack Welch of the Berkeley-Illinois-Maryland Array. The new image shows the same system in much greater detail.

Dr Greaves comments, "We see a distinct orbiting ball of gas and dust, which is exactly how a very young protoplanet should look. In the future, we would expect this to condense out into a gas giant planet like a massive version of Jupiter. The protoplanet is about 14 times as massive as Jupiter and is about twice as far from HL Tau as Neptune is from our Sun."

Dr Richards adds, "The new object, designated HL Tau b, is the youngest planetary object ever seen and is just 1 percent as old as the young planet found in orbit around the star TW Hydrae that made the news last year. HL Tau b gives a unique view of how planets take shape, because the VLA image also shows the parent disk material from which it formed."

Team member Dr Ken Rice of the University of Edinburgh ran a computer simulation to find out how such a massive protoplanet could form. His animation shows a very similar body condensing out of a disk with similar properties to that actually observed around HL Tau. The planet forms because of gravitational instability in the disk, which is about half as massive as the star itself. This allows small regions to separate out and cool down into self-contained structures. This instability mechanism has been controversial, but the simulated and real data are such a good match that it seems the mechanism really does operate in nature.

Dr Rice comments, "The simulations were as realistic as we could make them and we were delighted that the results compare so well with the observations."

One intriguing property is that XZ Tau, another young star in the same region, may have passed near HL Tau about 1600 years ago. Although not required for planet formation, it is possible that this flyby 'tweaked' the disk and helped it become unstable. This would be a very recent event in astronomical terms. Whether the proto-planet formed in only the last few hundred years, or sometime in the 100000 years since the birth of HL Tau, the images provide a unique view of planet formation in action, and the first picture of a protoplanet still embedded in its birth material.

Adapted from materials provided by Royal Astronomical Society.

http://www.sciencedaily.com/releases/2008/04/080402153613.htm

Good Sexual Intercourse Lasts Minutes, Not Hours, Therapists Say

Couple in Hawaii. Satisfactory sexual intercourse for couples lasts from 3 to 13 minutes, contrary to popular fantasy about the need for hours of sexual activity, according to a survey of U.S. and Canadian sex therapists. (Credit: iStockphoto/Justin Horrocks)

ScienceDaily (Apr. 2, 2008) — Satisfactory sexual intercourse for couples lasts from 3 to 13 minutes, contrary to popular fantasy about the need for hours of sexual activity, according to a survey of U.S. and Canadian sex therapists.

Penn State Erie researchers Eric Corty and Jenay Guardiani conducted a survey of 50 full members of the Society for Sex Therapy and Research, which include psychologists, physicians, social workers, marriage/family therapists and nurses who have collectively seen thousands of patients over several decades.

Thirty-four, or 68 percent, of the group responded and rated a range of time amounts for sexual intercourse, from penetration of the vagina by the penis until ejaculation, that they considered adequate, desirable, too short and too long.

The average therapists' responses defined the ranges of intercourse activity times: "adequate," from 3-7 minutes; "desirable," from 7-13 minutes; "too short" from 1-2 minutes; and "too long" from 10-30 minutes.

"A man's or woman's interpretation of his or her sexual functioning as well as the partner's relies on personal beliefs developed in part from society's messages, formal and informal," the researchers said. ""Unfortunately, today's popular culture has reinforced stereotypes about sexual activity. Many men and women seem to believe the fantasy model of large penises, rock-hard erections and all-night-long intercourse. "

Past research has found that a large percentage of men and women, who responded, wanted sex to last 30 minutes or longer.

"This seems a situation ripe for disappointment and dissatisfaction," said lead author Eric Corty, associate professor of psychology. "With this survey, we hope to dispel such fantasies and encourage men and women with realistic data about acceptable sexual intercourse, thus preventing sexual disappointments and dysfunctions."

Corty and Guardiani, then-undergraduate student and now a University graduate, are publishing their findings in the May issue of the Journal of Sexual Medicine, but the article is currently available online.

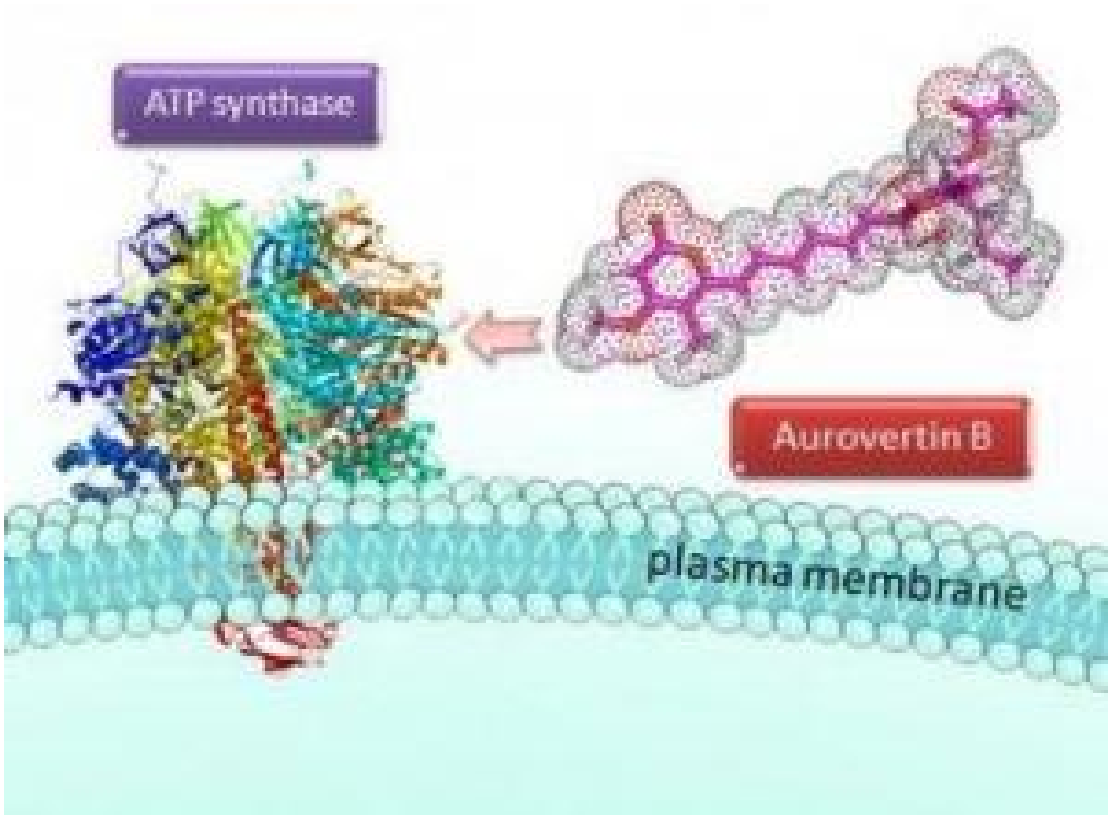
The survey's research also has implications for treatment of people with existing sexual problems.

"If a patient is concerned about how long intercourse should last, these data can help shift the patient away from a concern about physical disorders and to be initially treated with counseling, instead of medicine," Corty noted.

Adapted from materials provided by Penn State.

http://www.sciencedaily.com/releases/2008/03/080331145115.htm

Blocking Key Energy Protein Kills Cancer Cells, First Evidence Provided



In a finding that could lead to more effective anti-cancer medication, scientists exposed breast cancer cells to a substance that blocks a protein called ATP synthase. The cancer cells were killed while normal ones were preserved. (Credit: Courtesy of Hsin-Yi Chang and Hsueh-Fen Juan)

ScienceDaily (Apr. 2, 2008) — Researchers in Taiwan report for the first time that blocking a key energy-supplying protein kills cancer cells. The finding, described as the first to test possible medical uses of so-called ATP-synthase inhibitors, may lead to new and more effective anti-cancer medications, according to a new report.

In the new study, Hsueh-Fen Juan and colleagues focused on ATP synthase, a key protein involved in producing the energy-rich molecules of ATP that power all life processes. For years researchers thought that the protein existed only in mitochondria, structures located inside cells that convert nutrients into energy. Recent studies found high levels of ATP synthase on the surface of cancer cells, but until now the medical implications went unexplored.

The researchers analyzed tissue samples from breast cancer patients and found for the first time that the surface of breast cancer cells contains high levels of ATP synthase. In cell studies, exposing breast cancer cells to a substance that blocks ATP synthase killed the cancer cells but did not harm normal cells, the researchers say. The findings suggest that ATP synthase inhibitors may represent a new approach for fighting breast cancer and other cancer types, they say.

Journal reference: "Targeting Therapy for Breast Carcinoma by ATP Synthase Inhibitor Aurovertin B"Journal of Proteome Research. April 4, 2008.

Adapted from materials provided by American Chemical Society, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/03/080331092343.htm

Can A Laser Scanner Drive A Car By Itself?

The Spirit of Berlin is an automated car, with help from a laser scanner. (Credit: Image courtesy of Fraunhofer-Gesellschaft)

ScienceDaily (Apr. 2, 2008) — Can a computer steer a car through a city without a driver's help? The 'Spirit of Berlin', a vehicle developed jointly by researchers at the Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS in Sankt Augustin and their colleagues at the Freie Universität Berlin, proves that it is possible. The vehicle, which will be on display at this year's Hannover Messe, made it to the semi-finals of the 'DARPA Urban Challenge' competition* entirely alone –without a driver or a remote control.

One of Spirit of Berlin's most important sensors is a rotating 3-D laser scanner that was developed at the Fraunhofer IAIS. The scanner classifies the navigable route and is able to distinguish the street from footpaths, parking lots, houses and pedestrians.

"The scanner, which is fixed to the roof of the car, constantly moves laser beams back and forth through a mirror on a vertical axis – it moves the laser beam from top to bottom and back again," explains IAIS project manager Dr. Hartmut Surmann.

"If anything gets in the way, such as a pedestrian, the laser beam is reflected and sent back to the scanner. The software analyzes the information while the car is in motion and steers the vehicle in the right direction. The system comprises two back-to-back laser scanners that rotate in the same way as the flashing lights on police cars and are thus able to 'see' all of the car's surroundings." The lasers can record two complete images per second. One of the challenges involved is to keep adjusting the recorded values to allow for the distance covered. "At a speed of 36 kilometers per hour, the car moves 10 meters per second. Consequently, the measured data must constantly be adjusted to the car's current position," Surmann explains.

Does the new automated vehicle mean that the driver's license will one day become a thing of the past, and that people can sit back and enjoy the ride without taking notice of traffic? "That's quite unlikely," Surman says. "At a price of 17,800 euros, the scanner is much too expensive for use in private vehicles,

even though it is significantly cheaper than conventional models. The main purpose of taking part in this competition was to show what computers are capable of doing when they have the right sensors, such as laser scanners and cameras."

But where are these laser scanners in use today? "Among other things, our laser scanners are applied to assess the visibility of advertising billboards," says the scientist. The scanner determines from which perspective the billboard is visible, and whether the view is partially obscured by a tree or a streetlight. It also identifies the point from which someone driving by can see the billboard.

Within seconds, the laser beam scans the entire area and delivers the desired information at an aperture angle between 120 and 180 degrees – similar to a panoramic photograph. The difference is that a picture does not provide the observer with any information on spaces and distances, but a laser scan does. "This makes it possible to determine quality criteria for the placement of a billboard, which could be reflected in the price. A billboard that can be seen in its entirety from any angle can be rented at a higher price than a board that passers-by can only see from one angle," says Surmann.

3-D laser scanners can also be beneficial in the realm of freight transport, as they can help determine how much space a transporter has, where street lights are in the way, which bridges are too low and which tunnels are too narrow. While digital street maps do exist, they provide no information about available space. By driving the transport route beforehand in a car that is equipped with a laser scanner, it easy to create an exact model of the surroundings.

According to Surmann, the IAIS 3-D scanner's biggest advantage is its price: The device only costs a third of what conventional 3-D scanners cost. This has made a number of new applications possible that were previously unprofitable for cost reasons.

*The Urban Challenge for unmanned vehicles is organized by the Defense Advanced Research Projects Agency (DARPA), the research arm of the United States Department of Defense. In November 2007, the third edition of the event was held at the site of a former air force base in California for the first time.

