Infoteca's E-Journal

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New Tool To Assess Speech Development In Infants, Toddlers With Hearing Impairments

ScienceDaily (Sep. 29, 2008) — The number of hearing impaired infants and toddlers who are successfully aided by technological devices, such as hearing aids and cochlear implants, continues to grow, but there are still unknowns about these children's speaking abilities, according to a Purdue University expert.

A new assessment tool, a game-like activity to monitor early auditory-guided speech development in infants and toddlers, is available for speech-language pathologists, said David Ertmer, the tool's co-creator and an associate professor of speech, language and hearing sciences.

"We have universal newborn hearing screenings, which are mandatory in more than 40 states, to thank for identifying hearing issues immediately. Some children receive hearing assistance when they turn 1," said Ertmer, who specializes in early speech and language development in children with hearing losses. "Given the growing number of infants identified with hearing loss through newborn hearing screenings, there is a pressing need for a reliable and practical way to estimate how improved hearing affects listening and vocalizing during the first years of life."

To address this need, Ertmer and Carol Stoel-Gammon, a professor at the University of Washington, developed a test called the Conditioned Assessment of Speech Production. A description of the tool and field testing results were published in a recent edition of The Volta Review.

"Well before infants begin to say words, they produce a variety of increasingly complex and speechlike vocalizations," Ertmer said.

Infant vocalizations such as grunts, cooing and laughter emerge during the first six months of life. Well-formed syllables with consonants and vowels, which sounds like babbling, begin to emerge at 5-10 months of age. Toddlers begin to produce more complex syllables soon after that and eventually say single words around their first birthdays.

This process is called vocal development, and it lays the foundation for meaningful speech, Ertmer said. Children with moderate to profound hearing loss are usually delayed in vocal development.

"This assessment tool was designed to help speech-language pathologists and audiologists evaluate whether hearing aids and cochlear implants are helping children through the levels of vocal development efficiently," Ertmer said.

"Working with infant and toddlers can be tricky because they are often shy and not inclined to vocalize on request. Although parents hear the child vocalizing throughout the day, they do not have the training needed to recognize subtle changes in vocalizations. The idea behind CASP was to find a way to encourage toddlers to imitate their parents' vocalizations during a play activity."

Parent speech models and a Classical Stacker toy are used to encourage the child to play along. To start, the clinician says a vowel sound like "Ah," and asks the parent to imitate it aloud. Once imitated, the parent is given a star-shaped ring and allowed to place it on the post of the stacker toy as the child watches. Each time a ring is placed on the post, the toy lights up and plays music. Next, the parent repeats the same sound while holding a new ring, and the child is encouraged to say the same sound. The child receives a ring as a reward for each imitation.

To interpret the results, the clinician phonetically transcribes what the child says and evaluates how closely the child's attempts match the increasingly complex and speechlike vocalizations from the CASP. The five-minute procedure is repeated every three to four months to monitor speech development after hearing aid or cochlear implant fitting. Cochlear implants, which feature a part that is surgically

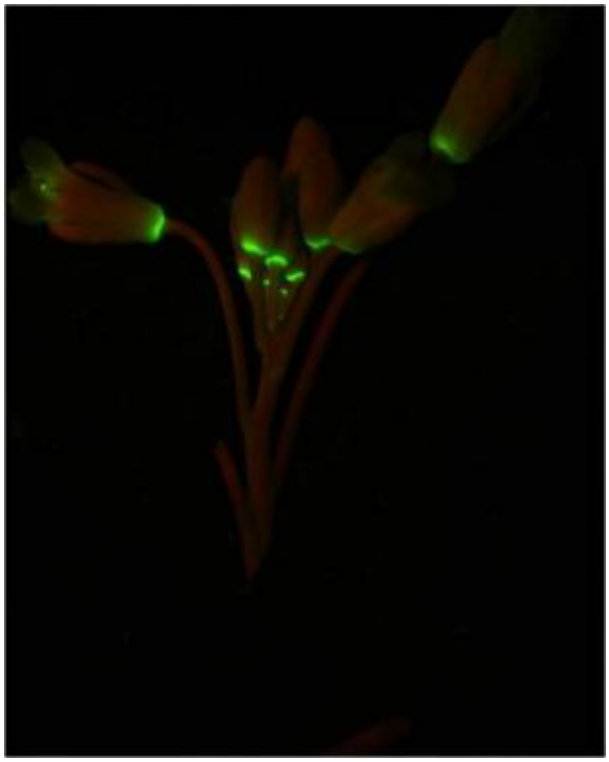
implanted, use electrical signals that bypass the inner ear's damaged auditory receptor cells to stimulate the auditory nerve.

"When we tested the CASP tool, we found that scores increased with age and with sensory aid experience," Ertmer said.

Adapted from materials provided by Purdue University.

http://www.sciencedaily.com/releases/2008/09/080923125136.htm

When Leaves Fall, More Is Occurring Than A Change Of Weather



Expression of a flourescent protein in the abscission zone of Arabidopsis thaliana. (Credit: John Walker)

ScienceDaily (Sep. 29, 2008) — A falling leaf often catches a poet's eye, but scientists also wonder about the phenomenon that causes leaves to fall, or abscission in plants. Abscission is the physiological process plants use to separate entire organs, such as leaves, petals, flowers and fruit, that allow plants to discard non-functional or infected organs.

University of Missouri researchers have uncovered the genetic pathway that controls abscission in the plant species Arabidopsis thaliana. The ability to control abscission in plants is of special interest to those in the commercial fruit tree and cut flower industries, which rely heavily on abscission-promoting or inhibiting agents to regulate fruit quality and pre-harvest fruit drop.

"Understanding the physiological mechanism by which plants control abscission is important for understanding both plant development and plant defense mechanisms," said John Walker, director of the MU Interdisciplinary Plant Group at the Christopher S. Bond Life Sciences Center. "Insight into the process of abscission in Arabidopsis thaliana provides a foundation for understanding this fundamental physiological process in other plant species."

Plants abscise an organ for a number of reasons, according Walker. Aged leaves, for example, may be shed to facilitate the recycling of nutrients, ripening fruits dropped to promote seed dispersal and infected or diseased floral organs discarded to prevent the spread of disease. However, why Arabidopsis thaliana is a small flowering plant that is native to Europe, Asia and northwestern Africa, sheds its floral parts after maturation is unclear. The floral part on the plant does not take significant space and abscission does not appear to serve an obvious function. Yet, the genes for abscission have been there for a really long time, Walker said.

Previous studies analyzing abscission in plants have implicated several different genes and gene products. Walker and his colleagues are the first to identify a pathway of genes involved in the process of abscission in Arabidopsis by using a combination of molecular genetics and imagine techniques.

"The process of abscission is a phenomenon that we have yet to fully understand," said Walker, who is also a professor of biological sciences in MU's College of Arts and Science. "Several different genes are involved in the process. Instead of looking at individual genes or proteins, we looked at an entire network at once to see how the difference genes work together in abscission."

Journal reference:

1. . **Regulation of Floral Organ Abscission in Arabidopsis thaliana**. *Proceedings of the National Academy of Sciences,* (in press)

Adapted from materials provided by University of Missouri-Columbia, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/09/080922174511.htm

Brain Imaging Study Provides New Insight Into Why People Pay Too Much In Auctions

Auctions are an old and widely used method for allocating goods that have become increasingly common with the advent of internet auctions sites such as Ebay. Previous economic research has shown that in an auction people tend to bid "too high," or overbid, given the value of the item for sale. (Credit: iStockphoto/Claudio Arnese)

ScienceDaily (Sep. 28, 2008) — Auctions are an old and widely used method for allocating goods that have become increasingly common with the advent of internet auctions sites such as Ebay. Previous economic research has shown that in an auction people tend to bid "too high," or overbid, given the value of the item for sale.

By combining brain imaging techniques with behavioral economic research, neuroscientists and economists at New York University were able to provide new insight into this tendency to overbid. Specifically, they show that the fear of losing the social competition inherent in an auction may, in part, cause people to pay too much. The research, which suggests an expanded role for neuroscience in understanding economic behavior, appears in the latest issue of the journal Science.

The goal of the study was to provide insight into the neural circuitry of experimental auctions, and then to use this insight to generate and test a novel economic approach to understand overbidding. It was conducted by a team of NYU neuroscientsts and economists. The neuroscientists were NYU Professor Elizabeth Phelps and Mauricio Delgado, now an assistant professor at Rutgers University in Newark, N.J. The economists were Andrew Schotter, a professor in NYU's Department of Economics, and Erkut Ozbay, a former NYU doctoral student and now an assistant professor in the University of Maryland's Department of Economics.

The researchers used functional magnetic resonance imaging (fMRI) to examine patterns of brain activation as participants played either an auction game with a partner or a lottery game. In both games participants could win money, but in the auction game winning depended on outbidding a partner. An examination of activation in the striatum, part of the brain's reward circuitry, showed the primary

difference when winning or losing in the auction vs. lottery games was an exaggerated response to losses in the auction game. The magnitude of this exaggerated loss response in the striatum during the auction game correlated with the tendency to overbid, suggesting the intriguing hypothesis that perhaps the prospect of losing the social competition inherent in an auction may lead people to bid "too high."

To confirm this hypothesis, a follow-up behavioral economic study was conducted. Three groups of participants played an auction game against a partner under different circumstances. The control group was simply given values and asked to make bids. The Bonus-Frame group was told that if they won the auction, they would also receive a bonus of 15 experimental dollars. The Loss-Frame group was given 15 experimental dollars prior to the auction, but participants were told they would lose the 15 dollars if they failed to win the auction.

In both the Loss and Bonus-Frame conditions, only the winners would get an additional 15 experimental dollars, so the auctions were strategically identical. The difference was simply the way it was framed to emphasize losing or winning. Consistent with the hypothesis that contemplation of loss may, in part, drive overbidding, participants in the Loss-Frame condition consistently bid higher than the other two groups, resulting in a greater potential profit for a hypothetical auctioneer.

According to Schotter, "such a result would not have been predicted by existing economic theory. While there have been investigations of overbidding which have attributed the phenomenon to either risk aversion or the 'joy of winning,' it was the use of imaging data which allowed us to distinguish between these conflicting explanations and actually arrive at a new and different one, the 'fear of losing.' Our results provide evidence of how an understanding of the neural systems of economic behavior might inform economic theory."

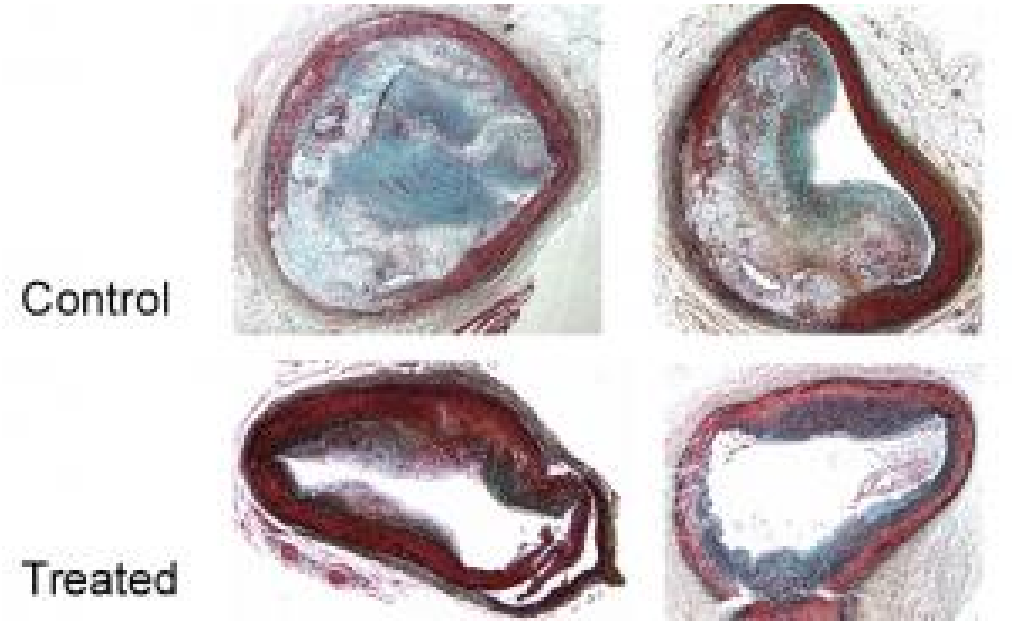
"These results highlight a role for the contemplation of social loss in understanding the tendency to bid 'too high' in auctions and emphasize the importance of considering social factors in economic decisions," Phelps explained. "By combining neuroeconomic and behavioral economic techniques we were able to provide novel insight into a classic economic problem."

"Although there have been a number of neuroeconomic studies that have used economic games to further our understanding of brain function, the benefits to traditional behavioral economics as a result are unclear," Delgado added. "Because of recent advances in neuroeconomics and our knowledge of the neural circuitry related to reward, we were able to use neuroimaging results to highlight the importance of framing, and specifically the contemplated loss, as an explanation for overbidding during experimental auctions."

Adapted from materials provided by New York University.

http://www.sciencedaily.com/releases/2008/09/080925144607.htm

Inhibiting Cholesterol-associated Protein Reduces High-risk Blockages In Arteries



Plaques due to atherosclerosis in darapladib-treated vessels (bottom) are less severe and complex as compared to non-darapladib-treated control groups (top). (Credit: Robert L. Wilensky, MD, University of Pennsylvania School of Medicine; Nature Medicine)

ScienceDaily (Sep. 28, 2008) — Using the drug darapladib, researchers at the University of Pennsylvania School of Medicine and colleagues have inhibited a cholesterol-and immune system-associated protein, thereby reducing the development of heart-disease plaques that may cause death, heart attacks, and strokes in a pig model of atherosclerosis and diabetes.

The study recently appeared online in Nature Medicine.

“We’ve used a model that closely mimics clinical disease,” says first author Robert L. Wilensky, MD, Director of Experimental Interventional Cardiology and Professor of Medicine at the Penn Cardiovascular Institute. “The study shows that darapladib is useful in reducing atherosclerosis but more importantly those blockages that are thought to cause death and heart attacks.”

Atherosclerosis, or hardening of the arteries, is the most common cause of heart attack, stroke, and death from cardiovascular disease, and has long been thought of as a type of chronic inflammation. An early first step in the build-up of the plaques associated with atherosclerosis is the accumulation of low-density lipoproteins (LDLs), the “bad” cholesterol, on artery walls. When LDLs are oxidized by the body, they attract immune cells and lipids to the site of the build-up.

Problems arise when the plaques grow to form a lesion characterized by a thin fibrous cap and a lipid-filled core of dying cells. These unstable plaques are prone to rupture, which can then lead to heart attack, stroke, and death.

A molecule called lipoprotein-associated phospholipase A_2 (Lp-PLA_2) is connected with LDLs circulating in the blood. Elevated levels of Lp-PLA_2 in the blood predict an increased risk of heart disease events and are related to the development of the necrotic core of plaques. Darapladib specifically inhibits Lp-PLA_2.

"The results are exciting," says Wilensky. "First, darapladib reduced the overall amount and size of plaques that block the coronary arteries of animals in the study. More importantly, it reduced the number and size of the type of advanced plaques that cause heart attacks and strokes. "

These advanced plaques have a thin cap and large core filled with cellular debris from inflammatory-immune cells that engorge themselves on cholesterol. If unstable plaques come into contact with blood, blood clots that develop from this contact constrict flow, which can lead to stroke and heart attack. Darapladib stabilizes these dangerous plaques by decreasing the size of the core and reducing the number of inflammatory-immune cells present within the plaque. Darapladib also decreased the expression of genes involved in enlisting immune cells involved in the inflammatory response associated with atherosclerosis.

"The aha moment came when we saw the profound difference in plaque composition in animals given medication versus those not given darapladib, although the high cholesterol levels in the pig model remained the same in both groups," says Wilensky. "This study took cholesterol out of the equation and let us evaluate the effects of inflammation on the development of atherosclerosis."

Recently, darapladib has been tested in a human clinical trial in Europe, which showed similar findings. GlaxoSmithKline (GSK) Inc., who provided the darapladib for the study, is planning a Phase 1 safety and efficacy trial with darapladib in humans in the near future. Penn will be one site in this proposed multi-center clinical trial.

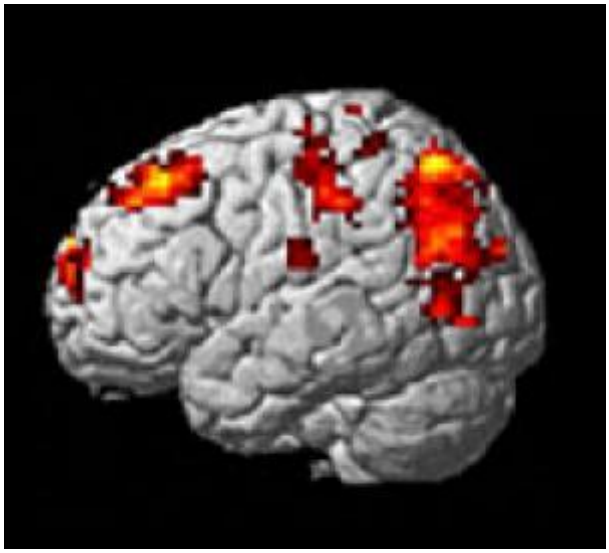
This study was supported, in part, by funding from GlaxoSmithKline, over the last two years totaling about $1.5 million, through an industry-academic alliance called the Alternative Drug Discovery Initiative at the Penn School of Medicine. Co-author Emile Mohler, III, has a position on a steering committee as a National Coordinator for the Phase III GSK trial for darapladib.

In addition to other Penn co-authors Damir Hamamdzic, Daniel J. Pelchovitz, and Jisheng Yang, colleagues from Thomas Jefferson University, GlaxSmithKline, Southhampton General Hospital (UK), and the University of Washington were also co-authors. Wilensky has a consulting agreement ($2000 over the past year) with GSK for another compound.

Adapted from materials provided by University of Pennsylvania School of Medicine.

http://www.sciencedaily.com/releases/2008/09/080922122538.htm

Learning From Mistakes Only Works After Age 12, Study Suggests



In children aged 8 to 9, the areas of the brain involved in cognitive control show strong activation following positive feedback. This is no longer the case with 12-year-olds. (Credit: Image courtesy of Leiden University)

ScienceDaily (Sep. 27, 2008) — Eight-year-old children have a radically different learning strategy from twelve-year-olds and adults. Eight-year-olds learn primarily from positive feedback ('Well done!'), whereas negative feedback ('Got it wrong this time') scarcely causes any alarm bells to ring.Twelve-year-olds are better able to process negative feedback, and use it to learn from their mistakes. Adults do the same, but more efficiently.

Brain areas for cognitive control

The switch in learning strategy has been demonstrated in behavioural research, which shows that eight-year-olds respond disproportionately inaccurately to negative feedback. But the switch can also be seen in the brain, as developmental psychologist Dr Eveline Crone and her colleagues from the Leiden Brain and Cognition Lab discovered using fMRI research. The difference can be observed particularly in the areas of the brain responsible for cognitive control. These areas are located in the cerebral cortex.

Opposite case

In children of eight and nine, these areas of the brain react strongly to positive feedback and scarcely respond at all to negative feedback. But in children of 12 and 13, and also in adults, the opposite is the case. Their 'control centres' in the brain are more strongly activated by negative feedback and much less by positive feedback.

Three-way division

Crone and her colleagues used fMRI research to compare the brains of three different age groups: children of eight to nine years, children of eleven to twelve years, and adults aged between 18 and 25 years. This three-way division had never been made before; the comparison is generally made between children and adults.

Unexpected

Crone herself was surprised at the outcome: 'We had expected that the brains of eight-year-olds would function in exactly the same way as the brains of twelve-year-olds, but maybe not quite so well. Children learn the whole time, so this new knowledge can have major consequences for people wanting to teach children: how can you best relay instructions to eight- and twelve-year-olds?' '

Ticks and crosses

The researchers gave children of both age groups and adults aged 18 to 25 a computer task while they lay in the MRI scanner. The task required them to discover rules. If they did this correctly, a tick appeared on the screen, otherwise a cross appeared. MRI scans showed which parts of the brain were activated.

Learning in a different way

These surprising results set Crone thinking. 'You start to think less in terms of 'good' and 'not so good'. Children of eight may well be able to learn extremely efficiently, only they do it in a different way.'

Learning from mistakes is complicated

She is able to place her fMRI results within the existing knowledge about child development. 'From the literature, it appears that young children respond better to reward than to punishment.' She can also imagine how this comes about: 'The information that you have not done something well is more complicated than the information that you have done something well. Learning from mistakes is more complex than carrying on in the same way as before. You have to ask yourself what precisely went wrong and how it was possible.'

Is it experience?

Is that difference between eight- and twelve-year-olds the result of experience, or does it have to do with the way the brain develops? As yet, nobody has the answer. 'This kind of brain research has only been possible for the last ten years or so,' says Crone, 'and there are a lot more questions which have to be answered. But it is probably a combination of the brain maturing and experience.'

Brain area for positive feedback

There is also an area of the brain that responds strongly to positive feedback: the basal ganglia, just outside the cerebral cortex. The activity of this area of the brain does not change. It remains active in all age groups: in adults, but also in children, both eight-year-olds and twelve-year-olds.

Journal reference:

1. Anna C. K. van Duijvenvoorde, Kiki Zanolie, Serge A. R. B. Rombouts, Maartje E. J. Raijmakers, and Eveline A. Crone. **Evaluating the Negative or Valuing the Positive? Neural Mechanisms Supporting Feedback-Based Learning across Development**. *The Journal of Neuroscience*, 17 September 2008 [link]

Adapted from materials provided by Leiden University.

http://www.sciencedaily.com/releases/2008/09/080925104309.htm

Provocative Duo, Naked and Natty

By HOLLAND COTTER

Dynamic duo, gruesome twosome or just plain geeks in ties and tweeds, the British artists Gilbert & George don't seem to care what you call them as long as you pay attention, which you couldn't avoid doing if you tried in their suffocating and disordered wraparound survey at the Brooklyn Museum.

Partners in life and work for 40 years, the artists have had a major career, particularly in Britain, where they were a sensation long before "Sensation," and now hold a kind of national monument status. Their new show at the Brooklyn Museum, "Gilbert & George," originated at Tate Modern in London.

Yet popular is not really the word for them. They're too strange for that. And to perpetually temperature-taking art-world eyes, they have always stood a little outside the coolness loop, a tad beyond the pale, a touch too much.

The look-alike personal style they've affected, a robotic blandness, has probably had something to do with this; they are certainly no one's idea of a glamour couple. And their sleek, photo-based, politically incorrect across-the-spectrum art is as hard to love as it is to categorize. Even if you appreciate it, you may prefer not to spend time with it.

Then there's the perversity factor. They have a funky sense of beauty and an appetite for unsightly things, things most people come to art museums not to see. They were using images of feces back in the 1980s, long before Andres Serrano got the idea. In the 1990s, when they had reached an age at which most exhibitionists put their clothes back on, Gilbert & George, then in their mid-50s, took theirs off. More recently, when the art establishment had declared blatantly topical political art to be anathema, that's what they made.

And they keep making it. It's as if they can't stop. And digital technology has only upped the output, which is one reason the Brooklyn show looks the way it does: oppressively and exhaustingly busy and dense, without even a clarifying logic of chronology to offer relief.

At the same time, for exactly these reasons, the show is a vivid experience. First look may be best look, but it's a memorable look. And it poses a genuine love-it-or-hate-it proposition, something in short supply these days, but one these artists have been offering for years.

Gilbert Proesch (born in northern Italy in 1943) and George Passmore (born in Devon, England, in 1942) met in art school in Swinging London in 1967. It was a wild time to be there. Mild-mannered male singing duos — Peter and Gordon, Chad and Jeremy — topped the charts while the Beatles dropped acid

in India. Middle-class hippies and working-class kids faced off. Pop was already old; Conceptualism was starting.

Gilbert & George fed off all of this, but also backed away from it. Self-described country boys in the big city for the first time, and a committed couple, they stayed away from the art school set and instead moved to what was then a derelict East London, where they lived cheaply, saw almost no one and did their thing.

What was their thing? Some would call it performance art; Gilbert & George called it sculpture. An early piece, "Underneath the Arches," was a kind of tableau vivant. It entailed their posing together for long stretches — eight hours in some cases — and barely moving as they lip-synched the recorded music-hall song of the title, about the melancholy joys of the homeless life.

In London in 1970 they presented it free on the street for passers-by. In galleries, they performed it standing on tables, their skin covered with blotchy bronze makeup that made them look diseased. You can see a 1974 performance in a video in the show. Like much of their art, it is striking, then maddening, an endurance test for artists and viewers alike.

By then they had fixed on the odd-couple look they would keep: Gilbert, short, dark-haired, cute; George, taller, spectacled, blond-going-bald. With their blank faces and matching, slightly too-tight suits, they suggested overgrown schoolboys or modish clerks, part of the present but also part of some undefined past.

In the early 1970s they translated their live sculpture into more permanent mediums, first large drawings — a gallery in the show is devoted to these — and then into photographic ensembles. Initially the photographs were small, but of varied sizes and differently arranged from piece to piece. Then a set format developed: four or more same-size framed pictures — black and white, sometimes dyed red — grouped edge to edge as a rectilinear unit.

This simple solution allowed the work to expand in size incrementally, and it let the artists focus on what really interested them: content more than form. The images they used, shot in and around their East London home, were a provocative mix: rotting buildings and empty rooms; homeless men and jobless youths; racist graffiti and street garbage; gray skies, spring flowers, drunken nights, hidden sex.

The ensembles they made from these images perfectly caught the look of mid-'70s London, a bone-cold, bad-air town. It also caught the social heat of years when an African and South Asian immigrant population and a violent, white-nationalist reaction were growing apace. The artists' impassive recording of these tensions led them to be accused of racism and fascist sympathizing, although far from being politically prickly, their work comes across as elegiac, in a wry Philip Larkin-esque way: life is nuts; it has its beauties, but it's a losing game.

Then, in the 1980s, prosperity returned, and art reflected that. The pictures grew to mural size; black and white gave way to punchy Pop color; the cast of characters grew. Gilbert & George continued to appear, now joined by ethnically mixed crowds of attractive young men, some fresh-scrubbed, others with the slouch of street hustlers.

The four-part "Death Hope Life Fear" (1984), big as an altarpiece, bright as a stained-glass window, has an army of them, with Gilbert & George soaring upward on either side like exuberant guardian angels.

In the early 1990s, when the full impact of AIDS became clear, the work changed further. The young men in the pictures decreased in number. Images of giant flowers and fields of tombstones recurred, as did the figures of the artists, now naked and self-consciously hugging and vamping. Emphasis fell on bodily

fluids, with microscopic close-ups of blood, spit, tears, sperm and urine used as a decoratively patterned backdrop for everything else. Disease isn't just inside us, the message seems to be; we are living inside it.

This perspective is fundamental to Gilbert & George's art: existence as a pathological condition; prognosis, terminal. Only an invented, illusory state called normality protects us from sinking under this knowledge. And maybe this idea of normality as a sort of false state of grace helps explain the George & Gilbert persona: the unchanging look; the well-practiced routines; the crisp, clean art that makes chaos graphically readable.

And maybe the chaos has been gaining the upper hand. The newest works in the show, from 2005 and 2006, are crazy, end-of-time stuff. Black, white and blood red are back. Terrorism and religious fundamentalism are the themes. Gilbert & George have always trafficked in religious imagery: crosses, churches, people praying, rosy Edens, martyrdoms and ascensions. More recently, much enhanced by digital manipulation, the supernatural has grown almost comically monstrous.

In "Fates" (2005), the artists are howling gods or demons communicating through coded Masonic and hip-hop gestures. In "Bomb" (2006), they stand, rigid and staring, framed by dozens of headlines: "London Terror Bomb Plot," "Bomb Victims' Funeral," "Bus Bomb: The Full Story." They wear the same tailored suits they wore as the vaudevillian performers of "Underneath the Arches" almost 40 years ago, but now they have moved their act to Club Armageddon.

It is difficult to make such historical connections in the exhibition itself, as the work is, unusually for a retrospective, not arranged by date. Instead the emphasis seems to be on compare-and-contrast symmetries, thematic correspondences and so on, which together create a total-immersion visual experience rather than a coherent career narrative. Over all the approach is effective, making the show a series of symphonic crescendos. Stand in any one gallery and you get a concentrated hit of the big career picture.

And one gallery might be enough. A little Gilbert & George goes a long way. In even moderate doses — and this show is immoderately large, spread over two floors — the work wears you down, the way the obsession-driven work of certain self-taught, or outsider, artists does: Henry Darger's convoluted erotic narratives; Madge Gill's through-the-looking-glass filigree epic; Howard Finster's symbolic sagas, at once ecstatic and accusatory, of salvation and perdition.

In the end Gilbert & George may be best understood within an outsider tradition. They are, of course, veteran and savvy insiders in the international art scene. They have been influenced by other contemporary artists, Joseph Beuys among them, and they have in turn had a significant effect on younger artists.

Yet at some level they have sustained the position of removal that they established in the 1960s as maverick artists, as a same-sex couple, as country boys. And this removal, this never-quite-fitting-in, is their strength.

It helps explain why they attract, in equal degree, admiration and hostility, and why the art world never really knows what to do with them. It may also explain how they have been able to keep their creative energy intact for so long, staying on track, but continually developing and enhancing the product. And it may explain the features — outlandish self-exposure, unmeasured moral outrage, and a belief in love, death and no heaven — that makes their art both all but unendurable and right for right now.

"Gilbert & George" runs from Friday through Jan. 11 at the Brooklyn Museum, 200 Eastern Parkway, at Prospect Park, (718) 638-5000, brooklynmuseum.org.

http://www.nytimes.com/2008/10/03/arts/design/03gilb.html?_r=1&th&emc=th&oref=slogin

Flu confusion 'could cost lives'

People who underestimate the dangers of flu could be putting their lives at risk, says the man in charge of vaccinations in England.

A survey of more than 1,000 people found that a third of them thought flu was the same as a heavy cold.

Professor David Salisbury is urging over-65s and other "at-risk" groups to visit their GP for a flu jab.

The advice was backed by charities, which stressed complications could be serious or even fatal.

> **Common colds are frequently confused with flu, but for some the flu virus can be potentially life-threatening**
> Professor David Salisbury
> Department of Health

Because strains of flu viruses change every year, vulnerable people need to be vaccinated every 12 months.

The vaccine is available free to older people, and those with chronic conditions including heart disease, asthma and diabetes.

Similar arrangements are available in other parts of the UK.

Professor Salisbury, the director of immunisation for the Department of Health, said that last year, fewer than half of eligible people under 65 took advantage of the jab.

The survey also found that many people believed so-called "old wives' tales" about avoiding and treating the virus.

More than one in four believed that "feeding a cold" and "starving a fever" was appropriate advice, while one in three said vitamin C could cure it, despite no evidence this is the case.

FROM THE TODAY PROGRAMME

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One in 20 thought that carrying garlic could ward off flu, and a similar number thought that the flu jab itself could cause the illness.

The vaccine does not contain any live viruses, so this is impossible.

Professor Salisbury said: "The research shows that common colds are frequently confused with flu, but for some the flu virus can be potentially life-threatening.

"We are urging those at greater risk - including people suffering serious heart problems, asthma and diabetes - to get their flu jab from their GP. The flu jab can literally save lives."

Heart attack or stroke

Diabetes UK, Asthma UK and the British Heart Foundation (BHF) all backed the jab.

June Davison, from the BHF, said that flu could, in extreme cases, trigger a heart attack or stroke in those who already had heart problems.

And Vikki Knowles, from Asthma UK, said that people with asthma should discuss flu jabs with their GP before the "flu season" - normally at its height in midwinter - gets under way.

The survey results do not inspire any confidence that infected people will be able to keep the virus to themselves.

Almost half of those questioned did not know they should cover their mouths when sneezing, and wash their hands after coughing into them.

Even more people did not know that carrying used tissues or handkerchiefs was a good way to spread the illness.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7649191.stm

Published: 2008/10/03 00:19:09 GMT

New twist in brain obesity riddle

The discovery of another way in which the body appears to control how much it eats could shed fresh light on obesity.

US researchers said poor diets may trigger a signalling system which prompts the body to consume even more.

When the signals - involving a protein linked to inflammation - were blocked in mice, they maintained normal weight.

A UK expert warned that the finding, in the journal Cell, may not lead to an effective anti-obesity drug because it could interfere with the immune system.

The complexity of the controls governing the human metabolism, appetite and the laying down of fat has become clear over recent years.

Despite some promising experiments in animals, none has yet produced a breakthrough in the battle against obesity.

The latest "pathway" under investigation, by scientists at the University of Wisconsin-Madison, is normally associated with the immune system, and inflammation, one of the body's defence systems.

Mouse diet

The link to obesity was made when scientists investigated "metabolic inflammation", a chronic, low-level condition often seen in obesity-related diseases.

In mice, a protein connected to inflammatory reactions appeared to be switched on when the animals were given a high fat, high sugar diet.

Not only this, but once the protein was switched on, the mice started eating more, suggesting that it was part of a pathway involving the regulation of food intake.

Closer examination of the a part of the brain called the hypothalamus, which is known to be involved in energy regulation, revealed the protein present there too.

In mice genetically altered to block the pathway, even with a high fat diet available, they were able to maintain a healthy weight.

Dr Dongsheng Cai, who led the research, said that that the pathway could possibly be used in anti-obesity drugs.

He said: "The ultimate goal will certainly be to identify a selective and effective suppressor of the pathway to target related neurons."

However, Professor Fran Ebling, from the University of Nottingham, said that other potential targets might prove more fruitful.

He said: "It's certainly interesting, but if we have some drugs that target this pathway, they may well interfere with some other part of the immune system."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7649261.stm

Published: 2008/10/03 00:19:17 GMT

Universities 'should vary offers'

Universities have been given the green light to vary the A-level grades expected from applicants depending on the schools they attend.

A government-backed report said admissions tutors should use a wide range of information to identify the students with the greatest potential.

The National Council for Educational Excellence report said such decisions should be open and transparent.

The government accepted this, and the report's other findings.

The report by a panel of university vice-chancellors, head teachers, ministers and business leaders said schools and colleges should significantly improve the support and advice to students with the ability to enter higher education.

> **We're not saying if you go to an independent school you're not going to get an offer, we're not distinguishing between types of schools**
> Professor Smith

The group was set up by Prime Minister Gordon Brown in June 2007 to look at how England's education system could be made "world class" and how young people could be helped to fulfil their potential.