Adapted from materials provided by Fraunhofer-Gesellschaft.

http://www.sciencedaily.com/releases/2008/04/080401112407.htm

Why We Don't Always Learn From Our Mistakes

ScienceDaily (Apr. 2, 2008) — If you are struggling to retrieve a word that you are certain is on the tip of your tongue, or trying to perfect a slapshot that will send your puck flying into a hockey net, or if you keep stumbling over the same sequence of notes on the piano, be warned: you might be unconsciously creating a pattern of failure, a new study reveals.

Karin Humphreys, assistant professor in McMaster University's Faculty of Science, and Amy Beth Warriner, an undergraduate student in the Department of Psychology, Neuroscience & Behaviour, suggest that most errors are repeated because the very act of making a mistake, despite receiving correction, constitutes the learning of that mistake.

Humphreys says the research came about as a result of her own experiences of repeatedly getting into a tip-of-the-tongue (or TOT) state on particular words.

"This can be incredibly frustrating -- you know you know the word, but you just can't quite get it," she said. "And once you have it, it is such a relief that you can't imagine ever forgetting it again. But then you do. So we began thinking about the mechanisms that might underlie this phenomenon. We realized that it might not be a case of everyone having certain words that are difficult for them to remember, but that by getting into a tip-of-the-tongue state on a particular word once, they actually learn to go into that incorrect state when they try to retrieve the same word again."

Humphreys and Warriner tested 30 students to see if their subjects could retrieve words after being given a definition. e.g. "What do you call an instrument for performing calculations by sliding beads along rods or grooves" (Answer: abacus). They then had to say whether they knew the answer, didn't know it, or were in a TOT. If they were in a TOT, they were randomly assigned to spend either 10 or 30 seconds trying to retrieve the answer before finally being shown it. Two days later, subjects were tested on those same words again. One would assume that having been shown the correct word on Day 1 the subject would still remember it on Day 2. Not so. The subjects tended to TOT on the same words as before, and were especially more likely to do so if they had spent a longer time trying to retrieve them The longer time in the error state appears to reinforce that incorrect pattern of brain activation that caused the error.

"It's akin to spinning one's tires in the snow: despite your perseverance you're only digging yourself a deeper rut," the researchers explained.

There might be a strategy to solve the recurrence of tip-of-the-tongue situations, which is what Warriner is currently working on for her honours thesis.

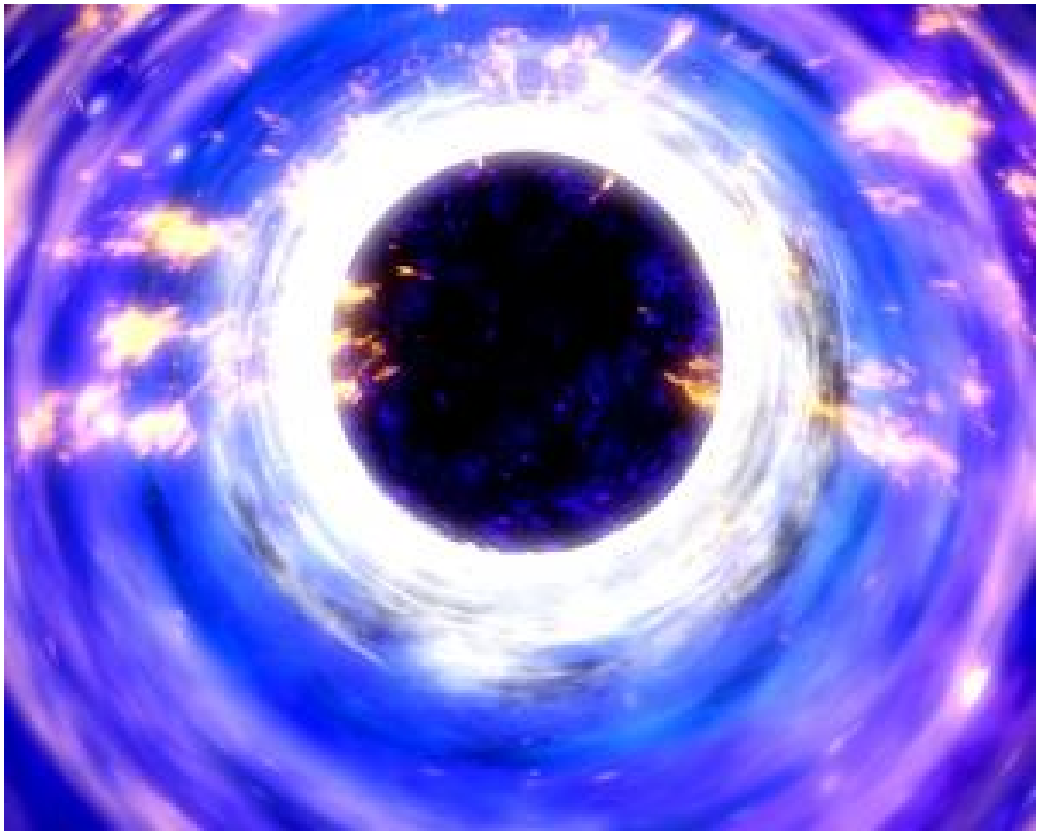
"If you can find out what the word is as soon as possible--by looking it up, or asking someone--you should actually say it to yourself," says Humphreys. "It doesn't need to be out loud, but you should at least say it to yourself. By laying down another procedural memory you can help ameliorate the effects of the error. However, what the research shows is that if you just can't figure it out, stop trying: you're just digging yourself in deeper."

The research appears April 1, 2008 in The Quarterly Journal of Experimental Psychology.

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

http://www.sciencedaily.com/releases/2008/04/080401102954.htm

Smallest Black Hole Ever Discovered Has Amazing Tidal Force



In this top-down illustration of a black hole and its surrounding disk, gas spiraling toward the black hole piles up just outside it, creating a traffic jam. The traffic jam is closer in for smaller black holes, so X-rays are emitted on a shorter timescale. (Credit: NASA)

ScienceDaily (Apr. 2, 2008) — Using a new technique, two NASA scientists have identified the lightest known black hole. With a mass only about 3.8 times greater than our Sun and a diameter of only 15 miles, the black hole lies very close to the minimum size predicted for black holes that originate from dying stars.

"This black hole is really pushing the limits. For many years astronomers have wanted to know the smallest possible size of a black hole, and this little guy is a big step toward answering that question," says lead author Nikolai Shaposhnikov of NASA's Goddard Space Flight Center in Greenbelt, Md.

The tiny black hole resides in a Milky Way Galaxy binary system known as XTE J1650-500, named for its sky coordinates in the southern constellation Ara. NASA's Rossi X-ray Timing Explorer (RXTE) satellite discovered the system in 2001. Astronomers realized soon after J1650's discovery that it harbors a normal star and a relatively lightweight black hole. But the black holeâ€™s mass had never been measured to high precision.

Shaposhnikov and his Goddard colleague Lev Titarchuk presented their results on Monday, March 31, at the American Astronomical Society High-Energy Astrophysics Division meeting in Los Angeles, Calif. Titarchuk also works at George Mason University in Fairfax, Va., and the US Naval Research Laboratory in Washington, DC.

The method used by Shaposhnikov and Titarchuk has been described in several papers in the Astrophysical Journal. It uses a relationship between black holes and the inner part of their surrounding disks, where gas spirals inward before making the fatal plunge. When the feeding frenzy reaches a

moderate rate, hot gas piles up near the black hole and radiates a torrent of X-rays. The X-ray intensity varies in a pattern that repeats itself over a nearly regular interval. This signal is called a quasi-periodic oscillation, or QPO.

Astronomers have long suspected that a QPO's frequency depends on the black hole's mass. In 1998, Titarchuk realized that the congestion zone lies close in for small black holes, so the QPO clock ticks quickly. As black holes increase in mass, the congestion zone is pushed farther out, so the QPO clock ticks slower and slower. To measure the black hole masses, Shaposhnikov and Titarchuk use archival data from RXTE, which has made exquisitely precise measurements of QPO frequencies in at least 15 black holes.

Last year, Shaposhnikov and Titarchuk applied their QPO method to three black holes whose masses had been measured by other techniques. In their new paper, they extend their result to seven other black holes, three of which have well-determined masses. "In every case, our measurement agrees with the other methods," says Titarchuk. "We know our technique works because it has passed every test with flying colors."

When Shaposhnikov and Titarchuk applied their method to XTE J1650-500, they calculated a mass of 3.8 Suns, with a margin of uncertainty of only half a Sun. This value is well below the previous black hole record holder with a reliable mass measurement, GRO 1655-40, which tips the scales at about 6.3 Suns.

Below some unknown critical threshold, a dying star should produce a neutron star instead of a black hole. Astronomers think the boundary between black holes and neutron stars lies somewhere between 1.7 and 2.7 solar masses. Knowing this dividing line is important for fundamental physics, because it will tell scientists about the behavior of matter when it is scrunched into conditions of extraordinarily high density.

Despite the diminutive size of this new record holder, future space travelers had better beware. Smaller black holes like the one in J1650 exert stronger tidal forces than the much larger black holes found in the centers of galaxies, which make the little guys more dangerous to approach. "If you ventured too close to J1650's black hole, its gravity would tidally stretch your body into a strand of spaghetti," says Shaposhnikov.

Shaposhnikov adds that RXTE is the only instrument that can make the high-precision timing observations necessary for this line of research. "RXTE is absolutely crucial for these black hole mass measurements," he says.

Adapted from materials provided by NASA/Goddard Space Flight Center.

http://www.sciencedaily.com/releases/2008/04/080401141549.htm

Brain Lesions More Common Than Previously Thought

ScienceDaily (Apr. 2, 2008) — New research shows cerebral microbleeds, which are lesions in the brain, are more common in people over 60 than previously thought.

"We found a three-to-four-fold higher overall prevalence of cerebral microbleeds compared to other studies," according to study author Monique M.B. Breteler, MD, PhD, with the Erasmus MC University Medical Center in Rotterdam, the Netherlands. "These findings are of major importance since cerebral microbleeds likely reflect cerebrovascular pathology and may be associated with an increased risk of cerebrovascular problems."

Cerebral microbleeds are lesions that can be seen on brain scans, such as an MRI brain scan. The lesions are deposits of iron from red blood cells that have presumably leaked out of small brain vessels.

For the study, 1,062 healthy men and women who were an average age of 70 underwent an MRI to scan for the presence of cerebral microbleeds. Of the participants, 250 were found to have cerebral microbleeds.

The study found overall prevalence of cerebral microbleeds was high and increased with age from 18 percent in people age 60 to 69 to 38 percent in people over age 80. People with the e4 allele of the APOE gene, which is known to increase the risk of Alzheimer's disease and of cerebral amyloid angiopathy, had significantly more microbleeds than people without this genetic variant.

"We also found that the risk factors for cerebral microbleeds appear to vary according to the location of the microbleed," said Breteler. "Our results show people with high blood pressure and a history of smoking had microbleeds in a different location in the brain than people with the APOE e4 allele, suggesting different causes for microbleeds in different locations."

The study is published in the April 1, 2008, issue of Neurology®, the medical journal of the American Academy of Neurology.

The study was supported by the Erasmus MC University Medical Center and Erasmus University Rotterdam, the Netherlands Organization for Scientific Research, and the Netherlands Organization for Health Research and Development.

Adapted from materials provided by American Academy of Neurology.

http://www.sciencedaily.com/releases/2008/03/080331165045.htm

Music File Compressed 1,000 Times Smaller Than Mp3

ScienceDaily (Apr. 2, 2008) — Researchers at the University of Rochester have digitally reproduced music in a file nearly 1,000 times smaller than a regular MP3 file. The music, a 20-second clarinet solo, is encoded in less than a single kilobyte, and is made possible by two innovations: recreating in a computer both the real-world physics of a clarinet and the physics of a clarinet player.

The achievement, announced April 1 at the International Conference on Acoustics Speech and Signal Processing held in Las Vegas, is not yet a flawless reproduction of an original performance, but the researchers say it's getting close.

"This is essentially a human-scale system of reproducing music," says Mark Bocko, professor of electrical and computer engineering and co-creator of the technology. "Humans can manipulate their tongue, breath, and fingers only so fast, so in theory we shouldn't really have to measure the music many thousands of times a second like we do on a CD. As a result, I think we may have found the absolute least amount of data needed to reproduce a piece of music."

In replaying the music, a computer literally reproduces the original performance based on everything it knows about clarinets and clarinet playing. Two of Bocko's doctoral students, Xiaoxiao Dong and Mark Sterling, worked with Bocko to measure every aspect of a clarinet that affects its sound—from the backpressure in the mouthpiece for every different fingering, to the way sound radiates from the instrument. They then built a computer model of the clarinet, and the result is a virtual instrument built entirely from the real-world acoustical measurements.

The team then set about creating a virtual player for the virtual clarinet. They modeled how a clarinet player interacts with the instrument including the fingerings, the force of breath, and the pressure of the player's lips to determine how they would affect the response of the virtual clarinet. Then, says Bocko, it's a matter of letting the computer "listen" to a real clarinet performance to infer and record the various actions required to create a specific sound. The original sound is then reproduced by feeding the record of the player's actions back into the computer model.

At present the results are a very close, though not yet a perfect, representation of the original sound.

"We are still working on including 'tonguing,' or how the player strikes the reed with the tongue to start notes in staccato passages," says Bocko. "But in music with more sustained and connected notes the method works quite well and it's difficult to tell the synthesized sound from the original."

As the method is refined the researchers imagine that it may give computer musicians more intuitive ways to create expressive music by including the actions of a virtual musician in computer synthesizers. And although the human vocal tract is highly complex, Bocko says the method may in principle be extended to vocals as well.

The current method handles only a single instrument at a time, however in other work in the University's Music Research Lab with post-doctoral researcher Gordana Velikic and Dave Headlam, professor of music theory at the University of Rochester's Eastman School of Music, the team has produced a method of separating multiple instruments in a mix so the two methods can be combined to produce a very compact recording.

Bocko believes that the quality will continue to improve as the acoustic measurements and the resulting synthesis algorithms become more accurate, and he says this process may represent the maximum possible data compression of music.

"Maybe the future of music recording lies in reproducing performers and not recording them," says Bocko.

This research is funded by the National Science Foundation.

Sound files

Human performance recorded using MP3 format
http://www.rochester.edu/news/audio/sound2_160mp3.wav

Virtual performance using Bocko's new compression http://www.rochester.edu/news/audio/sound4.wav

Adapted from materials provided by University of Rochester.

http://www.sciencedaily.com/releases/2008/04/080401150755.htm

Mysterious Link Between Summer Birthdates And Nearsightedness

ScienceDaily (Apr. 2, 2008) — Do natural light levels make a baby born in June more likely to be nearsighted, or myopic, than if he or she had been born in December? While scientists think genetic factors play the strongest role in nearsightedness, a number of studies show that light exposure before and just after birth generates biological signals that influence the development of the eye's ability to focus and refract light properly.

Research had suggested that the influence of light on vision development in this perinatal period might occur through mother-baby biological signals before birth, or through the baby's direct exposure after birth, or both. Because the effect of light levels on myopia, if any, was likely to be slight, a large population study was needed to further explore the question.

Yossi Mandel, MD, and his research team found a suitable study group in candidates for Israeli military service who were medically evaluated between 2000 and 2004. All 276,911 participants (157,663 male, 119,248 female) were born in Israel, ensuring their exposure to the same seasonal light variations. Myopia prevalence rates, determined by visual examination and defined at three levels of severity, were: mild, 18.8 percent; moderate, 8.7 percent; and severe, 2.4 percent.

The risk of moderate and severe myopia varied with seasonal levels of light, or photoperiods, with highest rates in babies born in June/July and lowest in December/January. These correlations were considered highly statistically significant. The findings were adjusted for other known myopia risk factors, such as gender, education level, and father's country of origin. Mild myopia was not associated with season of birth or perinatal light exposure.

Myopia allows people to see close-up objects clearly while distant objects appear blurred. The condition is on the rise worldwide, but causes remain uncertain. Treating myopia in the United States costs more than $4.6 billion per year, and people with the condition are at higher risk for retinal detachment and other complications.

Since the link to seasonal birth date was most pronounced for severe myopia, Dr. Mandel concludes: "It seems reasonable to assume that only a fraction of the population might be genetically prone to develop myopia if exposed to environmental risk factors such as a long perinatal photoperiod. Further exploration of the mechanisms underlying the effect of light on the development and progression of myopia in humans is needed to devise effective preventive measures."

This research was published in the April 2008 issue of Ophthalmology, the journal of the American Academy of Ophthalmology.

Adapted from materials provided by American Academy of Ophthalmology, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/04/080401091217.htm

Discovery Of Oldest Known Traces Of Mineralization Caused By Micro-organisms

Stromatolites are fossils which show the life processes of the blue-green algae. These were found in Cervantes, Australia. (Credit: iStockphoto)

ScienceDaily (Apr. 2, 2008) — An old controversy has finally been laid to rest. Stromatolites, cauliflower-shaped carbonate rocks that are found in abundance in geological formations, including ones that are several billion years old, show definite evidence of ancient biological activity. This has just been shown by researchers at the Institut de Physique du Globe in Paris (CNRS/Université Paris 7), thanks to detailed analysis of 2.7 billion-year-old rocks from cores drilled in Australia. Previously, the oldest known traces of mineralization caused by micro-organisms were only 350 million years old.

Until now, most scientists agreed that fossil stromatolites were connected with the activity of photosynthesizing micro-organisms, as is the case in present-day environments(1). This hypothesis was based on morphological criteria, which appeared to suffice for recent fossil rocks (several million years old) formed in environments similar to today's. However, this was not the case for older stromatolites (2.5 to 4 billion years old), which developed under very different conditions and for which researchers have proposed (and tested numerically) models of mineral growth in the presence of water.

The researchers collected unaltered fossil stromatolites as part of a drilling project (the Pilbara Drilling Project(2)), funded by CNRS's National Institute of Earth and Astronomical Sciences and the Institut de Physique du Globe, in the Tumbiana formation in Australia. By using a very high resolution characterization method (of around 10 nanometers), they were able to discover and analyze small globules of organic matter containing nanocrystals of aragonite. It is known that present-day bacteria cause the precipitation of aragonite, a very unstable polymorph of calcium carbonate which rapidly changes into calcite once the micro-organisms die. Thanks to these findings, researchers now have irrefutable proof of microbial mediation in the formation of ancient stromatolites.

Notes :

1) for instance, at Shark Bay, Australia

2) see the article Drilling the Outback (backstory), in the same issue of the journal Nature Géoscience, which describes the drilling expedition

Journal reference: Microbially influenced formation of 2,724-million-year-old stromatolites, Kevin Lepot, Karim Benzerara, Gordon E. Brown Jr and Pascal Philippot, Nature Geosciences, online publication 28 January 2008.

Adapted from materials provided by Centre National De La Recherche Scientifique.

http://www.sciencedaily.com/releases/2008/03/080330220602.htm

Remarkable Tool 'Sees' Internal Body Details 1,000 Times Smaller Than Ever Before

A mouse under the microscope. (Credit: Gambhir lab)

ScienceDaily (Apr. 2, 2008) — Doctors' quest to see what is happening inside a living body has been hampered by the limits on detecting tiny components of internal structures and events. Now a team of Stanford University School of Medicine researchers has developed a new type of imaging system that can illuminate tumors in living subjects-getting pictures with a precision of nearly one-trillionth of a meter.

This technique, called Raman spectroscopy, expands the available toolbox for the field of molecular imaging, said team leader Sanjiv Sam Gambhir, MD, PhD, professor of radiology. He is the senior author of a study describing the method that will be published in the March 31 advance online issue of the Proceedings of the National Academy of Sciences.

"This is an entirely new way of imaging living subjects, not based on anything previously used," said Gambhir, who directs the Molecular Imaging Program at Stanford. He said signals from Raman spectroscopy are stronger and longer-lived than other available methods, and the type of particles used in this method can transmit information about multiple types of molecular targets simultaneously.

"Usually we can measure one or two things at a time," he said. "With this, we can now likely see 10, 20, 30 things at once."

Gambhir said he believes this is the first time Raman spectroscopy has been used to image deep within the body, using tiny nanoparticles injected into the body to serve as beacons. When laser light is beamed from a source outside the body, these specialized particles emit signals that can be measured and converted into a visible indicator of their location in the body.

Gambhir compared the Raman spectroscopy work to the development of positron emission tomography discovered 20 or 30 years ago. PET has become a routine hospital imaging technique that uses radioactive molecules to generate a three-dimensional image of body biochemistry. "Nobody understood the impact of PET then," he said, referring to its discovery. "Ten or 15 years from now, people should appreciate the impact of this."

Imaging of animals and humans can be done using a few different methods, including PET, magnetic resonance imaging, computed tomography, optical bioluminescence and fluorescence and ultrasound. However, said Gambhir, none of these methods so far can fulfill all the desired qualities of an imaging

tool, which include being able to finely detect small biochemical details, being able to detect more than one target at a time and being cheap and easy to use.

Gambhir's group turned to making good use of the Raman effect, the physical phenomenon that occurs when light from a source such as a laser is shined on an object. When the light hits the object, roughly one in 10 million photons bouncing off the object's molecules has an increase or decrease in energy-called Raman scattering. This scattering pattern, called a spectral fingerprint, is unique to each type of molecule and can be measured.

Postdoctoral scholars Shay Keren, PhD, and Cristina Zavaleta, PhD, co-first authors of the study, found a way to make Raman spectroscopy a medical tool. To get there, they used two types of engineered Raman nanoparticles: gold nanoparticles and single-wall carbon nanotubes.

First, they injected mice with the some of the nanoparticles. To see the nanoparticles, they used a special microscope that the group had adapted to view anesthetized mice exposed to laser light. The researchers could see that the nanoparticles migrated to the liver, where they were processed for excretion.

To be able to detect molecular events, said Zavaleta, they labeled separate batches of spectrally unique Raman nanoparticles with different "tags" - peptides or antibodies - and then injected them into the body simultaneously to see where they went. For example, if each type of particle migrated to a different tumor site, the newly developed Raman microscope would enable the researchers to separate the signals from each batch of particles.

As part of this proof-of-principle work, Gambhir's team tagged the gold nanoparticles with different pieces of proteins that homed in on different tumor molecules.

"We could attach pretty much anything," said Gambhir. The Raman effect also lasts indefinitely, so the particles don't lose effectiveness as indicators as long as they stay in the body.

Using a microscope they modified to detect Raman nanoparticles, the team was able to see targets on a scale 1,000 times smaller than what is now obtainable by the most precise fluorescence imaging using quantum dots.

When adapted for human use, they said, the technique has the potential to be useful during surgery, for example, in the removal of cancerous tissue. The extreme sensitivity of the imager could enable detection of even the most minute malignant tissues.

Gambhir's lab is further studying these Raman nanoparticles to follow their journey throughout the body over the course of several days before they are excreted. They are also optimizing the particle size and dosage, and are evaluating the particles for potential toxicity. Gambhir is publishing a study in the March 30 issue of Nature Nanotechnology indicating that the carbon nanotubes are not likely toxic in mice.

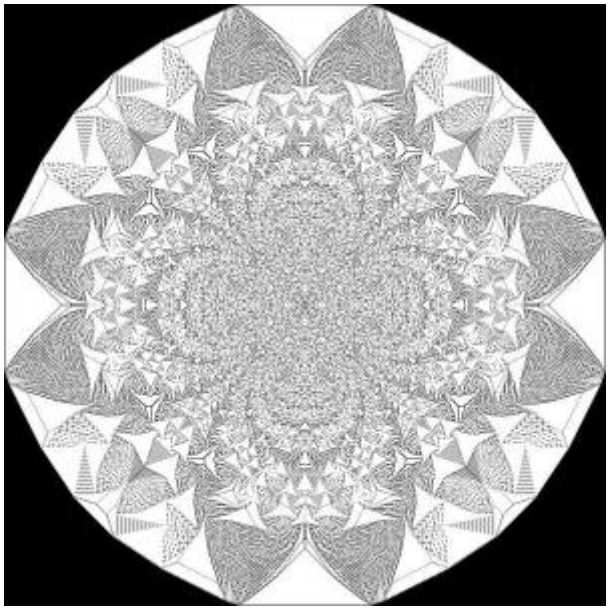
A clinical trial is planned to test the gold nanoparticles in humans for possible use in conjunction with a colonoscopy to indicate early-stage colorectal cancer.

This work was funded by the National Institutes for Health, including the Center for Cancer Nanotechnology Excellence. Other Stanford researchers who contributed to this work are: Zhen Cheng, PhD, assistant professor of diagnostic radiology; graduate student Adam de la Zerda and Oliver Gheysens, PhD, a former postdoctoral scholar.