Panel chairman and vice-chancellor of Exeter University and universities umbrella group Universities UK Professor Steve Smith said: "What we are saying is that we should be taking into account the context in which you got the grades you got.

"So that's actually about school performance."

However, the difference between offers was likely to be fairly small, he said.

"We're not saying if you go to an independent school you're not going to get an offer, we're not distinguishing between types of schools.

"But you could look at how well a student is doing compared to the performance of their schools and within the published offer range.

"What we are saying is it is OK to offer differentially at A-level because we are trying to find the pupils with most potential."

He gave the example of how pupils from independent schools were asked to obtain 3 As at A-level to study English at Exeter.

A pupil from a challenging school might have to achieve two As and a B, he said.

Universities have for many years made different offers based on the background of the candidate, but Prof Smith says such admissions policies have not always been transparent.

The report also recommended that primary school and younger secondary school pupils should visit universities to raise the chances of them going on to study at one.

Family tradition

Schools should nurture ambition in students from poorer families to study at the most selective universities, it said.

And all secondary schools should appoint a senior member of staff to be responsible for advice on university admissions and careers guidance. This should include tips on which subjects to choose at A-level.

The government should consider asking Ofsted to inspect the quality of the advice given, it added.

The report also called on all universities to produce comprehensive strategies for their work on widening participation.

These should include measures for improving school performance, whether that be by supporting Academies and school trusts or other means.

And in return the Office for Fair Access should acknowledge the full range of contributions universities make in trying to attract more students from non-traditional backgrounds.

But this did not mean an end to the unpopular targets universities are given every year on the proportion of students they take from poorer backgrounds, said Higher Education Minister Bill Rammell

A-level subjects

He said: "I have long been of the view that the earlier the intervention - the planting of that germ of an idea that 'university might be for me' - the better.

"If you come from a family where your parents or someone else in the family has been to university you probably have some idea of what university is at primary school."

This was not the case if you did not, he said.

President of Universities UK Professor Rick Trainor said: "Universities make strenuous efforts to seek out potential by looking at a number of factors when selecting students, but, as we've said consistently, they cannot admit people who are not applying to university."

NUS President Wes Streeting his union was a strong supporter of this government's efforts to widen participation in higher education and to unlock the talents of every individual.

Shadow Universities Secretary David Willetts said the Tories had produced analysis showing better advice was key.

"At the moment, one-third of all A-level entries are in subjects that universities value less. So the report is right to focus on today's problems."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/7648733.stm

Published: 2008/10/03 00:05:58 GMT

Babble On, Say Researchers In 'Linguists' Documentary

By Joel Garreau
Washington Post Staff Writer
Thursday, October 2, 2008; C01

Doesn't your life seem like a daily adventure in linguistics? Americans today routinely encounter more languages from more continents than at any time in the past century. Whether you're getting a meal or a clean shirt or a cab, or visiting a university or a hospital or simply walking through the mall, it's easy to think you're living in the golden age of language diversity.

But apparently, you would be wrong.

Languages are dying by the hundreds -- the thousands -- all over the world as you stand there trying to figure out the menu on Wilson Boulevard. And before you can be churlish enough to say, yeah, and the problem with that would be what? -- wasn't life better before the Tower of Babel? -- here comes a movie to set you straight that is so au courant, if you know what we mean, that it was shown at Sundance.

Called "The Linguists," it is basically a home movie with better than average production values -- which, come to think of it, may be a useful definition of indie movies -- that could have been subtitled "Dave and Greg's Excellent Language Adventures."

These guys travel to parts of Siberia, Bolivia and India so truly godforsaken that the film of Arizona Indian country looks cosmopolitan. All in the service of warning us that half the world's 7,000 languages are going extinct. These include Gta', in India, which features words that efficiently capture concepts at which English flails. Such as:

· "Goteh," which means "bring something from an inaccessible place with the help of a long stick";

· "Nosore," which means "to free someone from a tiger"; and

· "Poh," which means "to kill lice by pressing them under your nails."

It also turns out that in the Bella Coola/Nuxalk language of Canada, you can find such words as "stshlh" for "afterbirth" or "stsnts" for "transsexual/hermaphrodite."

We know what you're thinking. You want to buy a vowel.

But we're getting ahead of ourselves.

National Geographic is hosting a multi-culti All Roads Film Festival at its headquarters at 17th and M streets NW tonight through Sunday, and "The Linguists" is the opening-night attraction. Its success on the indie circuit is no small accomplishment. Even the film's director, Daniel A. Miller, acknowledges the challenge of dealing with linguists.

"My wife's friend at Berkeley was a linguistics major and we privately called her Data -- as from 'Star Trek: The Next Generation' -- because of her monotone recitation of mostly emotionless observations," he writes in his director's notes.

When the filmmakers first met a young researcher in endangered languages, K. David Harrison, "he seemed like the perfect protagonist. He was as young as we were in 2003 yet looked better on camera. At the same time, he was a bit of a control freak."

His co-researcher, Gregory Anderson, "was Oscar to David's Felix. We found out in time that Greg was a recovering Deadhead, the father of two and both a huge fan of extreme fighting and a black belt. He also spoke close to 20 languages and had founded with David the Living Tongues Institute for Endangered Languages."

Thus does the movie strive to make an adventure out of seeing all the ways the human mind can make sense of the world with language. The trailer's eloquent sell asks who "will circle the planet to hear the last whispers of a dying language, racing against time to hear words rarely spoken before they're never heard again?"

Ask why we care about recording a language that only three people speak, and Harrison replies, "If we were to give a rationale purely for selfish reasons, it would be, after those speakers die, we'll have a scientific record of the language."

But in addition, "science is playing catch-up in many respects to the people who have lived there for thousands of years and know about that ecosystem," says Anderson. "So since all of these ecosystems are under collapse now, it would behoove us to not just throw away this knowledge that people have accrued over the millennia."

And their knowledge doesn't translate out of their language?

"There are approximations that can be made, of course," says Anderson. "Which is why you're capable of reading Dostoevski even if you don't know Russian."

Languages divide as well as unite -- ask Canada. The luxury of embracing global language diversity is palatable in part because the world has succeeded in creating a lingua franca, a universal language -- English. A quarter of the world's population speaks it, according to David Crystal, author of the

Cambridge Encyclopedia of the English Language. Four or five times as many people speak English as a second language as do those who consider it their first.

"The Linguists" visits a boarding school in India where parents eagerly send their kids to learn a way to make a living -- running a sewing machine, for example. These kids speak 60 home languages, but as often as not they are taught in English because, the film acknowledges with some rue, it is the most efficient way to give them a good education.

If these parents are more concerned with their kids' economic futures than they are with the preservation of their tribal languages, what's wrong with that?

"English won the competition for languages," says Anderson. "The English-first laws are all inane because it's a fait accompli." And all those other languages he records? "We serve the heritage communities of these languages," he says.

"There's really a global movement going on right now for language revitalization," says Harrison. "A lot of it looks dire and depressing and the trend is downward, but people have realized that they were presented with a false choice: that they had to give up their identity, give up their language, become part of a homogenized melting-pot culture. People are pulling back from that and reasserting their roots, their ethnic identity, their multiple identities, their heritage languages and affiliations.

"There's a better attitude nowadays where people don't just pay lip service to the idea of diversity, but they understand that diversity does actually strengthen a society, strengthens us intellectually, strengthens us socially."

Weren't things better before the Tower of Babel?

"I was raised in a religious tradition that views multilingualism as quite literally a punishment from God," says Harrison. "It was intended to 'confound' -- that was the exact word that was used. But there are alternative mythologies. There are still societies today" -- in New Guinea and South America -- "that actually require their members to marry a person who is a speaker of a different language. Diversity has a survival value."

"Yeah," chimes in Anderson, "they call it hybrid vigor in biology."

H. Russell Bernard is a grand old man of endangered-language research, having devoted four decades to it. The chairman emeritus of the University of Florida anthropology department and the former editor in chief of the American Anthropologist takes the long view about disappearing language diversity.

"We're conducting this experiment where we had 35,000 years of language proliferation. About 500 years ago it started contracting, since the age of discovery and conquest and colonialism. We know that the proliferation of languages was the natural order of things for a very long time. Modern Homo sapiens is conducting an experiment to reduce that, to maybe one. It's hubris, but why shouldn't we do that -- translate it all into one?

"If I had 20 to 30 planets on which to conduct this experiment, in which some proliferate and some stay the same, and I could monitor it for 2,000 or 3,000 years, and could tell what the consequences were, I would not be so concerned about whether the experiment we're conducting is good or bad for humankind.

"Without that comparison," however, Bernard says, experimenting in language extinction "seems to me utterly reckless."

Meanwhile, you ask Anderson and Harrison whether they realize they are causing their National Geographic publicist to pound her head against her desk.

What a great opportunity, she thought. Language diversity! She promptly started to line up interviews with Spanish-language media. That's when she learned that of the 25 languages the two could speak, none of those was Spanish.

Twenty-five languages and none of them is Spanish? you say to the boys, incredulously. Aren't you ashamed?

"Yeah, I know," says Anderson.

"We're terrible."

http://www.washingtonpost.com/wp-dyn/content/article/2008/10/01/AR2008100103115.html

Rethinking Who Should Be Considered 'Essential' During A Pandemic Flu Outbreak

ScienceDaily (Oct. 3, 2008) — Not only are doctors, nurses, and firefighters essential during a severe pandemic influenza outbreak. So, too, are truck drivers, communications personnel, and utility workers. That's the conclusion of a Johns Hopkins University article to be published in the journal of Biosecurity and Bioterrorism.

The report, led by Nancy Kass, Sc.D, Deputy Director of Public Health for the Johns Hopkins Berman Institute of Bioethics, provides ethical guidance for pandemic planning that ensures a skeletal infrastructure remain intact at all times. Dr. Kass says, "when preparing for a severe pandemic flu it is crucial for leaders to recognize that if the public has limited or no access to food, water, sewage systems, fuel and communications, the secondary consequences may cause greater sickness death and social breakdown than the virus itself."

The authors represent a wide-range of expertise in several areas of pandemic emergency planning both at the state and federal levels. After examining several accepted public health rationing strategies that give priority to all healthcare workers and those most susceptible to illness, the authors propose a new strategy that gives priority to a more diverse group. "Alongside healthcare workers and first responders, priority should be given to the people who provide the public with basic essentials for good health and well-being, ranging from grocery store employees and communications personnel to truck drivers and utility workers," says Dr. Kass.

The report recognizes that given the widespread and sustained nature of a pandemic, federal assistance will be spread thin and local jurisdictions must develop their own preparedness plans to ensure they are capable of sustained self-sufficiency. Encouraging and working with local businesses to develop their own response plans can help reduce the burden on local governments during a pandemic.

Similarly, individuals and families who can afford it should do their best to prepare for any disaster. The paper notes, the more initiative the general public exercises in stockpiling several weeks' worth of food, water, paper goods, batteries medicines, and other needed supplies, the less vulnerable they will be to a break in the supply chain. In fact, the report emphasizes, it is important for leaders to communicate to the middle class and the wealthy that it is their responsibility to prepare for self-sufficiency in order to free up scarce supplies and allow first responders to direct their attention towards those too poor or vulnerable to prepare themselves.

The article lays out a set of ethics rules and principles to help guide and frame a pandemic response strategy that is evidence-based, transparent, fair, and recognizes the burdens the public may face. Dr. Kass points out the "consideration of ethics are critical not only in having respectful and inclusive discussion and engaging with the public fairly, but it also improves the likelihood of public health and medical success through increased cooperation and understanding of government plans."

Other authors of this paper include: Jean Otto, DrPH, Senior Epidemiologist, Department of Defense, Global Emerging Infections Surveillance and Response System, Armed Forces Health Surveillance Center, Walter Reed Army Institute of Research; Daniel O'Brien, JD, Principal Counsel, Office of the Maryland Attorney General, Department of Health and Mental Hygiene; and Mathew Minson, MD, Senior Medical Officer for Strategic Initiatives, Office of the Assistant Secretary for Preparedness and Response, U.S. Department of Health and Human Services.

Adapted from materials provided by Johns Hopkins Berman Institute of Bioethics.

http://www.sciencedaily.com:80/releases/2008/10/081002172441.htm

Compact Fluorescent Lighting: Are We Trading Energy Conservation For Toxic Mercury Emissions?

Some places may produce more mercury emissions by switching from incandescent light bulbs to compact fluorescent lighting, a new study suggests. (Credit: iStockphoto/Jon Schulte)

ScienceDaily (Oct. 3, 2008) — A team of Yale scientists has found that certain countries and some U.S. states stand to benefit from the use of compact fluorescent lighting more than others in the fight against global warming. Some places may even produce more mercury emissions by switching from incandescent light bulbs to compact fluorescent lighting.

The study, which appears online October 1 in the journal Environmental Science and Technology, looked at all 50 states and 130 countries to determine the impact of fluorescent lighting on total mercury emissions in those regions.

Estonia, which relies heavily on coal-powered energy generation, tops the list as the country that would see the greatest reduction in mercury emissions for every incandescent bulb it replaces with a compact fluorescent light bulb (CFL). However, given its similar reliance on coal-fired plants, coupled with its huge population, China stands to reduce its mercury emissions by the greatest overall amount. Other countries near the top of the list include Romania, Bulgaria and Greece; within the U.S., North Dakota, New Mexico and West Virginia have the greatest potential to reduce their mercury emissions.

But much of South America, Africa, the Middle East and parts of Europe, along with Alaska, California, Oregon, Idaho and several New England states, would actually increase their mercury emissions by making the switch from incandescent to fluorescent lighting. The results depend on a complex relationship between a number of factors, including how dependent a region is on coal-powered energy generation, the chemical makeup of the coal used in those plants, and existing recycling programs for CFLs.

"Compact fluorescent lighting is an area where we're really pushing this alternative and all these policies are being enacted, but we're not looking at the potential unintended consequences of what we're doing," said study author Julie Beth Zimmerman, an assistant professor in Yale's Department of Chemical Engineering and its School of Forestry & Environmental Studies.

Touted as a greener alternative to traditional lighting, CFLs are about four times more energy-efficient than incandescent bulbs and last up to 10 times longer. This increased efficiency lessens the energy demand on generating stations powered by fossil fuels and reduces greenhouse gas emissions, as well as the amount of packaging and old light bulbs that end up in landfills. But unlike incandescent light bulbs, CFLs contain mercury, a toxin with potentially hazardous effects that can be released during manufacturing and disposal.

"It's always good to promote energy efficiency, but it's always a tradeoff," said lead author Matthew Eckelman, a graduate student in Yale's Department of Chemistry and the Center for Industrial Ecology. "You may get a lower energy bill at home, but you don't see the emissions or the runoff downstream."

While the researchers stress that their study isn't an excuse to ignore the energy problem and stick with old, inefficient technologies, they caution that nation-wide strategies such as recent bans on incandescent bulbs, adopted by several countries including the U.S., may be too general. "All sustainability issues are local," said Zimmerman. "We need to ask if we should be making decisions on a national level, or if this is something better left to local governments."

The authors of the paper are Matthew Eckelman, Paul Anastas and Julie Beth Zimmerman, all from Yale University.

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

http://www.sciencedaily.com/releases/2008/10/081001093454.htm

Acupressure Calms Children Before Surgery

Acupressure bead applied before surgery decreases anxiety in children. (Credit: Photo by Daniel A. Anderson)

ScienceDaily (Oct. 2, 2008) — An acupressure treatment applied to children undergoing anesthesia noticeably lowers their anxiety levels and makes the stress of surgery more calming for them and their families, UC Irvine anesthesiologists have learned.

According to Dr. Zeev Kain, anesthesiology and perioperative care chair, and his Yale University collaborator Dr. Shu-Ming Wang, this noninvasive, drug-free method is an effective, complementary anxiety-relief therapy for children during surgical preparation. Sedatives currently used before anesthesia can cause nausea and prolong sedation.

"Anxiety in children before surgery is bad because of the emotional toll on the child and parents, and this anxiety can lead to prolonged recovery and the increased use of analgesics for postoperative pain," said Kain, who led the acupressure study. "What's great about the use of acupressure is that it costs very little and has no side effects."

In this study, Kain and his Yale colleagues applied adhesive acupressure beads to 52 children between the ages of 8 and 17 who were to undergo endoscopic stomach surgery. In half the children, a bead was applied to the Extra-1 acupoint, which is located in the midpoint between the eyebrows. In the other half, the bead was applied to a spot above the left eyebrow that has no reported clinical effects.

Thirty minutes later, the researchers noted decreased anxiety levels in the children who had the beads applied to the Extra-1 acupoint. In turn, anxiety levels increased in the other group. Overall, they found the use of acupressure had no effect on the surgical procedure.

"As anesthesiologists, we need to look at all therapeutic opportunities to make the surgical process less stressful for all patients," Kain said. "We can't assume that Western medical approaches are the only viable ones, and we have an obligation to look at integrative treatments like acupressure as a way to improve the surgery experience."

Surgery is traumatic for most children, and Kain leads research to find integrative methods, such as soothing music, massage, and Chinese acupuncture and acupressure treatments, to make the surgical period more calming for patients and their families.

Study results appear in the September issue of Anesthesia & Analgesia.

Dr. Sandra Escalera, Dr. Inna Maranets and Eric Lin of Yale also worked on the study, which was supported by the National Institutes of Health.

Adapted from materials provided by University of California - Irvine.

http://www.sciencedaily.com/releases/2008/10/081001130006.htm

Eureka! How Distractions Facilitate Creative Problem-solving

ScienceDaily (Oct. 2, 2008) — How many times have you spent hours slaving over an impossible problem, only to take a break and then easily solve the problem, sometimes within minutes of looking at it again? Although this is actually a common phenomenon, up until now the way that this occurs has been unclear.But new research in the September issue of Psychological Science, a journal of the Association for Psychological Science, demonstrates the answer is more complex than simply having an "Aha!" moment.

The new research, led in part by Kellogg School of Management Professor Adam Galinsky, suggests that unconscious thought results in creative problem-solving via a two-step process.

According to Galinsky and fellow psychologists Chen-Bo Zhong from the University of Toronto and Ap Dijkstererhuis of Radboud University Nijmegen, distractions may be helpful in coming up with creative solutions to a certain problem, but must be followed by a period of conscious thought to ensure that we are aware of those solutions and can apply them. Likewise, while distractions are more useful in solving difficult problems, it may be better to stay focused on finding the solution when confronted with easier problems.The researchers conducted two experiments to test their idea. In the first experiment, 94 subjects participated in a Remote-Association Test (RAT), which tests for creativity. In this test, participants were presented with three words (a triad) and were asked to come up with a fourth word that is linked with all three words. For example, if presented with the words cheese, sky and ocean, the correct answer would be blue (blue cheese, blue sky, blue ocean). Subjects were shown nine very difficult triads (but were instructed not to solve them yet) and were then divided into groups.

For five minutes following the RAT, participants were either concentrating on the triads they had just seen (the conscious thought group) or engaging in a test completely unrelated to the RAT (the unconscious thought group). Following the five-minute interval, all of the subjects participated in a lexical decision test. During this test, subjects were shown sequences of letters and had to indicate as quickly as possible if the sequences were English words or not. The sequences presented included answers to the RAT triads, random words and non-words. Finally, subjects were again shown the RAT items and had to write down their answers.

The second experiment involved 36 subjects and had a similar set up to the previous experiment, although the RAT triads presented were much easier to solve compared to those in the first experiment.

The results showed that in the first experiment, during the lexical decision test, members of the unconscious thought group had much faster responses to letter sequences which were answers to RAT items, compared to the conscious thought group. However, when it came time to solve the RAT problems, both groups had similar results. In the second experiment (using an easier set of RAT triads), the conscious thought group had more correct RAT answers compared to the unconscious thought group, but there was no difference in response time during the lexical decision test.

"Conscious thought is better at making linear, analytic decisions, but unconscious thought is especially effective at solving complex problems," said Galinsky and his co-authors. "Unconscious activation may provide inspirational sparks underlying the 'Aha!' moment that eventually leads to important discoveries."

Adapted from materials provided by Association for Psychological Science.

http://www.sciencedaily.com/releases/2008/09/080930154841.htm

Keeping Computing Compatible

ScienceDaily (Oct. 2, 2008) — As distributed computing becomes universal, the programs that make devices work really have to work together. European researchers have gone back to basics to create a development toolkit that guarantees this sort of compatibility.

Early in 2006, an EU-funded research group called SIMS, for Semantic Interfaces for Mobile Services, took on the challenge of how to envision, design and develop the next generation of software to power widely distributed and highly interactive devices.

The result – a suite of tools for speeding the design and validation of software and services that are guaranteed to interact smoothly – is now being applied and tested by a team of developers.

When SIMS-inspired services are widespread, says Richard Sanders, the SIMS project coordinator, devices such as smart phones, PDAs, and computers will interact with each other seamlessly, update themselves automatically, and offer users the ability to implement new services that are guaranteed to work from the start.

“If you have communicating software and the communication is important, you want to make sure it works when it interacts with other software,” says Sanders. “SIMS provides the tools to check those scenarios and actually guarantees compatibility.”

Autonomous and collaborating components

The SIMS researchers based their approach on two key factors that they felt had previously been neglected.

Communication and computation are becoming increasingly collaborative and, at the same time, the programs and components that make the devices that we rely on to work are becoming increasingly autonomous.

To accomplish a goal as simple as delivering a package, multiple agents using a wide range of fixed and mobile devices must exchange a variety of messages. For the package to get to the right place at the right time, every exchange has to produce the desired result.

So, the software components making all those interfaces work have to be compatible.

Unlike a telephone call, where one device attempts to initiate a particular kind of connection with another, most real-world services now involve many loosely interconnected software components running on a variety of devices initiating complex sequences of contacts and utilising many different messaging modes.

Most developers, notes Sanders, still think in terms of a single client and server, where one component takes the initiative and the other responds. “We find this very limiting,” he says. “We’re used to lots of components whose combined behaviour produces a service, and where many of them can take the initiative.”

Coded for success

To reach their goal, the SIMS researchers had to re-examine the process of service development from the ground up.

"The biggest challenge was to understand the basic concepts and find the right way to explain them to ourselves and others," says Sanders. "Concepts like what is a service, what is a goal, what is a semantic interface, and how do these relate to software?"

One result of their back-to-basics approach is that the development of a new service starts with a model of what that service should accomplish rather than with computer code.

The model uses semantic interfaces to specify what goals need to be realised and how the components of the system need to behave and interact to bring that about. Semantic interfaces detail, in a highly structured way, what kinds of connections, exchanges and results are meaningful and useful within a particular domain.

Crucially, the ability of components to communicate with and understand each other can be checked within these models, rather than after reams of computer code have been written.

"We can validate that nothing goes bad; that you don't send me a message that I won't understand," says Sanders.

Developers can create computer code to run devices directly from the validated models, code that is guaranteed to work with all the components of the system.

The researchers believe using their approach and tools could head off most of the interaction errors that trip up systems and frustrate users.

In addition, devices could detect when new or improved services become available, and update themselves automatically as they interact without the risk of introducing incompatible software.

Sanders is eager to see SIMS used wherever interactive services and the software that makes them work are being developed. The result he envisages is a dynamic, service-oriented market place that would work far more smoothly and efficiently than today.

"The greatest potential lies in the way it can support a market place with lots of people specifying services and lots of companies making components that implement these services," says Sanders. "This market place would support the spreading of software in a much more efficient way than you currently see, and without quality and compatibility problems."

The SIMS project received funding under the ICT theme of the EU's Sixth Framework Programme for research.

Adapted from materials provided by ICT Results.

http://www.sciencedaily.com/releases/2008/09/080929095918.htm

Why Metal Alloys Degrade And Fail

Jet turbine. Metal alloys can fail unexpectedly in a wide range of applications --- from jet engines to satellites to cell phones --- and new research from the University of Michigan helps to explain why. (Credit: iStockphoto/Maciej Noskowski)

ScienceDaily (Oct. 2, 2008) — Metal alloys can fail unexpectedly in a wide range of applications---from jet engines to satellites to cell phones---and new research from the University of Michigan helps to explain why.

Metal alloys are solids made from at least two different metallic elements. The elements are often mixed together as liquid, and when they "freeze," into solids, tiny grains of crystal form to create a polycrystalline material. A polycrystalline material is made of multiple crystals.

Within each of the grains of crystal, atoms are arranged in a periodic pattern. This pattern isn't perfect, though. For example, some of the places atoms should be are empty. These empty spaces are called vacancies. Atoms of each element in the alloy take advantage of these holes in the lattice. In a process called diffusion, atoms hop through the material, changing its structure.

"It's kind of like musical chairs," said Katsuyo Thornton, assistant professor in the U-M Department of Materials Science and Engineering. "Diffusion happens in nearly every material, and materials can degrade because diffusion causes certain changes in the structure of the material."

Atoms of different elements tend to hop at different rates because they are bound to their surrounding atoms with varying strength. Thornton and her colleagues have demonstrated that when there's a greater

discrepancy in the hop rates in the different elements in the alloy, there's a more pronounced diffusion along grain boundaries. This possibly leads to a faster degradation. Thornton's collaborators on this project are Materials Science and Engineering doctoral student Hui-Chia Yu, and Anton Van der Ven, an assistant professor in the same department.

"In some cases, the grain-boundary diffusion is 100 times higher than what was commonly expected," Thornton said.

"This is a very generic finding," she said. "That's why it's important. It applies to a wide variety of materials. It applies to polycrystalline materials including electronic materials like solder."

Conventional solder, made of tin and lead, is a common alloy that connects electronic components in computer circuit boards and gadgets. Because lead is toxic, engineers are working to design new kinds of solder without lead. But they haven't found a substitute that works as well. The team's findings may help explain why "tin whiskers" form in some of these new solders. Tin whiskers have caused damage to satellites, for example.

"We are trying to apply this theory to whisker growth in solder," Thornton said.

This finding suggests that materials scientists could make longer-lasting alloys if they use metals with similar atomic hop rates, or manipulate the intrinsic hop rates by other mechanisms.

Journal reference:

1. Yu et al. **Theory of grain boundary diffusion induced by the Kirkendall effect**. *Applied Physics Letters*, 2008; 93 (9): 091908 DOI: 10.1063/1.2978161

Adapted from materials provided by University of Michigan.

http://www.sciencedaily.com/releases/2008/09/080924175200.htm

Margaret Spellings Looks Back

EDUCATION DEPARTMENT

Margaret Spellings at Harvard

PODCAST

Margaret Spellings may be in the final weeks of her term as U.S. education secretary, but last week proved that she's not packing it in early. In a speech at Harvard University, she unveiled a plan to simplify the process of applying for federal student aid.

Spellings may not be quite ready to call it a term yet, but she is beginning, both in speeches like the one at Harvard and in an interview with *Inside Higher Ed* in her Washington office last week, to assess the impact of her nearly four years in office.

The interview covered some issues of immediate concern, notably the perceived short-term success that the department and Congress have had in ensuring that federal student loans remain available to borrowers and Spellings's hope that the Treasury Department will not need to use the additional powers granted to it to help student loan providers in the new $700 billion bailout package for the financial industry.

"I feel cautiously optimistic," Spellings said, rapping her knuckles on the wood conference table in her office. "I'm pleased we took action when we did, and that Congress acted with dispatch ... and so far, students seem to be getting the financing they need... I understand that there is broad authority for the Treasury secretary ... and there is recognition by this department that this will be somewhat of an ongoing challenge. We're prepared to solve it here at the Department of Education."

Looking Back

Not surprisingly, perhaps, Spellings credits her Commission on the Future of Higher Education with putting postsecondary education more squarely on the national agenda and with prodding college groups to undertake their own efforts to make higher education more effective.

She also argues, though, that much work remains to be done by college leaders and by federal policy makers to clearly define an agenda for attacking the big problems — inequitable access, insufficient capacity, high prices — that confront higher education. Without a clear agenda, she said, Congress and the next administration are likely to continue to produce unfocused, scattershot legislation like the Higher Education Act renewal enacted this summer.

"We haven't had, notwithstanding the commission and all that it did, a big enough understanding about what are our goals as a country about higher education," Spellings said in the interview. "Who should it be for? Where should it be available? What should the cost be? Should it be affordable to average Americans? I don't think we have a policy frame that we're really operating in, and that's why you get a Higher Ed Act that is this, that and the other thing."

She added: "I would give Congress an incomplete on the latest reauthorization," because "they haven't fully appreciated the big picture of some of these issues. That's why there needs to be more leadership from the field, from really all of us who care about these issues."

That implicit criticism of Congress's everything-but-the-kitchen-sink approach to the latest Higher Education Act legislation was far tamer than some of the choice words Spellings aimed at the legislative branch last winter (particularly in a stinging op-ed piece in the Washington publication *Politico*) after Congressional leaders blocked Spellings and the Education Department from issuing regulations to govern higher education accreditation.

Such harsh criticism has been relatively rare coming directly from Spellings during her term as education secretary; even though her administration has been seen as being highly critical of higher education, most of the toughest rhetoric has come not from her but from surrogates such as Charles Miller, the businessman who headed her higher ed commission, and Sara Martinez Tucker, her under secretary of education.

The Spellings Commission was accused of confronting rather than engaging leaders in higher education, in ways that college officials say diminished its potential effectiveness. Spellings largely rejects that critique, crediting the commission with producing a "very substantive body of work ... developed through a very open, transparent, far-reaching process that has kickstarted a lot of initiative in the [higher education] community and a lot of awareness outside of the community."

Asked if her commission was unnecessarily confrontational when collaboration might have proven more effective, Spellings cited comments made this month by leaders of two groups of public universities in explaining why their new accountability Web site does not allow students and families to compare the performance of multiple colleges against each other. It's all well and good to say, as the college leaders did, that families want to be able to sit down at their kitchen tables to compare colleges, Spellings said.

"But what if you don't have a kitchen table?" she said. "What if you're not a sophisticated enough player to look at all these things, or you're first generation, or not English speaking…. There's a little bit of a disconnect, if you will, between some in the higher education community, the academy, and the 'kitchen table,' and to the extent that some on the commission represented those at the kitchen table, [college leaders] may have seen it as controntational."

The other major accusation leveled against Spellings by college and university leaders is that her department showed a willingness, if not an eagerness, to expand the federal role in higher education through aggressive regulation, particularly in the realm of accreditation. (Congress has also shown that willingness, college leaders note, as evidenced by the expansive approach the new Higher Education Act renewal takes in legislating new areas such as campus emergencies and illegal file sharing on campuses.)

To fix the perceived problems facing higher education, "I think you do have to have federal solutions, and I think you have to have federal leadership," said Spellings. "We're a one-third investor in American higher education, when you include research dollars, and that's not inconsequential in the least. Clearly it's a place for federal leadership, and we are involved."

Despite the lack of consensus that Spellings describes among policy makers and the public about the key issues facing higher education, she acknowledges that the need to get more Americans into and through college is the foremost challenge ahead. Did the approaches taken by the Spellings Education Department in the last two years — particularly its emphasis on trying to compel accrediting agencies and colleges to collect and report student learning outcomes — further that goal?

"I do believe that more information, more transparency, is an essential part of informing the public as to what's at issue and what the potential solutions are," Spellings said. But she insisted, as she has done repeatedly in recent months, that her administration does not favor excessively standardized approaches to student learning.

"I want to take this opportunity to say, once again ... that I certainly have not supported, and would not support, a one-size-fits-all ratings system or accountability system from the federal government," Spellings said, her voice rising. "When I read this crap on these blogs, people saying, 'Whaaa, Margaret Spellings is trying... .' It's just not the case. It's emphatically not true.

"I'm encouraged by the kinds of things I'm seeing in the community in these fledgling pilot-type deals," she said, referring to accountability efforts from college associations, like the one from the groups of public colleges. "But to just throw it out there, for the American family, for their 'kitchen table,' given all that the American family has to sort through, well, we could be more of a helpmate in that process."

— Doug Lederman

The original story and user comments can be viewed online at
http://insidehighered.com/news/2008/10/06/spellings.

Putting What Works to Better Use

When critics of higher education list the supposed sins of colleges and their leaders, they almost always say that institutions have paid too little attention to the academic success of students and failed to develop creative techniques to engage and challenge students. A report to be published today by the Association of American Colleges and Universities puts the lie to that charge, documenting at least 10 practices (learning communities, undergraduate research and the like) that colleges commonly and successfully use to improve the academic outcomes of their students.

But don't be fooled: With this paper, the AACU and the report's author, George D. Kuh, a leading education researcher, keep up their pressure on colleges to bolster their performance in educating students. Yes, colleges and faculty members have, over the past 10 to 15 years, developed numerous successful practices to improve student performance, Kuh and AACU argue in the report, *"High-Impact Educational Practices: What Are They, Who Has Access To Them, and Why They Matter."*

But far too few students are exposed to the proven practices, and first-generation college students and others traditionally underrepresented in higher education are least likely to participate in these techniques, even though research shows that they benefit even more than their peers, the report finds.

"Our nation's future depends on helping today's extraordinarily diverse generation of college students reap the full benefits of their studies in college," Carol Geary Schneider, the president of AACU, said in her introduction to the group's report. "What Kuh's research plainly reveals is that we know what works, but we just aren't providing it to all the students who could benefit. We must make excellence inclusive and expand access to our best educational approaches to all our students, not just to those who are most privileged or most prepared for college learning."

Numerous previous reports by Kuh (who was founding director of the National Survey of Student Engagement and is Chancellor's Professor and Director of Indiana University's Center for Postsecondary Research) and by AACU's Liberal Education and America's Promise initiative have laid out the evidence that the practices underscored in this report — first-year seminars, service learning, capstone courses, and learning communities, among others — "appear to engage participants at levels that elevate their performance across multiple engagement and desired-outcomes measures such as persistence," Kuh writes.

The reasons why different activities seem to have these beneficial effects tend to vary, but as a general rule, they have certain things in common, Kuh writes: They require significant individual effort, provide significant interaction with professors and peers and expose students to the potentially conflicting views of others, provide significant feedback, and allow students to take their knowledge into settings outside the classroom, among other factors.

That's the report's good news. What's troubling, Kuh said in an interview, is that "even though people have been talking about the importance of these kinds of activities for a long, long time," and their benefits are clear, a relatively small number of all college students participate in these activities.

And while research shows that participation in these types of educational practices has a disproportionately positive impact (as measured by first-year GPA and retention rates to the second year of college) on underrepresented minority students, students from low-income backgrounds, and others who come into college with, on average, less academic preparation, those students are less likely than their peers to be exposed to these practices, as seen in the table below:

Proportion of Students Participating in High-Impact Educational Experiences, by Student Characteristic

	Freshman Year Experiences	Senior Year Experiences	

Student Characteristics	Learning Community	Service Learning	Research with Faculty	Study Abroad	Senior Experience
Type of Institution					
—Less Selective	16%	36%	16%	10%	30%
—More Selective	18	37	23	21	35
Race					
—African American	18	40	17	9	27
—Asian Pacific Islander	17	37	22	14	28
—White	17	36	19	15	34
—Hispanic	20	36	17	11	26
Enrollment					
—Part-Time	10	26	12	7	22
—Full-Time	17	37	21	16	35
First-Generation?					
—No	18	37	22	19	36
—Yes	15	35	16	9	29
Transfer?					
—Started Here	17	37	23	19	38
—Started Elsewhere	13	32	14	9	25
Age					
—Under 24	17	37	23	18	37
—24 or Older	10	24	13	7	24

Source: AACU and NSSE

If people know these experiences work, why are they not being distributed more broadly? Cost is almost certainly a factor, Kuh and Schneider say. Sending students abroad and involving undergraduates meaningfully in faculty research are expensive for institutions, and first-year seminars are a lot pricier than 400-student lectures. And there are natural barriers because of the characteristics of some underrepresented students, Kuh acknowledges. “Fewer first-generation students study abroad because they don’t have the resources to do it,” he said.

But getting faculty buy-in is both an essential element and often the bigger impediment, Kuh and Schneider agree. Kuh has aligned data from his student engagement survey with information from the Faculty Survey of Student Engagement, he says, and they clearly show a “linear increase” between activities that faculty members on a given campus believe are important and those in which their students participate. “For every point on the importance scale, the percentage of students who actually do whatever it is — be it internships, research with faculty — jumps 25 percent,” Kuh said. “When faculty decide it is important, it is much more likely to happen.”

Does all the responsibility fall on faculty members, then, if a campus does not make good use of educational practices that are proven to work for students? Hardly, says Schneider. Many of those

practices involve work that falls outside the normal boundaries of activities for which faculty members tend to be rewarded — notably classroom teaching and pure research. As a result, professors on many campuses have little incentive to push for more students to participate in these sorts of activities, and "we have to change the reward system so that faculty are rewarded for student *learning* instead of *teaching*.

"When you think how many of these practices are being done through faculty good will up to now, it's amazing we've gotten as far as we've gotten," she said.

— Doug Lederman

The original story and user comments can be viewed online at http://insidehighered.com/news/2008/10/06/aacu.

Dying of the Light

By GARRISON KEILLOR

NOTHING TO BE FRIGHTENED OF

By Julian Barnes

244 pp. Alfred A. Knopf. $24.95.

"I don't believe in God, but I miss Him," the book begins. Julian Barnes, an atheist turned agnostic, has decided at the age of 62 to address his fear of death — why should an agnostic fear death who has no faith in an afterlife? How can you be frightened of Nothing? On this simple question Barnes has hung an elegant memoir and meditation, a deep seismic tremor of a book that keeps rumbling and grumbling in the mind for weeks thereafter.

Thanatophobia is a fact in his life — he thinks about death daily and sometimes at night is "roared awake" and "pitched from sleep into darkness, panic and a vicious awareness that this is a rented world . . . awake, alone, utterly alone, beating pillow with fist and shouting 'Oh no Oh No OH NO' in an endless wail." He dreams about being buried and "of being chased, surrounded, outnumbered, outgunned, of finding myself bulletless, held hostage, wrongly condemned to the firing squad, informed that there is even less time than I imagined. The usual stuff." He imagines being trapped in an overturned ferry. Or locked by kidnappers in the trunk of a car that is then driven into a river. He imagines being taken underwater in the jaws of a crocodile.

Beyond the big knock-down stuff, he dreads the diminution of energy, the drying-up of the wellspring, the fading of the light. "I look around at my many friendships, and can recognize that some of them are not so much friendships any more as memories of friendships." He has seen his parents through their decline and deaths — "however much you escape your parents in life, they are likely to reclaim you in death" — his father, a teacher of French, felled by strokes, reading the "Mémoires" of Saint-Simon at the end still tyrannized by his wife "always present, nattering, organizing, fussing, controlling" — a few years later, his mother in a green dress, in a wheelchair paralyzed on one side, "admirably unflinching, and dismissive of what she saw as false morale-boosting," and what he sees there is hardly comforting.

Religious faith is not an option. "I had no faith to lose," he writes. "I was never baptized, never sent to Sunday school. I have never been to a normal church service in my life. . . . I am constantly going into churches, but for architectural reasons; and, more widely, to get a sense of what Englishness once was."

The Christian religion has lasted because it is a "beautiful lie, . . . a tragedy with a happy ending," and yet he misses the sense of purpose and belief that he finds in the Mozart Requiem, the paintings of Donatello — "I miss the God that inspired Italian painting and French stained glass, German music and English chapter houses, and those tumbledown heaps of stone on Celtic headlands which were once symbolic beacons in the darkness and the storm." Barnes is not comforted by the contemporary religion of therapy, the "secular modern heaven of self-fulfilment: the development of the personality, the relationships which

help define us, the status-giving job, . . . the accumulation of sexual exploits, the visits to the gym, the consumption of culture. It all adds up to happiness, doesn't it — doesn't it? This is our chosen myth."

So Barnes turns toward the strict regime of science and here is little comfort indeed. We are all dying. Even the sun is dying. Homo sapiens is evolving toward some species that won't care about us whatsoever and our art and literature and scholarship will fall into utter oblivion. Every author will eventually become an unread author. And then humanity will die out and beetles will rule the world. A man can fear his own death but what is he anyway? Simply a mass of neurons. The brain is a lump of meat and the soul is merely "a story the brain tells itself." Individuality is an illusion. Scientists find no physical evidence of "self" — it is something we've talked ourselves into. We do not produce thoughts, thoughts produce us. "The 'I' of which we are so fond properly exists only in grammar." Stripped of the Christian narrative, we gaze out on a landscape that, while fascinating, offers nothing that one could call Hope. (Barnes refers to "American hopefulness" with particular disdain.)

"There is no separation between 'us' and the universe." We are simply matter, stuff. "Individualism — the triumph of free-thinking artists and scientists — has led to a state of self-awareness in which we can now view ourselves as units of genetic obedience."

All true so far as it goes, perhaps, but so what? Barnes is a novelist and what gives this book life and keeps the reader happily churning forward is his affection for the people who wander in and out, Grandma Scoltock in her hand-knitted cardigan reading The Daily Worker and cheering on Mao Zedong,while Grandpa watched "Songs of Praise" on television, did woodwork and raised dahlias, and killed chickens with a green metal machine screwed to the doorjam that wrung their necks. The older brother who teaches philosophy, keeps llamas and likes to wear knee breeches, buckle shoes, a brocade waistcoat. We may only be units of genetic obedience, but we do love to look at each other. Barnes tells us he keeps in a drawer his parents' stuff, all of it, their scrapbooks, ration cards, cricket score cards, Christmas card lists, certificates of Perfect Attendance, a photo album of 1913 entitled "Scenes From Highways & Byways," old postcards ("We arrived here safely, and, except for the ham sandwiches, we were satisfied with the journey"). The simple-minded reader savors this sweet lozenge of a detail. We don't deny the inevitability of extinction, but we can't help being fond of that postcard.

"Wisdom consists partly in not pretending anymore, in discarding artifice. . . . And there is something infinitely touching when an artist, in old age, takes on simplicity. . . . Showing off is part of ambition; but now that we are old, let us have the confidence to speak simply." And so he does. In this meditation on death, he brings to life, in short sure strokes, his parents, Albert and Kathleen.

"She lay in a small, clean room with a cross on the wall; she was indeed on a trolley, with the back of her head towards me. . . . She seemed, well, very dead: eyes closed, mouth slightly open, and more so on the left side than the right, which was just like her — she used to hang a cigarette from the right corner of her mouth and talk out of the opposite side. . . . I touched her cheek several times, then kissed her at the hairline. Was she that cold because she'd been in the freezer, or because the dead are naturally so cold? . . . 'Well done, Ma,' I told her quietly. She had, indeed, done the dying 'better' than my father. He had endured a series of strokes, his decline stretching over years; she had gone from first attack to death altogether more efficiently and speedily." In her effects he finds a full bottle of cream sherry and a birthday cake, untouched.

I don't know how this book will do in our hopeful country, with the author's bleak face on the cover, but I will say a prayer for retail success. It is a beautiful and funny book, still booming in my head.

Garrison Keillor's most recent book is "Liberty: A Lake Wobegon Novel."

http://www.nytimes.com/2008/10/05/books/review/Keillor-t.html?_r=1&8bu&emc=bua1&oref=slogin

The Master and the Mistress

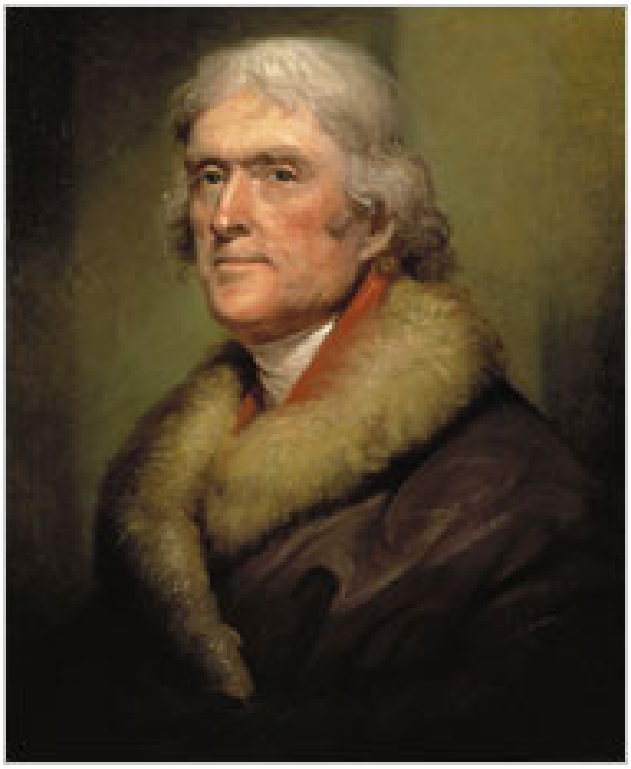
By ERIC FONER

THE HEMINGSES OF MONTICELLO

An American Family

By Annette Gordon-Reed

Illustrated. 798 pp. W. W. Norton & Company. $35



Sometime around 1800, an anonymous American artist produced an arresting painting entitled “Virginian Luxuries.” It depicts a slave owner exercising two kinds of power over his human property. On the right, a white man raises his arm to whip a black man’s bare back. On the left, he lasciviously caresses a black woman. The artist’s identification of these “luxuries” with the state that produced four of our first five presidents underscores the contradiction between ideals and reality in the early Republic.

No one embodied this contradiction more strikingly than Thomas Jefferson. In 1776, when he wrote of mankind’s inalienable right to liberty, Jefferson owned more than 100 slaves. He hated slavery but thought blacks inferior in “body and mind” to whites. If freed, he believed, they should be sent to Africa; otherwise, abolition would result in racial warfare or, even worse, racial “mixture.” Yet in his own lifetime, reports circulated that Jefferson practiced such mixture with his slave Sally Hemings.

In 1997, Annette Gordon-Reed, who teaches at New York Law School and in the history department of Rutgers University, published “Thomas Jefferson and Sally Hemings: An American Controversy.” Reviewing the evidence, she concluded it was likely that Jefferson had fathered Hemings’s children. But her main argument was that generations of Jefferson scholars had misused historical sources to defend the great man’s reputation. For example, they had dismissed as worthless the recollections of Madison Hemings, Sally Hemings’s son, who described his mother’s relationship with Jefferson to a journalist in 1873, while accepting at face value the denials of Jefferson’s white descendants that such a relationship existed. The book caused a sensation in the sedate world of Jefferson scholarship. Shortly after it appeared, DNA testing established a genetic link between a male Jefferson and Eston Hemings, Madison’s brother. Today, Monticello’s Web site discusses the controversy in a way that leaves the distinct impression of Thomas Jefferson’s paternity.

Gordon-Reed has now turned her attention to an even more ambitious project. In “The Hemingses of Monticello,” a work based on prodigious research in the voluminous Jefferson papers and other sources, she traces the experiences of this slave family over three generations. Engrossing and suggestive, it is also

repetitive (we are frequently reminded that the law does not necessarily reflect social reality) and filled with unnecessary pronouncements about human nature (e.g., "Youth in females has attracted men in all eras across all cultures"). Readers will find it absorbing, but many will wish it had been a shorter, more focused book.

Gordon-Reed's account begins with Elizabeth Hemings, born in 1735 as the daughter of an African woman and a white sea captain; she bore at least 12 children, half with an unknown black man, half (including Sally) with her owner, John Wayles, Jefferson's father-in-law. (This made Sally Hemings the half sister of Jefferson's wife, Martha Wayles, who died in 1782, after which he never remarried.) The Hemings family went to Monticello as part of Martha's inheritance. Individual members eventually found their way to Paris, New York, Philadelphia and Richmond, allowing Gordon-Reed to present a revealing portrait of the varieties of black life in Jefferson's era.

When she died in 1807 at 72, Elizabeth Hemings left behind 8 living children, more than 30 grandchildren and at least 4 great-grandchildren. The most fascinating parts of Gordon-Reed's book deal not with Sally Hemings herself but with other all but unknown members of her extended family. Initially because they were related to Jefferson's wife and later because of his own connection with Sally Hemings, the family was treated quite differently from other slaves at Monticello. The women worked as house servants, never in the fields, the men as valets, cooks and skilled craftsmen. Jefferson paid some of them wages and allowed a few to live in Charlottesville or Richmond and keep their earnings. Because of their independent incomes, her sons were able to provide Elizabeth Hemings with goods unavailable to most slaves. As Gordon-Reed relates, archaeological excavations have revealed among her possessions pieces of Chinese porcelain, wineglasses and other products of the era's consumer revolution.

Their status as a "caste apart" from the other slaves did not diminish the Hemingses' desire for greater freedom. In 1792, at her own request, Jefferson sold Sally's older sister Mary to Thomas Bell, a local merchant, who lived openly with her and treated their children as his legal family. Three years later, Jefferson allowed their brother Robert to work out an arrangement with a white resident of Richmond to purchase and free him.

Less happy was the fate of Sally's brother James Hemings, who accompanied Jefferson to Paris, where he studied cuisine. During the 1790s, James asked for his freedom and Jefferson agreed, so long as he trained his successor as chef at Monticello. A few years later, James Hemings committed suicide. Gordon-Reed sensitively traces the career of this restless, solitary man, acknowledging that "we simply cannot retrieve" his inner world or why he took his own life. Unfortunately, when it comes to the core of the book, the relationship between Jefferson and Sally Hemings, she is less circumspect.

In 1787, at the age of 14, Sally Hemings accompanied Jefferson's daughter Polly from Virginia to Paris, where Jefferson was serving as American minister. According to Madison Hemings's account, at some point she became Jefferson's "concubine." When Jefferson was about to return to America in 1789, according to Madison, Sally Hemings, pregnant and aware that slavery had no legal standing in France, announced that she was going to remain in Paris. To persuade her to accompany him home, Jefferson agreed to a "treaty" whereby he would free her children when they reached adulthood.

Most scholars are likely to agree with Gordon-Reed's conclusion that Jefferson fathered Hemings's seven children (of whom three died in infancy). But as to the precise nature of their relationship, the historical record is silent. Was it rape, psychological coercion, a sexual bargain or a long-term loving connection? - Gordon-Reed acknowledges that it is almost impossible to probe the feelings of a man and a woman neither of whom left any historical evidence about their relationship. Madison Hemings's use of the words "concubine" and "treaty" hardly suggests a romance. But Gordon-Reed is determined to prove that theirs was a consensual relationship based on love.

Sometimes even the most skilled researcher comes up empty. At that point, the better part of valor may be simply to state that a question is unanswerable. Gordon-Reed's portrait of an enduring romance between

Hemings and Jefferson is one possible reading of the limited evidence. Others are equally plausible. - Gordon-Reed, however, refuses to acknowledge this possibility. She sets up a series of straw men and proceeds to demolish them — those who believe that in the context of slavery, love between black and white people was impossible; that black female sexuality was "inherently degraded" and thus Jefferson could not have had genuine feelings for Hemings; that any black woman who consented to sex with a white man during slavery was a "traitor" to her people. She cites no current historians who hold these views, but is adamant in criticizing anyone who, given the vast gap in age (30 years) and power between them, views the Jefferson-Hemings connection as sexual exploitation.

As a black female scholar, Gordon-Reed is undoubtedly more sensitive than many other academics to the subtleties of language regarding race. But to question the likelihood of a long-term romantic attachment between Jefferson and Hemings is hardly to collaborate in what she calls "the erasure of individual black lives" from history. Gordon-Reed even suggests that "opponents of racism" who emphasize the prevalence of rape in the Old South occupy "common ground" with racists who despise black women, because both see sex with female slaves as "degraded." This, quite simply, is outrageous.

After this rather strident discussion, which occupies the best part of four chapters, Gordon-Reed returns to her narrative. She relates how in 1802 the Richmond journalist James Callender named Hemings as Jefferson's paramour and how throughout his presidency newspapers carried exposés, cartoons and bawdy poems about his relationship with "Yellow Sally." Gordon-Reed makes the telling point that while Callender called Hemings a "slut as common as the pavement," she was hardly promiscuous. She gave birth only at times when Jefferson could have been the father.

Neither Jefferson nor Hemings responded to these attacks. But whatever his precise feelings about the relationship, Jefferson certainly took a special interest in their children. Gordon-Reed notes that while other Hemings offspring were named after relatives, Sally Hemings's sons bore names significant for Jefferson — Thomas Eston Hemings (after his cousin) and James Madison and William Beverley Hemings (after important Virginians).

In the end, Jefferson fulfilled the "treaty" he had agreed to in Paris and freed Sally Hemings's surviving children. He allowed their daughter Harriet and son Beverley (ages 21 and 24) to leave Monticello in 1822. Very light-skinned, they chose to live out their lives as white people. Jefferson's will freed Madison and Eston Hemings as well as three of their relatives. The will did not mention Sally Hemings, but Jefferson's daughter allowed her to move to Charlottesville, where she lived with her sons as a free person until dying in 1835. For the other slaves at Monticello, Jefferson's death in 1826 was a catastrophe. To settle his enormous debts, his estate, including well over 100 slaves, was auctioned, destroying the families he had long tried to keep intact.

"The Hemingses of Monticello" ends at this point. Only in an earlier aside do we learn that Madison Hemings's sons fought in the Union Army during the Civil War. One was among the 13,000 soldiers who perished at the infamous Andersonville prison camp in Georgia. I am glad to hear that Gordon-Reed is at work on a second volume tracing the further history of this remarkable family.

Eric Foner is the DeWitt Clinton professor of history at Columbia University and the editor of "Our Lincoln: New Perspectives on Lincoln and His World," which has just been published.

http://www.nytimes.com/2008/10/05/books/review/Foner-t.html?8bu&emc=bua2

The Lost Child

By LUCINDA ROSENFELD

AN EXACT REPLICA OF A FIGMENT OF MY IMAGINATION

A Memoir

By Elizabeth McCracken

184 pp. Little, Brown & Company. $19.99

If a book's merit were measured in subway stops accidentally bypassed while being read, the novelist Elizabeth McCracken's affecting memoir about having a stillborn baby would rank high: I found myself three stations past my destination before I realized I'd missed it. No doubt my forgetfulness had something to do with bringing my own maternal history to bear on McCracken's — my first child, too, stopped kicking on her due date — but the author also applies honesty, wisdom and even wit to a painful event.

A self-described travel nut, McCracken spent her doomed first pregnancy in a rundown but picturesque former home for single mothers in Bordeaux. The period, she says, ranked among the happiest in her life, with this onetime "spinster" (as she calls herself) basking in wedded bliss with her British husband and their shared expectation of further joy to come.

Jokes about the French should be tired by now. Yet McCracken finds fresh material in places like the municipal pool of Bergerac, where she's incredulous at how "the French could gossip while doing the backstroke," and the local gym, where, to her amazement, people "tucked their shirts into their exercise

pants." There is also a deliciously rendered passage in which a French ob-gyn, chatting with a co-worker while giving McCracken a sonogram, explains that "we were writers from England, voilà, the placenta, a lot of English people liked to come to this area of France, the Dordogne, there's the baby's head, the English found it inspiring, look, the bladder."

Even after McCracken returns to America, her heart broken by her loss despite a new pregnancy, the sharp observations keep coming. There is the Lamaze class where couples "sit on the floor in the bobsled position," and the infant CPR class in which "the rescue mannequins were the usual beige objects that looked as though they'd died of heroin overdoses." McCracken even gives Dorothy Parker a run for quotable drollness with lines like "I've never gotten over my discomfort at other people's discomfort."

Yet, ultimately, "An Exact Replica of a Figment of My Imagination" is sad, at times even tear-inducing, since McCracken offers an unstinting account of her grief and the outlying emotions it engenders, from embarrassment to feelings of failure to misdirected anger — at a moving-man, for one. Her limpid vision extends to the realization that the agony of a stillbirth has as much to do with the parents' projections as anything else: "And so in my grief I understand that mourning is a kind of ventriloquism; we put words into the mouths of our bereavers, but of course it's all entirely about us, our wants, our needs, the dead are satisfied, we are greedy, greedy, greedy, unseemly, self-obsessed." In the book's most moving passage, - McCracken imagines her tragedy as a comic book in which her baby is fine in one panel, and then: "In the next panel, seconds later, something is supposed to intervene. . . . But Superman never shows. I can see it so clearly. In one panel we are safe and stupid. In the next we're only stupid."

The only time McCracken seems blinded by her grief is when, toward the end of this slim volume, she deals with the question of blame. In her seventh month, McCracken decided to deliver the baby, whom she and her husband have nicknamed "Pudding," with the help of a midwife, instead of an obstetrician. The decision proved fateful. When McCracken was unable to feel Pudding moving inside her womb, she booked an emergency appointment with the midwife. The midwife, Claudelle, was able to detect a heartbeat, but a nonstress test performed on the baby suggested trouble. Lacking sonogram equipment and the other tools of high-tech medicine, Claudelle might have sent McCracken straight to the hospital; instead, she sent her home. By 5 o'clock, it was too late.

Reflecting on the events that led to Pudding's death, McCracken bends over backward trying not to accuse Claudelle and her colleague Sylvie of negligence. But the reader can't help feeling that - McCracken is being too polite. Or is it self-protective? (Giving birth to a stillborn child is perhaps agonizing enough without having to imagine that another human being is responsible.)

The only unsympathetic moment in this deeply sympathetic book takes place in the opening chapter. Years earlier, McCracken gives a reading at which a woman in the audience suggests that she "write a book about the lighter side of losing a child." Though it soon emerges that the woman has lost a teenage son, McCracken describes her as a "childish, unnerving person" who'd clearly been "trying people's patience for some time," and whose husband sported "appalling choppers." The description seems inexplicably harsh and even snobbish, especially in light of what McCracken later suffers.

However, McCracken revisits the woman's request at the end of the book. Now the mother of a healthy baby boy, born almost exactly a year after Pudding died, McCracken realizes that the woman in the audience was looking for a way to celebrate her son's life rather than simply to mourn his passing. If that was the goal of "An Exact Replica of a Figment of My Imagination," McCracken has more than succeeded.

Lucinda Rosenfeld's third novel, "I'm So Happy for You," will be published next summer.

http://www.nytimes.com/2008/10/05/books/review/Rosenfeld-t.html?8bu&emc=bua2

Man in the Middle

By PATRICK COCKBURN

LION OF JORDAN

The Life of King Hussein in War and Peace

By Avi Shlaim

723 pp. Alfred A. Knopf. $35

KING HUSSEIN OF JORDAN

A Political Life

By Nigel Ashton

431 pp. Yale University Press. $35

King Hussein of Jordan (1935-99)was the great survivor of Middle East politics. For almost half a century until his death in 1999 he balanced delicately between the Arab world, Israel and the United States. There were few important events in the region in which he did not play a role, from the Suez crisis in 1956, when Israel, Britain and France invaded Egypt, to the bungled attempt 40 years later by the C.I.A. and Iraqi exiles to overthrow Saddam Hussein using Jordan as a base.

But Hussein was always far more than an artful opportunist cynically shifting alliances with the sole aim of staying in power. It is for this reason that these two excellent biographies are so worthwhile. “Lion of Jordan,” by Avi Shlaim, a professor of international relations at the University of Oxford, and “King Hussein of Jordan,” by Nigel Ashton, a senior lecturer at the London School of Economics and Political Science, provide insight not only into the king but into the conflicts that ravaged the region during his lifetime. Shlaim has a particularly valuable account of Hussein’s relations with Israel and the Palestinians, while Ashton is very interesting on Hussein’s relations with Iraq and the wider Arab world.

Hussein’s critics accused him of being all things to all men, and it is true that he systematically cultivated good relations with leaders who would speak to him but loathed one another. Jordan’s colors were, in the patronizing words of one British ambassador soon after Hussein was crowned king in 1953, “firmly nailed to the fence.” The jibe had some truth in it, though it underestimated Hussein’s capacity for swift and independent action if his interests were threatened.

Britain created Jordan out of the largely barren and scantily inhabited land east of the Jordan River in the aftermath of the defeat of the Ottoman Empire in World War I. For its ruler the British chose Abdullah, the second son of the sharif of Mecca and their ally against the Ottomans, who became the first member of the Hashemite dynasty to rule Jordan. A political realist like his grandson Hussein, he was adamantly averse to fighting anybody stronger than himself, and this included the nascent Israeli state. He emerged a winner in the first Arab-Israeli war in 1948 when he ordered his army across the Jordan River with the objective, as Shlaim puts it, not of preventing "the establishment of a Jewish state but to make a bid for the Arab part of Palestine." Three years later Abdullah paid a price for this when he was shot dead by a Palestinian nationalist gunman as he walked, together with the 15-year-old Hussein, into Al Aqsa Mosque in Jerusalem.

When Hussein succeeded his mentally ill father he inherited an impoverished kingdom at the heart of a chronically unstable political earthquake zone. Between then and his death he saw many of the world's most dangerous crises erupt on his doorstep, in Israel, Egypt, Syria, Lebanon and Iraq. Geography made Jordan an important player. Shlaim and Ashton show how skillfully its ruler played his hand.

The British were the first to discover that the new king was unwilling to behave as the pliant tool of Western powers in order to keep his crown. He was an autocrat but also saw himself as an Arab nationalist. The Jordanian Army had been built up by the British general John Bagot Glubb, who was viewed by foreigners and Jordanians alike as the power behind the throne. In 1956 the young king suddenly sacked this important figure, giving Glubb at first just two hours to leave the country. "Hussein's broad political reason for dismissing Glubb," Shlaim remarks, "stemmed from his fear that if he did not place himself at the head of the nationalist movement, he would be overwhelmed by it."

It was a calculation that was to determine or at least color many of Hussein's policy decisions. It gave the lie to Arab nationalist critics who denounced him as a stooge for the British and the Americans or a treacherous collaborator with Israel, though he cultivated close relations with all three. It helped save him from the fate of his cousin and boyhood friend King Faisal II of Iraq, shot down by Iraqi army officers during a military coup in Baghdad in 1958. This need to show that he stood with his fellow Arabs also propelled Hussein into his most disastrous decision. In 1967 he went to war with Israel as an ally of Egypt and Syria and in a few days lost East Jerusalem and the West Bank, half of his kingdom.

In the aftermath of this catastrophic defeat, many foreign observers believed he could not survive. Yet the king always held a slightly stronger hand than others imagined. In a region of military regimes he had the loyalty of the army, which drew many of its officers and men from Bedouin tribes of Jordan. In the brief civil war of 1970 between Hussein's forces and the Palestinian fedayeen, he commanded 65,000 well-trained and well-equipped troops compared with 15,000 lightly armed Palestinian militiamen. The outcome of the conflict was never in doubt.

The United States had long replaced Britain as Hussein's main foreign mentor, and Washington's political, military and financial backing was essential to him. With few natural resources Jordan was always in need of a paymaster. The king also needed to know what was in the minds of successive Israeli leaders to avert any direct military threat or plans to turn Jordan into a permanent national home for the Palestinians.

These encounters, entailing a great number of meetings with American and Israeli political, military and intelligence leaders, are retailed at somewhat excessive length in both these books. The king's diplomatic efforts, as he himself repeatedly said, were all too frequently ineffectual. Shlaim concludes sadly that Hussein's attempts "to work out a peaceful solution to the conflict in the Middle East met, for the most part, with ignorance and indifference on the part of the top American policy makers and dishonesty and deviousness on the part of the Israeli ones."

The sources for the life of King Hussein have become plentiful. "Until now, no biography of a contemporary Arab leader has been written with the benefit of full access to his papers," writes Ashton,

who was given entry to the royal archive by Hussein's son and successor, King Abdullah II, in 2007. These papers certainly flesh out our knowledge of Hussein's relationship with other leaders, from Saddam Hussein to Ronald Reagan, but they are scarcely revelatory. What they do confirm is Hussein's reputation for being a highly intelligent and kindhearted man, surely the most attractive of recent Middle Eastern leaders, though the competition here is scarcely very stiff.

On one occasion a suspiciously large number of dead cats were found in the palace grounds in Amman, the Jordanian capital. Investigators discovered that a royal cook had been bribed by Syrian security to poison the king and was testing the correct dosage on the local cat population. Shlaim relates that the cook was jailed "until Hussein responded to a plea from the cook's daughter by releasing him to celebrate a Muslim feast with his family." Compare this with the actions of Saddam Hussein, who reacted to a botched attempt to assassinate him in Dujail north of Baghdad in 1982 by torturing to death or executing 148 men and boys from the village.

Patrick Cockburn is the author of "Muqtada: Muqtada Al-Sadr, the Shia Revival, and the Struggle for Iraq."

http://www.nytimes.com/2008/10/05/books/review/Cockburn-t.html?8bu&emc=bua2

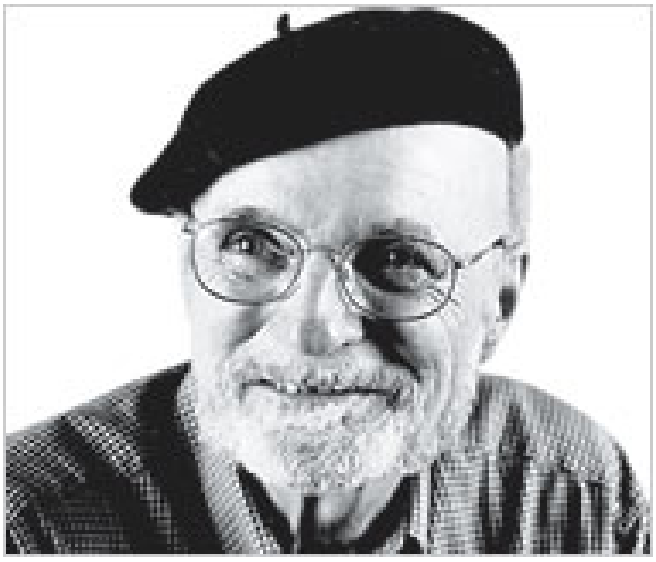
Lost in the Rest Home

By SVEN BIRKERTS

THE DEVELOPMENT

By John Barth

167 pp. Houghton Mifflin Company. $23.



The conventional wisdom about childhood, made memorable in L. P. Hartley's phrase, is that "the past is a foreign country." But it's a country so much touristed in literary retrospect that we begin to think we really know what it was like. If we're old enough to read, we have a stake in the matter; we're interested. This might be less true for the other, antipodean place, at the edge of Shakespeare's "undiscover'd country from whose bourn no traveler returns." We may all hope to get to old age, but slowly, with leisured circumspection, and few of us are in a great hurry to study the brochures. The writer who takes the declining years as his subject matter is sailing into the wind.

John Barth is such a writer. Now in his late 70s, the much-honored author of 18 books, including "The Sot-Weed Factor," "Giles Goat-Boy" and "Chimera," he continues to resist being cashiered out as "emeritus." His latest work, "The Development," is a set of loosely linked stories that move with wry and lordly omniscience among the loosely linked lives of various elderly residents of Heron Bay Estates, a gated community in the Maryland Tidewater region.

Nothing human has ever been alien to Barth, and this now includes the somewhat decelerated doings and autumnal preoccupations of the moderately well-off in their retirement. If those doings are not for the most part the stuff of high drama — the discovery of a neighborhood Peeping Tom, the staging of a toga party — the preoccupations are universal. Heron Bay dwellers contend with fear, desire, loss, betrayal and the near-presence of death. The story called "Assisted Living" filters the tragedy of a wife's sudden demise through the scrim of her husband's impaired focus, and "The End" stares with horrifying equanimity at a happy older couple's destruction in a freak tornado. In both stories, the power comes from the author's cleareyed view rather than his fathoming of the whys and wherefores of the action. Here wisdom is perspective.

Barth's narrative vantage might be characterized as "intimate aerial," able to convey at once the variegated material realities of his characters and to lance swiftly into their inner lives. He plies, as he has from the very start of his career, a gratifyingly well-textured prose, kept interesting not only by its alert depiction of psychological states but by its sly deployment of self-reflexive asides, which remind us every few pages that a tale is always an artifice.

"Toga Party," the tour-de-force showpiece of the collection, where Barth comes closest to tapping the tragedians' pity and terror, begins in a deceptively offhand fashion: "If 'Doc Sam' Bailey — Dick Felton's longtime tennis buddy from over in Oyster Cove — were telling this toga party story, the old ex-professor would most likely have kicked it off with one of those lefty-liberal rants that he used to lay on his Heron Bay friends and neighbors at the drop of any hat."

Barth starts in the conditional place of invention, but segues into a witty, character-rich contemporary naturalism: "A suitably toga'd pianist tinkled away at the grand piano in one corner of the multi-couched and -cocktail-tabled room; out on the lanai a laureled bartender filled glasses while a mini-toga'd, similarly wreathed young woman moved among the guests with platters of hors d'oeuvres."