Adapted from materials provided by Stanford University Medical Center.

http://www.sciencedaily.com/releases/2008/03/080331172528.htm

Sandpile Models Useful To Model Earth Crust Movement, Stock Market And Traffic Jams



Visualization of the mathematical sandpile model showing Sand spreading out symmetrically in highly angulated forms in which fractal patterns develop. (Credit: Image courtesy of Netherlands Organization for Scientific Research)

ScienceDaily (Apr. 2, 2008) — Dutch mathematician Anne Fey has investigated probability calculations in mathematical sandpile models. Although the rules of the model are simple, the wide-ranging behaviour that emerges from these is fascinating. Fey's research concerned various forms of self-organisation in these models. Practical applications are, for example, movements in the Earth's crust, stock market fluctuations and the formation of traffic jams.

These mathematical models are defined on a grid. Each grid point has a height, or quantity of sand, that must be below a limiting value. With each time interval, the height of one of the points increases. If a height exceeds a limiting value the sand must be moved to nearby points until all points are once again under the limiting value.

Although the rules of the model are simple, the wide-ranging behaviour that emerges from these is fascinating. Sandpile models exhibit various forms of self-organisation and patterns are formed which are stable over the course of time. That is seen most clearly in the case where only the height of the mid-point increases. The sand then spreads out symmetrically in highly angulated forms, in which fractal patterns develop. Fractal patterns have an infinite quantity of details in which designs are repeated on an increasingly smaller scale – this is comparable to ice crystals and certain corals.

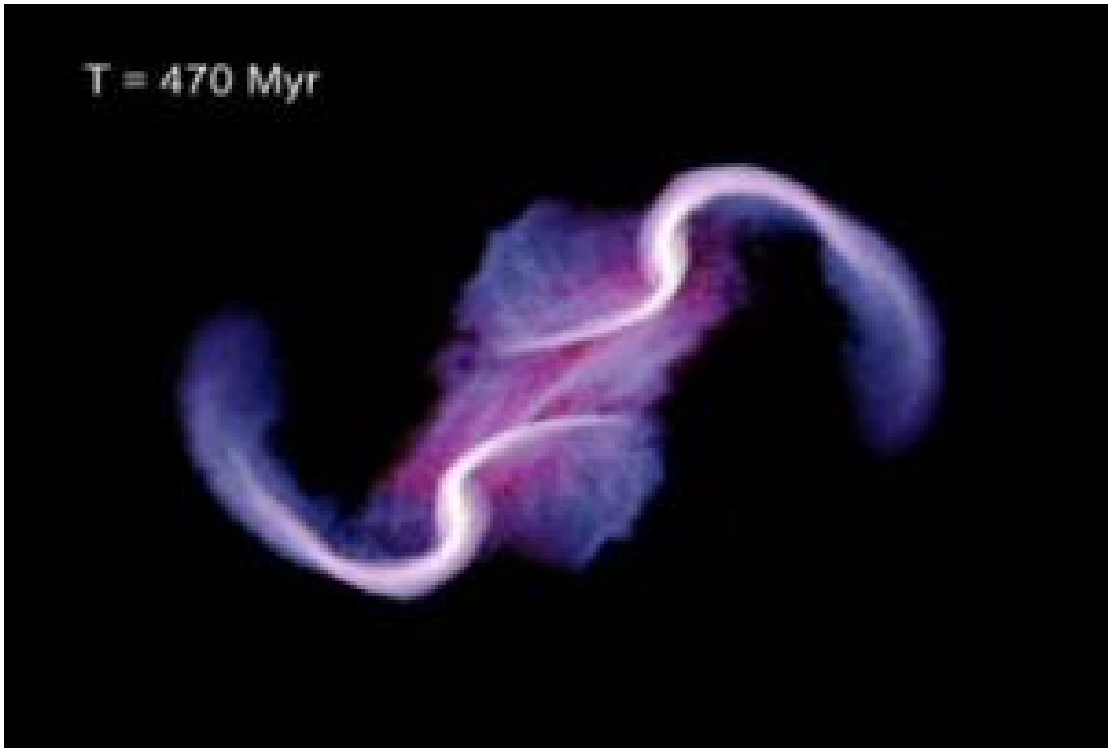
In the other situations, the choice of the point where the height increases is random. Then 'self-organised criticality' occurs, a deeper form of self-organisation that is also studied in diverse research areas such as movements in the Earth's crust, stock market fluctuations and the formation of traffic jams.

Fey was originally a mathematics teacher. Via the programme Teacher in Research from NWO Division for the Physical Sciences, she was given the opportunity to familiarise herself with scientific research. She liked it so much that she gave up her teaching job in order to pursue her research ambitions full time. She is the second teacher to gain a doctorate under this programme.

Adapted from materials provided by Netherlands Organization for Scientific Research.

http://www.sciencedaily.com/releases/2008/03/080331110052.htm

Stars Burst Into Life In The Early Universe



Simulation of dramatic merging event of two galaxies in the early universe. (Credit: Tiziana Di Matteo (MPE/CMU), Volker Springel (MPE) & Lars Hernquist (Harvard)))

ScienceDaily (Apr. 2, 2008) — New measurements from some of the most distant galaxies bolster the evidence that the strongest burst of star formation in the history of the Universe occurred about two billion years after the Big Bang. An international team of astronomers from the UK, France, Germany and the USA have found evidence for a dramatic surge in star birth in a newly discovered population of massive galaxies in the early Universe.

In his talk at the RAS National Astronomy Meeting in Belfast on Tuesday 1 April, team member Dr Scott Chapman from the Institute of Astronomy in Cambridge will present observations of five of these galaxies that are forming stars at a tremendous rate and have large reservoirs of gas that will power the star formation for hundreds of millions of years. Dr Chapman's work is supported by a parallel study made by PhD student Caitlin Casey, who finds that the star formation in the new galaxies is distributed over a vast area.

The galaxies are so distant that the light we detect from them has been travelling for more than 10 billion years. This means that we see them as they were about a three billion years after the Big Bang. The recent discovery of a new type of extremely luminous galaxy in this epoch - one that is very faint in visible light, but much brighter at longer, radio wavelengths - is the key to the new results.

A related type of galaxy was first found in 1997 (but not well understood until 2003) using a new and much more sensitive camera that detects radiation emitted at submillimetre wavelengths (longer than the wavelengths of visible light that we see with but somewhat shorter than radio waves). The camera, called `SCUBA' was attached to the James Clerk Maxwell Telescope (JCMT), on Mauna Kea in Hawaii.

In 2004 the Cambridge-led team of astronomers proposed that these distant "submillimetre-galaxies" might only represent half of the picture of rapid star formation in the early Universe, as SCUBA is biased

towards colder objects. They suggested that a population of similar galaxies with slightly hotter temperatures could exist but have gone largely unnoticed.

The team of scientists searched for the missing galaxies using observatories around the world: the MERLIN array in the UK, the Very Large Array (VLA) in the US (both radio observatories), the Keck optical telescope on Hawaii and the Plateau de Bure submillimetre observatory in France. The instruments found and pinpointed the galaxies, measured their distances and then confirmed their star forming nature through the detection of the vastly extended gas and dust.

The new galaxies have prodigious rates of star formation, far higher than anything seen in the present-day Universe. They probably developed after the first stars and galaxies had already formed in what would have been a perfectly smooth Universe. None the less, studying these new objects gives astronomers an insight into the earliest epochs of star formation after the Big Bang.

With the new discovery, the Cambridge astronomers have provided a much more accurate census of some of the most extreme galaxies in the Universe at the peak of their activity. Future observations will investigate the details of the galaxies' power source and try to establish how they will develop once their intense bursts of activity come to an end.

Additional images and video at: http://www.ast.cam.ac.uk/~ccasey/sfrg.html

Adapted from materials provided by Royal Astronomical Society.

http://www.sciencedaily.com/releases/2008/04/080401152953.htm

Gene Mutations Tied To Immune Comeback During Therapy For HIV-1

Lead author Sunil K. Ahuja, M.D., of The University of Texas Health Science Center at San Antonio, pictured with his lab team in 2005. (Credit: University of Texas Health Science Center)

ScienceDaily (Apr. 2, 2008) — A new study by U.S. scientists provides compelling evidence that two genes are linchpins in defining the course of immune restoration in HIV-positive individuals undergoing virus-suppressing therapy.

Nature Medicine posted the study online March 30. The findings explain why some subjects' immune systems fail to have a sustained immune comeback, despite suppression of HIV-1 replication by highly active antiretroviral therapy (HAART), while others' immune systems roar back.

The two genes are CCR5, an HIV-1 co-receptor or portal of entry for the virus into CD4+ T cells, and CCL3L1, an HIV-suppressing molecule that binds to CCR5.

Tailored therapy

"The new results suggest that we may be able to personalize the treatment of HIV as we might be able to predict, based on the presence of these gene variations, whether someone will have a better or worse immunological response when taking HAART," said lead author Sunil K. Ahuja, M.D., professor of medicine, microbiology, infectious diseases and biochemistry at The University of Texas Health Science Center at San Antonio and director of the Veterans Administration Center for AIDS and HIV Infection at the South Texas Veterans Health Care System in San Antonio. He holds the university's President's Council Chair for Excellence in Medical Research.

"We categorized the copy number of the CCL3L1 gene and variations in the CCR5 gene into three categories designated as high, moderate and low genetic risk groups," said Matthew Dolan, M.D., co-lead author and professor of medicine at the Uniformed Services University, Bethesda, Md. Dr. Dolan also helped oversee the cohort of subjects at Wilford Hall Medical Center, San Antonio, which contributed to this study.

"Those HIV-positive persons categorized into the low genetic risk group did the best on HAART. In contrast, those categorized into the high genetic risk group initially did fine during the first two years of therapy, but then their immune reconstitution failed and their CD4 cell counts began to decline," Dr. Dolan said.

Genetic risk

A 2005 study by Dr. Ahuja and colleagues suggested that individuals with fewer copies of the CCL3L1 gene than the average found in people from their same ethnic background have increased risk of acquiring HIV-1 infection and progressing faster to AIDS. Also, previous studies by these researchers defined the CCR5 variations that confer protection.

"As those in the high and moderate genetic risk groups might be especially vulnerable to both increased AIDS risk and a poorer immune response during HAART, it might be important to keep a closer eye on such patients and perhaps even consider starting them on therapy earlier," said Brian Agan, M.D., a co-author also from Wilford Hall Medical Center.

"When patients fare poorly on HAART, clinicians usually think about genetic mutations in the virus as a possible reason, but this study points to the importance of also alerting caregivers to the importance of a person's CCL3L1-CCR5 genetic makeup as another possible factor for faring poorly on therapy," added Hemant Kulkarni, M.D., a co-author from the Veterans Administration Center for AIDS and HIV Infection.

'Novel tools'

Mike McCune, M.D., Ph.D., chief of the Division of Experimental Medicine at the University of California, San Francisco, hailed the study as one with potentially important practical applications. "By showing that the same genetic makeup increases susceptibility to immune depletion and impaired immune recovery, the authors provide novel tools that may allow us to predict both those who will progress faster after HIV infection as well as those who might benefit from earlier initiation of HAART," he said.

The study suggests the need for new thinking in HIV-1 management. "The current debate about when to initiate antiretroviral therapy might need to be redirected toward first assessing who should be considered for therapy, on the basis of the host genetic endowment," Dr. Ahuja said.

Capt. Gregory Martin, M.D., U.S.N., program director for the Infectious Diseases Clinical Research Program at the Uniformed Services University, said, "The finding that CCL3L1-CCR5 genetic makeup has its greatest impact on immune recovery when persons were started on therapy with CD4+ counts of less than 350 cells/mm3 highlights the importance of starting persons on therapy earlier rather than later."