The festive prose is in fact a kind of enticement, even a trap, because the telling will lead to an unexpected, though also subtly prepared, act of violence, which in turn inspires a chilling and thought--provokingly deliberate resolution. The tragedy — I can say that much — reverberates through a number of the other stories and is referred to in conversations and asides for months and years afterward. Whatever protection the community's gates may offer from outside invasions, they're completely useless against the surges of fate.

This is hardly a literary discovery. But from his less traveled frontier, Barth reminds us that these surges — eruptions — aren't the prerogative of the young and the restless, and indeed that where fate is concerned there's no such thing as retirement. He brings the news home with finesse, as if tapping a bony finger on his reader's shoulder right in the middle of a heedless day.

Sven Birkerts is the author of "The Art of Time in Memoir: Then, Again." He directs the Bennington Writing Seminars.

http://www.nytimes.com/2008/10/05/books/review/Birkerts-t.html?8bu&emc=bua2

Casualties of War

By MATTHEW PRICE

LIKE EATING A STONE

Surviving the Past in Bosnia

By Wojciech Tochman. Translated by Antonia Lloyd-Jones

Illustrated. 141 pp. Atlas & Company. $20

The Bosnian wars ended in 1995, but peace brought its own terrible realities: a fractured Bosnia divided between Serbs and a Croat/Muslim federation, thousands of dead (most of them Muslim), uprooted families, a ravaged landscape, economic ruin. Books on Afghanistan and Iraq have taken over bookstore shelves, but the recent arrest of the long-wanted fugitive Radovan Karadzic, the Serb leader charged with genocide, is a reminder of how much unfinished business remains in this still troubled corner of Europe.

In the spare and bleak “Like Eating a Stone: Surviving the Past in Bosnia,” the Polish journalist Wojciech Tochman chronicles the aftermath of war in Bosnia and, if anything, confirms that the so-called peace has brought little actual peace. Yet he is not polemical about this point; instead, he relies on suggestive details, pungent quotes and simple, understated prose that is mannered at times but powerful in its own way.

Crisscrossing Bosnia several years after the war’s end, Tochman follows several Muslim women as they search for the remains of loved ones: husbands, children, parents. By the end of the war, nearly 20,000 Muslims were missing, and the process of recovering bodies, many of them dumped into mass graves, mine shafts and waste dumps, is proceeding with agonizing slowness.

Tochman is an austere scene setter. Here, he describes the efforts of Ewa Klonowski, a Polish forensic anthropologist connected to the Bosniak Commission on Missing Persons, as she works at a mass grave: “Now the first white body bags are coming up. The workmen lay them out on the grass. The relatives of

the missing people stand around as Dr. Klonowski examines the bones, identifying their age and sex." Her work is grim — she has recovered some 2,000 bodies — but she takes pride in her vocation. "I love bones; bones speak to me," she tells Tochman. "I can determine nationality by bones. A Muslim's femur is bent into a slight arc, because Muslims squat."

The survivors themselves don't view things with such scientific detachment. Jasna Ploskic, a Muslim widow searching for the remains of her small children, presumed killed in 1992 when they fled their village after it came under attack, says of the Serbs: "In every one of them I see a murderer." Many Muslims, expelled from their homes by Serbs, want their property returned, but are reluctant to live in the Serb-controlled part of Bosnia.

If Tochman is sympathetic to Bosnia's Muslims as they struggle to make their way, he also takes a nuanced view of the much vilified Serbs. The Serb Republic of Bosnia is an economic backwater, and many Serbs Tochman encounters share their regrets with him: "What on earth was the point of the war?" asks one Serb woman threatened with eviction. Tochman visits the eastern mining town of Srebrenica, site of the infamous 1995 massacre of Muslim men and boys. Once dominated by Muslims, it has become a haunted place. Even if it is now a part of Serbian Bosnia, few Serbs feel comfortable there, Tochman writes. "They say: 'This isn't our home. This is a Muslim town, a town of death and bloodshed. And voices that come from God knows where. Whispers, screams, wailing.' " Other Bosnian Serbs can only point fingers: "More Serbs were killed in Sarajevo than Muslims in Srebrenica," a social worker insists. "You must understand that, and not invent all that Dayton peace nonsense, mass graves, tribunals, all that sort of thing."

Matthew Price's reviews have appeared in Bookforum, The Boston Globe and other publications.

http://www.nytimes.com/2008/10/05/books/review/Price-t.html?8bu&emc=bua2

The Ambition of the Short Story

By STEVEN MILLHAUSER

The short story — how modest in bearing! How unassuming in manner! It sits there quietly, eyes lowered, almost as if trying not to be noticed. And if it should somehow attract your attention, it says quickly, in a brave little self-deprecating voice alive to all the possibilities of disappointment: "I'm not a novel, you know. Not even a short one. If that's what you're looking for, you don't want me." Rarely has one form so dominated another. And we understand, we nod our heads knowingly: here in America, size is power. The novel is the Wal-Mart, the Incredible Hulk, the jumbo jet of literature. The novel is insatiable — it wants to devour the world. What's left for the poor short story to do? It can cultivate its garden, practice meditation, water the geraniums in the window box. It can take a course in creative nonfiction. It can do whatever it likes, so long as it doesn't forget its place — so long as it keeps quiet and stays out of the way. "Hoo ha!" cries the novel. "Here ah come!" The short story is always ducking for cover. The novel buys up the land, cuts down the trees, puts up the condos. The short story scampers across a lawn, squeezes under a fence.

Of course there are virtues associated with smallness. Even the novel will grant as much. Large things tend to be unwieldy, clumsy, crude; smallness is the realm of elegance and grace. It's also the realm of perfection. The novel is exhaustive by nature; but the world is inexhaustible; therefore the novel, that Faustian striver, can never attain its desire. The short story by contrast is inherently selective. By excluding almost everything, it can give perfect shape to what remains. And the short story can even lay claim to a kind of completeness that eludes the novel — after the initial act of radical exclusion, it can include all of the little that's left. The novel, when it remembers the short story at all, is pleased to be generous. "I admire you," it says, placing its big rough hand over its heart. "No kidding. You're so — you're so —" So pretty! So svelte! So high class! And smart, too. The novel can hardly contain itself. After all, what difference does it make? It's nothing but talk. What the novel cares about is vastness, is power. Deep in its heart, it disdains the short story, which makes do with so little. It has no use for the short story's austerity, its suppression of appetite, its refusals and renunciations. The novel wants things. It wants territory. It wants the whole world. Perfection is the consolation of those who have nothing else.

So much for the short story. Modest in its pretensions, shyly proud of its petite virtues, a trifle anxious in relation to its brash rival, it contents itself with sitting back and letting the novel take on the big world. And yet, and yet. That modest pose — am I mistaken, or is it a little overdone? Those glancing-away looks — do they contain a touch of slyness? Can it be that the little short story dares to have ambitions of its own? If so, it will never admit them openly, because of a sharp instinct for self-protection, a long habit of secrecy bred by oppression. In a world ruled by swaggering novels, smallness has learned to make its way cautiously. We will have to intuit its secret. I imagine the short story harboring a wish. I imagine the short story saying to the novel: You can have everything — everything — all I ask is a single grain of sand. The novel, with a careless shrug, a shrug both cheerful and contemptuous, grants the wish.

But that grain of sand is the story's way out. That grain of sand is the story's salvation. I take my cue from William Blake: "All the world in a grain of sand." Think of it: the world in a grain of sand; which is to say, every part of the world, however small, contains the world entirely. Or to put it another way: if you concentrate your attention on some apparently insignificant portion of the world, you will find, deep within it, nothing less than the world itself. In that single grain of sand lies the beach that contains the grain of sand. In that single grain of sand lies the ocean that dashes against the beach, the ship that sails the ocean, the sun that shines down on the ship, the interstellar winds, a teaspoon in Kansas, the structure of the universe. And there you have the ambition of the short story, the terrible ambition that lies behind its fraudulent modesty: to body forth the whole world. The short story believes in transformation. It believes in hidden powers. The novel prefers things in plain view. It has no patience with individual grains of sand, which glitter but are difficult to see. The novel wants to sweep everything into its mighty embrace — shores, mountains, continents. But it can never succeed, because the world is vaster than a

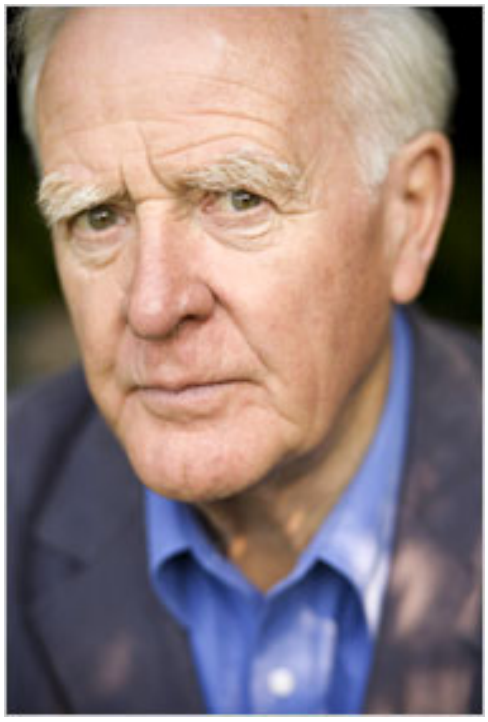
novel, the world rushes away at every point. The novel leaps restlessly from place to place, always hungry, always dissatisfied, always fearful of coming to an end — because when it stops, exhausted but never at peace, the world will have escaped it. The short story concentrates on its grain of sand, in the fierce belief that there — right there, in the palm of its hand — lies the universe. It seeks to know that grain of sand the way a lover seeks to know the face of the beloved. It looks for the moment when the grain of sand reveals its true nature. In that moment of mystic expansion, when the macrocosmic flower bursts from the microcosmic seed, the short story feels its power. It becomes bigger than itself. It becomes bigger than the novel. It becomes as big as the universe. Therein lies the immodesty of the short story, its secret aggression. Its method is revelation. Its littleness is the agency of its power. The ponderous mass of the novel strikes it as the laughable image of weakness. The short story apologizes for nothing. It exults in its shortness. It wants to be shorter still. It wants to be a single word. If it could find that word, if it could utter that syllable, the entire universe would blaze up out of it with a roar. That is the outrageous ambition of the short story, that is its deepest faith, that is the greatness of its smallness.

Steven Millhauser's most recent book is "Dangerous Laughter: Thirteen Stories."

http://www.nytimes.com/2008/10/05/books/review/Millhauser-t.html?8bu&emc=bub1

Cloak, Dagger and Abuses of a New Era

By SARAH LYALL



LONDON — The novelist John le Carré was recalling an encounter from a decade or so ago, as the cold war was receding into history, giving way to a new system of shadowy threats and uneasy alliances. Sir David Spedding, ill and retiring as head of the Secret Intelligence Service, or M.I. 6, had come to visit him at his house in Cornwall, and they were talking about the changed realities of spying. "He told me, 'You can't imagine how disgusting our world has become,' " Mr. le Carré said. "And I accept that. It is a disgusting world."

At 76, Mr. le Carré is snowy-haired, droll and courtly, speaking in perfect paragraphs and exuding the air of quiet privilege and distinguished manner of a retired statesman. If he chose to, he could still be producing crowd-pleasing books about his most famous spy, George Smiley, late of M.I. 6, or easing into a gracious old age of playing with his grandchildren, lunching at his club and resting on his laurels.

But he is still sharp, still fizzing with ideas, and fueled by a new righteous fury. He has become, if not exactly radicalized, then at least clearer about his political views and more willing to articulate them. His latest book, "A Most Wanted Man" (Scribner), speaks to one of his preoccupations: the excesses, as Mr. le Carré sees it, of American foreign policy and the immoral nature of the intelligence practices that underpin it.

The message in the book, his 21st, is embedded, as always, in an absorbing tale: of spies and maybe-spies, of divided loyalties, of corrupted innocence. The title character is a young Muslim refugee named Issa, who suddenly and illegally surfaces in Hamburg and falls under the care of an idealistic young female lawyer. But then he becomes the object of a nasty and ill-conceived tug of war among feuding factions of several Western intelligence agencies, which cannot agree on whether he is a broken man or a dangerous terrorist, or perhaps a bit of both.

There are no scenes of torture in "A Most Wanted Man," but Issa, its once and perhaps future victim, lives perpetually under its shadow. The degradation of torture and the horror of practices like extraordinary rendition were themes that Mr. le Carré returned to again and again in a recent conversation, speaking over tea and butter cookies on an overcast day in the living room of his handsome Victorian house in Hampstead, North London.

"I know about interrogation," he said, alluding to his days as a British spy in the 1950s. "I've done interrogations, and I can tell you this: By extracting information under torture, you make a fool of yourself. You obtain information that isn't true. You receive names of people who are supposedly guilty and aren't. You land yourself with a wild goose chase, and you miss what is being handed to you on a plate, and that is the possibility of bonding with someone and engaging with them and talking to them reasonably."

Mr. le Carré was recruited as a spy while still a college student. Working for the British Foreign Office as a diplomat-cum-secret agent, he began writing thrillers under a pseudonym. (His real name is David Cornwell.) His earlier books had the cold war as their backdrop, and while he is not nostalgic for that time, he said it "was a softer world, of course, mine."

"I probably lived in a charmed time," he added. "The cold war was fought between people of the same culture. Basically, it was."

"Of course, the Russians tortured wholesale," he continued. But in his experience, "it was never the beginning of an option."

"The Spy Who Came In From the Cold," the 1963 work that made Mr. le Carré's name, upended the traditional spy thriller by portraying East and West as equally cynical and equally corrupt — two sides of the same tarnished coin. It can be argued that where the world once seemed black and white, Mr. le Carré saw gray, and that now that it seems gray, he sees black and white. He doesn't concur, exactly, but explains it this way: His recent work, he says, has a "clearer confusion, perhaps — a more articulate pessimism."

Mr. le Carré set "A Most Wanted Man" in Germany because of its explosive ethnic and religious mix, its strained debates over immigration and the turf-battling disarray of its intelligence services. Although his main characters were inspired by actual people — a drunken Scottish banker he knew in Vienna, now deceased; a Chechen national he met in Moscow; a freed and exonerated Turkish inmate of Guantánamo — they were just starting points.

"Characters don't have counterparts in real life," Mr. le Carré said. "I don't think they do for any fiction writer, not really, not if you're any good. You can pinch the furniture of a character, but you can't pinch the energy systems."

The book is full of fathers whose misdeeds echo down the generations. His own father was a larger-than-life con man who was either riding high with gangsters and starlets or running to escape from creditors and the law; his mother walked out on the family when young David was still a boy.

"I have a very strong memory of what was done to me as a child," he said. "I know what it's like to come out from under a maverick, fascinating, overlarge father, what it's like to feel, as Issa did, motherless. These are very simple projections. You're like an actor : 'Where do I get my tears from?' "

Mr. le Carré has explored his relationship with his father often in his fiction, most nakedly in "A Perfect Spy" (1986). The book's protagonist, Magnus Pym, is the son of a charlatan and thief who develops a defensive facility for lying easily — and who becomes a spy, his true identity lost beneath layers of alternative ones. Mr. le Carré wrote about his father in The New Yorker several years ago, a piece,

perhaps, of the not-yet-written autobiography he has long talked of producing. Recently he published another snippet of memoir, recalling an incident from his early spying days to make a greater point about spies' fallibility and the public's credulity in trusting its intelligence services — "which, come to think of it, is how we went to war in Iraq," he wrote.

Mr. le Carré has not visited the United States since the bombing of Afghanistan, which he called "a blood sacrifice," and he hates President Bush's foreign policy. His worst fictional villains tend to be American. But he says he has no grudge against the country itself.

"If I'm angry at America, I'm angry as a disenchanted romantic," he said. "Of course, I'm not angry at America at all. My argument is not with the American people. It's with the way they've been misled, which I consider monstrous."

Mr. le Carré knows that he risks alienating his American readers with his politics. And while some reviewers certainly take him to task for writing "fiction as polemic," as Joan Smith said in The Independent recently, others admire him for having the courage of his convictions.

"I don't think he minds putting noses out of joint," the British critic Sebastian Shakespeare said in an interview via e-mail. "He's already got literary acclaim and a healthy bank balance, so he has nothing to lose, apart from a few disgruntled readers. That is a small price to pay if you are convinced the world is going to hell in a handcart and you want to get your message across."

Otto Penzler, a publisher and editor and the proprietor of the Mysterious Bookshop in TriBeCa, said that he and many of his customers read Mr. le Carré's books "in spite of his politics."

"I have always been offended by his moral relativism, and it's only gotten worse in the last few books," he said in a telephone interview. "But you'd have a hard time finding a better prose stylist writing in the English language, sentence by sentence."

Several weeks ago, The Sunday Times of London published a profile of Mr. le Carré in which it seemed to quote him as saying that, as a spy, he had been tempted to defect to the Soviet Union. But Mr. le Carré said in a letter to the paper that his views had been misrepresented.

The point he was making, he said, was that "in common with other intelligence officers who lived at close quarters with their adversaries, I had from time to time placed myself intellectually in the shoes of those on one side of the Curtain who took the short walk to the other; and that rationally and imaginatively I had understood the magnetic pull of such a step, and empathized with it."

Mr. le Carré is happy at home, after an early adulthood he describes, with exquisite understatement, as "untidy." (His books are full of betrayed wives and cuckolded husbands.) He has four sons, three with his first wife, Alison Sharp, and one — the writer Nick Harkaway, the author of "The Gone-Away World" — with his second wife, Jane. Altogether, they run a successful extended family, which includes 12 grandchildren.

A product of Sherborne boarding school and Oxford, Mr. le Carré is of the establishment but also outside of it. Years ago, Margaret Thatcher's government offered to make him a Commander of the British Empire (in the hierarchy of awards, it is a step down from a knighthood); he turned it down.

"I absolutely don't approve of artists getting medals from the state — they should stay outside the city walls," he said. "I mean, I don't want to be Sir David." He laughed. "Lord David, King David. I don't want any of those things. I find it absolutely fatuous."

The tea long gone, he agreed to lead a short touristic excursion down the street to Hampstead Heath. He takes daily long walks in this wildest of London parks. He stopped at a row of trees just inside one of the entrances. Here, in the crook of a branch, is the very spot from which George Smiley extracts the crumpled packet of Gauloises, a message from his old agent Vladimir, in "Smiley's People."

Seeing it was a thrill, a bit of fictional history come to life, and Mr. le Carré said he was delighted to be of service. He doesn't mind, he said, being introduced even now as the author of the 45-year-old "Spy Who Came In From the Cold," which Graham Greene once said was "the best spy story I have ever read."

"For me, Kingsley Amis is still the man who wrote 'Lucky Jim,' " he said. " If you write one book that, for whatever reason, becomes iconic, it's an extraordinary blessing."

But his famous spy, who was never very healthy anyway, would now be more than 100 years old, Mr. le Carré said. "He belonged to his time, and his time is over."

Not Mr. le Carré's, though. He has no plans yet for a new novel, but there is the memoir, perhaps, and a lifetime of startling experiences.

These include surreal encounters with world leaders who assumed, incorrectly, that whatever they told Mr. le Carré would be passed directly along to British Intelligence. Once he had dinner with Yevgeny Primakov, a former first deputy chairman of the K.G.B. and onetime Russian foreign minister. "He was an obsessive fan," Mr. le Carré said. "But who does he identify with? George Smiley."

But sustained self-revelation presents a complicated prospect for Mr. le Carré, who has worked so hard to control the narrative of his own life, holding back even as he carefully metes out selective truths.

As he thinks about an autobiography, he said, "I'm already constructing the lies I'm going to tell."

http://www.nytimes.com/2008/10/05/books/05lyal.html?th&emc=th

THE FUTURE OF READING

Using Video Games as Bait to Hook Readers

By MOTOKO RICH

CARLSBAD, Calif.— When PJ Haarsma wrote his first book, a science fiction novel for preteenagers, he didn't think just about how to describe Orbis, the planetary system where the story takes place. He also thought about how it should look and feel in a video game.

The online game that Mr. Haarsma designed not only extends the fictional world of the novel, it also allows readers to play in it. At the same time, Mr. Haarsma very calculatedly gave gamers who might not otherwise pick up a book a clear incentive to read: one way that players advance is by answering questions with information from the novel.

"You can't just make a book anymore," said Mr. Haarsma, a former advertising consultant. Pairing a video game with a novel for young readers, he added, "brings the book into their world, as opposed to going the other way around."

Mr. Haarsma is not the only one using video games to spark an interest in books. Increasingly, authors, teachers, librarians and publishers are embracing this fast-paced, image-laden world in the hope that the games will draw children to reading.

Spurred by arguments that video games also may teach a kind of digital literacy that is becoming as important as proficiency in print, libraries are hosting gaming tournaments, while schools are exploring how to incorporate video games in the classroom. In New York, the John D. and Catherine T. MacArthur Foundation is supporting efforts to create a proposed public school that will use principles of game design like instant feedback and graphic imagery to promote learning.

Publishers, meanwhile, are rushing to get in on the action. Scholastic, the American publisher of the Harry Potter series, recently released "The Maze of Bones," the first installment in a 10-book mystery series that is tied to a Web-based game.

In advance of the publication of "Brisingr," the third book in the best-selling "Inheritance" fantasy series by Christopher Paolini, Random House Children's Books commissioned an online game. About 51,000 people have signed up since June to play and chat on message boards on the site.

But doubtful teachers and literacy experts question how effective it is to use an overwhelmingly visual medium to connect youngsters to the written word. They suggest that while a handful of players might be motivated to pick up a book, many more will skip the text and go straight to the game. Others suggest that video games detract from the experience of being wholly immersed in a book.

Some researchers, though, say that even when children don't read much text, they are picking up skills that can help them thrive in a visually oriented digital world. And some educational experts suggest that video games still stimulate reading in blogs and strategy guides for players.

To be sure, some of the experiments pairing electronic games with books will be little more than marketing gimmicks. But publishers and authors suggest that some projects may push creative boundaries, helping to extend storytelling beyond the traditional covers of a book.

The premise of Scholastic's series "The 39 Clues," for example, is that online players search for some of the clues themselves, encountering background stories about new characters as well as text and pictures

about everything from the Titanic to the Iditarod sled-dog race, material that supplements the novels and inevitably entails some reading.

A New Narrative

A recent poll by the Pew Internet & American Life project found that 97 percent of children 12 to 17 play games on computers, consoles and handheld devices. But while video games may seem to have little in common with books, some see a clear connection.

“I think gamers and readers are looking for the same thing,” said Rick Riordan, author of the popular “Percy Jackson and the Olympians” novels, who has written the first book in Scholastic’s “39 Clues” series. “They are looking to be dropped into an intriguing story and to become a character in the story.”

Still, avid readers who have compared the narrative arcs of video games with books sometimes find the games wanting. When Jacob Bagley first arrived as a freshman at Brown University, he was rapidly sucked into “World of Warcraft,” an online game set in a medieval landscape where players collaborate to slay monsters and complete quests.

Mr. Bagley, now a senior, was so addicted that he sometimes abandoned friends in the dining hall to return to the game. But the story was never the attraction. Both the narrative and the characters, he said, were too simplistic, and he gave up “World of Warcraft” in his sophomore year.

Video games, said Mr. Bagley, 21, “certainly don’t have the same degree of emotional and intellectual complexity of a book.”

Some people argue that video games are an emerging medium likely to undergo an evolution. “I wouldn’t be surprised if, in 10 or 20 years, video games are creating fictional universes which are every bit as complex as the world of fiction of Dickens or Dostoevsky,” said Jay Parini, a writer who teaches English at Middlebury College.

Writers have also started to adopt the pace and perspective of video games. Quinn Clark, a video game player in Vista, a San Diego suburb, was drawn to Mr. Haarsma’s novel, “The Softwire: Virus on Orbis 1,” because of its similarities to some of his favorite games.

The novel is narrated by J. T., a 13-year-old boy who has the ability to burrow into a computer with his mind and fights aliens. His viewpoint mimics the behind-the-eyeballs feel of a video game.

“I felt like I was in ‘Call of Duty 4,’ ” said Quinn, a beanpole thin 12-year-old, referring to a popular combat game.

Libraries Check In

Gaming advocates suggest that even if video games don’t motivate more traditional reading, they have the potential to teach players how to absorb visual information and think strategically.

Inspired in part by such theories, librarians now stage tournaments for teenagers with games like Super Smash Brothers Brawl and Dance Dance Revolution. In the first half of this year, the New York Public Library hosted more than 500 events, drawing nearly 8,300 teenagers. In Columbus, Ohio, nearly 5,500 youngsters have participated in more than 300 tournaments at the public library this year.

"I think we have to ask ourselves, 'What exactly is reading?' " said Jack Martin, assistant director for young adult programs at the New York Public Library. "Reading is no longer just in the traditional sense of reading words in English or another language on a paper."

In some cases, librarians may guide young gamers towards other resources — including, occasionally, books. But critics argue that most children who play games at the library simply do just that. And games like Dance Dance Revolution, in which players follow dance steps on a screen, seem to have little to do with literacy of any kind.

At a gaming tournament at a branch of the Ann Arbor, Mich., public library earlier this year, more than 30 boys gathered in a darkened room, feverishly sparring in matches of Super Smash Brothers Melee for more than six hours. Most of them said they did not read much, and rarely checked out books.

Derek Hibbs, 18, a regular tournament player, said reading felt too solitary. "You can't say: 'I charge you to a reading duel. Go!' "

Researchers, who are just beginning to explore the cognitive effects of video games, have found that in laboratory settings, action gamers are better than nonplayers at focusing on tasks and ignoring irrelevant distractions.

Some gaming evangelists suggest reading feels too passive to youngsters who want the sense of power conferred by a control pad.

"Games are teaching critical thinking skills and a sense of yourself as an agent having to make choices and live with those choices," said James Paul Gee, the author of the book "What Video Games Have to Teach Us About Learning and Literacy." "You can't screw up a Dostoevsky book, but you can screw up a game."

Skeptics point out that psychological research consistently shows that skills often don't transfer from one setting to another.

Nevertheless, some educators argue that students may learn more by playing an active role in the simulated world of a game than they might by simply reading a book.

Such ideas led Lyn Lord, a social studies teacher at Kimball Union Academy, a boarding school in Meriden, N.H., to introduce students to Civilization, a role-playing game in which players build and lead cultures like the Aztecs or the ancient Romans through thousands of years of historical development.

Holly McLaughlin, a senior at Kimball who played Civilization as a sophomore in Ms. Lord's class, said that at first she failed at the game, choosing to develop culture and religion at the expense of roads and the military. Playing, she said, helped her gain a deeper appreciation for why leaders made certain decisions.

"Rather than just reading about it," Holly said, "you would understand everything about it, because you had built a network of roads yourself."

There is still little research on whether students ultimately absorb information better by playing games. "I actually think reading is pretty great and can compete with video games easily," said Mark S. Seidenberg, a professor at the University of Wisconsin in Madison who specializes in reading research. "So rather than say, 'Oh, books are irrelevant in the modern era because there are all these other media available,' I would ask shouldn't we be doing a better job of teaching kids how to read?"

Some gaming advocates suggest that video games may help with that. The reading that gamers do in instructional manuals, strategy guides or message boards, though often cryptic and more technical than

narrative, might serve as a "gateway drug for literacy," said Constance Steinkuehler, an assistant professor in the school of education also at the University of Wisconsin at Madison.

For the past year, Ms. Steinkuehler has been testing this hypothesis with a group of teenage boys who play World of Warcraft.

Noah Tropp, 14, who participated in Ms. Steinkuehler's program for several months this year, regularly reads sites like gamewinners.com and supercheat.com. While looking for hints online, he read about "Death Note," a novel based on a Japanese video game. Over the summer, he read it.

Noah also wrote about the games and other pastimes on a group Internet forum. "I was so surprised because he does not like writing," said William Tropp, Noah's father. "I said, 'Why aren't you like this in school?' "

In one posting, Noah recommended "xxxHOLIC," a graphic novel based on Japanese manga cartoons.

"You should check it out if you get the chance," Noah concluded, "and it is a good book!"

http://www.nytimes.com/2008/10/06/books/06games.html?th&emc=th

Music boosts prisoners' learning

Music projects for prisoners help to improve learning skills, says research from the University of Cambridge.

Researchers examined the impact of schemes in which inmates took part in learning and creating music.

About a quarter of these prisoners were illiterate - and the study found that music projects increased their readiness to learn to read and write.

The research said there were "discernible impacts on participants' learning skills".

The study, called Beats and Bars, was an evaluation of the Irene Taylor Trust Music in Prisons project which, for 13 years, has been using music as a way of "raising life aspirations" among prison inmates.

Creative thinking

The project has run in 51 prisons and young offenders institutes and spends time with inmates in learning, rehearsing and performing music.

It aims to help prisoners develop a more positive and creative view of life and improve their chance of successful rehabilitation.

This study has been an attempt to analyse what benefits such schemes might bring individual prisoners and the provision of skills that might reduce the likelihood of re-offending.

Researchers Alexandra Cox and Loraine Gelsthorpe of the Institute of Criminology, University of Cambridge, said that such music projects improve the "motivation to participate in additional learning and skills projects".

With many prisoners having low levels of educational achievement, collaborating in a creative arts project can be a push towards raising skills, they added.

This might mean improving "communication and listening skills, testing and expressing one's voice, and building the self-efficacy that may be necessary to try new skills, such as learning to read and write".

It also suggested that music could provide a means of communication and self-expression for male inmates whose lives have otherwise had been dominated by violence and low self-expectations.

The researchers surveyed prisoners about how their experience in music projects might influence attitudes to other types of learning - with 88% saying they would be more confident about other education projects.

Head of learning at HMP Manchester told researchers a number of prisoners had signed up for "the Writer in Residence group" as a result of the project and that this would help them to improve their literacy skills.

At HMP Wayland, researchers found that seven out of the nine participants in the music project have engaged in further courses.

Music in Prisons is presenting a music and photography exhibition, based on projects at Holloway and Wandsworth prisons, at the Royal Festival Hall from 16 October.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/7650466.stm

Published: 2008/10/03 13:28:05 GMT

Survey shows contraception myths

Women do not end up with the best form of contraception for them because of false beliefs and fears, a snapshot survey of Scottish women suggests.

The poll of 55 women, published in a family planning journal, found anxiety about weight-gain deterred many from long-acting hormonal contraception.

The coil and implants were rejected because women did not want examinations or invasive procedures.

Many chose the Pill just because their peers had done so, the survey found.

> **We are shooting ourselves in the foot by saying they are long-acting, and we need to emphasise that they don't impair fertility, and the majority of them don't affect weight**
> Professor Anna Glasier
> Sexual Health NHS Lothian

Both the Department of Health and the Scottish authorities are actively promoting long-acting contraceptives, because they are reliable and have few side-effects.

Guidelines say that all women should be offered them when they visit a GP asking about contraception.

However, research suggests they are not popular, with only one in 10 women reporting having used them in the past year, less than a quarter of the number using either oral contraceptives or condoms.

Weight fear

The study of 55 women, published in the Journal of Family Planning and Reproductive Health Care, was carried out by sexual health specialists in southern Scotland to try to find out why women felt this way.

They found two of the biggest things that put women off particular types of contraception were unfounded fears that they would harm their long-term fertility, and, in the shorter term, that they would make them put on weight.

One younger woman said: "With a long-term method, you'd worry what it was doing to your insides."

Others said that intrauterine devices such as a coil were out of the question because of the need to have it inserted by a doctor.

"I hate the idea of a stranger poking around down there," said one.

The thought of an implant sitting under the skin was off-putting for some of the women.

Peer choice

Others told the survey that they had gone to the GP and asked for "the Pill" simply because their friends were using it, rather than going to ask about the right contraception for them.

One of the women told the researchers: "Everyone was on the Pill, so that's what I asked for - she just gave it to me."

Specialists said that while women's fears of medical examinations or implants might not be easily overcome, the survey suggested that the term "long-acting" used when promoting some forms of contraception could be creating false fears.

Professor Anna Glasier, from Sexual Health NHS Lothian, said: "We are shooting ourselves in the foot by saying they are long-acting, and we need to emphasise that they don't impair fertility, and the majority of them don't affect weight.

"Doctors tend to focus on medical problems, whereas women are actually more worried about their weight, their skin and their chances of being able to have children in the future."

Lynn Hearton, of Fpa (the Family Planning Association), said: "Women do worry about things like their fertility and gaining weight.

"They are concerned about how contraception fits into the whole of their lives, and not just its effectiveness.

"Contraception is of paramount importance to many women of all ages, but there are many myths and misconceptions circulating about how methods work and what the side effects are.

"So it's imperative that each and every woman has the information, time and support to consider all these issues and make her own informed choice."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7651474.stm

Published: 2008/10/05 22:58:50 GMT

Single jab cancer therapy backed

A study has concluded that one dose of chemotherapy is the best way to cure testicular cancer in many patients.

Doctors already offer either carboplatin or radiotherapy, but scientists needed long-term trial results to see which was the best.

The Medical Research Council project found that the drug offered a similar relapse rate - but far fewer side effects.

A leading expert said it could one day reduce the need for testicle removal.

> **This trial shows that chemotherapy can cure early stage seminoma, so that men diagnosed with the disease can be successfully treated with fewer side-effects**
> Professor Peter Johnson
> Cancer Research UK

Several hundred men are diagnosed with testicular cancer each year in the UK.

The vast majority are "seminomas", affecting the sperm-producing cells in the testicle, and almost half of these are caught at an early stage.

These patients have their affected testicle removed, and are then offered either a single dose of carboplatin chemotherapy, a longer regime of radiotherapy, or the option to have no extra treatment with a higher risk of the cancer returning.

Radiotherapy can have severe side effects, while people undergoing this type of chemotherapy can resume their normal lives much more quickly.

The study, led by Southampton University, followed almost 1,500 patients, 904 given radiotherapy, and 573 carboplatin.

The rate of relapse in both groups was roughly the same, and lead researcher Dr Ben Mead said the results were "reassuring" and that carboplatin was the better option.

"Giving patients a carboplatin injection rather than radiotherapy is less unpleasant with fewer long-term risks.

"The initial results of the trial looked encouraging, but we needed to follow patients for another four years before we knew for sure that they had been cured."

Although practice was changing in Europe to include carboplatin, in many other parts of the world, including the US, radiotherapy remains standard treatment, and Dr Mead said he hoped this would now change.

Extra benefits

The results are to be presented on Monday at a cancer conference in Birmingham, and Professor Peter Johnson, from Cancer Research UK, said that this cancer had proved to be a "success story" in terms of treatment research.

"This trial shows that chemotherapy can cure early stage seminoma, so that men diagnosed with the disease can be successfully treated with fewer side-effects."

Professor Tim Oliver, from the Bart's and the London Medical School, said that another advantage of carboplatin was that by treating the whole body rather than one area, the small risk of another testicular cancer emerging in the other testicle was also reduced.

This was borne out by the study, which found just two out of 573 patients on carboplatin experiencing this, compared with 15 out of 904 in the radiotherapy group.

He said: "The question now is whether you can approach testicular cancer in a different way, and, rather than remove the whole testicle automatically, carry out a 'lumpectomy' in very much the same way as in breast cancer.

"We are looking for funding to investigate whether this could work."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7647007.stm

Published: 2008/10/05 23:00:53 GMT

Toddlers' Focus On Mouths Rather Than On Eyes Is Predictor Of Autism Severity

Two-year-olds with autism look less at others' eyes and more at their mouths. (Credit: Yale University)

ScienceDaily (Oct. 6, 2008) — Scientists at Yale School of Medicine have found that two-year-olds with autism looked significantly more at the mouths of others, and less at their eyes, than typically developing toddlers. This abnormality predicts the level of disability, according to study results published in the Archives of General Psychiatry.

Lead author Warren Jones and colleagues Ami Klin and Katelin Carr used eye-tracking technology to quantify the visual fixations of two-year-olds who watched caregivers approach them and engage in typical mother-child interactions, such as playing games like peek-a-boo.

After the first few weeks of life, infants look in the eyes of others, setting processes of socialization in motion. In infancy and throughout life, the act of looking at the eyes of others is a window into people's feelings and thoughts and a powerful facilitator in shaping the formation of the social mind and brain.

The scientists found that the amount of time toddlers spent focused on the eyes predicted their level of social disability. The less they focused on the eyes, the more severely disabled they were. These results may offer a useful biomarker for quantifying the presence and severity of autism early in life and screen infants for autism. The findings could aid research on the neurobiology and genetics of autism, work that is dependent on quantifiable markers of syndrome expression.

"The findings offer hope that these novel methods will enable the detection of vulnerabilities for autism in infancy," said Jones, a research scientist from the Yale School of Medicine Interdepartmental

Neuroscience Program and the Yale Child Study Center. "We hope this technology can be used to detect and measure signs of an emerging social disability, potentially improving a child's outcome. Earlier intervention would capitalize on the neuroplasticity of the developing brain in infancy."

Study collaborator Ami Klin, director of the Autism Program at the Child Study Center, said they are now using this technology in a large prospective study of the younger siblings of children with autism, who are at greater risk of also developing the condition. "By following babies at risk of autism monthly from the time they are born, we hope to trace the origins of social engagement in human infants and to detect the first signs of derailment from the normative path," said Klin.

Jones and Klin are also engaged in parallel studies aimed at identifying the mechanisms underlying abnormal visual fixation in infants with autism. "Our working hypothesis is that these children's increased fixation on mouths points to a predisposition to seek physical, rather than social contingencies in their surrounding world. They focus on the physical synchrony between lip movements and speech sounds, rather than on the social-affective context of the entreating eye gaze of others," said Jones. "These children may be seeing faces in terms of their physical attributes alone; watching a face without necessarily experiencing it as an engaging partner sharing in a social interaction."

Citation: Archives of General Psychiatry, 65(8), 946-954.

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

http://www.sciencedaily.com:80/releases/2008/09/080926143751.htm

Depression Linked To Higher Death Rates From All Causes Among Elderly With Diabetes

ScienceDaily (Oct. 6, 2008) — In a large group of Medicare beneficiaries with diabetes, depression was associated with a higher death rate from all causes during a two-year study period.

Lead author Dr. Wayne Katon, professor of psychiatry and behavioral sciences at the University of Washington (UW), noted that previous research indicates that depression and diabetes is a potentially lethal mix among young to middle-aged patients. Depression also puts patients at greater risk of complications from their diabetes. This more recent study suggests that depression is also a risk factor for mortality in older patients with diabetes. Most Medicare beneficiaries, like the ones in this study, are over age 65. The mean age of the participants was 75.6 years.

The study tracked 10,704 Medicare beneficiaries with diabetes who were enrolled in a disease management program in Florida. They were surveyed at the start of the study with a health assessment questionnaire. Evidence of depression among members of the group came from physician diagnosis, patient reports of having a prescription for an antidepressant in the year before the survey, or patient answers to a brief screening test. For the next two years, the research team recorded the death and cause of death of participants through bi-monthly checks of Medicare claims and eligibility files, or from phone calls with the participants' families.

The research team found that patients with both diabetes and depression had an increased risk of about 36 percent to 38 percent of dying from any cause during the two-year follow-up. Participants with a physician diagnosis of depression were significantly younger than their cohorts, more likely to be female, had more severe medical illness, were less likely to be African-American, and more likely to be Hispanic. These variables were controlled for in the analysis of increased risk. A total of 12.1 percent of participants who had both disorders died during that period. Among those without depression, 10.4 percent died.

Participants who had been treated with one or more antidepressant medications in the year before the study had a 24 percent increased risk of mortality, compared to non-depressed participants. According to the study authors, those patients may have been treated with antidepressants because their depressive symptoms were more severe and persistent than those of more mildly depressed patients who weren't prescribed antidepressants.

There was no difference in the rate of cardiovascular or cerebrovascular events between those treated with antidepressants and those who had no indication of depression.

"Rates of mortality from vascular disease may be decreasing in recent years among patients with diabetes due to more aggressive treatment of high blood pressure, cholesterol, and glucose levels," the researchers surmised, "as well as widespread use of preventative medications such as aspirin and beta blockers."

According to the authors, there may be several reasons why depression worsens chronic diseases such as diabetes. Depression has been associated with inadequate self-care and harmful habits like smoking or overeating. Depression is also associated with nervous system and endocrine system problems, and with inflammatory markers.

The authors noted their study's limitations: the participants were from one geographic region of the United States, and the follow-up period was relatively short. Defining depression in part by physician diagnosis and treatment, they added, may have selected for participants with more severe illness. The study was also not able to obtain information on education, income, weight, smoking habits, physical activity, or compliance in taking medication.

In addition to Katon, the researchers included Drs. Ming-Yu Fan and Jurgen Unutzer from the UW, Dr. Jennifer Taylor from Green River Health in Tampa, Fl.; Dr. Harold Pincus from Columbia University and the Rand Corporation; and Michael Schoenbaum from the National Institutes of Health (NIH) in Bethesda, Md.

Grants from the National Institute of Mental Health of the NIH funded the study. The findings are published in the October 2008 Journal of General Internal Medicine.

Adapted from materials provided by University of Washington.

http://www.sciencedaily.com/releases/2008/09/080930154839.htm

100 Years Of Ammonia Synthesis: How A Single Patent Changed The World

ScienceDaily (Oct. 6, 2008) — As a result of the Haber-Bosch process for the synthesis of ammonia from atmospheric nitrogen, billions of people have been fed, millions have died in armed conflict and a cascade of environmental changes has been set in motion, suggests a feature article by scientists from four of the world's leading environmental research centres that will be published online on 28 September in Nature Geoscience.The feature appears 100 years after Fritz Haber filed his patent on the 'synthesis of ammonia from its elements' for which he was later awarded the 1918 Nobel Prize in Chemistry.

Lead author, Jan Willem Erisman from the Energy research Centre of the Netherlands (ECN), explains: "The increasing demand for food and biofuels makes efficient use of nitrogen fertilizer and more sustainable energy a challenge for many. Haber-Bosch is perhaps the most significant invention of the 20th Century, yet it has many side effects. Now we need a new invention that changes the world just as much, but without the environmental impact."According to the article, we now live in a world transformed by, and highly dependent upon, Haber-Bosch nitrogen. This extra nitrogen has allowed large scale production of explosives with the result of millions of casualties. On the other hand, it has created an enormous chemical industry producing materials and goods for society. The major impact, however, has been the large scale production of fertilizers supporting almost half of the world's population through increased food production.

While the use of nitrogen as a fertilizer has brought enormous benefits, losses of fertilizer nitrogen to the environment lead to many side effects. These include reduced biodiversity and the formation of marine algal blooms. Nitrogen compounds endanger the quality of drinking water, and contribute to air pollution as well as climate change, affecting life quality and the health of large parts of the population.

Future scenarios suggest that such problems will become more extreme, with a potential doubling of fertilizer use predicted over the coming century. This demand is partly driven by the growing requirement for 'nitrogen hungry' biofuels. These environmental challenges highlight the need for a new invention, as transforming as the Haber-Bosch process that would benefit both society and the global environment.

The feature concludes by arguing that today's society is dependent on a nitrogen-based economy and discusses some of the challenges we are likely to face in the next 100 years.The global nitrogen challenge is an issue that is set to receive more attention in the future. For example, the European Commission is funding the NitroEurope project, a consortium of over 60 research institutions, which is investigating the effect of nitrogen on global warming. Its results will feed into the work of the 'Task Force on Reactive Nitrogen', recently established by the United Nations Economic Commission for Europe (UN-ECE).

Mark Sutton from the UK's Centre for Ecology & Hydrology, who is co-chair of the UN-ECE Task Force and one of the feature's authors, commented: "It is remarkable how a century of Haber-Bosch nitrogen has transformed all our lives. Without it, half of us might not be alive today. At the same time, the environmental impacts of nitrogen cut across all global change issues. To reduce these effects, we must improve nitrogen use efficiency, especially in food production."

The research programme of Erisman and colleagues at ECN further highlights the role of bioenergy in the nitrogen cycle. ECN is developing second generation technology for bioenergy and biofuels that will contribute to limiting fertilizer use in the future.

Adapted from materials provided by Centre for Ecology and Hydrology, via AlphaGalileo.

http://www.sciencedaily.com/releases/2008/09/080929095708.htm

Walking Forum Report Shows Need To Expand Physical Activity In Schools

ScienceDaily (Oct. 6, 2008) — With childhood obesity expanding to epidemic proportions in the United States, educators, researchers and health practitioners are actively seeking to identify effective means of addressing this public-health crisis.

Among the solutions proposed by teachers, researchers and others who met during a roundtable discussion of the issues at a major international conference at the University of Illinois, is the integration of physical activity programming throughout the curriculum in the nation's schools. In other words, the group recommended that physical activity no longer be confined to the domain of the physical education classes.

"There are a number of steps that can be taken to accomplish this," said U. of I. kinesiology and community health professor Weimo (pronounced WE-moh) Zhu, the lead organizer of the "Walking for Health" conference. For example, "science teachers can teach the science behind physical activity – theories about energy transfer. Or teachers can combine graphics and arts, going on a walk to look at different parts of the city."

A summary of the group's findings and recommendations was compiled in a recently published consensus report titled "We Move the Kids." The report – along with 10 others by conference participants – was published this past summer in a supplemental volume of Medicine & Science in Sports & Exercise (Vol. 40, No. 7), the journal of the American College of Sports Medicine. The ACSM was a co-sponsor of the 2005 walking conference with the U. of I.

Zhu called the supplement "the most comprehensive collection of the current literature on walking."

The "We Move the Kids" roundtable discussion and follow-up report focused on strategies for promoting physical activity, integrating physical activity with other health behaviors in school curricula, and potential barriers to accomplishing these goals.

"There was a general recommendation to go beyond what happens in the P.E. class, and to try to create a healthy environment for the children during school and after school across the curriculum," said Wojtek Chodzko-Zajko (VOY-tek HODGE-koh-zye-koh), the head of the kinesiology and community health department and a co-author of the roundtable report.

Chodzko-Zajko said the concept of integrating topics across the curriculum is not necessarily a new pedagogical idea.

"It's very common, especially at the elementary level. So, if there's a major theme occurring – elections, or some big national event – it's not unusual for elementary schools to integrate that across the curriculum, in math, geography, social sciences. The idea here is that concepts not only in physical activity, but concepts in wellness, need to be integrated.

"If you talk to the pedagogy people, they say two things: Kids need physical education, where they learn motor skills and activities that are going to set them up to develop the competencies they need to be physically active. But they also need to know how to be regularly physically active.

"So there's a double mission. The school has a responsibility to educate them in motor skills but also provide students with an opportunity to be active."

And, Chodzko-Zajko said, "many schools are failing in both regards, without question."

He noted that while schools are federally mandated to have wellness plans, many – including those within walking distance of the site of the 2005 walking conference – don't employ teachers trained specifically in physical education.

"That's amazing, really, when you think of it," he said.

On a more positive note, U. of I. kinesiology professor Amelia Woods, another co-author of the "We Move the Kids" report who has worked one on one with teachers in Champaign, Ill., elementary schools, said "there are some really innovative physical educators in this community."

Woods, who is the author of the book "Interdisciplinary Teaching Through Physical Education," pointed to Wendy Huckstadt at Bottenfield School and Wendy Starwalt at Carey Busey, both in Champaign. Among the strategies they employ in the classroom are ones recommended in the roundtable report, such as using pedometers and other motivational devices; offering rewards and incentives; and setting individual and group goals.

"Wendy Huckstadt organized a program called the Mileage Club, where students can cover a quarter-mile track before and after school, at recess and sometimes during physical education to earn little plastic foot charms," Woods said. "Once they cover five miles, they earn a charm. The charms are put on necklaces. Teachers and students all wear them."

Woods said after school, parents come to pick up their children, and it's not unusual to see students, parents and teachers all walking around the track after school.

"It's really awesome," she said.

Starwalt has done many innovative things as well. "She also incorporates the foot charms in her program, and has introduced 'Fitness Fridays,' to try to emphasize the benefits of physical activity," Woods said.

Chodzko-Zajko noted that one of the major hurdles he and his colleagues face is getting society to abandon old notions of physical education in the schools.

"The challenge, I think, is that people have come to think that children should get their physical activity in P.E. class, and they're lucky if they have one class a week," he said. "So, we need to help the kids track their activity using pedometers. But they can't be expected to get that activity (only) during P.E. class."

In addition to encouraging the systemic inclusion of physical activity and wellness in the classroom, recommendations in the "We Move the Kids" report include strategies for educators, school administrators, and even parents and communities.

Among them:

- positioning physical-education teachers as role models not just for students, but other teachers as well.
- supporting student participation in sports clubs and other physical-activity opportunities.
- opening gyms, pools, playgrounds and other school facilities to students and community members before and after school hours.
- providing administrators with information about health benefits of physical activity and information about childhood obesity and inactivity.
- offering in-service training to educate non-P.E. teachers on ways to build activity into their curricula.

- creating collaborative partnerships involving teachers, parents, businesses and professional associations that advocate the benefits of physical activity.
- organizing annual health fairs or physical-activity events that emphasize the importance of physically active lifestyles for people of all ages.

Along with Chodzko-Zajko, Woods and Zhu, additional co-authors of the roundtable report are U. of I. kinesiology and community health professors Darla Castelli and Kim Graber. Castelli and Graber organized a subsequent conference at Illinois last fall called Physical Activity in Contemporary Education to further promote the importance of integrated physical-activity and wellness programs in schools and communities.

Another conference participant contributing an article to the journal supplement is David M. Buchner, former chief of the Physical Activity and Health branch in the Division of Nutrition and Physical Activity at the Centers for Disease Control and Prevention in Atlanta.

Buchner joined the U. of I. kinesiology and community health department this fall as director of the university's new master of public health degree program, which will be offered beginning in fall 2009. He also leads the writing team responsible for drafting the federal government's first-ever "Physical Activity Guidelines for Americans"; the U.S. Department of Health and Human Services is expected to issue the guidelines in October.

Buchner's journal article, "The Importance of Walking to Public Health," co-authored with Harvard University professor I-Min Lee, serves in part as a review of the existing body of research on walking for health purposes. The article also considers the type of walking that produces the greatest health benefits and considers methodological issues relevant to epidemiologic studies on the relationship between walking and health.

Adapted from materials provided by University of Illinois at Urbana-Champaign.

http://www.sciencedaily.com/releases/2008/09/080930135259.htm

Learning To Shape Your Brain Activity

ScienceDaily (Oct. 5, 2008) — A study in the Oct. 1 issue of the journal Sleep shows that the successful manipulation of sensorimotor rhythm (SMR) amplitude by instrumental SMR conditioning (ISC) improved sleep quality as well as declarative learning. ISC might thus be considered a promising non-pharmacological treatment for primary insomnia.

This study allowed participants to "shape their own brain activity" by directly modifying certain electroencephalographic (EEG) activities. Findings support the theory that an increase in relaxation and a decrease in muscle tension might lead to less movement during sleep and thereby augment the restorative and learning enhancement benefits of sleep. Significant changes in SMR amplitude from early to late conditioning sessions confirmed the success of ISC. EEG changes transferred into sleep and improved immediate memory retrieval after learning. The study's 27 participants were able to fall asleep faster (decrease in "sleep onset latency") and increase memory performance after two weeks of ISC.

"The aim of the study was to improve sleep quality and memory performance by 'rewarding' the existence of certain activities of the brain," said the study's workgroup leader, Dr. Manuel Schabus, researcher for the division of physiological psychology at the University of Salzburg in Austria.

Instrumental conditioning of different EEG parameters has long been used as a therapeutic tool to treat different kinds of disorders, including epilepsy and attention–deficit/hyperactivity disorder (ADHD). Prior research has found that ISC can be effective in treating psychophysiological insomnia, a form of insomnia associated with worrying.Twenty-seven healthy subjects were randomly assigned to either an ISC group or a randomized frequency group in order to examine the effects of ISC on sleep as well as declarative memory performance. Participants attended the laboratory on 13 occasions, during 10 of which they were connected to a feedback system that allowed them to keep track of their current brain activity by looking at a computer screen. Participants were encouraged to use physiological relaxation combined with positive mental activity in order to "shape their brainwaves"; all participants remained blind to their group assignment and were not debriefed until after the investigation had ended.

Participants trained the enhancement of the SMR over the course of two weeks and were rewarded with a pleasant image whenever they succeeded to enhance this specific type of brain activity. Subjective data about sleep quality and depression and objective data about memory and intelligence were also collected. Participants were asked to perform a declarative word-pair association task before and after a 90-minute nap periods in the laboratory; naps were taken before and after treatment sessions.

The researchers suggest that future studies focus on the effects of ISC on various cognitive tasks and address the potential clinical significance of this kind of training for the long-term treatment of insomnia.

Journal reference:

1. Kerstin Hoedlmoser, Thomas Pecherstorfer, Georg Gruber, Peter Anderer, Michael Doppelmayr, Wolfgang Klimesch, Manuel Schabus. **Instrumental Conditioning of Human Sensorimotor Rhythm (12-15 Hz) and Its Impact on Sleep as Well as Declarative Learning**. *Sleep,* Oct. 1, 2008

Adapted from materials provided by American Academy of Sleep Medicine, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081001093233.htm

Immune System For Electronics? Electronics That Can Diagnose And Heal Themselves Under Development

ScienceDaily (Oct. 5, 2008) — Researchers at the University of the West of England (UWE) are to carry out ground breaking research with collaborators from the University of York* into creating electronic systems that can diagnose and heal their own faults in ways similar to the human immune system.

The project is called SABRE (Self-healing cellular Architectures for Biologically-inspired highly Reliable Electronic systems). The part of the project to be carried out in Bristol will be based at Bristol Robotics lab (BRL), which is jointly run by the University of Bristol and UWE.Increasingly, our lives are intertwined with digital electronic equipment. From gadgets to household appliances, computers, and the life-saving systems which ensure that cars and planes are safe, these devices can be extremely complex and often have hundreds of thousands of components on a single chip. However, if one component fails this commonly causes catastrophic failure of the whole system.

Electronic hardware designers have achieved fantastic levels of reliability so far but, as such devices become more and more complex, such instances can only become more common. Under fault conditions it would, therefore, be highly desirable for the system to be able to cope with faults, and continue to operate effectively even if one or more components have failed; but this is not the way electronic systems are currently designed.Drawing on inspiration from nature, the researchers at York and Bristol will look for ways to create electronic systems based on a structure of 'cells' which have the ability to work together to defend system integrity, diagnose faults, and heal themselves. The researchers will be looking at the way complex biological systems, such as the defence mechanism of the human body, are able to deal with faults and still keep functioning.

Dr. Tony Pipe, (Bristol Robotics Laboratory) explains, "When an electronic system malfunctions it should be able to cope with minor faults and continue to operate effectively even if one or more components fail. Currently, those few electronic systems that are designed to be fault-tolerant either replicate whole sub-systems at a high level in the overall architecture (similar to having two lungs), or roll back to a simpler, safer mode when there is a malfunction, but still replicate the whole system or a large part of it in a simplified form. This is a vital function in current safety-critical systems such as anti-lock breaking, fly-by-wire aircraft, space exploration, as well as industrial control and shutdown systems.

"However highly complex living organisms such as the human body are able to deal with malfunctions at a much lower level, that of the cells, defending the system overall by repairing damage to cells, thus maintaining normal functionality. The human body is both reliable and highly complex. It is this ability that we want to try to replicate in electronic systems. By studying the multi-cellular structure of living organisms and their protective immune systems, we hope to be able to design 'nature-like' fault tolerant architectures for electronics. This research has the potential to influence the way complex electronic systems are designed in the future, creating a new generation of electronic systems which are fault tolerant and self healing."

The research will pave the way for a biologically inspired unique design approach for electronic systems across a wide range of applications, from communication through computing and control, to systems operating in safety-critical or hostile environments.

The project is funded by EPSRC.

Adapted from materials provided by University of the West of England.

http://www.sciencedaily.com/releases/2008/10/081002095018.htm

The Earth After Us: What Legacy Will Humans Leave In The Rocks?

"Looking to the distant future gives us a warning for the present: our activities have already left a significant footprint on the planet, and not a flattering one. It is not too late to limit it. We would not wish to be dubbed by future explorers the 'amazingly clever and utterly foolish two-legged ape'", said Dr Zalasiewicz. (Credit: Copyright Michele Hogan)

ScienceDaily (Oct. 5, 2008) — What will be the lasting impression made by mankind - 100 million years hence? Jan Zalasiewicz, a lecturer in geology at the University of Leicester, has published a new book looking at the lasting impression likely to be made by mankind.

He takes the perspective of alien explorers arriving on earth - their geologists study the layers of rock, using the many clues to piece together its history over several billion years.

A story unfolds of moving and changing continents, rising and falling oceans, ice ages, and evidence of life going back many millions of years. They grow familiar with its phases of change, the rise of great new ecosystems, and occasional catastrophic collapses of life. But then they stumble on something quite different in a thin layer of rock: a striking signal of climate changes, extinctions and strange movements of wildlife across the planet. Following this trail, decoding clues in the rocks takes them to the petrified remains of cities, and finally to the fossilized bones of those, long dead, who built them.

Dr Zalasiewicz said: "From the perspective of 100 million years in the future – a geologist's view – the reign of humans on Earth would seem very short: we would almost certainly have died out long before then. What footprint will we leave in the rocks? What would have become of our great cities, our roads and tunnels, our cars, our plastic cups in the far distant future? What fossils would we leave behind?

"My study shows how scientists put together clues from the rocks to understand the past, its landscapes and climate, and the nature of the creatures that inhabited it. A thin layer of silt here, a trace formed by a crawling worm there–the clues are often subtle and difficult to read. But by such clues would future geologists – whether hyper-evolved rat or alien visitor – work out our story. My study explores which of our structures are likely to leave traces, and what future explorers might make of us and the impact we made on our environment.

"Looking to the distant future gives us a warning for the present: our activities have already left a significant footprint on the planet, and not a flattering one. It is not too late to limit it. We would not wish to be dubbed by future explorers the 'amazingly clever and utterly foolish two-legged ape'."

Zalasiewicz's book "The Earth After Us: What Legacy Will Humans Leave In The Rocks?" is published by Oxford University Press. For more information, see:
http://www.oup.com/uk/catalogue/?ci=9780199214976

Adapted from materials provided by University of Leicester.

http://www.sciencedaily.com/releases/2008/09/080926100634.htm

Topsoil's Limited Turnover: A Crisis In Time

ScienceDaily (Oct. 5, 2008) — Topsoil does not last forever. Records show that topsoil erosion, accelerated by human civilization and conventional agricultural practices, has outpaced long-term soil production. Earth's continents are losing prime agricultural soils even as population growth and increased demand for biofuels claim more from this basic resource.

Top geomorphologist David R. Montgomery of the University of Washington says that "ongoing soil degradation and loss present a global economic crisis that, although less dramatic than climate change or a comet impact, could prove catastrophic nonetheless, given time."

Montgomery is an invited speaker in the Pardee Keynote Symposia, “Human Influences on the Stratigraphic Record,” on 9 October at the 2008 Joint Meeting of the Geological Society of America, Soil Science Society of America-American Society of Agronomy-Crop Science Society of America, and Gulf Coast Association of Geological Societies in Houston, Texas, USA.

In his talk on Montgomery will present the record of erosion, both in historic civilizations and today, and address the long-term implications for agricultural sustainability, including the possibility that unchecked anthropogenic erosion will in time undermine the foundation of civilization itself.

Montgomery is a Fellow of the Geological Society of America and was recently awarded a MacArthur Fellowship by The John D. and Catherine T. MacArthur Foundation, which recognizes individuals who have shown extraordinary originality, creativity, and dedication, a marked capacity for self-direction, and promise for important future advances based on a track record of significant accomplishment.

Adapted from materials provided by Geological Society of America.

http://www.sciencedaily.com/releases/2008/10/081002103651.htm

Making Metabolism More Inefficient Can Reduce Obesity

ScienceDaily (Oct. 4, 2008) — In a discovery that counters prevailing thought, a study in mice has found that inactivating a pair of key genes involved in "fat-burning" can actually increase energy expenditure and help lower diet-induced obesity. These unusual findings might lead to some new roads in weight-loss therapy.

Humans and other warm-blooded animals need to continually "burn fat" in order to maintain body temperature, and it's currently believed that an individual's fat-burning capacity, or thermogenic potential, is connected with obesity risk; that is, people with more thermogenic potential are less likely to become obese. In fact, bodybuilders and dieters looking to burn fat commonly use thermogenic supplements like ephedra.

In theory, lowering thermogenesis should increase the chances of obesity, but Leslie Kozak and colleagues at Pennington Biomedical Research Center found that this may not be the case. They knocked-out two thermogenic genes in mice, Ucp1 (mitochondrial uncoupling protein) and Gdm (glycerol 3-phosphate dehydrogenase) and then fed the mice a high-fat diet while rearing them at a cool 20 °C (68 °F).

Surprisingly, these mice were actually quite resistant to obesity, which resulted from the mice turning on backup heat generators, so to speak. Lacking Ucp1 and Gdm, genes that have been designed for the efficient production of heat, mouse white fat cells activated alternate, and more inefficient, fat burning pathways. In this case, though, inefficiency is beneficial, as the mice had to burn more fat than normal to stay warm (by analogy you burn more wood by warming your house with an open fire then with a well designed wood stove).

Importantly, after spending 10 weeks at 20 °C the mice retained these alternate pathways even after transferring to 28 °C (82 °F), suggesting their bodies had adapted to the change. Thus, Kozak and colleagues note, fat burning does not necessarily require making thermogenesis easier; by making it harder and forcing the body to use inefficient methods to stay warm, the same goals can be reached.

Journal reference:

1. Anunciado-Koza et al. **Inactivation of UCP1 and the Glycerol Phosphate Cycle Synergistically Increases Energy Expenditure to Resist Diet-induced Obesity**. *Journal of Biological Chemistry*, 2008; 283 (41): 27688 DOI: 10.1074/jbc.M804268200

Adapted from materials provided by American Society for Biochemistry and Molecular Biology, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081003122756.htm

World's Biggest Computing Grid Launched

The world's largest computing grid is ready to tackle mankind's biggest data challenge from the earth's most powerful accelerator. (Credit: Image courtesy of DOE/Brookhaven National Laboratory)

ScienceDaily (Oct. 4, 2008) — The world's largest computing grid is ready to tackle mankind's biggest data challenge from the earth's most powerful accelerator. Today, three weeks after the first particle beams were injected into the Large Hadron Collider (LHC), the Worldwide LHC Computing Grid combines the power of more than 140 computer centers from 33 countries to analyze and manage more than 15 million gigabytes of LHC data every year.

The United States is a vital partner in the development and operation of the WLCG. Fifteen universities and three U.S. Department of Energy (DOE) national laboratories from 11 states contribute their power to the project.

"The U.S. has been an essential partner in the development of the vast distributed computing system that will allow 7,000 scientists around the world to analyze LHC data, complementing its crucial contributions to the construction of the LHC," said Glen Crawford of the High Energy Physics program in DOE's Office of Science. DOE and the National Science Foundation support contributions to the LHC and to the computing and networking infrastructures that are an integral part of the project.

U.S. contributions to the Worldwide LHC Computing Grid are coordinated through the Open Science Grid, a national computing infrastructure for science. The Open Science Grid not only contributes computing power for LHC data needs, but also for projects in many other scientific fields including biology, nanotechnology, medicine and climate science.

"Particle physics projects such as the LHC have been a driving force for the development of worldwide computing grids," said Ed Seidel, director of the National Science Foundation's Office of

Cyberinfrastructure. “The benefits from these grids are now being reaped in areas as diverse as mathematical modeling and drug discovery.”

“Open Science Grid members have put an incredible amount of time and effort in developing a nationwide computing system that is already at work supporting America’s 1,200 LHC physicists and their colleagues from other sciences,” said Open Science Grid Executive Director Ruth Pordes from DOE’s Fermi National Accelerator Laboratory.

Dedicated optical fiber networks distribute LHC data from CERN in Geneva, Switzerland to eleven major “Tier-1” computer centers in Europe, North America and Asia, including those at DOE’s Brookhaven National Laboratory in New York and Fermi National Accelerator Laboratory in Illinois. From these, data is dispatched to more than 140 “Tier-2” centers around the world, including twelve in the United States.

“Our ability to manage data at this scale is the product of several years of intense testing,” said Ian Bird, leader of the Worldwide LHC Computing Grid project. “Today’s result demonstrates the excellent and successful collaboration we have enjoyed with countries all over the world. Without these international partnerships, such an achievement would be impossible.”

“When the LHC starts running at full speed, it will produce enough data to fill about six CDs per second,” said Michael Ernst, director of Brookhaven National Laboratory’s Tier-1 Computing Center. “As the first point of contact for LHC data in the United States, the computing centers at Brookhaven and Fermilab are responsible for storing and distributing a great amount of this data for use by scientists around the country. We’ve spent years ramping up to this point, and now, we’re excited to help uncover some of the numerous secrets nature is still hiding from us.”

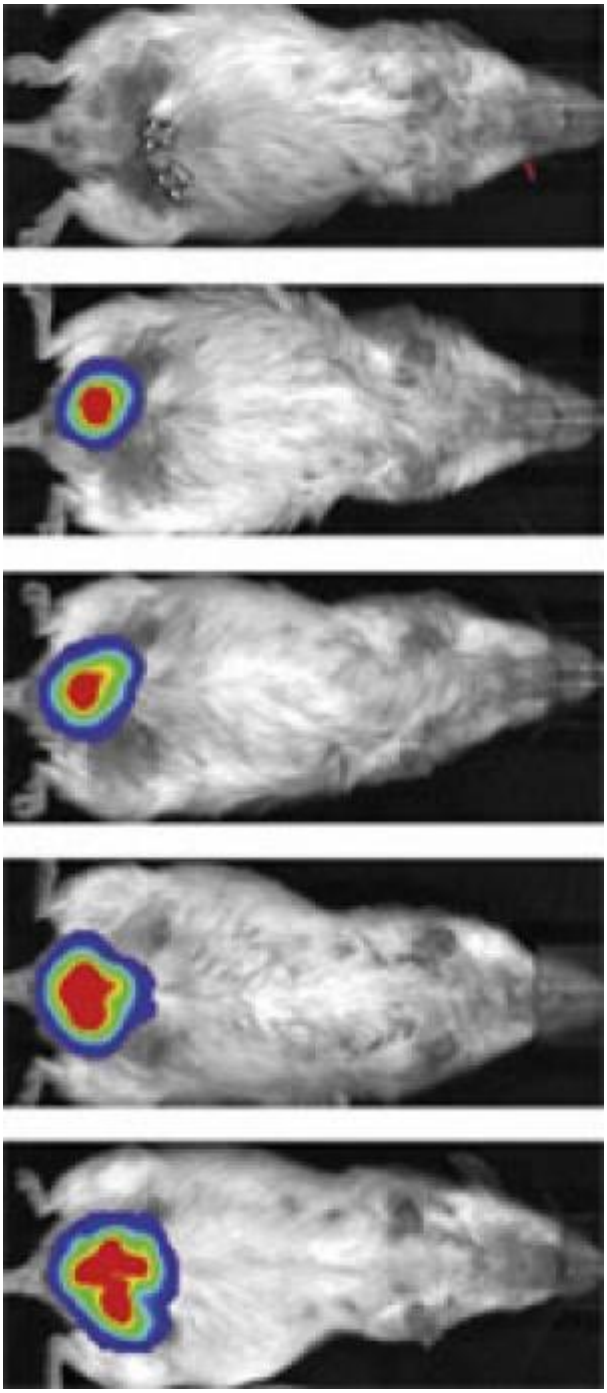
Physicists in the U.S. and around the world will sift through the LHC data torrent in search of tiny signals that will lead to discoveries about the nature of the physical universe. Through their distributed computing infrastructures, these physicists also help other scientific researchers increase their use of computing and storage for broader discovery.

“Grid computing allows university research groups at home and abroad to fully participate in the LHC project while fostering positive collaboration across different scientific departments on many campuses,” said Ken Bloom from the University of Nebraska-Lincoln, manager for seven Tier-2 sites in the United States.

Adapted from materials provided by DOE/Brookhaven National Laboratory.

http://www.sciencedaily.com/releases/2008/10/081003155614.htm

Obesity Clue: Newly Identified Cells Make Fat



Using an animal strain called the leptin-luciferase mouse, Rockefeller University researchers observed the formation of fat from precursor cells over 12 weeks. A luminescent marker (red) switches on to indicate where mature fat cells have developed. (Credit: Rockefeller University)

ScienceDaily (Oct. 4, 2008) — To understand where fat comes from, you have to start with a skinny mouse. By using such a creature, and observing the growth of fat after injections of different kinds of immature cells, scientists at the Howard Hughes Medical Institute and Rockefeller University have discovered an important fat precursor cell that may in time explain how changes in the numbers of fat cells might increase and lead to obesity.