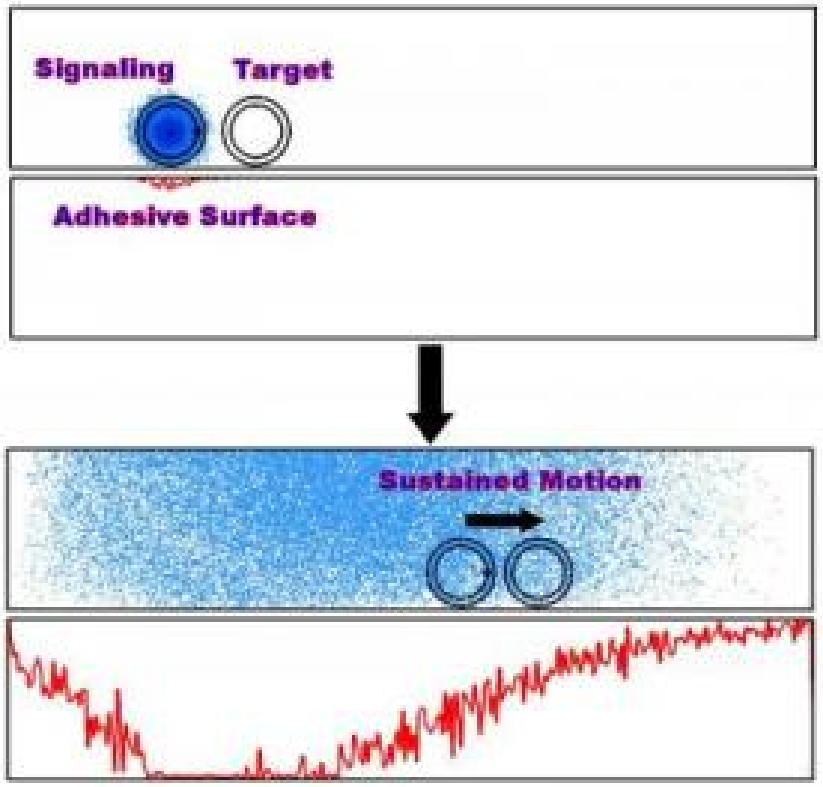
Joel Kupersmith, M.D., chief research and development officer for the Veterans Health Administration, said, "Dr. Ahuja's groundbreaking research is in line with the VA's mission of providing personalized medicine for veterans. We look forward to the translation of these findings into improved care for HIV-infected veterans and HIV patients worldwide." The Veterans Health Administration is a part of the U.S. Department of Veterans Affairs and in part funded this work.

The CD4+ restoration was more closely associated with number of copies of CCL3L1 than with CCR5 status. "This suggests that drugs that mimic or amplify the activity of CCL3L1 could be effective for HIV treatment," Dr. Dolan said.

Adapted from materials provided by University of Texas Health Science Center at San Antonio, via Newswise.

http://www.sciencedaily.com/releases/2008/03/080331222526.htm

Chemical Signaling May Power Nanomachines



Scientists report that chemical signaling between microcapsules can initiate the capsules' movement, a finding that could assist nanomachines in drug delivery as well as a host of other applications. (Credit: Courtesy of O. Berk Usta)

ScienceDaily (Apr. 2, 2008) — In a finding that could provide controlled motion in futuristic nanomachines used for drug delivery, fuel cells, and other applications, researchers in Pennsylvania report that chemical signaling between synthetic microcapsules can trigger and direct movement of these capsules.

Researchers theorize that synthetic capsules can communicate with each other by physically shuffling chemical signals from capsule to capsule, much like passing water through a fireman's bucket brigade. Scientists recently suggested that this same signaling process also appears capable of sending cues to direct cell movement.

In the new study, Anna C. Balazs and colleagues used computer models to simulate the chemical signaling. They modeled a porous polymer microcapsule filled with nanonparticles to imitate a biological cell. When placed next to an empty capsule, nanoparticles from the filled capsule initiated the motion of the empty capsule, which in turn caused the movement of the filled "signaling" capsule. The same locomotion process could be engineered into futuristic nanomachines to help direct their movement through the body or through fuel cells, the researchers suggest.

The article"Modeling Microcapsules That Communicate through Nanoparticles To Undergo Self-Propelled Motion" is scheduled for the current issue of ACS Nano. (http://dx.doi.org/10.1021/nn700379v)

Adapted from materials provided by American Chemical Society, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/03/080331090921.htm

Overweight Kids Need Less Intensive Exercise For Effective Weight Loss, Study Suggests

ScienceDaily (Apr. 2, 2008) — Overweight kids are better off doing less intensive exercise if they are to shed the pounds effectively, suggests a study of pubescent boys, published ahead of print in the British Journal of Sports Medicine.

The researchers assessed the rate at which fat was burned (fat oxidation) during graded leg cycling exercises in thirty 12 year old boys, 17 of whom were obese. The others were lean and healthy.

The intensity of the exercises increased every 3.5 minutes, with the aim of finding the level of exercise intensity required to burn off the most fat, known as the "Fat Max."

The Fat Max is determined by the amount of oxygen breathed in and the amount of carbon dioxide breathed out per minute as the exercise intensity increases, calculated as the VO2 peak.

The results showed that the average values of the VO2 peak for the two groups varied considerably, with the lean boys burning much more fat than the fat boys at higher exercise intensity. Among the lean boys the VO2 peak steadily increased before it began to level off at around 50%, although it was still increasing at 60%. The VO2 peak also increased in the obese boys, reaching the same level as the lean boys at 30%, equating to low intensity exercise.

But it then levelled off, before falling sharply at 50%, equating to moderate intensity exercise.

In other words, obese boys reached their Fat Max at much lower levels of exercise intensity than the lean boys. And more intensive exercise did not burn off more fat for them. The authors suggest that this is because obesity, and the sedentary lifestyle it induces, reduces muscle capacity as well as its requirement for, and ability to use, fat as fuel.

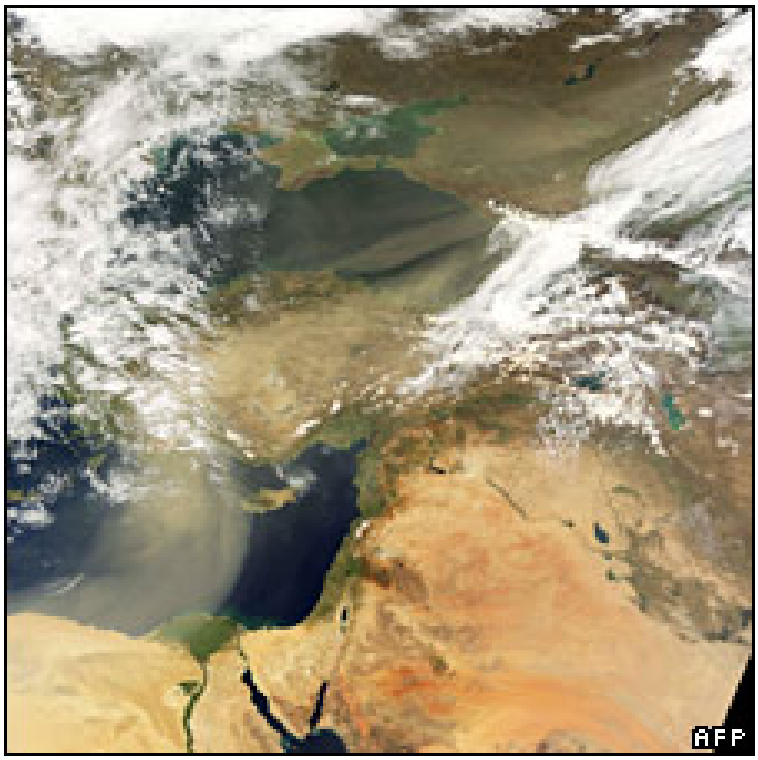
And obesity changes muscle type. Obese people have higher levels of type 2 "fast twitch" muscle fibres, which burn off more carbohydrate. Lean people have a higher proportion of type 1 muscle fibres, which burn off more fat, they add.

Journal reference: Comparison of fat oxidation during exercise in lean and obese pubertal boys: clinical implications. Online First Br J Sports Med 2008; doi 10.1136/bjsm.2007.044529

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

http://www.sciencedaily.com/releases/2008/03/080331221148.htm

'No Sun link' to climate change
By Richard Black
Environment correspondent, BBC News website



Scientists have produced further compelling evidence showing that modern-day climate change is not caused by changes in the Sun's activity.

The research contradicts a favoured theory of climate "sceptics", that changes in cosmic rays coming to Earth determine cloudiness and temperature.

The idea is that variations in solar activity affect cosmic ray intensity.

But Lancaster University scientists found there has been no significant link between them in the last 20 years.

Presenting their findings in the Institute of Physics journal, Environmental Research Letters, the UK team explain that they used three different ways to search for a correlation, and found virtually none.

The IPCC has got it right, so we had better carry on trying to cut carbon emissions
Terry Sloan

This is the latest piece of evidence which at the very least puts the cosmic ray theory, developed by Danish scientist Henrik Svensmark at the Danish National Space Center (DNSC), under very heavy pressure.

Dr Svensmark's idea formed a centrepiece of the controversial documentary The Great Global Warming Swindle.

Wrong path

"We started on this game because of Svensmark's work," said Terry Sloan from Lancaster University.

> **Terry Sloan has simply failed to understand how cosmic rays work on clouds**
> Henrik Svensmark

"If he is right, then we are going down the wrong path of taking all these expensive measures to cut carbon emissions; if he is right, we could carry on with carbon emissions as normal."

Cosmic rays are deflected away from Earth by our planet's magnetic field, and by the solar wind - streams of electrically charged particles coming from the Sun.

The Svensmark hypothesis is that when the solar wind is weak, more cosmic rays penetrate to Earth.

That creates more charged particles in the atmosphere, which in turn induces more clouds to form, cooling the climate.

The planet warms up when the Sun's output is strong.

Professor Sloan's team investigated the link by looking for periods in time and for places on the Earth which had documented weak or strong cosmic ray arrivals, and seeing if that affected the cloudiness observed in those locations or at those times.

"For example; sometimes the Sun 'burps' - it throws out a huge burst of charged particles," he explained to BBC News.

"So we looked to see whether cloud cover increased after one of these bursts of rays from the Sun; we saw nothing."

Over the course of one of the Sun's natural 11-year cycles, there was a weak correlation between cosmic ray intensity and cloud cover - but cosmic ray variability could at the very most explain only a quarter of the changes in cloudiness.

And for the following cycle, no correlation was found.

Limited effect

Dr Svensmark himself was unimpressed by the findings.

"Terry Sloan has simply failed to understand how cosmic rays work on clouds," he told BBC News.

"He predicts much bigger effects than we would do, as between the equator and the poles, and after solar eruptions; then, because he doesn't see those big effects, he says our story is wrong, when in fact we have plenty of evidence to support it."

But another researcher who has worked on the issue, Giles Harrison from Reading University, said the work was important "as it provides an upper limit on the cosmic ray-cloud effect in global satellite cloud data".

Dr Harrison's own research, looking at the UK only, has also suggested that cosmic rays make only a very weak contribution to cloud formation.

The Svensmark hypothesis has also been attacked in recent months by Mike Lockwood from the UK's Rutherford-Appleton Laboratory.

He showed that over the last 20 years, solar activity has been slowly declining, which should have led to a drop in global temperatures if the theory was correct.

The Intergovernmental Panel on Climate Change (IPCC), in its vast assessment of climate science last year, concluded that since temperatures began rising rapidly in the 1970s, the contribution of humankind's greenhouse gas emissions has outweighed that of solar variability by a factor of about 13 to one.

According to Terry Sloan, the message coming from his research is simple.

"We tried to corroborate Svensmark's hypothesis, but we could not; as far as we can see, he has no reason to challenge the IPCC - the IPCC has got it right.

"So we had better carry on trying to cut carbon emissions."

Richard.Black-INTERNET@bbc.co.uk

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7327393.stm

Published: 2008/04/03 13:04:23 GMT

Computers to merge with humans

The purrfect companion? Computers designed to bring man and machine closer than ever

By 2020 the terms "interface" and "user" will be obsolete as computers merge ever closer with humans.

It is one prediction in a Microsoft-backed report drawn from the discussions of 45 academics from the fields of computing, science, sociology and psychology.

It predicts fundamental changes in the field of so-called Human-Computer Interaction (HCI).

By 2020 humans will increasingly interrogate machines, the report said.

In turn computers will be able to anticipate what we want from them, which will require new rules about our relationship with machines.

Table map

The report, entitled Being Human: Human-Computer Interaction in the year 2020, looks at how the development of technologies over the next decade can better reflect human values.

"It is about how we anticipate the uses of technology rather than being reactive. Currently the human is not considered part of the process," said Bill Buxton, from Microsoft Research.