The finding could also have implications for understanding how fat cells affect conditions such as diabetes and cardiovascular disease.

"The identification of white adipocyte progenitor cells provides a means for identifying factors that regulate the proliferation and differentiation of fat cells," says senior author Jeffrey Friedman, who is the Marilyn M. Simpson Professor at Rockefeller and a Howard Hughes Medical Institute investigator.

Obesity, a major public health problem in the United States and increasingly in much of the Western world, results, in part, from an increase in the mass and number of white fat cells. Because white fat cells are post-mitotic, meaning that they cannot divide, scientists have hypothesized that a population of fat precursor cells must exist in the fat depot in order to produce new fat cells. But identifying these fat precursor cells has been difficult.

With the assistance of researchers in Rockefeller's Flow Cytometry Resource Center, first author Matt Rodeheffer, a postdoctoral associate in Friedman's Laboratory of Molecular Genetics, used a cell sorting technique called fluorescence-activated cell sorting, or FACS, to search for cell populations that could produce fat in cell cultures and identified two such populations.

To determine if these cells could develop into fat cells in living animals, Rodeheffer injected these cell populations into the fat depots of a genetically engineered mouse, developed at NIH, called fatless, which lacks white fat and mimics a condition in humans called lipodystrophy that also results in diabetes.

Rodeheffer found that only one of the isolated cell populations, which express the CD24 cell-surface marker protein, produced fat tissue in the fatless mouse. This population normally represents only .08 percent of the non-adipocyte population in adipose tissue.

An imaging assay recently developed by co-author Kivanç Birsoy, a graduate student in Friedman's laboratory, enabled Rodeheffer to observe the CD24-expressing cells form fat in a living animal. Birsoy's technique uses another animal strain called the leptin-luciferase mouse, in which the visibly detectable marker luciferase is expressed under the control of the promoter of the gene that produces the hormone leptin. In this mouse strain the luciferase marker gene only switches on in mature fat cells, and provides a non-invasive way of watching immature fat cell precursors develop into mature fat cells in a living animal over time.

"I injected the CD24+ cells - which represent a very small population of cells in normal adipose tissue - into a site where the fat would normally develop in the fatless mouse, and I found that a normal sized fat depot forms at the site of injection," says Rodeheffer.

Rodeheffer also found that the injection of the fat-producing cells corrects the fatless mouse's diabetes, and the fat cells secrete adipocyte-specific signaling proteins called cytokines. Both of these results confirm that the cells produced in the fatless mouse are functional fat cells.

"This finding gives us a better understanding of the basic biology of adipose tissue and opens the door for us and for other researchers to be able to study these cells in living animals and determine the molecular factors that regulate formation of adipose tissue," says Rodeheffer. "We then can potentially study how the growth and differentiation of these cells are regulated in obesity and determine whether or not the molecular events that are involved in the regulation of adipose tissue are contributing factors to other pathologies, such as diabetes and cardiovascular disease, that are associated with obesity and metabolic syndrome."

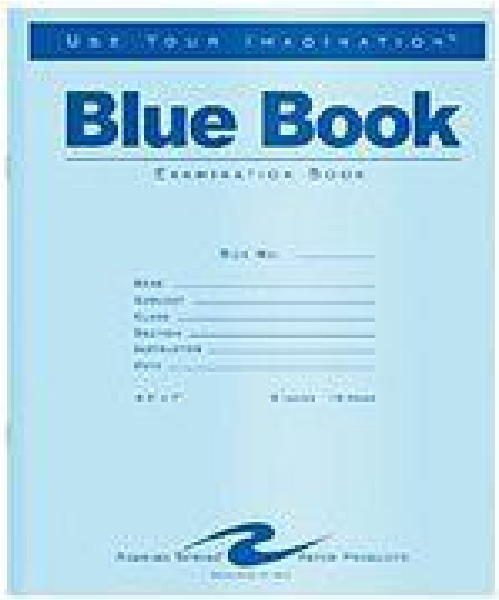
Journal reference:

1. Rodeheffer et al. **Identification of White Adipocyte Progenitor Cells In Vivo**. *Cell*, October 2008; DOI: 10.1016/j.cell.2008.09.036

Adapted from materials provided by Rockefeller University.

http://www.sciencedaily.com/releases/2008/10/081003173018.htm

From Blue Books to Secure Laptops



The snaking, hours-long add/drop line is a distant memory, the chalkboard is becoming an anachronism and even note-taking is increasingly a task for a keyboard, not a pad of paper. While computers have removed age-old burdens (and added some new ones), one common element of the higher education experience has generally remained stuck solidly in the 20th century: final exams, where the dreaded blue book continues to thrive.

Even today, a class that relies heavily on course management software and PowerPoint slides can end with that familiar downer, a small book of lined notepaper that seems to encourage everyone's worst handwriting — to the dread of both the students cramming in the margins and the professors who have to read their work.

It was only a matter of time before the proliferation of computer labs and laptops on campus would replace cramped hand with carpal tunnel syndrome, but until recently, concerns about security and the possibility that students could use other programs or the Internet to supplement their preparation have held back widespread adoption of word processing solutions.

Computer-administered testing, made available on students' own laptops, first became a reality for both students with disabilities and for professional graduate programs with intensive testing regimens, such as law school and medical school. In summer 2007, the New York State bar exam made headlines when problems with the software made available to students for their laptops, Securexam, resulted in some test takers having trouble saving or uploading their work. Since then, the problems with that particular software have been resolved.

Occasional mishaps aside, Securexam and similar offerings from companies such as Respondus are trickling down to the undergraduate level. Securexam has some 150 clients — also including high schools and professional certification programs — in five countries worldwide, including Seton Hall University and the University of North Carolina at Chapel Hill, which is extending a pilot for the College of Arts & Sciences so that any interested faculty members can use the software in their classes.

The software works by opening a word processor window in students' laptops and simultaneously locking down all other programs, iexams / 08 / 10 / 2008 / News / Home — Inside Higher Edncluding network access. When they are done with their exams, students can save and then upload their files — which are immediately encrypted and which they can't open again — to a server accessible only by the instructor. Students can also submit later, if they need to find a working Internet connection, but the laptop remains locked — even after shutdowns or restarts — until they do. Licensed institutions pay on a user-per-year basis, ranging from $5 to $25 each.

Although only 26 or 27 UNC-Chapel Hill faculty members use Securexam, there is already something of a movement for wider adoption among those who have to do the scribbling — at least if the campus newspaper, *The Daily Tar Heel*, is any indication. "It's time for the University to implement Securexam across campus, thus eliminating the need for blue books," the paper said in a recent editorial.

"We could go on about the problems with blue books until we're, well, blue in the face," it later continues, and one of the reasons it would make sense at UNC, the editors write, is the fact that the university, unlike many colleges, requires all students to own laptops.

Proponents also note that everyone stands to win in the end with computer-administered testing — either through students' own laptops or at proctored testing locations in computer labs.

"Computer-based testing benefits every stakeholder in the academic institution, from the student that's more comfortable typing to the teacher who finds it easier to grade something that's typed to the administration that can support the needs of their students and faculty better," said Doug Winneg, the president of Software Secure, the maker of the Securexam suite of products, which includes a package for distance learning (which authenticates students with fingerprint identification and remote video monitoring feeds) and a browser-based plug-in for course management systems that requires Internet access.

"Our client base, University of [North Carolina at] Chapel Hill, is obviously an institution that has a clear and logical need for our product because every student has a laptop, so in those institutions where technology is widely available, then our software has great value for the student base," he added.

Partly because of that ubiquity, the faculty members using Securexam adopt it for all kinds of written tests and quizzes rather than just final exams, as at other institutions, suggested Zachary Fisher, who works on academic and educational computing at UNC-Chapel Hill's Arts & Sciences Information Services.

"I think it improves their work, and it certainly means that I can grade their papers paying attention to what it is they have to say," said Joseph Wittig, a professor of English and comparative literature at UNC-Chapel Hill, adding that he used to spend significant time deciphering students' handwriting. Would he ever return to blue books? "Oh, no! Death first!"

Wittig, who has used the software for at least five years, said that early on there were some technical issues for students, especially those with Macs or older laptops. But those have mainly been resolved, and although there tend to be at least one or two students each semester who opt out of laptop-administered tests in favor of tried-and-true blue books, he said those numbers were dwindling and that most were older students.

And although cheating isn't usually at the top of his list of worries, Wittig added, "this takes that problem off the table."

— Andy Guess

The original story and user comments can be viewed online at
http://insidehighered.com/news/2008/10/08/exams.

Helping Community College Students Beat the Odds

Each semester, many community college students have to address an important and nagging question, "Should I stay or should I go?"

As retention becomes more of a key issue for two-year institutions, some educators argue that they need to focus on what leads students to ask that question. This, however, has not always been an easy task for many community colleges, oftentimes because their many and disparate student services are incongruously spread throughout their administrative structures. Hudson Valley Community College, a State University of New York institution located outside of Albany, has congregated its retention efforts under one banner to relative success and is hoping it can serve as a model.

Studies have shown that students seeking either an associate degree or higher who start at a two-year institution have a lower chance of achieving their educational goals than students who start at a four-year institution. This so-called "community college penalty" can be discouraging to some, especially in a time of rising enrollments at open-access institutions, due in part to economic distress. Still, Hudson Valley officials said they try not to think about the what-ifs for their students.

"Most of our students couldn't have begun at a four-year institution," said Kathy Quirk, associate dean for instructional support services and retention. "Also, most of our students do not transfer. We worry less about whether we wish they would have or if they would have been more successful. We concentrate on the ones who couldn't have transferred or the ones for whom starting at a four-year institution wasn't an option."

With a semester-to-semester student retention rate of 73.7 percent — counting all students from last year's fall to spring semester — Hudson Valley boasts a figure that it says is higher than the national average. Even though, like so many institutions in this tight economy, its enrollment has ballooned recently, the college's retention rate has remained relatively static with a fluctuation of only around 2 percent in the past five years. Quirk attributes the college's past success and future ambition — the 12,000-student institution experienced a five percent growth this year — to its robust retention efforts.

In 2001, Quirk's position was created to coordinate all of the institution's retention efforts, from its learning centers to its personal outreach programs. This combined approach to student services, she said, allows for clearer conversation between these programs, helping match students to what may best help them. Moreover, she noted, this gives retention efforts more leverage when the college is determining its budget.

"Student services have traditionally gotten the short end of the stick," Quirk said. "When enrollment increases you have to hire more faculty, but it's rare that student services gets additional hires at the same time. Now, with the coordinating of student services into one unit, it is really treated the same as any other department. Though all these offices have separate budgets, I oversee all of them. It's easier to make requests within the budget."

The college's retention efforts strive, for the most part, to be proactive, hoping to reach students before they decide to take a hiatus from their studies, explained Kevin McNeelege, Hudson Valley retention specialist. One approach is an early warning system. Typically, professors provide academic counselors with a list of students likely to have difficulty before the first major tests of the semester. McNeelege said professors identify underperforming students by their behavior in the classroom and other factors such as tardiness and truancy. Counselors then direct these students to an appropriate student service for assistance. Other efforts to help students before they encounter trouble in the classroom include Smart Start, a two-week summer program for new students who show testing weakness in the three basic skills of reading, writing and arithmetic. Placement tests are required of most students.

One of the college's fastest growing retention-assistance programs is its Learning Center, which offers tutoring during the semester to students who seek academic help. Unlike those of some colleges, Quirk noted that its learning center tutors are full-time employees, which allows them to cater to more students more often. Last fall, almost 1,800 students visited the learning center almost 10,000 times for a total of

around 12,800 hours. As Hudson Valley's enrollment grows, usage of its Learning Center has increased steadily. Quirk said that it is important to note that along with this use growth, students are also staying longer each time. Students who use the Learning Center more often have higher grade point averages than less-frequent visitors.

Issues outside of the classroom, however, more often cause problems for students. Quirk said the Collegiate Assistance Support Program has an "emergency fund" with which it can lend money to students who may need it for pressing personal issues. Last year, she said, the college gave out more than $2,000 to students to purchase everything bus passes and supermarket gift cards to textbooks and medical attention. Often, she noted, students are in a bind near the beginning of the semester and cannot pay for basic services because they are still waiting for their delayed financial aid checks. Quirk said she plans to lobby to set aside between $5,000 and $7,000 for the emergency fund each semester.

Information collection is key to improving student retention, noted McNeelege. The college's Student Outreach and Support Call Center — a telephone hotline for students and their parents to ask logistical questions — collects data from students who chose to leave Hudson Valley. Of the 490 "intent to not return" forms collected during the last two years from students who were eligible to return, nearly three-fourths came from those who had either graduated or transferred, which is to say that all these students had achieved their educational goals. The remaining percentage indicated they were not returning because of personal reasons.

Making sure students and faculty know about the institution's student services — now made simpler because of their consolidation — is important to further bolstering retention, McNeelege said.

"It is often difficult to know when any individual student will need help," McNeelege wrote in a recent college retention report. "Indeed, students may be reluctant to ask for help. Student concerns must be addressed when they are raised. Consequently, all faculty and staff members need to be responsible for knowing what resources are available, promoting students to use resources, and directing individual student appropriately."

— David Moltz

The original story and user comments can be viewed online at http://insidehighered.com/news/2008/10/08/retention.

'Deepest ever' living fish filmed

By Rebecca Morelle
Science reporter, BBC News

The "deepest ever" living fish have been discovered, scientists believe.

A UK-Japan team found the 17-strong shoal at depths of 7.7km (4.8 miles) in the Japan Trench in the Pacific - and captured the deep sea animals on film.

The scientists have been using remote-operated landers designed to withstand immense pressures to comb the world's deepest depths for marine life.

Monty Priede from the University of Aberdeen said the 30cm-long (12in), deep-sea fish were surprisingly "cute".

> **Nobody has really been able to look at these depths before - and I think we will see fish living much deeper**
> Alan Jamieson, Oceanlab

The fish, known as *Pseudoliparis amblystomopsis* , can be seen darting about in the darkness of the depths, scooping up shrimps.

Alan Jamieson, from the University of Aberdeen, said: "It was an honour to see these fish.

"No-one has ever seen fish alive at these depths before - you just never know what you are going to see when you get down there."

The deepest record for any fish is *Abyssobrotula galatheae* , which was dredged from the bottom of the Puerto Rico Trench at a depth of more than 8km (5 miles) in 1970. However, it was dead by the time it reached the surface.

The previous record for any fish to have been spotted alive was thought to have stood at about 7km (4 miles).

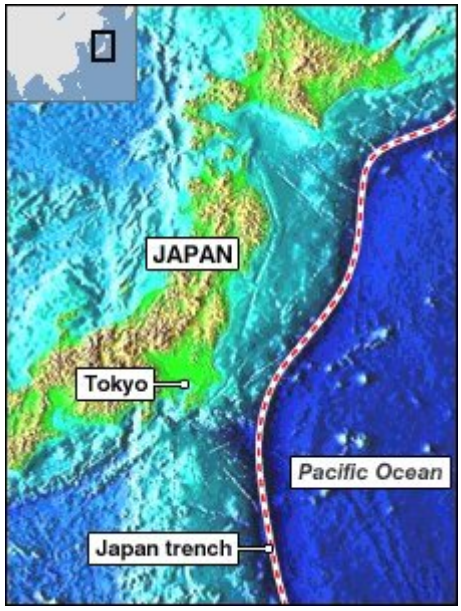
Pressure points

The Hadeep project, which began in 2007, is a collaboration between the University of Aberdeen's Oceanlab and the University of Tokyo's Ocean Research Institute (Ori) and aims to expand our knowledge of biology in the deepest depths of the ocean.

It is funded by the Nippon Foundation and the Natural Environment Research Council (Nerc).

DEEP SEA DIVISIONS
Bathyal zone: 1,000-3,000m (3,000-10,000ft)
Abyss: 3,000-6,000m (10,000-20,000ft)
Hadal: 6,000m-11,000m (20,000-36,000ft)

The researchers have been looking at the Hadal zone - the area of ocean that sits between 6,000 and 11,000m (20,000-36,000ft). It consists of very narrow trench systems, most of which are found around the Pacific Rim.



The researchers are able to explore them using specially designed remote operated vehicles that are fitted out with cameras.

Professor Priede, director of Oceanlab, said: "There is the question of how do animals live at all at these kinds of depths.

"There are three problems: the first is food supply, which is very remote and has to come from 8km (5 miles) above.

"There is very high pressure - they have to have all sorts of physiological modifications, mainly at the molecular level.

"And the third problem is that these deep trenches are in effect small islands in the wide abyss and there is a question of whether these trenches are big enough to support thriving endemic populations."

But this species appears to have overcome these issues, added Professor Priede.

"We have spotted these creatures at depths of 7,703m (25,272ft) - and we have actually found a massive group of them.

"And this video is pretty tantalising - the fact that there are 17 of them implies that they could well be a family group, begging the question of whether some form of parental care exists for these fish."

Vibration sensors

The researchers said they were surprised by the fish's behaviour.

"We certainly thought, deep down, fish would be relatively inactive, saving energy as much as possible, and so on," Professor Priede told BBC News.

"But when you see the video, the fish are rushing around, feeding accurately, snapping at prey coming past."

Because the fish live in complete darkness, they use vibration receptors on their snouts to navigate the ocean depths and to locate food.

Professor Priede added: "Nobody has seen fish alive before at these depths - only pickled in museums - and by the time they come up from the depths they look in a pretty sorry state.

"But these fish are actually very cute."

Alan Jamieson added that he believed the team would find more fish during their next expedition in March 2009, which would probe the ocean between depths of 6,000m and 9,000m.

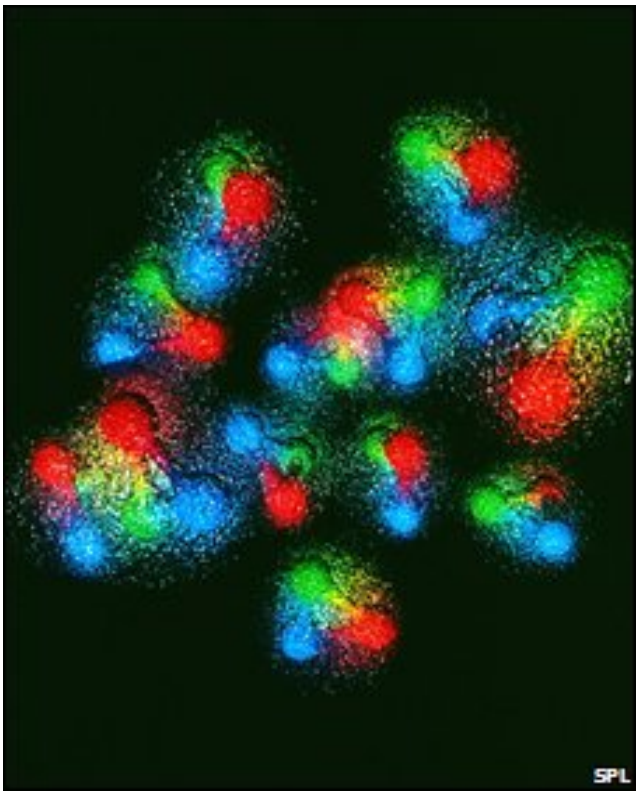
He told BBC News: "Nobody has really been able to look at these depths before - I think we will see some fish living much deeper."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7655358.stm

Published: 2008/10/07 10:57:26 GMT

Cosmic imperfections celebrated

By Jonathan Amos
Science reporter, BBC News



The Nobel Prize for physics this year lauds three individuals who described tiny - but hugely significant - flaws in the fabric of the Universe.

Yoichiro Nambu, Makoto Kobayashi and Toshihide Maskawa have all provided new insights into the nature of matter.

Nambu described a mechanism called spontaneous broken symmetry in sub-atomic physics.

The work of Kobayashi and Maskawa predicted the existence of three families of particles known as quarks.

According to the Standard Model in particle physics - which ties together the smallest known building blocks of matter and three of nature's forces - quarks are the elementary sub-units of protons and neutrons, which together make up the nuclei of atoms.

The new laureates' investigations explain anomalies in the laws of physics.

'Long overdue'

According to the Royal Swedish Academy of Sciences, "spontaneous broken symmetry is said to conceal nature's order under an apparently jumbled surface".

One analogy is to consider a pencil balancing on its point that then suddenly falls over. Prior to falling, the pencil is in perfect symmetry and has no preferred direction in which to topple; but in moving to the lower energy position of resting lengthways on the surface, the pencil suddenly defines a direction and the symmetry is broken.

Nambu is said to have formulated a mathematical description for this phenomenon in particle physics. The work is highly relevant in relation to upcoming experiments on the Large Hadron Collider (LHC), the recently completed giant accelerator at Cern on the Swiss-French border.

The LHC will search for an explanation for why the Universe has mass - with the leading candidate being the so-called Higgs field.

At the extremely high energies that existed in the very early Universe, symmetries would have existed that were then suddenly broken as the cosmos cooled and expanded. Theory suggests mass resulted when the Higgs field lost its symmetry.

Professor Sir Chris Llewellyn Smith, who was director general at Cern in the 1990s, said Nobel recognition for Nambu was long overdue.

"Hidden symmetries allow simple, economical laws to give rise to very diverse, apparently unrelated, phenomena," he commented.

"They play a key role in the unification of different forces in the successful Standard Model of particle physics." Broken symmetry has become powerful concept in particle physics in recent decades.

Prior to the 1950s and 60s, it was thought the laws of physics would be invariant - they would look and perform the same in mirrored spatial directions; in forward and reverse time; and between particles and their opposites, anti-particles.

Observations of decaying sub-atomic particles in accelerators, however, demonstrated that these symmetric effects were being broken; and one of the most important is a spatial and time inconsistency which has become known as CP violation.

Jim Stirling, a professor of particle physics at Cambridge University, explained: "When we wish to build a theory in which broken symmetry is incorporated then we have to add to the theory some aspect, some property of the theory, that distinguishes between particles and anti-particles; and the work of Kobayashi and Maskawa was based on trying to understand the CP violation that was observed; and they postulated there should be more particles than were known at the time.

"They suggested that in addition to the two generations of quarks known at the time, there should be a third generation; and this was before the third generation was discovered."

Observations subsequently confirmed the Kobayashi and Maskawa predictions.

Professor Nambu, 87, from the University of Chicago, is a US citizen but was born in Japan.

Professor Kobayashi, 64, works at the KEK Laboratory, Tsukuba, Japan; while Professor Toshihide Maskawa, 68, is affiliated to the University of Kyoto, Japan.

The Nobel Prizes - which also cover chemistry, medicine, literature, peace and economics (more properly called the Sveriges Riksbank Prize) - are valued at 10m Swedish Kronor (£800,000; $1.4m).

Nambu will receive 5m Kronor; Kobayashi and Maskawa will share the other half.

Laureates also receive a medal and a diploma.

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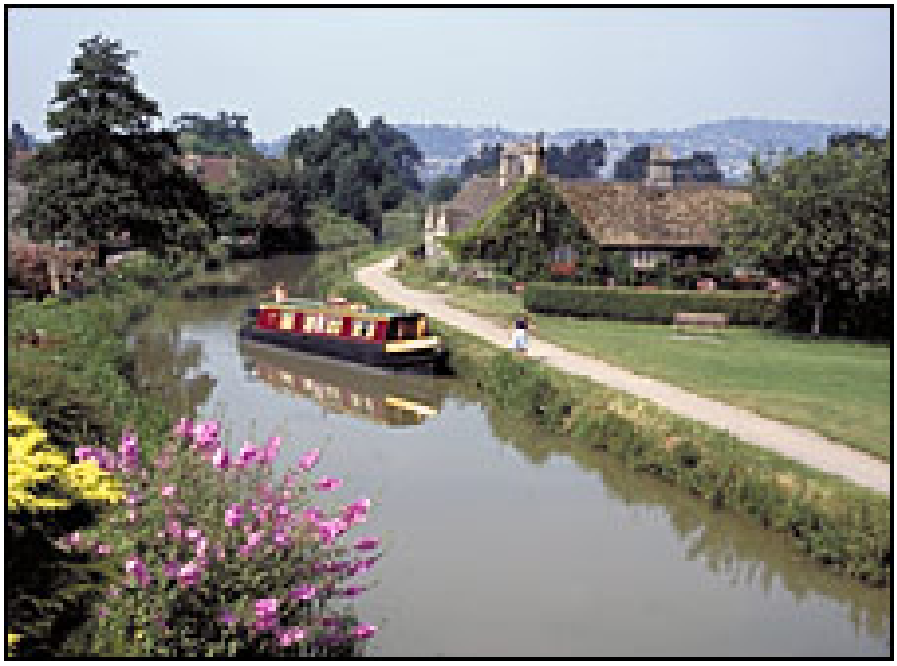
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7656538.stm

Published: 2008/10/07 13:54:55 GMT

Canal plan to power 45,000 homes

Plans have been unveiled to power 45,000 homes with wind and hydro-electric turbines along Britain's historic canals and rivers.



British Waterways want to house 50 wind turbines and additional small-scale hydro schemes on land it owns over the next five years.

They say the scheme will raise more than £1m a year, which will be used for waterway upkeep.

The exact locations of the turbines have yet to be decided.

British Waterways, which is a public body in charge of the waterside land, was praised by its partner in the project for using its resources in an innovative and environmental way.

Partnerships for Renewables said the navigation authority was a "torchbearer for others to follow".

Yorkshire option

The £1m that will be raised will be used to help maintain and repair some of the 2,200 miles of canals, historic locks, bridges and rivers that the organisation looks after throughout the UK.

British Waterways' chief executive Robin Evans was delighted that the project will generate income and help with the government's renewable energy targets.

Mr Evans said that, whilst the authority is always protecting the canals and rivers' heritage, they are "proactively looking at how we can use this resource to make a contribution towards the fight against climate change.

"If we successfully develop this resource it would mean that the nation's canal network would generate more than 10 times more electricity than it consumes," he added.

PUBLIC SECTOR ENERGY CAPACITY
The public sector could host around 3000 megawatts of renewable energy capacity
That would supply energy needs of 1.4 million UK households
Source: Partnerships for Renewables

The public corporation is now looking at potential locations for the turbines and generators.

One suitable site could be on the banks of the Aire and Calder navigation in Yorkshire.

A British Waterways spokesman told the BBC: "We are looking at radar and environmental issues first and then will engage with the local communities at suitable sites."

Environmentalists 'delighted'

Partnerships for Renewables, a privately-funded group that works with public bodies on renewable energy projects, will develop, construct and manage all the equipment at an estimated cost of £150m.

The private company hopes to create the capacity to power 230,000 homes from electricity on public land within five to eight years and this project would contribute to a fifth of that target.

Stephen Ainger, chief executive of Partnerships for Renewables, said, "It is great to see that British Waterways has demonstrated the vision to become a torch bearer for others to follow."

Friends of the Earth energy campaigner Nick Rau was delighted by British Waterways' plans.

Mr Rau said that "Community-scale renewable energy projects such as hydro-power schemes and wind turbines have a huge role to play in reducing our dependency on fossil fuels and helping Britain to develop a low-carbon economy."

The government had pledged to generate 15% of the UK's electricity from renewable sources by 2015, although some studies have shown this target may not be reached by then.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/7656748.stm

Published: 2008/10/08 00:02:03 GMT

Probiotics 'worthless' for eczema

'Friendly' bacteria found in yoghurt and health drinks have no effect on the symptoms of eczema and may occasionally cause gut problems, evidence suggests.

Researchers reviewed 12 studies involving nearly 800 children with eczema and found probiotics did nothing to ease itching and the rash.

And in separate studies 46 patients reported side effects including infection and bowel damage.

Experts said more trials were needed into the long-term safety of their use.

> **There is no evidence that probiotics are a worthwhile treatment for eczema**
> Researcher Dr Robert Boyle

Eczema affects one in 20 people at some time in their lives and is increasingly common among children - a fifth of children in the UK now has eczema.

The causes are complex, but the finding that people with eczema have different bacteria in their guts from others has led to some doctors recommending probiotics to treat this skin problem.

No benefit

But NIHR researcher Dr Robert Boyle, of Imperial College London, who carried out the review for the Cochrane Collaboration, says this is pointless.

"There is no evidence that probiotics are a worthwhile treatment for eczema," and he said they may even be harmful for certain groups of people, such as very young infants or others susceptible to infection.

However, he said it was possible that new probiotics, yet to be studied, might have an effect.

And there is evidence emerging that probiotics might be useful for preventing eczema when taken during pregnancy or in the first weeks of life.

Professor Ashley Woodcock, of Manchester University, has been carrying out his own study into the effects of probiotics on eczema risk in infants.

He said: "We have no data on the long-term impact/safety on the use of probiotics in young children. Until that time, their use should be restricted to clinical trials which are properly designed, adequately powered and long enough to understand the long-term outcomes."

He said although eczema was increasingly common, existing treatments could make a huge difference to both the disease and the patient's quality of life.

Member of the British Association of Dermatologists Dr Nick Levell said: "There are many very well researched and effective treatments available for eczema, so sufferers should seek medical advice from their GP."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7656727.stm

Published: 2008/10/07 23:41:06 GMT

E-Textbooks for All

Many observers, both in academe and in the publishing industry, believe it's only a matter of time before electronic textbooks become the norm in college. Some campuses in particular may already be getting a glimpse of the future through partnerships with individual publishers or with consortiums.

Such deals tend to offer students a choice in addition to their current options in the hope that they'll opt for the cheaper alternative. In contrast to that model, and through a partnership with the publisher John Wiley & Sons, an experiment soon to be underway at the University of Texas at Austin will shift certain classes entirely to e-textbooks.

Beginning next semester, for the initial pilot phase of one to two years, the university will cover the electronic materials for the approximately 1,000 students enrolled in a handful of courses in largely quantitative subjects such as biochemistry and accounting. By purchasing in bulk on a subscription model, the university initially hoped for a "per student per book" cost of $25 to $45. (Wiley hasn't publicized a final price range, so it's unclear whether it will be that low.) The idea of the "beta test," as the university dubs it, is to see how students and faculty respond to e-textbooks and to decide whether they could be deployed on a larger scale.

Most of the biggest textbook publishers already offer some or all of their catalogs in electronic form, but e-texts remain a relatively small portion of the overall market. What remains to be seen is how the publishing industry alters its business models — which many readily admit will have to change — and whether the companies are in for a shift along the lines of that seen in the music industry, as some have predicted.

"The industry knows that their model, their former model ... is changing, and changing before their eyes," said Kevin Hegarty, vice president and chief financial officer of UT-Austin, who is managing the partnership for the university.

Obstacles to widespread adoption range from technology concerns to questions about whether students or, perhaps more importantly, faculty members will warm to the idea of reading (and taking notes) on screens rather than on printed paper. The ubiquity of laptops hasn't ushered in an era of electronic-only textbooks, and a new generation of e-reader technologies may or may not encourage students to change their reading preferences.

At UT-Austin's campus book store this semester, for example, e-books were available for 198 courses representing an estimated enrollment of 15,531 students. About a month ago, when the numbers were calculated, only 55 were sold — or about 0.35 percent of all potential e-textbook buyers.

So, to test-drive new models and observe students' preferences, campus-wide pilot programs have been cropping up over the past year. Most recently, the University System of Ohio, in a statewide program, is creating a partnership with the publishing consortium CourseSmart, which has deals in place with campuses across the country as part of its effort to jump-start an e-textbook market based on a subscription model. Unlike the Texas partnership, no courses are moving entirely over to e-textbooks, although professors will be eligible for financial incentives to reduce textbook costs for their students.

The UT-Austin pilot also differs in that it is currently with a single publisher, although if the beta test is a success, officials hope to sign deals with other companies as well. Like Ohio's initiative, the focus is mainly on cost reduction, so students in courses at UT that are part of the program will be able to opt out of the e-textbooks — by paying a fee to have the campus store print a bound copy on demand. Hegarty estimated that students would have to pay somewhere between $20 and $40 out of pocket for that option. (Many of CourseSmart's prices run at least double that amount, but their e-books are mainly marketed to individual students, not whole classes or institutions.)

"This pilot aims to improve student outcomes, provide students with equity of access to the most current materials and increase faculty satisfaction and efficiency while respecting faculty independence and freedom of choice in the selection of course materials," Bonnie Lieberman, Wiley's senior vice president

and general manager for higher education, said in a statement released Monday. “Our primary aim is to improve learning and teaching outcomes while significantly lowering the costs of learning materials for students.”

She added: “Wiley has a longstanding relationship with the university through our UT system-wide license for our major portfolio of journals, our significant professional and trade book business and our traditional textbook sales. In moving aggressively into a digital model for learning materials, we see this as a logical and very welcome evolution of our relationship with UT.”

Students in participating classes will have two ways (besides printing their own copies through the campus store) to access their textbooks electronically. They can download to their personal computer an e-book that will be usable for the duration of the license, or they can access the materials online through a service called Wiley Plus, which offers additional tools for students and faculty. The downloadable e-books have features like searching, note taking and highlighting; the online versions boast added functionality such as interactive tutorials, quizzes and grading tools for faculty.

“This is the most advanced of our pilots,” said Christopher McKenzie, vice president and director of institutional sales at Wiley. “We have discussions ongoing with a number of different universities, consortia and [institutions], but this is the most significant in terms of those that have been nailed down and agreed to.”

The Root of All Prices?

The genesis of the beta test wasn’t a corporate board meeting, but an academic with a theory.

Michael Granof is the Ernst & Young Professor of Accounting at the McCombs School of Business at UT-Austin, and himself a Wiley textbook author and chairman of the highly regarded campus book store, the University Co-op. He publicized his diagnosis of the textbook market’s ills, at least as perceived by students who pay the steadily rising prices and faculty members who resent churning out new editions every few years, most recently last year in a *New York Times* op-ed.

“The basic theory is this: that textbooks are very expensive mainly because of the used book market,” he said in an interview.

Rather than assume (correctly) that books will always be resold, in increasingly organized and sophisticated fashion, he argued, publishers should switch to a model based on licenses that expire, charging less for each license.

“Here’s how it would work: A teacher would pick a textbook, and the college would pay a negotiated fee to the publisher based on the number of students enrolled in the class. If there were 50 students in the class, for example, the fee might be $15 per student, or $750 for the semester. If the text were used for 10 semesters, the publisher would ultimately receive a total of $150 ($15 x 10) for each student enrolled in the course, or as much as $7,500,” he wrote in the op-ed.

“In other words, the publisher would have a stream of revenue for as long as the text was in use. Presumably, the university would pass on this fee to the students, just as it does the cost of laboratory supplies and computer software. But the students would pay much less than the $900 a semester they now typically pay for textbooks.”

According to that model, publishers would stop trying to recoup their costs for a book in a single semester and undermine the used book market by releasing frequent new editions and adding CDs with online and multimedia extras, Granof said. Instead, they’d get a steady stream of revenue from legitimately issued licenses, whether in e-book format or as print-on-demand copies.

“Every three years I got to come up with a new edition. What a waste of time,” he added in the interview.

The *Times* article, especially, "caught people's attention," he recalled. Interested publishers, including Wiley and Pearson, contacted the university, and Granof helped bring the stakeholders to the table. The final pilot as announced by the university has significant support from the student leadership, which has backed cost-saving measures in the past, as well as key figures in the administration.

Looking Ahead

Granof doesn't pin the future of the textbook industry on e-textbooks per se; it's the structure of the market that's the problem, he said.

"The textbook market is changing. There's no question that textbook sales are going down throughout the country, and publishers [have] been surprisingly un-innovative. And the publishers think that electronic books are going to solve all of their problems."

Instead, Granof predicts that switching to e-textbooks en masse could lead to the kinds of intellectual property issues and widespread piracy seen in the music industry. "So far, students don't like electronic books. My scheme doesn't depend on the use of electronic books. They can get a hard copy," he said.

Frank Lyman, the executive vice president for marketing at CourseSmart, said the benefit of this kind of model is that when institutions commit to purchasing materials for 100 percent of students enrolled in a course, they can get good prices from publishers. There are a "number of institutions kind of looking at the model, and they're going to try and see how students react," he said.

While he said CourseSmart has some smaller-scale pilots in a similar vein at for-profit institutions, the consortium mainly focuses on partnerships in which college students are provided with e-textbooks as another, cheaper, option. Noting the 80 percent satisfaction rate among students who use e-textbooks from CourseSmart, he said, "I think if you required 100 percent of students in any course to take digital, it could be more students [will be] dissatisfied."

Added Wiley's McKenzie, "The pilot phase is really proving the concept, and that's why the mutual work we're doing together to evaluate its efficacy is really important, because we have our own internal surveys that show very, very high satisfaction for example with Wiley Plus, and this is really validating that with a major prestigious university.... Beyond that, what we're looking at doing is turning this into a new business model for our relaionship with the University of Texas ... looking at this as a way for the future for learning materials and how they're [provided] and paid for on a campus.

"I think it's inevitable that it's going in this direction."

— Andy Guess

The original story and user comments can be viewed online at
http://insidehighered.com/news/2008/10/07/ut.

Open Access or Faux Access?

The headline on Monday's announcement seemed impressive: "AAA Creates 'Open Access' to Anthropological Research."

The announcement starts off by calling the new policy of the American Anthropological Association "a groundbreaking move" that would provide "greater access for the global social science and anthropological communities to 86 years of classic, historic research articles." The problem, critics say, is that the emphasis should have been on the word "historic," because those 86 years worth of articles aren't the most recent 86 years. Rather the association will apply its new policy for its flagship journal, *American Anthropologist,* only 35 years after material was published. The association has created open access to the scholarship of the '50s and '60s.

The anthropology association has been divided for years over open access — the view that research findings should be online and free. Many rank-and-file anthropologists embrace the idea, seeing it as a way to most effectively communicate without imposing huge financial burdens on their libraries. But the association relies on revenue from subscriptions to its journals and has resisted repeated pushes from its own members to move in the direction of open access.

These tensions are not unique to anthropology, but the discipline has seen more than its share of flare-ups over the the issue, with pro-access scholars horrified that their association lobbied against open access legislation in Congress and that the scholarly society replaced a university press as its publishing agent with a for-profit publisher.

The idea of the association fully embracing open source as a philosophy is so unexpected that one scholar — when contacted for this article and read the headline on the press release — started laughing hysterically. Another started his blog posting by writing "Breaking News! Stop the Presses!!! OMGWTF!!!!"

What the association actually announced was that it would apply open source principles, 35 years after publication, for both *American Anthropologist* and *Anthropology News.* The announcement quoted Bill Davis, executive director of the association, as saying: "This historic move, initiated by the needs and desires of our worldwide constituency, is our association's pointed answer to the call for open access to our publications. This program, I believe, is an important first step in answering the call to un-gating anthropological knowledge." The statement went on to say that the new policy would be evaluated next year by the association's Committee on Scientific Publication and the Committee for the Future of Electronic Publishing, and "may be expanded in the future."

Several members of those committees, asking that their names not be revealed, said that some members of those panels had wanted the association to open up more recent scholarship, but that association leaders were cautious about going any further.

In an interview, Oona Schmid, director of publishing for the association, said, "We know we have members who really care about open access," and that the shift amounted to "a really substantial offer."

Asked about the 35-year time delay, Schmid cited research showing that the half life of articles in anthropology journals (meaning the time in which half of the scholarly citations they receive are made) is 12-15 years, and that the association wanted a time period that would keep journals for subscribers only while they were being cited.

She insisted that, even though access will be open only after articles cease to be widely cited, the volume of material made it significant. "I don't believe that this is a trivial offer," she said.

Asked whether the association would be charging libraries any less to subscribe to the journals — since all of this valuable material was now being provided free — she said no. Libraries subscribe for "the ongoing subscription," she said.

Association officials also said that they compare favorably to other social science disciplines. For example, the primary journals of the American Political Science Association and the American Sociological Association are not published open source, although archives are available (with delays of just a few years) for institutions that subscribe to JSTOR.

Patricia Kay Galloway, an associate professor in the School of Information at the University of Texas at Austin, has previously served on anthropology association committees on digital publishing but left because of disputes over her support for open access. She said that the idea that open access involves a 35-year delay is "just crap."

She said that "it's nice to get" the older material, but noted that the field of anthropology has changed radically in the last 35 years on such issues as how indigenous people should be studied and the need to avoid "elitist bias." She said "the most exciting work" is not going to be available in this program. "And that's why people are not going to be impressed."

The primary reason the association won't go open access, she said, is to preserve revenue. And that's not an appropriate reason, even if it means that the association might end up with a smaller operation. Galloway said she could have accepted a time lag of a few years on open access — while the association tries to adjust its business model — but that 35 years is just not open access.

The scholar who quipped "OMGWTF!!!!" about the announcement is Christopher Kelty, an anthropologist at the University of California at Los Angeles who writes about free software and the intersection of technology and scholarship. At the anthropology blog Savage Minds, Kelty wrote that it was "a huge step forward" that the "AAA has realized that opening up 35 year old scholarship is not a threat to their publishing revenue, and it may well improve public understanding of anthropology."

But Kelty said that this needs to be seen as an overdue first step and a public relations move, not a true embrace of open access. "What is happening here is a dissolution of the term open access and a pretty shameless use of this opportunity to issue a press release that might repair some of the damage the association has suffered on this issue," he wrote. "Fair enough, they are trying. Try harder, I say."

A commenter to the blog said that the new policy could be called open access only "to the past," adding: "Isn't the purpose of research to contribute to a wider body of knowledge? Shouldn't it be our first intent to share it / disseminate our finding with the wider community? No.... It's still thought that what is good has be kept safe and locked away."

Alex Golub, an anthropologist at the University of Hawaii at Manoa, had a more positive reaction on the same blog. He said it was "utterly superb news" that some important material would now be available. If this is really just a "first step," and the association manages the open access material well, scholars could gain, he wrote.

At the same time, he said that association was way behind where it should be — and where many members have been pushing it to go. "This decision clearly represents the success of the OA community's decision to hold the AAA accountable, in public, for its actions," he wrote. "I honestly do not think this decision would have been made if the OA community had not called out the AAA and demanded to know what the hell it thought it was doing.

"In 2003 the AAA was planning to be a 'change agent' in the world of scholarship. Five years later, it has become a reactive institution that slowly implements the changes demanded of it by a vibrant and active community of scholars that are moving forward without it. That the AAA [is] responsive is good. That its internal workings cannot be used to produce this sort of leverage, or to become the locus of new and innovative projects[,] remains disappointing."

Kevin M. Guthrie is president of Ithaka, a nonprofit organization that promotes the use of technology to develop new modes of scholarly communication. He said that he didn't know the rationale used by the anthropology association, but that many organizations are facing such challenges. On the one hand, he said, "there has to be some way to pay the bills."

But for any nonprofit publisher, he said, there is "a mission-based desire to make content as available as possible." He said that while publishers continue to search for new business models, "the trend to more openness is strong."

— Scott Jaschik

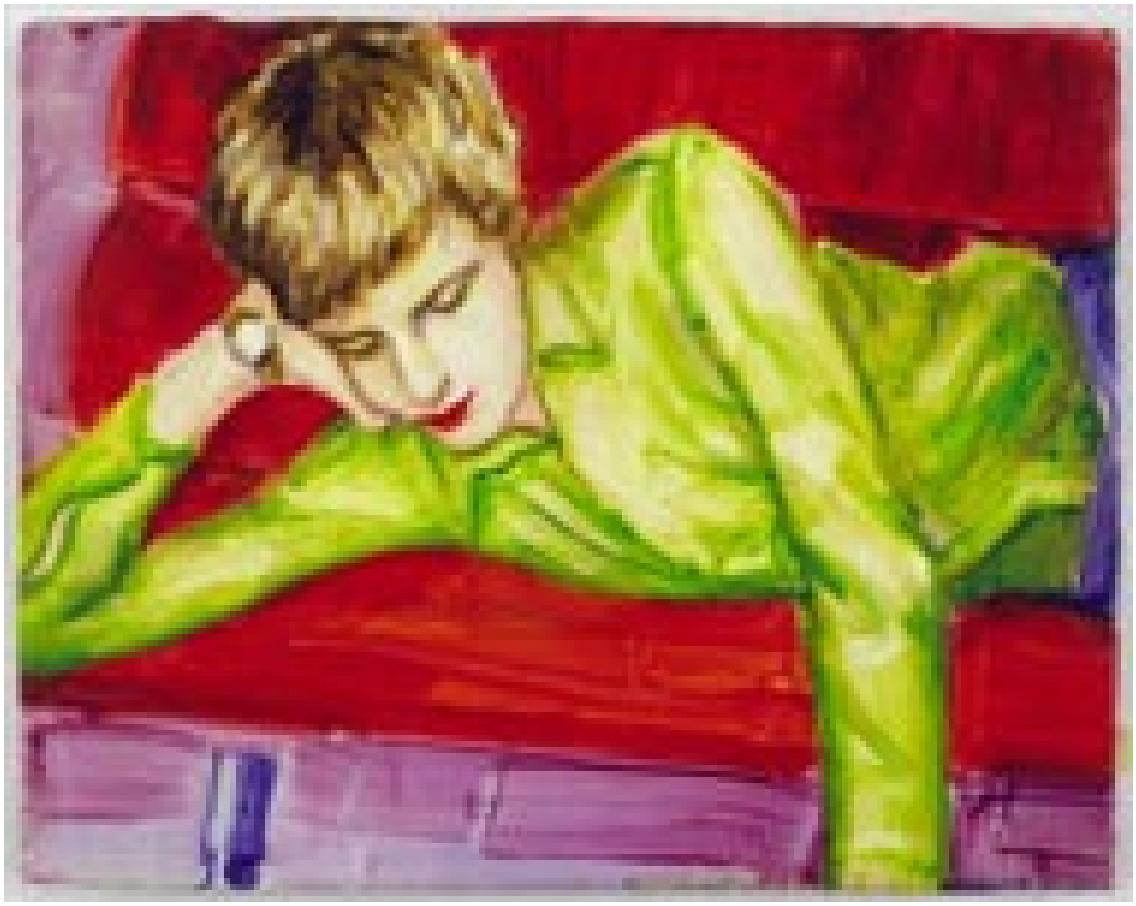
The original story and user comments can be viewed online at http://insidehighered.com/news/2008/10/07/anthro.

ELIZABETH PEYTON

The Personal and the Painterly

By ROBERTA SMITH

Elizabeth Peyton and her bohemian flock of friends, artists, rock stars and other renowned personages living and dead have alighted at the New Museum.



More than 100 strong, they populate the midcareer survey, “Live Forever: Elizabeth Peyton,” with small or tiny images that sit almost skittishly on the walls. Most are portraits and occasionally self-portraits painted from photographs or from life; a few are interiors or still lifes; one is a stunning Greenwich Village street scene.

Few are much larger than your face. The best collapse the distances between realist painting, modernist abstraction, personal snapshot and magazine, and are accessible, devotional and visually alive. Their gem-rich colors are applied with brazen abandon, like miniature action paintings.

This elegantly micromanaged presentation doesn’t have the best timing. It comes after the first peak of Ms. Peyton’s career, in the late 1990s, when her influence was at its height, but before a second phase has completely gelled. The show is uneven in some places and overlong in others. At its conclusion Ms. Peyton is shown heading in several promising new directions, although unsteadily. This will help perpetuate the underestimation that has often surrounded her work.

Ms. Petyon emerged in the early 1990s; with painters like John Currin and Lisa Yuskavage, she helped open the floodgates to the painterly, outsiderish, illustrational, art-smart figurative styles that by now has become a crowded genre. Her portraits have been correctly seen as indebted to David Hockney, Alex Katz and Andy Warhol. Lovingly rendered and relatively unprotected by irony or size, they have also frequently been dismissed with the put-down du jour. They're pretty. They're slight. They're celebrity besotted. They're paintings. They sell. All this is true to some degree, but hardly the whole or most interesting part of the story, which "Live Forever: Elizabeth Peyton" is at pains to tell as completely as possible.

Born in Connecticut in 1965, Ms. Peyton began making portraits as a child, and graduated from the School of Visual Arts in New York in 1987. Six years later she and Gavin Brown, a young dealer on the verge of opening a gallery, staged her first solo show, a two-week display of weirdly illustrational, seemingly slapdash charcoal-and-ink drawings based on photographs or prints of scenes from the lives of Ludwig II of Bavaria, Napoleon, Queen Elizabeth II and Marie Antoinette. Mounted in a small room in the Chelsea Hotel, the works could be seen by anyone who requested the room key at the front desk.

I remember the show. It felt stilted and old-fashioned and got on my nerves. But within a year Ms. Peyton had taken up more contemporary, if equally romantic, subjects and her preoccupations began to come into focus.

Her wan, incandescent paintings of youth-culture royalty — starting with Kurt Cobain — gave the magazine images on which they were based a second, handmade, more substantial life. You'll find six paintings of Cobain near the show's entrance, most impressively "Zoe's Kurt," which portrays that grunge legend as little more than a succession of alabaster whites, a pair of piercing eyes and a jacket implied with a thin, runny layer of deep red. He seems to be disappearing before our eyes.

Other paintings portray Liam Gallagher of the band Oasis and Jarvis Cocker of Pulp looking suitably thin, androgynous and wasted around the eyes (especially in "Blue Liam," with its raccoonlike mask of lavender). Opposite the Cobain tributes hang six drawings from the Chelsea Hotel show that don't look so slapdash anymore. The 1992 "Princess Elizabeth Walking to Westminster With Queen Mary" may simultaneously call forth childhood infatuations with Elizabeth (you know who you are), evoke suave cartoons from The New Yorker and convey the essential isolation of a life engulfed by fame.

By fits and starts, this exhibition reveals the complicated fusion of the personal, the painterly and the Conceptual that informs Ms. Peyton's work. Each image is a point on entwined strands of artistic or emotional growth, memorializing a relationship, acknowledging an inspiration or exposing an aspect of ambition. This implies an overriding narrative, which is unusual for an exhibition nearly devoid of text labels and unaccompanied by a meet-the-artist introductory video.

At the same time, Ms. Peyton is enthralled by the abstract power of paint as paint. Her broad brushstrokes and their sudden shifts function independently of her subjects. "Dallas, TX (January 1978)" shows a blond young man, John Lydon of the Sex Pistols, against a pale-orange background made luminous by the white gesso behind it and measured off by the repeating lines of the palette knife with which it was applied. His red-orange shirt is a lively tussle of brushstrokes. "Tokyo (Craig)," a nearly all-purple image that shows a figure in a darkened room, is but one example of Ms. Peyton's extension of the modernist monochrome into everyday life.

You could say that Ms. Peyton paints two tribes: the one formed by the people she cares about and lives among, and the one that fills her imagination. Both tribes are present here, and not necessarily just in the art. Laura Hoptman, the New Museum curator, is a longtime friend of Ms. Peyton's and is married to the painter Verne Dawson, who is represented by Mr. Brown. (Ms. Hoptman diagrams these connections in her readable, if effusive, catalog essay.) The show's excellent design is by Jonathan Caplan, an architect and friend of Ms. Peyton who is depicted with his partner, the artist and writer Angus Cook, in a painting completed last year. Though this may appear incestuous, it is also evidence that Ms. Peyton's particular

tribe remains tight. Were she more opportunistic and had joined the galleries of Larry Gagosian or David Zwirner, as some of Mr. Brown's artists have, the point would be moot.

In Mr. Caplan's design, two-tone gray walls create the illusion of soft light and intimate scale while funneling visitors along a single, fairly chronological route through the two floors of the exhibition without seeming to do so. Several works are placed so that they are first seen from a distance, as if to challenge the idea that smallness means an image can't carry. Drawings, paintings and a few prints are carefully grouped by subject, size and, it would appear, frame style (which reveals quite a bit about the different tastes and pretensions of collectors).

Since the late 1990s Ms. Peyton has increasingly portrayed friends and lovers, most of them artists, starting with the British provocateur Jake Chapman; and including the post-Conceptualist Rirkrit Tiravanija (Ms. Peyton's former husband); the painter Tony Just, with whom she lived for several years; and the Polish artist Piotr Uklanski, all of whom are, or once were, also represented by Mr. Brown. A 1996 portrait of Mr. Uklanski, wearing a chartreuse shirt and lying on a red couch, is one of the show's best paintings. Ms. Peyton's work is fueled by dueling saturated colors, as evidenced by the bright primaries in a rare outdoor scene, "Ben Drawing," and in the dominant reds keyed by browns and purples in "Jarvis and Liam Smoking."

As Ms. Peyton moves into more personal territory, painting more from life than from photographs, her work deepens. Faces that once tended toward an elfin, Kabuki sameness become individualized. More is at stake. Among the famous and admired, the rock stars are replaced by Delacroix, Susan Sontag and Georgia O'Keeffe.

Ms. Peyton's prominence is either a fluke or a further sign of the ascendancy of the feminine. Her art seems to belong to a strand of painting that has historically been dismissed or marginalized, and for which respect tends to come late, if at all. You could call it girly art. It includes the small still lifes of late Manet and the long careers of Giorgio Morandi and William Nicholson; the work of Marie Laurencin and Florine Stettheimer, who, like Ms. Peyton, chronicled their artistic circles; and the suggestive abstractions of O'Keeffe. The painting of O'Keeffe that concludes the show, based on a famous photograph by Alfred Stieglitz, is one of the weaker and larger works here. But that doesn't stop this exhibition, which wears it heart on its sleeve and sheaths its ambition in a velvet glove, from striking a blow for the girl in all of us.

"Live Forever: Elizabeth Peyton" runs through Jan. 11 at the New Museum, 235 Bowery, at Prince Street, Lower East Side, (212) 219-1222, newmuseum.org.

http://www.nytimes.com/2008/10/10/arts/design/10peyt.html?_r=1&th&emc=th&oref=slogin

'TRACES OF THE CALLIGRAPHER'

Copying the Koran, One Book at a Time

By HOLLAND COTTER

"Say it!" the angel Gabriel commanded Muhammad, who had been chosen to channel the message of Allah to mankind. "Write it," the angel might have said, because the words the prophet recited became a book, the Koran. And in the hands of artists over the centuries that book became a devotional object of surpassing beauty.

The art of the book and the art of writing are the subjects of paired exhibitions at Asia Society, "Traces of the Calligrapher: Islamic Calligraphy in Practice, Circa 1600-1900" and "Writing the Word of God: Calligraphy and the Qur'an." Perfect in size and proportion, carefully thought out and gorgeous, they are worthy of the book they honor.

Gorgeous is important. Precious jewels should be superbly cut and set. Many would say that the word of God is the most precious jewel of all. "Traces of the Calligrapher" is about how that word was packaged for earthly consumption. Basically, the show is a manual of fine handwriting and luxury bookmaking, illustrated by superb examples of tools of the trade and finished products.

No tool was more essential than the ink pen. From the time the first Korans were written in the seventh century, a traditional kind of pen was preferred, one made of a plain, dried, hollow reed, cut at the end to form a nib. Yet when it came to the holy book, nothing was ever really plain. Every aspect of its production took on symbolic weight.

The pen was an emblem for the creation of the cosmos, when primal matter issued forth from God like ink on a page. Its use had ethical implications. The skill with which a calligrapher trimmed the nib — ideally with a single, deft knife stroke — was assumed to say everything about his force of character.

Calligraphers were not regarded as ordinary artisans. They were members of a subculture with its own set of aesthetic codes and foundation myths and often with strong connections to Sufism, a mystical branch of Islam still too little understood in the West.

Exalted as it was, the pen came with sumptuous accoutrements. Knives used to trim it were fitted with ivory, agate or coral handles. Small flat objects, called maktas, originally bits of stone on which the pen rested when cut, were transformed into miniature sculptures of walrus tusk and gold.

Parchment was used for early Korans. Then paper became common and inspired yet another line of ornate and ingenious instruments, evident in the show.

Scissors from 18th-century Iran fold into a sleek, compact dart shape, rounded at the top and pierced with pinpoint fine openwork patterns. The finger holes of a large pair of scissors made in Ottoman Turkey form calligraphic characters that spell out one of the names of God. With every slice, the idea is, you say a prayer.

Over time, an entire industry of calligraphic accessories flourished, from pen-cases and ink wells inlaid with tortoise shell, ebony and mother-of-pearl to an Ikea's worth of specialized furniture, including calligrapher's tables as ornate as altars.

Most sensuous of all were book covers of tooled and gilded leather, or painted and lacquered pasteboard. Many Koran covers had abstract decorations, but on one Iranian example roses and tulips palpitate against a hot-red ground as if drawing vitality from the writing they enclosed and protected.

Writing — the written word — was the essential thing. If "Traces of the Calligrapher," organized by Mary McWilliams and David J. Roxburgh of Harvard University, is primarily an ensemble of the instruments that produced it, the show also evokes calligraphy as a physical act.

A film of the American-born master calligrapher Mohamed Zakariya at work is a mesmerizing part of the show. So are the wall texts that describe stages of calligraphic training. Hands-on study entails the preparation of materials and the mastery of pen techniques.

But it begins with a prolonged contemplation of existing calligraphy, a total immersion in the written word, which means keeping it in front of your eye, living with it, absorbing its particular pulses and energies before attempting to send your own version out into the world.

The second and smaller of the two shows, "Writing the Word of God: Calligraphy and the Qur'an," affords something like this experience. It is a deep-end dive into writing and its history.

Two parchment sheets, their edges nibbled away by time, date to the seventh century, when Islam was new. The words that crowd every inch of surface might even have been copied during the prophet's lifetime. At that early date, though, the word of Allah was customarily presented as Muhammad had presented it: orally. The manuscript at Asia Society was probably a kind of prompt-book for recitations.

But very quickly, copies of the Koran became primary objects, esteemed for their beauty as well as their content. Stretched-out Arabic letters on a single surviving page from an eighth century Koran have the stop-start rhythms of a music score. And on a page from a different copy the same script appears in gold on a rich midnight-blue ground.

Expressive new script styles developed: Eastern Kufic with characters tall, thin and slightly flexed like blades of grass in a field; Maghribi from North Africa, with its flourishes of downward lines, like roots reaching into desert subsoil.

Ornament entered the picture: red and green accent marks; verse markers in the form of fat gold knots; and in a 15th- or 16th-century page, a teardrop-shaped medallion, ripe and showy, floating in the margin. And the later books bring us back around to secular examples of calligraphy in the first show.

In an early 17th-century composition, the strokes forming the letters of a poem about a celestial garden are filled with tiny birds and flowers. An imperial degree ordering that generous wages be paid to an artist is topped by what looks like a Christmas tree.

And a third sheet refers to just such an artist in the making. It is a calligraphy student's graduation certificate, with writing in different sizes and scripts, by the student himself. His work looks more than confident; his teachers have signed off on it; clearly, he is ready to start a career.

Just for luck, though, he adds a prayer: "O Lord, make things easy and do not make them difficult. Make everything come out well."

"Traces of the Calligrapher: Islamic Calligraphy in Practice, Circa 1600-1900" and "Writing the Word of God: Calligraphy and the Qur'an" continue through Feb. 8 at Asia Society, 725 Park Avenue, at 70th Street; (212) 288-6400.

http://www.nytimes.com/2008/10/10/arts/design/10trac.html?ref=arts

African Art, Modern and Traditional: Seductive Patterns From a Rich Palette

By KAREN ROSENBERG

To the casual Western eye "African art" equals "African sculpture" — masks, headdresses and ritual figures. As two new exhibitions make clear, this picture is laughably outdated.

Many contemporary African artists would point to textile, rather than sculpture, as the tradition with the strongest impact on their work. The Nigerian-born, London-based artist Yinka Shonibare, for one, has extrapolated an entire career from the fascinating colonial history of the fabrics known as Dutch wax prints.

"The Essential Art of African Textiles: Design Without End," at the Metropolitan Museum of Art, presents 19th-century fabrics alongside a few relevant contemporary artworks. Flipping the scales, "The Poetics of Cloth: African Textiles/Recent Art," at New York University's Grey Art Gallery, emphasizes the place of traditional textiles in works by contemporary African artists.

The exhibitions were conceived and organized independently, and there is considerable overlap on the contemporary end. Both, however, are worth a visit.

The older textiles at the Met are rare, exceptional pieces, many on loan from the British Museum. They contain "the DNA," in the curator Alisa LaGamma's words, of contemporary works by El Anatsui and others. But the 20th-century textiles and contemporary artworks at the Grey, organized by the gallery's director, Lynn Gumpert, offer a more generous swath (so to speak) of Africa's current visual culture.

The Met's 2005 exhibition "Matisse: The Fabric of Dreams" hinted that textiles had been undervalued in the Western canon, offering ample proof that North African cloths were as important to Matisse as Gabon figures and Grebo masks were to Picasso. The museum's current show may not have the same blockbuster appeal, but it goes deeper into the techniques and traditions that make the fabrics so striking and seductive.

The patterns of African textiles fall into three categories: woven, dyed, and printed or painted. In many woven fabrics, like kente cloth, narrow hand-loomed bands are joined together. Curiously, the designs of many dyed fabrics echo the structure imposed by the loom, conveying a sense that the strip, or band, is to African art as the grid is to Western postwar painting.

One of the Met show's most spectacular pairings matches Mr. Anatsui's "Between Earth and Heaven," a recent acquisition, with a kente prestige cloth from Ghana (in the collection of the British Museum). Using folded and linked aluminum caps from liquor bottles, Mr. Anatsui echoes the rhythmic tension between warp- and weft-face stripes exemplified in the kente. The works also share a palette of red, indigo and gold, although gold dominates in Mr. Anatsui's shimmering metal "tapestry."

As the son and brother of Ewe weavers in Ghana, Mr. Anatsui has clearly internalized some of the principles of kente cloth design. This easy, familial relationship to fabric is typical of the contemporary artists in the exhibition. Another Ghanaian, Atta Kwami, is the son of the noted textile designer Grace Salome Kwami. In a statement that accompanies his small paintings and prints, Mr. Kwami mentions his mother's work in the same breath as the paintings of Sean Scully and Piet Mondrian — with none of the art-craft, insider-

outsider hang-ups Westerners so often display.

An alternative to weaving can be seen in several adinkra and adire wrappers (Yoruba textiles made by stamping fabric with dark pigment or painting on it with a starchy paste that resists dye). These feature quiltlike blocks of pattern instead of bands and are often dyed a deep indigo blue. The contemporary artist Rachid Koraichi, who appears in both exhibitions, makes reference to the complex history and geography of indigo in large vertical banners filled with text from an eighth-century Sufi mystic. They are beautiful, if arcane.

While some of the larger textiles at the Met were commissioned as architectural decoration, others were made to be worn. Most impressive are two voluminous men's robes, from Nigeria and Liberia, with Islamic-style embroidery over striped weavings.

Women, particularly in Nigeria, were traditionally outfitted in many layers of fabric. As one 19th-century observer, quoted in the catalog, described the wives of Bonny chiefs, "They sported sometimes five, six, or more pieces of different kinds of cloth about them, especially when going to any of their festivals, so that the body looks like a roll or truss of yarn at both ends."

One of the show's discoveries, Grace Ndiritu, uses printed fabrics in videos. In "The Nightingale" (2003), at the Met, she coyly winds and unwinds a headscarf. In a more evocative four-screen video installation at the Grey, she tweaks the seductive role of textiles in Matisse's paintings: allowing her bare limbs to peek out from behind curtains or posing as a mummified Olympia.

At both the Grey gallery and the Met, studio portraits by the Malian photographers Seydou Keïta and Malick Sidibé make abundant use of textiles as props and backdrops. Their heir apparent, the young South African Lolo Veleko, takes color photographs of Johannesburg teenagers modeling brightly hued sportswear on the street.

Any show of contemporary African textiles would be incomplete without some reference to commercial wax-print fabrics (the ubiquitous brightly patterned cloth made in the Netherlands and, more recently, East Asia for an African market). The Grey's selection illustrates the breadth of wax-print designs: some reproduce images of political and religious leaders, while others feature bold abstract motifs.

Mr. Shonibare, the best known of the contemporary artists in these shows, makes exhaustive use of wax prints — sometimes as autobiography, sometimes as postcolonial satire. At the Met his benignly

decorative installation “100 Years” consists of a grid of rectangles of stretched wax-print fabric, each one selectively modified with a paintbrush. The works at Grey are toothier: a wax-print upholstered dollhouse of the artist’s home in East London, a child-size mannequin in a wax-print dress cut to a Victorian pattern.

Seeing Mr. Shonibare’s art in an Afrocentric context, one comes to realize how much it relies on the history, and vernacular artistry, of wax-print cloth — and on Western viewers’ relative ignorance of both. The work of Mr. Anatsui, on the other hand, only becomes more profound as its underlying conventions are exposed.

“The Essential Art of African Textiles: Design Without End” continues through March 22 at the Metropolitan Museum of Art; (212) 535-7710, metmuseum.org. “The Poetics of Cloth: African Textiles/Recent Art” continues through Dec. 6 at the Grey Art Gallery, 100 Washington Square East, Greenwich Village; (212) 998-6780, nyu.edu/greyart.

http://www.nytimes.com/2008/10/10/arts/design/10text.html?ref=design

Nature loss 'dwarfs bank crisis'

By Richard Black
Environment correspondent, BBC News website, Barcelona

The global economy is losing more money from the disappearance of forests than through the current banking crisis, according to an EU-commissioned study.

It puts the annual cost of forest loss at between $2 trillion and $5 trillion.

The figure comes from adding the value of the various services that forests perform, such as providing clean water and absorbing carbon dioxide.

The study, headed by a Deutsche Bank economist, parallels the Stern Review into the economics of climate change.

It has been discussed during many sessions here at the World Conservation Congress.

Some conservationists see it as a new way of persuading policymakers to fund nature protection rather than allowing the decline in ecosystems and species, highlighted in the release on Monday of the Red List of Threatened Species, to continue.

Capital losses

Speaking to BBC News on the fringes of the congress, study leader Pavan Sukhdev emphasised that the cost of natural decline dwarfs losses on the financial markets.

"It's not only greater but it's also continuous, it's been happening every year, year after year," he told BBC News.

> **Teeb will... show the risks we run by not valuing [nature] adequately."**
> Andrew Mitchell
> Global Canopy Programme

"So whereas Wall Street by various calculations has to date lost, within the financial sector, $1-$1.5 trillion, the reality is that at today's rate we are losing natural capital at least between $2-$5 trillion every year."

The review that Mr Sukhdev leads, The Economics of Ecosystems and Biodiversity (Teeb), was initiated by Germany under its recent EU presidency, with the European Commission providing funding.

The first phase concluded in May when the team released its finding that forest decline could be costing about 7% of global GDP. The second phase will expand the scope to other natural systems.

Stern message

Key to understanding his conclusions is that as forests decline, nature stops providing services which it used to provide essentially for free.

So the human economy either has to provide them instead, perhaps through building reservoirs, building facilities to sequester carbon dioxide, or farming foods that were once naturally available.

Or we have to do without them; either way, there is a financial cost.

The Teeb calculations show that the cost falls disproportionately on the poor, because a greater part of their livelihood depends directly on the forest, especially in tropical regions.

The greatest cost to western nations would initially come through losing a natural absorber of the most important greenhouse gas.

Just as the Stern Review brought the economics of climate change into the political arena and helped politicians see the consequences of their policy choices, many in the conservation community believe the Teeb review will lay open the economic consequences of halting or not halting the slide in biodiversity.

"The numbers in the Stern Review enabled politicians to wake up to reality," said Andrew Mitchell, director of the Global Canopy Programme, an organisation concerned with directing financial resources into forest preservation.

"Teeb will do the same for the value of nature, and show the risks we run by not valuing it adequately."

A number of nations, businesses and global organisations are beginning to direct funds into forest conservation, and there are signs of a trade in natural ecosystems developing, analogous to the carbon trade, although it is clearly very early days.

Some have ethical concerns over the valuing of nature purely in terms of the services it provides humanity; but the counter-argument is that decades of trying to halt biodiversity decline by arguing for the intrinsic worth of nature have not worked, so something different must be tried.

Whether Mr Sukhdev's arguments will find political traction in an era of financial constraint is an open question, even though many of the governments that would presumably be called on to fund forest protection are the ones directly or indirectly paying for the review.

But, he said, governments and businesses are getting the point.

"Times have changed. Almost three years ago, even two years ago, their eyes would glaze over.

"Today, when I say this, they listen. In fact I get questions asked - so how do you calculate this, how can we monetize it, what can we do about it, why don't you speak with so and so politician or such and such business."

The aim is to complete the Teeb review by the middle of 2010, the date by which governments are committed under the Convention of Biological Diversity to have begun slowing the rate of biodiversity loss.

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Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7662565.stm

Published: 2008/10/10 00:23:07 GMT

Gut 'tasting' could beat poisons

The human intestine detects potential poisons passing into it - and may take action to reduce the harm they cause.