At the launch of the report some of the authors showed off the types of technologies that could bring the human back into the equation.

At Goldsmiths College, Professor Bill Gaver and his team have developed a Drift table, a piece of furniture which allows people to view aerial photography of their local neighbourhood and beyond.

"It isn't really designed for anything," explained Prof Gaver.

"People can use it for entertainment or learning. One of the people that was given the table used to check out houses in Southampton following a piece on the news about house prices going up in the area.

"Someone else used it to look at the towns they lived in as a child or to visit towns where friends lived," he said.

The table has no buttons and the small display in the middle moves as a result of pressure being put on the table.

"From central London it would take a day to navigate the table to the coast," said Prof Gaver.

Other prototype technologies aimed at putting human needs at the centre of the equation include the Whereabouts Clock.

The interface - designed at Microsoft's research labs in Cambridge - allows people to see where other members of their family are at any given time.

The categories of "home", "work" and "school" are deliberately vague in order to maintain privacy, explained Abigail Sellen, from Microsoft Research.

Other communication devices for the home that Microsoft is working on include Epigraph, an interface that allows family members to "post" pictures and messages to each other via their mobile phones.

Smart devices

The keyboard, mouse and monitor will increasingly be replaced by more intuitive forms of interaction and display, including tablet computers, speech recognition systems and fingertip-operated surfaces.

> **Without proper consideration and control it is possible that we - both individually and collectively - may no longer be in control of ourselves or the world around us**
> Being Human - Microsoft HCI report

Boundaries between humans and computers will become blurred over the next decade as devices are embedded in objects, our clothing or, in the case of medical monitoring, in our bodies.

Although paper will still be a reality in 2020, digital paper will also flourish allowing us to create, for example, social network magazines that update in real time.

Digital storage of even more aspects of our lives, from mobile phone calls to CCTV footage, could be a reality by 2020 and, in combination with an omnipresent network will mean privacy will be a key focus of the HCI community.

Our "digital footprint" - the sharing of more and more aspects of our lives through digital photography, podcasting , blogging and video - is set to get bigger and this will raise key questions about how much information we should store about ourselves.

Losing control

The ever-present network will channel mass market information directly to us while disseminating our own intimate information.

The report dubs this the era of so-called hyper-connectivity and predicts it will mean a growth in "techno-dependency".

This ever more intimate relationship between humans and computers will be a double-edged sword, it suggests.

The report compares the widespread introduction of the calculator - widely blamed for a fall in the standard of mental arithmetic - with what may happen as computers become more intelligent and take on new responsibilities.

"Without proper consideration and control it is possible that we - both individually and collectively - may no longer be in control of ourselves or the world around us," the report warns.

As well as the need for language to reflect the newly expanded human/computer environment so too the concept of teaching computer science will need to be adapted.

"Not just teaching children about how computers and applications work, but about their wider impact," reads the report.

Among its recommendations for the future direction of HCI, the report suggests there needs to be greater engagement with government and policy makers.

There also needs to be consideration for how technological developments will go forward in the developing world.

One of the report authors, Gary Marsden from the University of Cape Town in South Africa, showed off a prototype digital noticeboard.

Dubbed Big Board, the display, which is free to use, allows users to download information to their mobile phones about a range of topics including politics, health and even university lectures.

Mobile use in Africa is the fastest growing of anywhere in the world.

The display unit is currently being trialled in community centres, clinics and educational establishments in South Africa.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/7325004.stm

Published: 2008/04/02 10:35:45 GMT

Daily caffeine 'protects brain'

Coffee may cut the risk of dementia by blocking the damage cholesterol can inflict on the body, research suggests.

The drink has already been linked to a lower risk of Alzheimer's Disease, and a study by a US team for the Journal of Neuroinflammation may explain why.

A vital barrier between the brain and the main blood supply of rabbits fed a fat-rich diet was protected in those given a caffeine supplement.

UK experts said it was the "best evidence yet" of coffee's benefits.

> **Caffeine is a safe and readily available drug and its ability to stabilise the blood brain barrier means it could have an important part to play in therapies against neurological disorders**
> Dr Jonathan Geiger
> University of North Dakota

The "blood brain barrier" is a filter which protects the central nervous system from potentially harmful chemicals carried around in the rest of the bloodstream.

Other studies have shown that high levels of cholesterol in the blood can make this barrier "leaky".

Alzheimer's researchers suggest this makes the brain vulnerable to damage which can trigger or contribute to the condition.

The University of North Dakota study used the equivalent to just one daily cup of coffee in their experiments on rabbits.

After 12 weeks of a high-cholesterol diet, the blood brain barrier in those given caffeine was far more intact than in those given no caffeine.

'Safe drug'

"Caffeine appears to block several of the disruptive effects of cholesterol that make the blood-brain barrier leaky," said Dr Jonathan Geiger, who led the study.

"High levels of cholesterol are a risk factor for Alzheimer's disease, perhaps by compromising the protective nature of the blood brain barrier.

"Caffeine is a safe and readily available drug and its ability to stabilise the blood brain barrier means it could have an important part to play in therapies against neurological disorders."

A spokesman for the Alzheimer's Society said that the barrier seemed to work less efficiently in people who went on to develop Alzheimer's or suffer strokes, and the cholesterol link might explain this.

"This is the best evidence yet that caffeine equivalent to one cup of coffee a day can help protect the brain against cholesterol.

"In addition to its effect on the vascular system, elevated cholesterol levels also cause problems with the blood brain barrier."

She called for more research into whether the same effect could be seen in humans.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7326839.stm

Published: 2008/04/02 23:27:27 GMT

Professors Should Embrace Wikipedia

By Mark A. Wilson

When the online, anyone-can-edit Wikipedia appeared in 2001, teachers, especially college professors, were appalled. The Internet was already an apparently limitless source of nonsense for their students to eagerly consume — now there was a Web site with the appearance of legitimacy and a dead-easy interface that would complete the seduction until all sense of fact, fiction, myth and propaganda blended into a popular culture of pseudointelligence masking the basest ignorance. An *Inside Higher Ed* article just last year on Wikipedia use in the academy drew a huge and passionate response, much of it negative.

Now the English version of Wikipedia has over 2 million articles, and it has been translated into over 250 languages. It has become so massive that you can type virtually any noun into a search engine and the first link will be to a Wikipedia page. After seven years and this exponential growth, Wikipedia can still be edited by anyone at any time. A generation of students was warned away from this information siren, but we know as professors that it is the first place they go to start a research project, look up an unfamiliar term from lecture, or find something disturbing to ask about during the next lecture. In fact, we learned too that Wikipedia is indeed the most convenient repository of information ever invented, and we go there often — if a bit covertly — to get a few questions answered. Its accuracy, at least for science articles, is actually as high as the revered *Encyclopedia Britannica*, as shown by a test published in the journal *Nature.*

It is time for the academic world to recognize Wikipedia for what it has become: a global library open to anyone with an Internet connection and a pressing curiosity. The vision of its founders, Jimmy Wales and Larry Sanger, has become reality, and the librarians were right: the world has not been the same since. If the Web is the greatest information delivery device ever, and Wikipedia is the largest coherent store of information and ideas, then we as teachers and scholars should have been on this train years ago for the benefit of our students, our professions, and that mystical pool of human knowledge.

What Wikipedia too often lacks is academic authority, or at least the perception of it. Most of its thousands of editors are anonymous, sometimes known only by an IP address or a cryptic username. Every article has a “talk” page for discussions of content, bias, and organization. “Revert” wars can rage out of control as one faction battles another over a few words in an article. Sometimes administrators have to step in and lock a page down until tempers cool and the main protagonists lose interest. The very anonymity of the editors is often the source of the problem: how do we know who has an authoritative grasp of the topic?

That is what academics do best. We can quickly sort out scholarly authority into complex hierarchies with a quick glance at a vita and a sniff at a publication list. We make many mistakes doing this, of course, but at least our debates are supported with citations and a modicum of civility because we are identifiable and we have our reputations to maintain and friends to keep. Maybe this academic culture can be added to the Wild West of Wikipedia to make it more useful for everyone?

I propose that all academics with research specialties, no matter how arcane (and nothing is too obscure for Wikipedia), enroll as identifiable editors of Wikipedia. We then watch over a few wikipages of our choosing, adding to them when appropriate, stepping in to resolve disputes when we know something useful. We can add new articles on topics which should be covered, and argue that others should be removed or combined. This is not to displace anonymous editors, many of whom possess vast amounts of valuable information and innovative ideas, but to add our authority and hard-won knowledge to this growing universal library.

The advantages should be obvious. First, it is another outlet for our scholarship, one that may be more likely to be read than many of our journals. Second, we are directly serving our students by improving the source they go to first for information. Third, by identifying ourselves, we can connect with other scholars and interested parties who stumble across our edits and new articles. Everyone wins.

I have been an open Wikipedia editor now for several months. I have enjoyed it immensely. In my teaching I use a “living syllabus” for each course, which is a kind of academic blog. (For example, see my History of Life course online syllabus.) I connect students through links to outside sources of information. Quite often I refer students to Wikipedia articles that are well-sourced and well written.

Wikipages that are not so good are easily fixed with a judicious edit or two, and many pages become more useful with the addition of an image from my collection (all donated to the public domain). Since I am open in my editorial identity, I often get questions from around the world about the topics I find most fascinating. I've even made important new connections through my edits to new collaborators and reporters who want more background for a story.

For example, this year I met online a biology professor from Centre College who is interested in the ecology of fish on Great Inagua Island in the Bahamas. He saw my additions and images on that Wikipedia page and had several questions about the island. He invited me to speak at Centre next year about evolution-creation controversies, which is unrelated to the original contact but flowed from our academic conversations. I in turn have been learning much about the island's living ecology I did not know. I've also learned much about the kind of prose that is most effective for a general audience, and I've in turn taught some people how to properly reference ideas and information. In short, I've expanded my teaching.

Wikipedia as we know it will undoubtedly change in the coming years as all technologies do. By involving ourselves directly and in large numbers now, we can help direct that change into ever more useful ways for our students and the public. This is, after all, our sacred charge as teacher-scholars: to educate when and where we can to the greatest effect.

Mark A. Wilson is a professor of geology at the College of Wooster.

The original story and user comments can be viewed online at
http://insidehighered.com/views/2008/04/01/wilson

Business-like arts a failure, says entrepreneur

Joyce Morgan
April 3, 2008

FILLING the boards of arts companies with business appointees has been a dismal failure that has stifled creativity.

That is the view of the international arts entrepreneur Justin Macdonnell, who wants a radical rethink of the way arts companies are run.

For too long arts companies had been urged by funding bodies to simulate the business sector, he said yesterday at the first in a series of breakfast forums, Arts And Public Life, held by the arts organisation Currency House.

"Who has not been told that they need to get more people with 'business skills' on their board, more people with financial, legal, marketing prowess to guide and restrain the wilful artist - as though it were the arts that regularly had the corporate crashes, bankruptcies and shady dealings?" Macdonnell said.

This move had restricted the ability of arts boards to make informed judgments. Ironically, the funding agencies that had pushed their clients in that direction were now questioning whether the boards had the capacity to choose good artistic leadership.

"Throughout the English-speaking world, the board system of governance in the not-for-profit sector has been a miserable failure," he said.

Macdonnell, who returned to Australia this year to establish the Anzarts Institute as an advocate for the arts, told the *Herald* credentials for appointing board members were often questionable.

"The pendulum has swung so far in the direction of appointing people to arts boards whose primary skill is to be business people and who are appointed on the grounds that maybe they've been a subscriber or an audience member or they're described as a lover of the arts," he said.

"Well, I'm a subscriber to Telstra but that doesn't mean anyone would put me on [its] board or put me in charge of communications policy."

Macdonnell, who has spent the past five years in Miami as artistic director of the Carnival Centre for the Performing Arts and who has worked extensively in South America, said the appointment of board members was taken seriously in the US. Potential board members received guidance there.

But he did not believe that simply including more artists on boards was a solution. What was needed was a way for artists and their boards to work more collaboratively and a rethink of the way arts companies were structured.

"Are we so limited in our thinking that we can come up with no better way of doing business than a company limited by guarantee with a board of seven and an uneasy diarchy of general manager and artistic director?" he said.

Many art forms around the world were in crisis, particularly classical music, which had raised the worship of the past to cult status. Theatre companies seemed to be in better shape because they were presenting current work as well as past.

"But they, too, seem to rely more on celebrity than substance in their quest for renewal," Macdonnell said.

His five years in Miami had taught him that arts organisations had few skills in fostering and managing innovation.

Arts centres in the US were essentially presenters, not creators, of work.

"They take their shopping cart to the arts mall - also known as the booking conference - and buy pre-packaged shows off the shelf, like frozen peas," he said.

"And they thaw them out for touring. To me, however, a presenter ought to present not just the pre-packaged but the fresh food as well - work made by our own artists."

This story was found at: ***http://www.smh.com.au/articles/2008/04/02/1206851005398.html***

http://www.smh.com.au:80/news/arts/businesslike-arts-a-failure-says-entrepreneur/2008/04/02/1206851005398.html

Impac shortlist boasts global scope

Guy Dammann
Wednesday April 2, 2008
guardian.co.uk

The shortlist for the world's largest literary award, the International Impac Dublin prize, was announced today with a selection of eight novels that further reinforce the prize's already strong international credentials. With only two of the shortlisted novels - Irish writer Patrick McCabe's psychological chiller, Winterwood, and Australian Gail Jones's technophile rhapsody, Dreams of Speaking - originating from the English-speaking world, the selection extends to books from Spain, Sri Lanka, Israel, Russia and Algeria.

Apart from its genuine internationalism, the Impac prize, now in its 13th year, is also distinguished among book prizes for the size of the purse - at €100,000 (£79,000), the Impac dwarfs most other literary prizes - and for the length of its longlist, which is unique in being based on nominations from lending libraries the world over. Once the longlist has been compiled, however, the lengthy process of drawing up the shortlist follows the more traditional model of a voting panel, albeit a rigorously international one.

From this year's longlist of 137 titles, drawn from nominations from 161 libraries in 121 cities, today's shortlist of just eight novels is also remarkable for the absence of a number of strong contenders. Neither last year's Booker winner, Kiran Desai, nor Thomas Pynchon made the cut from a longlist which also included strong nominations for Margaret Atwood, Philip Roth, John Updike, Peter Carey and Cormac McCarthy. Yesterday's Kiryama prize winner, Lloyd Jones, also failed to make the shortlist.

The topicality of the prize may be judged from the fact that three of the eight shortlisted novels deal with the middle east, two of them being concerned directly with the Israeli Arabs. While the first, Sayed Kashua's Let it be Morning, tells of a young journalist's return to his village to find his former community under threat and changed beyond recognition, Algerian Yasmina Khadra's The Attack concerns a cosmopolitan Israeli Arab's discovery that his wife was behind a suicide attack in a Jerusalsem pizza restaurant. Yasmina Khadra, author of 2005's The Swallows of Kabul, is the feminine pseudonym of Algerian army officer Mohammed Moulessehoul, who took the name to avoid submitting his manuscripts for approval by the army. The third middle eastern novel is Lebanese Rawi Hage's tale of the Beirut criminal underworld.

Also on the shortlist are Yasmine Gooneratne's tale of the fate of a high political family in the newly independent Sri Lanka of the 1950s and 60s, and Siberian-born French author Andrei Makine's The Woman Who Waited, set in former-Soviet Union's Archangel region in the 1970s, about a wife still waiting for her husband to return from the second world war.

Commenting on the award, Deirdre Ellis King, of Dublin City Library, responsible for collating the worldwide library nominations, said, "The themes of the 2008 shortlisted titles are international and include war, love, terrorism, politics, religion, family and murder. Nominated by public libraries in Australia, Canada, Finland, France, Ireland, Lebanon, Sri Lanka and the USA, they prove that such a high standard of literature can be read and appreciated by anyone."

The panel of six judges responsible for drawing up the shortlist is drawn from six different countries. The voting members are Helon Habila (Nigeria), Patricia Duncker (UK, Jamaica), Aamer Hussein (Pakistan), and Eibhlín Evans (Dublin). The panel is chaired by the former chief judge of the US Court of Appeals, Eugene R Sullivan, who has a non-voting role.

In cases where the award is made to a translated book, the translator receives a quarter of the prize fund, the remaining €75,000 going to the author. For translated works to be eligible for the prize, the translation must have been published during the calendar year preceding the longlist nomination process (in this case, 2006), and the original title must have been published during the preceding four years (in this case, since Jan 1, 2002). Nominations are made by individual libraries based on assessment of literary merit.

The winner of this year's prize will be announced on June 12.

Last year's prize went to Norwegian Per Petterson's Out Stealing Horses.

The shortlist in full

The Speed of Light by Javier Cercas (Spanish, in translation)
The Sweet and Simple Kind by Yasmine Gooneratne (Sri Lankan)
De Niro's Game by Rawi Hage (Lebanese)
Dreams of Speaking by Gail Jones (Australian)
Let it be Morning by Sayed Kashua (Israeli)
The Attack by Yasmina Khadra (Algerian) in translation
The Woman who Waited by Andrei Makine (Russian) in translation
Winterwood by Patrick McCabe (Irish)

http://books.guardian.co.uk:80/news/articles/0,,2270252,00.html

Show's cancellation a rare case of artists advocating censorship

Kenneth Baker, Chronicle Art Critic
Tuesday, April 1, 2008

Think of it as a six-day internecine culture war.

On March 20, the San Francisco Art Institute opened an exhibition by Algerian-born Paris artist Adel Abdessemed. By the following Wednesday, the Art Institute announced that it had closed the exhibition until the controversy it provoked could be aired at a public discussion to take place Monday at noon.

Over the weekend, the Art Institute canceled the panel discussion and the exhibition altogether.

The reason: unnumbered threats of violence from animal rights activists and possibly from others.

Menacing e-mails and phone messages had even streamed into Abdessemed's New York gallery, David Zwirner, unnerving its employees. A fellow artist represented by Zwirner, videomaker Diana Thater, circulated online one of the more reasoned statements of indignation over the SFAI show.

The animal rights protesters were inflamed by Abdessemed's six very brief video loops, played on separate monitors, each showing an animal - a horse, a pig, a goat, an ox, a deer and a sheep - being killed, apparently without bloodshed, by a quick hammer blow to the head. Abdessemed shot the videos himself in rural Mexico, merely documenting passages in the town's customary food production.

But text accompanying the videos' presentation at SFAI left Abdessemed's role ambiguous. A viewer had to wonder whether his hand wielded the hammer rather than the camera, whether he shot the video or merely commissioned it, and whether he commissioned the animals' execution.

The shock of the protest lies not only in its vehemence but also in the fact that it involves the rare spectacle of artists, including many SFAI faculty members, *advocating* censorship.

Apologists for Abdessemed's show, including Okwui Enwezor and Hou Hanru of SFAI, who brought it to San Francisco, represent it as a critical intervention in the public's habitual obliviousness to the facts behind their own food culture and the wider conventions behind it.

Abdessemed's critics reproach him and his defenders for valorizing gratuitous cruelty to animals and for erasing the invisible boundary that has generally kept real death out of art, despite an abundance of depicted bloodshed and death in nearly every artistic tradition.

Damien Hirst's animal carcasses immersed in formaldehyde make an obvious reference point in recent art. But neither they nor the queasy-making morgue-slab portraits by Andres Serrano - of "Piss Christ" fame - caused the complete shutdown of an exhibition.

The relentlessness of Abdessemed's video loops, as much as their literalness, guaranteed their repellent impact.

The "tock, tock, tock, tock" of the death blows pervaded the SFAI gallery like the sounds of so many metronomes, each one eliciting a little flinch from the visitor's own animal. Not even the soundtrack of a projected video at the center of the show could drown them out: footage of Abdessemed attempting to draw on boards while hanging upside down by a harness from a hovering helicopter.

"Don't Trust Me," as Abdessemed called his show, stirred the alarming thought - unforgettable, once contemplated - at the center of J.M. Coetzee's novel "Elizabeth Costello": that carnivore cuisine entails a worldwide perpetual "holocaust" of livestock.

By framing his animal executions too casually for the context in which it appeared, Abdessemed and the curators left them exposed as an apparent exercise in sheer sensationalism. They did create a sensation, although a Zwirner gallery associate said that the same pieces aroused no controversy when shown recently at a prominent art venue in Grenoble, France.

Abdessemed apparently intended to shed light - or heat - on the distance between cultures and their shades of self-consciousness that exists even in an increasingly globalized world. But responses to inflammatory material presented as art are local, not global.

I see Abdessemed working at the morbid end of creative ambition's descent into "the gap between art and life," as the young Robert Rauschenberg famously called it when claiming it as his milieu. With "Don't Trust Me," Abdessemed seemingly moved to up the ante by minimizing the gap between art and death.

I think his work fails as art by its literalness alone, its moral muzziness aside, but people in San Francisco's smoke-free restaurants may debate the matter over their steaks and lamb chops for some time. The show's closure may end up prolonging its notoriety.

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http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2008/04/01/DD4DVTD7T.DTL

*This article appeared on page **E - 1** of the San Francisco Chronicle*

http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2008/04/01/DD4DVTD7T.DTL&feed=rss.entertainment

Intel Makes a Push Into Pocket-Size Internet Devices

By JOHN MARKOFF

SAN FRANCISCO — Intel plans to proclaim Wednesday in Shanghai that the next big thing in consumer gadgets will be the "Internet in your pocket."

The challenge for the giant chip maker will be to prove that it is not too late to a market that has rapidly become the hottest spot in the consumer electronics business in a post-PC era.

At a developer event in China, the company, based in Santa Clara, Calif., will display a range of wireless Internet devices that Intel believes will fill a gap between smartphones and laptops. The company is hoping to capitalize on the success that Apple has had with its iPhone, which is one of the most popular mobile Web smartphones.

Intel is calling the new computers Mobile Internet Devices, or MIDs, and claims that it will have a significant advantage over makers of chips for cellphones because the Intel version will be highly compatible with the company's laptop and desktop processors for which most Web software is written today.

The first generation of Intel's MID technology will be aimed at data, not voice communications, leaving the company out of the market for smartphones. That has not damped the enthusiasm of Intel executives who foresee a proliferation of devices ranging from advanced ultracompact laptops to small, tablet-size devices that will be used for browsing the Web, navigation and Internet chat, rather than voice communications.

"What enables the innovation is the ability to bring over all the existing PC applications," said Anand Chandrasekher, general manager of the company's Ultra Mobility Group.

The weak link in the Intel strategy is that voice communication remains a significant factor for consumers choosing to buy hand-held devices.

Intel backed out of the cellphone market two years ago when it sold its Xscale microprocessor business to the Marvell Technology Group. Intel then set out on an ambitious redesign project for ultralow-power versions of its PC-oriented X86 chips. The current system requires two chips, one for the processor and one for peripherals. It will take the company another technology generation to place everything on a single chip.

That leads some analysts to believe that the company's real breakthrough will not come until 2009 or 2010, when a new processor, now code-named Moorestown, arrives.

"We're pretty bullish on it with some qualifications," said Van L. Baker, a research vice president at the Gartner Group, a market research firm. "We don't believe they get there in a significant way until the next generation of technology."

Meanwhile, Intel's strategy is moving the company toward a direct confrontation with Qualcomm, the San Diego-based chip maker that is also trying to deliver the wireless Internet on hand-held devices. The company, which refers to its strategy as "pocketable computing," is offering a competing chip that offers lower power consumption and which is aimed for devices that blend voice and Internet data.

"We need to deliver an Internet experience that is like the desktop," said Sanjay Jha, Qualcomm's chief operating officer. "People are used to the Internet, and you can't shortchange them."

The new Intel mobile Internet strategy takes advantage of the company's Atom microprocessor, which was announced in early March. The Atom will have performance roughly equivalent to laptop computers

introduced four years ago, but will use little more than a half-a-watt to two-and-a-half watts of battery power. That is significantly lower than the 35 watts of power consumed by the company's state-of-the-art microprocessors in today's laptops.

The new MIDs, which are scheduled to begin showing up in consumer electronics outlets in June, are the clearest evidence to date of the effort that Intel has made since its chief executive, Paul Otellini, set the company on a low-power strategy in 2005. In interviews, Intel executives said that the company was slightly ahead of the commitment Mr. Otellini made to bring out a line of lower-power processors before the end of the decade.

Complicating life for Intel is the fact that the chip maker is locked out of the low-power cellphone and smartphone marketplace, which today is entirely based on microprocessor chips made by designs licensed from the British design firm ARM Ltd. to companies like Qualcomm.

More than 10 billion ARM chips have been sold by more than 200 licensees, and ARM now says that more than eight million chips a day are being used in cellphones, smartphones and a wide range of hand-held consumer products.

Until recently, early efforts by the PC industry to create so-called palmtop PCs, such as the Microsoft-inspired Ultra-Mobile PCs, have failed to find a broad consumer audience. Indeed, the entire P.D.A., or personal digital assistant, market is all but dead as many of its functions were overtaken by the smartphone.

However, the category showed renewed signs of life last year when Asus, a Taiwanese equipment maker, made a name for itself by introducing the Eee PC, a two-pound Linux-based laptop that sells for $400.

Now many of the mainstream PC makers are rushing to introduce similar laptops that fall well below the traditional PC laptop price, but allow Web surfing and many basic computing tasks. There is also renewed interest among consumer electronics makers in devices that are neither laptops or cellphones.

Introducing products at the Intel event in Shanghai will be Asus, BenQ, Clarion, Fujitsu, Gigabyte, Lenovo, LG-E, NEC, Panasonic, Samsung, Sharp, Toshiba, WiBrain and Usi. Intel has also distanced itself from its traditionally close relationship with Microsoft and Windows by striking up a new partnership with Ubuntu and Red Flag, two distributors of Linux software for consumer markets.

"Think of it as, 'honey I shrunk the PC,' " said Richard Doherty, president of Envisioneering, a consumer electronics market research and consulting firm. "Intel is betting that this will be a win in China, which already has the world's largest mobile phone market and therefore influences the rest of the world market."

http://www.nytimes.com/2008/04/02/technology/02chip.html?th&emc=th

Ballet's Classical History, the Kirov Edition

By ALASTAIR MACAULAY

The best way to learn dance history is in the theater. And the three-week Kirov Ballet season that opened at City Center on Tuesday night looks on paper like a major course in the history of ballet classicism. You could know nothing about dance and learn from this season much about the forms of ballet and how they have changed. Audiences perusing the lineups will assume the season's focus will be on choreography. It has started with the first of two Petipa anthologies and will include a Fokine, a Balanchine and a Forsythe program.

The three late-19th-century ballets presented on opening night, all Kirov home repertory, are core texts of the ballet classicism perfected in St. Petersburg by Marius Petipa. Act III of "Raymonda" (1898) is a nonpareil demonstration of how Petipa could take folk dances as thematic material on which he then concocted exuberant classical variations. The Grand Pas from "Paquita" (1881) is a bright classicization of Spanish dance style that stops to include a series of solo variations. And in the Shades scene from "La Bayadère" (1877) an Orphic journey into the realm of the dead is shown as a Romantic vision but arranged in intensely and hierarchical classical-ballet terms.

There is an infinity of detail to be learned from each of these works and from the immense resources of Kirov ballet style evident in all three. And yet the company's productions treat them in part as far more finite affairs. For any Kirov season, alas, is an exercise in balletomania (obsession with dancers rather than with choreography), in ballet mannerism and in circus acrobatics.

"Yes, that phrase I just danced was charming, wasn't it? You cannot have missed how I pivoted from my above-head-level sideways extension into a spectacular arabesque penchée. (The raised leg remained just as high, but now my torso turned into profile and plunged low, the kind of change of silhouette in which Petipa specialized.) Now bear with me while I walk — so slowly, so proudly — across the stage, looking so dignified while I collect my breath, change gears and prepare for the next event. Watch! Here I go around the stage doing the same jump (or turn or both) again and again and again; ah, how kind of you to applaud even the first one."

Ballet often takes circus acrobatics and turns them into thrilling art, but the art comes in two ways: stylistic liquefaction and choreographic ordering. The Kirov is one of those ballet companies that too often present show-off steps as if the art lay nakedly in nothing but excellence of technical execution. Michel Fokine (who was dancing in "Raymonda" in 1898) began complaining about this in about 1904, but has the Kirov ever changed this aspect of its act since then? A century later the Kirov's way with Petipa choreography would surely make Fokine every bit as angry. Much about the style is moment-by-moment glamorous and shows the immense wealth of Kirov training; but the delivery is often the world's least spontaneous. And the emphasis often attends to academic nicety and pyrotechnic splendor rather than sheer dance pleasure.

To make matters considerably worse, any Kirov (any Russian) season is accompanied by numerous audience members who behave like a claque, talking (usually in Russian) right through the dancing, applauding through the music, creating what ovations they can for individual dancers. Need I say that this creates the law of diminishing returns?

On Tuesday night you could feel how Diana Vishneva in "Paquita" made less of a sensation than she deserved. As lustrous a ballerina as any in the world today, she seems now to have reached the early summer of her powers; but by the time we had come to her variation, we had already been asked to applaud turns and jumps beyond count.

Equally eminent among Kirov luminaries is Uliana Lopatkina, who on Tuesday danced the "Raymonda" ballerina role. Although in past years I have known her to exemplify the worst kind of Kirov mannerisms, she seems now to have simplified her style and to address her music with refreshing directness; and she carries her authority lightly.

I'm inclined to think the Kirov's way with the "Raymonda" classical dances has airbrushed a lot of the real dance juice out of them. (The old film of Maria Tallchief dancing Balanchine's arrangement of this material in "Pas de Dix" might jolt them usefully, as might the texture and phrasing of Rudolf Nureyev's version for the Royal Ballet.) Even so, this staging — gorgeously designed, as is the "Paquita" Grand Pas — is the highlight of the opening program, not least because the Maryinsky Orchestra, as conducted by Mikhail Sinkevich, brings such rapturous color to Glazunov's music.

It was fascinating to watch the five guest ballerinas who preceded Ms. Vishneva in "Paquita." The grandly dignified Ekaterina Kondaurova deserves special acclaim, though even she exhibits the too-polished guardedness that often deprives these exceptional dancers from making the impression they should. The opening of the "Bayadère" Shades scene — badly lighted and taken faster than ever before — was simply the most obvious demonstration of how the Kirov has painstakingly combed the poetry out of this choreography; and Alina Somova's account of the ballerina role typifies the company's most glacially showy and least appealing features.

In "The Importance of Being Earnest" Lady Bracknell says, "The chin is worn particularly high this season," and for several years I have suspected that Lady Bracknell is now one of the Kirov's ballet mistresses. Ms. Lopatkina used to wield her chin like a ship's prow, and now Ms. Somova has acquired

the habit. She also skews her pelvis sideways to achieve her high extensions, even though the angle of her tutu in this role shows just how much this distorts her line.

Ms. Somova was partnered in “Bayadère” by Leonid Sarafanov, the fastest and most astoundingly buoyant of the opening night’s male dancers. He is also the most youthful; and, like Danila Korsuntsev (who partnered Ms. Lopatkina in “Raymonda”) and Andrian Fadeev (Ms. Vishneva’s consort in “Paquita”), he shows a freshness of manner that seems not to be allowed among the women. It will be good to see more of these and other dancers as the season proceeds. But will the stunt-heavy nature of Kirov dance theater make it as great a pleasure as these artists and their choreography deserve?

This Petipa program will be performed again Thursday; the Kirov season runs through April 20 at City Center, 131 West 55th Street, Manhattan; (212) 581-1212 or citycenter.org.

http://www.nytimes.com/2008/04/03/arts/dance/03ball.html?th&emc=th

Hydrogen-powered plane takes off

The hydrogen-powered plane in action

The first manned, hydrogen-powered plane has been successfully tested in the skies above Spain, its makers say.

The small, propeller-driven craft, developed by aviation giant Boeing, made three short flights at an airfield south of Madrid, the company said.

It was powered by hydrogen fuel cells, which produce only heat and water as exhaust products.

The tests could pave the way for a new generation of greener aircraft, the company said.

Boeing's chief technology officer John Tracy said the flights were "a historical technological success" and "full of promises for a greener future".

Small future

Three test flights of the two-seater aircraft took place in February and March at an airfield at Ocana, south of Madrid. The plane was modified to include a hybrid battery and fuel cell system developed by UK firm Intelligent Energy.

The fuel cells, which create electricity by combining oxygen and hydrogen, were used to power an electric motor coupled to a propeller.

During take-off the plane's batteries were used to provide an additional boost, but whilst in the air, the plane relied entirely on the cells.

Boeing said the plane has a flying time of 45 minutes but tests were limited to around half that time.

Although the test had been successful, the firm said it did not believe fuel cells could be the primary power source for large passenger aircraft.

However, it could be used as a secondary source of energy for large planes, according to Nieves Lapena, the engineer responsible for the test flights, but this may take some time to develop.

"In my opinion, we are talking about a delay of about twenty years," she said.

Green skies

Hydrogen-powered planes have been flown before, but never with a human pilot onboard.

In 2005, California-based AeroVironment successfully completed test flights of its Global Observer craft which was powered by liquid hydrogen.

Other companies are also seeking to develop more environmentally-friendly planes, amid concerns over their contribution to climate change.

Earlier this year, the airline Virgin Atlantic conducted the first commercial flight powered partly by biofuel.

And last year, defence firm Qinetiq flew a solar-powered plane for 54 hours, smashing the official world record for the longest-duration unmanned flight.

Zephyr, as the craft was known, could be used for military applications, as well as for Earth-observation and communications.

Other unmanned prototypes have been shown off by the American space agency Nasa.

However, in 2010, Swiss balloonist Bertrand Piccard plans to launch Solar Impulse, a manned plane in which he will attempt to circumnavigate the globe.

To carry the precious payload, the craft will have a huge wingspan of 80m (262ft), wider than the wings of the Airbus A380.

As the plane is piloted by only one person at a time, it will have to make frequent stopovers. The current plan is for the journey to be broken into five legs each lasting between four or five days.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/7330311.stm

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Rise in women doctors 'worrying'

The rising number of female doctors is "bad for medicine", and universities should recruit more men, a GP warns.

Writing in the British Medical Journal, Dr Brian McKinstry said female doctors were more likely to work part-time, leading to staffing problems.

Women, who now outnumber men in medical schools, were also less likely to take part in training or research, he said.

But opponents said the best candidates should be chosen regardless of gender and flexible working policies improved.

Professor Jane Dacre, vice dean of biomedical sciences at University College London, said rather than worrying about having too many female doctors, there should be more focus on ensuring equal opportunities for medics throughout their careers.

I think medical school numbers should reflect society generally and we need a more even split between men and women
Dr Brian McKinstry

"When I was at medical school, there was a quota and they were only allowed 30% women.

"There is quite a developing evidence base that female doctors are not inferior to male doctors, but in fact are doing better in terms of getting into medical school and in their exams."

But she said women doctors were still under-represented in some specialities, such as surgery, and at senior levels in the profession.

The best candidates needed to be chosen for medical school whatever their sex but flexible hours, on-site child care and part-time training options were needed to ensure women doctors had equal opportunities in their career, she said.

Discrimination

Women now outnumber men in most UK medical schools by three to two.

This has reversed many years of male dominance in medicine and unfair discrimination against women, said Dr McKinstry, who is also a researcher at the University of Edinburgh.

But the recent large rise in female medical graduates was worrying, particularly in more "family friendly" areas of medicine such as general practice, he added.

Many older full-time male GPs are shortly due to retire leaving behind a workforce of younger women, many of whom work part-time.

"I'm not meaning to be critical - women have a difficult time of it because they are left with the bulk of childcare.

"The main thing we need is a revolution in the attitude of society towards childcare and who has the responsibility for childcare.

"But I think medical school numbers should reflect society generally and we need a more even split between men and women."

In Scotland where he works, figures show that women GPs contribute about 60% of the activity of their male counterparts in training, teaching, research and committee work, he said.

Selection concern

A separate piece in the BMJ pointed out costs associated with poor performance, litigation, re-education, and rehabilitation were consistently higher for male doctors.

Dr Steve Field, chair of the Royal College of GPs, said he welcomed more women in the profession.

But he added that there were concerns over the fact that girls tended to do better in the interview process for medical school at age 18.

"I'm concerned about how we select into medical school as it seems to be more difficult for boys post A-level.

"I'm all for graduate entry, people who have already done a degree, as they come from more diverse backgrounds, they are more mature, and you also get more men."

Are you a female doctor? What are your views on this story? You can send your comments to the BBC using the form below:

Name:
Email address:
Town and Country:
Phone number (optional):
Comments:

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7329082.stm

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