US researchers have found a link between receptors in the gut which detect bitter foods and higher levels of a digestion-slowing hormone.

The same hormone also reduces appetite - perhaps to stop us eating any more.

The scientists, writing in the Journal of Clinical Investigation, say it means that sweeter-tasting medicines could be more effective.

The whole scientific area of 'nutrient sensing' is really getting quite big
Professor Soraya Shirazi-Beechey
University of Liverpool

Humans, and other animals, have evolved to dislike bitter tastes, probably because many natural plant poisons carry these flavours.

The researchers from the University of California at Irvine, led by Dr Timothy Osborne, are suggesting that when we do manage to eat something bitter, another defence mechanism may kick in.

It has been established for some time that the same taste receptors which are found on the tongue, and help us differentiate between sweet and bitter flavours, are found in the gut.

While the tongue-based receptors send a message to the brain, those in the gut are thought to trigger other chemical signals involved in digestion, although these have yet to be fully understood.

The US team found that when the bitter taste receptors in the gut are activated, this leads to the production of a hormone called cholecystokinin.

This is already known to not only slow up "motility", the rate at which food passes through the digestive system from the stomach, but also suppress appetite.

Slow the flow

The researchers believe that keeping potentially poisonous food in the stomach for longer might mean a bigger chance it would be expelled before its ingredients are absorbed.

Additionally, suppressing appetite might mean that less of the poison is eaten.

They are now eyeing the practical uses of their findings - and suggest that some medication might be absorbed more quickly if it was not so bitter tasting.

Professor Soraya Shirazi-Beechey, from the University of Liverpool, led research which proved that the action of "sweet" taste receptors in the gut could actually alter the way that glucose was absorbed into the body.

She said it was "quite reasonable" that bitter receptors might also have an effect on digestion.

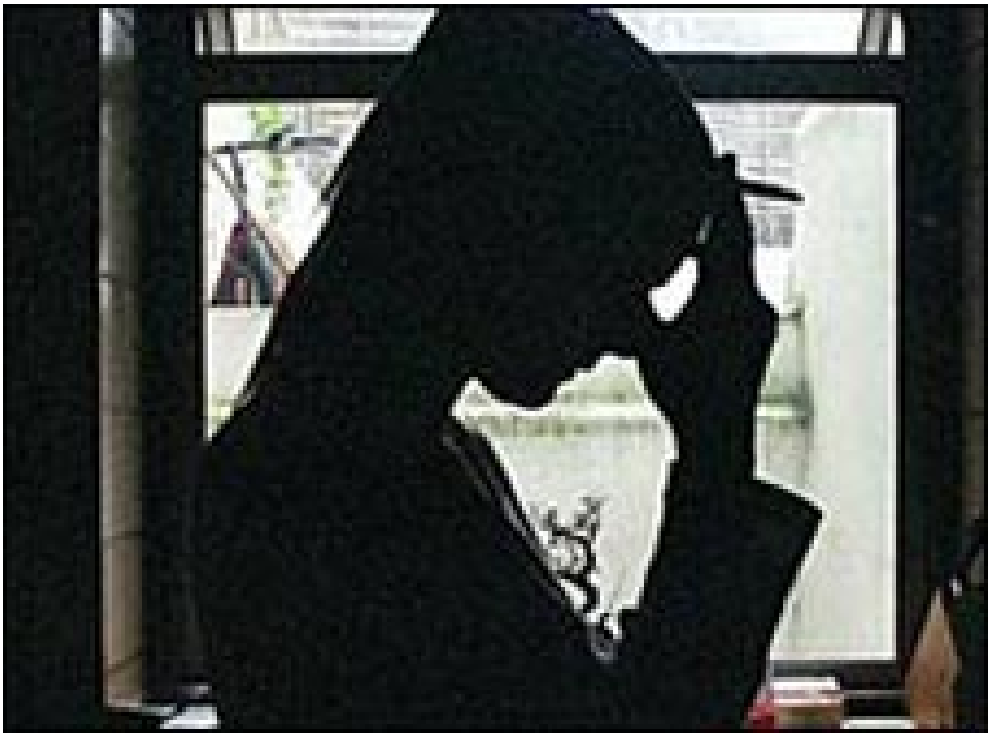
"The whole scientific area of 'nutrient sensing' is really getting quite big. This is the first time that the link between bitter taste receptors and this hormone has been made."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7661964.stm

Published: 2008/10/10 00:01:37 GMT

Repossession 'is mental threat'

The fallout from the economic downturn could be a significant threat to mental health, according to a survey.



House repossession was rated as the event most likely to cause mental health problems, ahead of redundancy, or finding out about infertility. Charity Rethink called for action to prevent a "mental health disaster".

The survey was published as a UN report showed England spends more of its health budget on mental health care than any other European country.

There's an urgent need to do something to prevent a mental health disaster
Paul Corry
Rethink

Rethink's director of public affairs Paul Corry said: "I wouldn't be surprised if we see a rise in the number of people going to their doctor because of mental health problems in the coming months. "Even for people lucky enough to hang on to their home, the stress and worry of arrears building up can be enough to harm your mental health - this survey shows it worries millions of us."

He said that people who already had mental health problems were likely to be treated less well by their lenders, and did not have a "safety net" to protect them.

He said: "There's an urgent need to do something to prevent a mental health disaster."

Another mental health charity agrees with that assessment - Mind, which is launching its own £16m initiative to link exercise to better mental health, and to reduce stigma, released its own report earlier this year warning about the dangers of debt.

High ranking

The survey of 2,000 people was released to mark World Mental Health day. The World Health Organisation report contained a far cheerier message about the services in place to tackle the UK's mental health problems.

The pernicious concept of the asylum is over
Alan Johnson MP
Health Secretary

It compared spending on mental health in European countries, and found England and Wales spent 13.8% of its health budget on mental health - the highest level in Europe. Scotland spent 9.8%, according to the report, and in the UK as a whole, the numbers of psychiatrists per 100,000 people was found to be above the European average.

More detained

Health Secretary Alan Johnson said he was "delighted" by the report, citing a huge rise in investment as the reason for the UK's present position, and said that the focus was now on community-based teams to treat patients. "The pernicious concept of the asylum is over, but our commitment to improving services further is undiminished," he said.

However, a report in this week British Medical Journal suggested that, over the past 10 years, the use of inpatient mental hospitals has increased, rather than lessened. Dr Patrick Keown, a Newcastle-based psychiatrist, calculated that the number of patients "sectioned" under the Mental Health Act increased by a fifth between 1996 and 2006. At the same time, the number of psychiatric beds in England fell. A spokesman for the charity Sane said: "Improvements in community care are supposed to reduce the need for compulsory admission when someone reaches crisis point - yet precisely the opposite appears to have happened.

"We urgently need to find out why this is the case."

Have you been affected by the issues covered in this story? What effect is the current upheaval having on you physically and psychologically? Have you developed coping strategies? Would you be willing to be interviewed by a BBC journalist? Send us your comments using the form below.

Name
Your E-mail address
Town & Country
Phone number (optional):
Comments
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7662119.stm

Published: 2008/10/10 00:20:58 GMT

With Her Company All Grown Up, a Director Says Goodbye

By JULIE BLOOM

Tina Ramirez, the artistic director of Ballet Hispanico, is stepping down from her position after almost 40 years, but she doesn't want to call it retirement: "I've been in the theater my whole life, how can you retire?" Ms. Ramirez was dressed in an impeccably tailored black pantsuit and gold lamé sneakers, her ash-colored hair neatly pinned back with sequined clips. She bustled about her company's Upper West Side office last week as she prepared for the Ballet Hispanico's season at the Joyce Theater, which began Tuesday night.

The engagement is Ms. Ramirez's last as the leader of a company she helped to grow into one of the most prominent Hispanic-American dance organizations in the country. The run at the Joyce, which ends Oct. 19 and coincides with Hispanic Heritage Month, features two world premieres, two company revivals, live music, highlights from the repertory and Ms. Ramirez in performance.

Ms. Ramirez literally bounced about her office while she talked, and her agility — a result of dance classes and Bikram yoga — defied her age, which she would not confirm but references place at about 80. Ms. Ramirez, who will remain artistic director until June 2009, or until a successor is found, said now was the right time to move on.

"It's like a family," she said. "I think everybody has grown up, and I have people who can do it, perhaps better. There are other things that I want to do. You see my interest has always been education and children, so I think there is so much more to do, especially in today's world."

Ms. Ramirez was born in Venezuela, the daughter of a Mexican bullfighter and a Puerto Rican homemaker. Her contribution as an educator is in many ways as important as her legacy as an artist and director. When her Spanish-dance teacher, Lola Bravo, retired in 1963, Ms. Ramirez ended her own career as a dancer and took over the studio, which became the Ballet Hispanico School of Dance. She decided to start a company in 1970 when she realized there were few companies for young Hispanic dancers.

"I looked at all the companies, and I could tell you the names," she said, citing Hilda Morales of American Ballet Theater, among a few others. "I had to have a place for them so they could dance."

She added: “In the early days I just wanted Hispanics to have a voice in dance and for people to get to know us as people. Because, you know, you went to see a ballet, and there was somebody crouched with a sombrero, and that’s not who we are.”

Reviewing the company for The New York Times in 2007 Jennifer Dunning wrote that Ms. Ramirez’s programming tended to be adventurous, adding: “Ballet Hispanico is also filled with dancers of wide experience. Yet the company is unmistakably itself.”

Ms. Ramirez’s troupe “has been a savior for a lot of Latino dancers,” said Jose Costas, a former Ballet Hispanico principal dancer who performed with the company from 1986 to 1995 and now serves as director of the school. He added: “For me it was a feeling of home. I tried modern companies and working here and there, but once I put my foot down in Ballet Hispanico, it was like, O.K., this is exactly where I belong.”

When she started, Ms. Ramirez ran her studio like a regular school, with classes beginning bright and early at 8:30, and the pupils studying subjects like singing, drama, Spanish and ballet. The school now has 625 students and still offers Spanish classes as well as a range of techniques, from Afro-Cuban and Latin Jazz to point and flamenco and the style created by the modern choreographer and teacher Lester Horton. What hasn’t changed is an education philosophy that extends beyond the studio. In the beginning that meant teaching students’ mothers how to pay their telephone bills and sew costumes, and taking the young dancers to perform at hospitals and parks around the city.

Today the school has numerous outreach initiatives, including the Primero Pasos (First Steps) program, which has been bringing Hispanic culture to public school classrooms around the city for over 20 years. During the 2007-8 season the program served 1,582 students. The school also offers after-school programs and scholarships.

“Tina is one of our dance lions,” Joan Finkelstein, the director of dance programs for the New York City Education Department’s Office of Arts and Special Projects, said by phone, describing Ms. Ramirez as one of the first dance artistic directors to view education as part of her core mission. “She has a personal force of conviction and vitality that is unique.”

Ms. Ramirez works with adults too, and the 13 members of her company were all busy rehearsing last week in one of the company’s three large studios. They ran through Vicente Nebrada’s “Group Portrait of a Lady,” one of the revivals at the Joyce. Ms. Ramirez may appear demure at first, but as she chastised a group of dancers who were chatting while another worked on a solo, it was easy to see the tough instructor behind the gentle exterior.

“Terrible!” she screamed. “She’s working her heart out, and you’re talking.” The dancers quieted down while their colleague ran through the solo in Mr. Nebrada’s lyrical, balletic piece, her white skirt fanning out as she extended a leg through the air like a wave.

In her office Ms. Ramirez said she recognized how far she has come. She remembered with fondness those early performances of her young company, like one at the Delacorte Theater in Central Park when her 12- and 13-year-old dancers were performing a semi-classical Spanish piece.

“I had them crouching down with little crowns on their head,” she said, quietly brushing tears from her face. She stood up proudly to demonstrate how they entered. “They were so gorgeous. It was a five-minute number, and there was a standing ovation.”

http://www.nytimes.com/2008/10/09/arts/dance/09hisp.html?ref=arts

Where Fish Sticks Swim Free and Chicken Nuggets Self-Dip

By MELENA RYZIK

The rumors are true: Banksy is — or was, or has been — in town, and he's doing more than just painting, or hiding.

For the last few weeks aficionados of street art have been atwitter with sightings of work by this pseudonymous, secretive British artist. Several of his murals, all featuring giant rats, have popped up on walls and billboards in Lower Manhattan, and on Wednesday a Banksy piece was unveiled at 89 Seventh Avenue South (near Bleecker Street) in Greenwich Village.

This one is not a mural but an installation: a mock pet supply shop, filled with animatronic creatures like a rhesus monkey and would-be creatures like fish sticks swimming in a tank. The Village Pet Store and Charcoal Grill, as the green awning reads, is Banksy's first official exhibition in New York, his representatives say, and it will be open to the public daily through Oct. 31.

"Open for Pet Supplies/Rare Breeds/Mechanically retrieved meat" says a sign in front of the shop. Bales of hay dot the sidewalk, along with a kiddie dolphin ride, wrapped in a fishing net like the day's catch. But it is the leopard in one of the storefront windows that stops passers-by first. "Is that — real?" a woman asked on Wednesday, peering at a large furry object perched on a tree branch, its tail swinging.

It's not: it is an ingeniously arranged fake fur coat. The robot monkey is more lifelike: it sits, breathing, in a cage inside the store, wearing headphones, holding a remote and watching a television clip of some fellow monkeys in an amorous moment.

A rabbit wearing a pearl necklace files her nails in a window; the coop in the next one has chicken nuggets with legs, busily dipping themselves in sauce.

Inside the store, hot dogs and sausages squirm like snakes in sand-filled terrariums, and the floating fish sticks are so lifelike that a visitor tapped on the tank, as if to get their attention.

“I wanted to make art that questioned our relationship with animals and the ethics and sustainability of factory farming,” Banksy said in a statement distributed by a publicist, “but it ended up as chicken nuggets singing.”

Sadly, there are actually no vocalizing snacks. Banksy’s statements, like much of his pranksterish oeuvre, should be taken with a grain of salt. But there’s no denying the show’s attention to comically pointed detail.

Juxtaposed with the animatronic displays are real pet supplies, packages of luncheon meat and odd foodstuffs, like cans of quail eggs and Hormel pork tidbits. None are for sale; entrance is free, lunch not included.

http://www.nytimes.com/2008/10/09/arts/design/09publ.html?ref=arts

New fungi species unearthed in UK

Several species of fungi new to the UK have been unearthed by mushroom experts at the National Trust's Clumber Park.

Conservationists say the wet summer means some species of fungi have thrived this year. And the recent warmer winters means there could be even more exotic mushrooms to be found in this country.

Experts say it is likely these new discoveries have always been at the Nottinghamshire park, but that they flourished in the extremely wet August. Mushroom spores can also travel great distances on the air and in water.

One of the new species to be identified has the Latin name of Tuber mesentericum, which is also known as the Bagnoli truffle. This is prized in Italy for its intense flavour.

However, another new discovery is from a family of fungi commonly known as pinkgills, some of which can be very poisonous. Dr Peter Roberts, from the Royal Botanic Gardens at Kew, says it has already been an amazing season for rare and interesting fungi, with at least 10 species new to the UK reported in the last two weeks alone.

But the same period has seen experts warning the public not to eat mushrooms unless they can be certain they are of the non-toxic variety. The author of the Horse Whisperer book, Nicholas Evans, was taken to hospital last month after picking and eating poisonous mushrooms while on holiday in Scotland.

The writer and his wife Charlotte were in Moray when their party cooked and ate mushrooms picked in woodland.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/7660405.stm

Published: 2008/10/09 01:24:38 GMT

Testicles 'are stem cell source'

The cells in a man's testicles may be able to do a lot more than just make sperm - they could provide any cell type in his body.

German and UK research suggests that sperm cells can be coaxed into stem cells with similar properties to those found in the embryo.

The study, in Nature, raises hopes eventually of a supply of "repair tissue" for other parts of the body.

However, a UK expert said it was too early to draw firm conclusions.

An answer to how these testis-derived pluripotent cells can be used will have to be left dangling a little longer
Professor Robin Lovell-Badge
National Institute for Medical Research

Any ability to transform cells taken from an adult back into stem cells, and then onwards into a wide variety of tissue types, offers the chance of "personalised treatment" for patients.

Resulting brain, bone, or heart cells could be injected with no fear of rejection by the body's immune system.

It would also avoid the ethical controversies surrounding the use of cells taken from embryos.

The research project, which involved scientists from King's College London, used 22 different samples taken either from biopsies or from medical castrations.

From these, they extracted a type of cell called the "sperm precursor cell" - a type of adult stem cells with a fixed role - to become a sperm cell.

These were then manipulated chemically in the laboratory into a state more similar to cells found in the embryo, which can go on to produce all the cell types in the body.

Male benefits

However, it is as yet unclear whether the cells could one day be safely used in humans.

Professor Robin Lovell-Badge, a stem cell specialist from the Medical Research council National Institute for Medical Research, said: "The DNA in the stem cells in the testes lacks some important modifications that regulate the activity in certain genes, and this may affect the ability of the reprogrammed cells to make specific mature tissue types.

"The same cells are also the likely origin of testicular tumours, so will the reprogrammed cells be entirely normal?"

He added: "An answer to how these testis-derived pluripotent cells can be used will have to be left dangling a little longer."

He pointed out that as the donors would be all male, women could not hope to benefit from similar procedures.

Professor Chris Mason, from University College London, added: "Whilst much too early to predict the true impact of this particular paper, it is however, highly likely to add to the growing ground-swell of first-class research that will eventually lead to real benefits for patients, the NHS and to the UK economy."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7659120.stm

Published: 2008/10/08 23:41:42 GMT

'Vaccinate now' to beat bird flu

A vaccine being tested right now could help save lives in a future bird flu pandemic, UK scientists claim.

A jab against one strain of avian flu, given years earlier, may "prime" the immune system to fight a wide range of bird flu strains.

When the pandemic arrives, "pre-vaccinated" people could then be given a booster shot, and be protected far quicker, said researchers.

The research was published in the New England Journal of Medicine.

If a bird flu pandemic erupted tomorrow it isn't clear we would have six weeks to vaccinate people before it arrived in this country, even if the vaccine was stockpiled
Dr Iain Stephenson
Leicester University

The speed that pandemic flu - labelled the "gravest threat" to the UK by a recent government document - could sweep the world, is one of the great challenges facing scientists and governments.

Some suggestions say it might only be a matter of weeks before an emerging virus reached the UK.

By the time a vaccine exactly matching the pandemic strain is developed and administered, it may already have claimed many thousands of lives.

Unlike seasonal flu, to which most of us have been exposed at some point, most humans will have far less immunity to pandemic flu, and this means that multiple vaccinations over a period of at least a month will be needed, in addition to a delay of weeks while antibodies tailored to fight the strain are built up.

The Leicester researchers say that their solution could mean that a single vaccination of the pandemic strain vaccine would be needed, and it could be effective within a week.

The research centred on people given a vaccine against the H5N3 strain of bird flu between 1999 and 2001.

The vaccine contained another ingredient called MF59 designed to boost its effectiveness.

Years later, they were vaccinated against the H5N1 strain of avian flu, and their immune system response compared against a group of people who had not received the earlier vaccination.

After just seven days, 80% of the "primed" group had signs that their body was protected against H5N1, compared with 20% of the "unprimed" group.

The earlier vaccine had not only offered protection against that strain, but laid the foundations for protection against other avian flu strains, said the researchers.

No time to lose

Dr Iain Stephenson, one of them, said: "If a bird flu pandemic erupted tomorrow it isn't clear we would have six weeks to vaccinate people before it arrived in this country, even if the vaccine was stockpiled.

"We have been able to prove in this study that you can vaccinate people six, seven, or eight years ago and still get a very rapid response with a booster shot within a week."

Dr John Wood, from the National Institute for Biological Standards and Control, a government funded body which helps in the production and testing of vaccines for emerging flu strains, backed the study.

"The fact that they seem to have this protection after eight years is really interesting," he said.

"If governments are thinking about stockpiling vaccine, you could actually be stockpiling it in people's arms."

He said that while there was no certainty that any flu pandemic would be based on avian flu, the Leicester research should be followed up, with the possibility that people might eventually be primed against a "cocktail" of different flu types.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7659113.stm

Published: 2008/10/09 00:03:03 GMT

US and UK universities 'dominant'

Universities in the USA and the UK continue to dominate an annual table ranking the world's top higher education institutions.

Among the top 10 institutions in the Times Higher Education QS list, six are in the USA and four are in the UK.

Harvard and Yale are in first and second places, with Cambridge and Oxford in third and fourth.

The compilers of the list say technology-based universities are becoming more important.

Caltech, MIT, ETH Zurich and Hong Kong University of Science and Technology all improved their position in the table, which is based on views of academics, citations in academic publications, opinions of employers and staff to student ratios.

It is the fifth year that the list has been produced and the fifth year that Harvard University has led the field.

Yale was in joint second place with Oxford and Cambridge last year but this year has that spot alone.

Top universities
Harvard
Yale
Cambridge

Oxford
California Instit. of Technology
Imperial College London
University College London
University of Chicago
Massachusetts Instit. of Technology
Columbia University

Cambridge and Oxford slipped to third and fourth places respectively.

Imperial College London fell from fifth to sixth place, while University College London, the last in the UK to make the top 10, rose from ninth to seventh place.

Of the top 100 institutions 17 are from the UK, two fewer than in 2007, compared with 37 US universities.

The editor of Times Higher Education, Ann Mroz, said: "UK universities are very clearly among the world's best and have maintained good positions in the rankings this year.

"But the fact that Cambridge and Oxford have slipped down the top 10 and that US universities have cemented their dominance among the world's elite - at the UK's expense - raises key questions about the future funding of the sector.

"Harvard alone has an endowment that is about the same size as the total annual income for the whole of the UK university sector."

More than 6,300 academics and 2,300 employers took part in the surveys used to compile the list. Academics are not allowed to vote for their own institutions.

New entrants in the top 200 include: Technion - Israel Institute of Technology, Stony Brook University (USA), Indian Institute of Technology Delhi (IITD), VU University Amsterdam (Netherlands), University of Lausanne (Switzerland), Chulalongkorn University (Thailand), Universität Frankfurt am Main (Germany), Indian Institute of Technology Bombay (IITB), Lomonosov Moscow State University (Russia), Brandeis University (USA), Pohang University of Science and Technology (South Korea), Technische Universität Berlin (Germany), University of Bern (Switzerland), Dalhousie University (Canada), University of Buenos Aires (Argentina) and University of Athens (Greece).

Ben Sowter, from QS, says there is a "reasonably strong trend" of technology-based institutions moving up the world rankings.

Thirteen of those in the top 100 were strong on technology, he said.

He said such institutions scored particularly well in the survey of employers.

"People with strong numerical and problem-solving skills seem to be appreciated by employers."

Such institutions seemed to be becoming more important in many regions of the world, he said.

China

The director general of the Russell Group of leading UK universities, Dr Wendy Piatt, said it had reservations about the use and accuracy of "league tables" but the group was pleased that its member universities were continuing to perform well against major global competitors.

But she added: "We are very concerned about our ability to sustain this level of success in the face of fierce global competition.

"The table reflects the growing strength of our major competitors - particularly the US institutions - who benefit from much higher levels of investment than UK universities.

"As a result of huge investment in higher education and science in recent years, China already looks set to overtake the UK very soon in terms of total research publications, and its universities have been steadily climbing up international league tables," she said.

England's Higher Education Minister David Lammy said the table was further evidence that its higher education system was world class.

"But we are not complacent. Excellence today is no guarantee of excellence in 10 - 15 years' time.

"There are plenty of countries both developed and emerging that will want to challenge our position and that is why we are having a debate on the challenges we will need to overcome to have a world class system into the future."

So by 2011 it was planned that funding would have increased by 30% in real terms since 1997, to £11bn a year.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/7659616.stm

Published: 2008/10/09 01:04:28 GMT

Modern dance is moving to center stage, despite those who condemn it as a sin

A 1980s bass line is thumping. Young men, some shirtless, dressed in sweats or cargo pants, are lifting and swirling their bodies to the beat. These are not flimsy ballet dancers; they are tall, sinewy, muscled young dudes. They've got attitude.

In front stands a small man, an earring glinting in his ear. His salt-and-pepper hair betrays an age not otherwise evident as he spins on one foot, arms lifted, demonstrating the step he's looking for.

This scene is set in the Cairo Opera House, but opera it is not: This is the Egyptian Modern Dance Theater Company and, despite its penchant for controversy, it has become an incontrovertible fixture in the local art world.

These 11 men and their nine female colleagues — waiting in the wings to practice the sequence — make up the dance company, now in its fifteenth year. The dancers range in age from 17 to 30; their salt-and-pepper teacher is choreographer and director Walid Aouni, a legendary figure in the Arab world of dance.

While the battle for acceptance as a legitimate art form isn't over, Aouni says that Egypt is much more open to modern dance today than it was 18 years ago, when he first arrived from his homeland of Lebanon.

"Some people didn't like it at all," he says of the difficult early years with the fledgling dance company. "The attitude was 'go home, Walid Aouni!'" he recalls. "There was so much misunderstanding: 'Why do you have to walk on this side of art'?"

Egyptians did not understand the abstract nature of modern dance in the early 1990s, Aouni says. The genre uses symbolism and suggestion in its performances; everything is open for interpretation by the audience. It is the antithesis of ballet and its fairy-tale plots that were already dear and familiar to Egyptians. "[Ballet] is romantic: it has a beginning and an end, a battle between bad and good, and the bad guy dies in the end," he says.

When Aouni founded the Egyptian Modern Dance Theater Company in 1993, despite its status as a government institution fully funded by the Ministry of Culture, modern dance was something most Egyptians had never experienced. The Lebanese choreographer had landed in Egypt almost by chance, after coming to Cairo in 1990 with a Belgian dance company to present a show.

Then (and now) Minister of Culture Farouk Hosni, an avid supporter of the arts, saw the show and asked Aouni to consider setting up a modern dance company in Egypt. Aouni seemed a solid candidate: He had a list of successful shows, a reputation as a rising star in dance and, being Lebanese, a fluent command of Arabic.

He accepted the offer and started from scratch, opening auditions and launching his company.

Despite an initial backlash, there was a glimmer of hope for the dancers even then. It wasn't a complete rejection. "Some said, 'this is what we want,'" Aouni recalls.

That hope, coupled with Aouni's tenacity, kept the dancers going. Fighting low show attendance, booing audiences and public outrage, the company survived, putting on notable shows such as The Fall of Icarus, Elephants Hide to Die, and The Smell of Ice. The troupe won awards at home and abroad and slowly gained recognition for their art form.

Indeed, beyond just surviving, the company expanded, progressing to the next step in the nation's artistic dance evolution: the opening of the Modern Dance School in 2002. Another trial by fire, it left many burned and the public, at the outset, confused. "A lot of [people] thought it was a belly dance school," Aouni says.

Despite the skepticism, young people turned out for the auditions, if not in droves, in decent numbers, he says, and he soon had a full class ready to tackle the first three-year program.

Public and religious outcry was fierce, however, and the pressure was too much for many students. Many quit — only one month before one major performance, 11 of 20 students had jumped ship. "It was very bad," Aouni says pragmatically. The choreographer didn't let it stop him. He put the show on anyway. He says it was a success.

Government-sanctioned 'filth'?

Modern dance's struggle for acceptance here is tied to the idea that it is haram (forbidden) in Islam.

"Contact between men and women is something forbidden in Islam," Sheikh Mohamed Shaheen of El-Salam Mosque in Cairo says. "Nothing good or beneficial comes of it other than satisfying desires and pleasures in a filthy way that is not appropriate."

Unique in the Arab world, the modern dance school and company, both under the auspices of the Ministry of Culture's Cairo Opera House, are fully funded by the government. Though the other Arab dancing communities are envious — it's hard to make a living on the stage without government help — it's ironic, Aouni says, that the company and school are in Egypt.

"We are the example for the other Arab companies," he says, "and, at the same time, we have the country the most against the dance: Here it is very controversial."

It's not hard to see why the conservative set might balk. Two recent performances included, among other elements, male duets with homoerotic undertones, an angel/demon theme, and a dramatic and bloody staged throat-cutting.

Modern dance includes the word 'modern' for a reason — it blazes new territory.

Shaheen is adamant that the government funding of modern dance is unacceptable in Islam. "The supporter of good deeds is a doer of good deeds and the supporter of bad deeds is a doer of bad deeds," he says, "so the government shouldn't support bad deeds." The sheikh wants to see the government stop funding it and the company shut down.

The perceived controversy has led to verbal attacks on Aouni, his company and the Ministry of Culture. The opposition can be heavy, according to Tarek Sharara, a composer who wears many hats in the Ministry of Culture, including Opera House board member and member of the High Council for Culture.

"The dark side [of the opposition] is really dark, but it's not as dark as it used to be," he says, claiming that beyond those who genuinely oppose the dance, it has also been used as a political scapegoat for those wishing to make trouble for the Minister of Culture.

"[Hosni] was attacked several times because [people erroneously believe] he is spreading the art of belly dance," says Sharara. "People who want to attack the minister find this a very interesting subject and give him a bad time about it."

Despite this, Sharara says, the ministry has remained a steadfast supporter of modern dance, despite the backlash that has been there since the beginning. "The minister is broad minded. The minister knows what he's doing very, very well and [he] has a very clear vision of what he wants."

Sharara credits long-term leadership as an integral part of the school and the company's success, noting that both Hosni and Aouni have stayed in their positions since the company was founded 15 years ago.

Rational restraint

From sexually suggestive movements to dancers clad only in underwear, not to mention the young artists engaging in all kinds of bodily contact with each other, boundaries are always being pushed, and sometimes toppled over, on the modern dance stage.

He isn't officially censored, Aouni says, but acknowledges that he has to consider his audience at the same time: He's not going to deliberately create something to offend and infuriate.

Sharara, who worked for the Ministry of Culture's Censorship Department for 20 years, says that while the government vets plays, movies, screenplays and song lyrics and cuts what it deems unsavory content, it tends to leave modern dance alone.

"Usually they leave it to the one responsible and [Aouni] is the one responsible. He should be the one who censors his work," Sharara says. "He has his own ethics, he has his own beliefs, and he should act accordingly. He shouldn't be doing something deliberately obscene. Everybody knows his limits."

This makes it more intriguing, Aouni says. He has to think very carefully about presenting an idea. In Europe, where they have total creative freedom, the lack of restriction often leads to over-the-top results.

"In Europe, they start to be nude, nude, nude, and I don't like this," the choreographer says. "I find a way to do it better, to be more symbolic, more interesting."

Day-to-day dancers

Behind the public discourse, the perceived glamor of an artistic career and the mind-bending shows, are a group of about 25 people — the company and the school — who show up at the Opera House every day to stretch their limbs and throw their bodies into moves most of us can only imagine accomplishing. Their muscles never stop hurting. They face censure from people who believe their career is a sin. And still they dance, because they believe in it and because there is nothing else in the world that brings them such joy.

In the company's sunny practice studio, Ayman Kessam stands out — at 1.8 meters tall and some 80 kilograms, he looks more like a warrior than a dancer. With his shaved head, dark rolled up sweatpants and t-shirt, his is a commanding presence. Not only did Kessam dance the lead role of the villain in Sheherazade Monalisa, Aouni's opening performance at the 2008 dance festival, he also choreographed A Taste of My Fears for the festival, the first time he had entered a show of his own.

"I was so scared," Kessam says of creating his own show, an appropriate sentiment considering its title. Though he has choreographed a star-studded list of music videos, he had never before created a specific piece of modern dance.

Despite his words, it's hard to see any fear in Kessam. He has fought for 11 years to get where he is, and it shows in a defiance that lies behind his friendly exterior. His father — a military man and Olympic track team coach — forbade him to dance as a boy, so Kessam ran track instead. When he asked his father for permission to take up for patinage (artistic roller skating) he was told instead that he would study kung fu. Tragically, it was the death of his parents that gave him the opportunity to finally follow his heart. When he was 17, Kessam left his remaining family in Upper Egypt and set off to Cairo alone, joining Aouni's company in 1998.

Surviving on his own, molding himself from an orphaned boy into an accomplished professional, has made him strong. The public's beliefs about his style of dance no longer have the power to affect him. "I don't ask anybody about their opinion. I am tired," he says bluntly. "What difference is it going to make for me? I am going to continue."

Despite some religious leaders who insist dance is haram, Kessam has a hard time believing that dance is a sin. "I'm convinced I am doing something good, I'm not doing something bad for God to punish me. I make people happy."

The artistic field is growing and public perception is improving, but there are still times when it's tough to be a dancer. Kessam says that show time can be hard on the dancers' spirits.

"We practice with Mr. Walid [Aouni] for six months for a performance, killing ourselves, and in the end you see [just] a few people come [to the show]," he notes. "This is really bad."

Part of the problem is that modern dance is not even on Egypt's radar, he says. Too many people still don't know it exists.

Monadel Antar, another principal in the company, is working on getting that message out into the public eye.

Unlike Kessam, Antar came to the dance world with full approval. Growing up in a family brimming with artistic talent — an opera singer, an international aerobics instructor, and multiple poets among them — he started dancing at the age of eight, at the Institute for Art in Cairo.

"I wasn't that good," he recalls with a smile. "I wasn't focused on it, I was just a kid." It was years later that he realized how much he loved dancing. Originally he studied classical ballet, but found it didn't fit with his rebel spirit. It was at age 16, when he left Egypt on a two-year scholarship to the London

Contemporary Dance School, that Antar discovered the sky's-the-limit freedom of expression in modern dance. He joined Aouni's company in 2001.

Modern dance works for him because he has never fit into molds, he says. "I think with my heart. I want to break every rule that we've got. I've got that passion."

It is easier to be a modern dancer now than it was 10 years ago, Antar believes. "Now the people understand it much more, it's not like before. The mentality of people is changing a little bit."

Like Kessam, Antar also had a show of his own in the modern dance festival, Machines. In an Al-Ahram Weekly review, it was described as "one of the best items in the festival."

Despite the occasional good press, prejudice is hard to eradicate. Antar says that the dancers stick together as much as they can; it's easier than dealing with Egyptian society's sometimes negative view of their careers.

"We hang out together, we eat together, we work together. When you actually leave [the company of other dancers] people act different, especially the guys. 'You are a man dancing?'" Antar says, imitating the disgusted look he receives.

Dancers marry dancers, or foreigners, he says, as the latter tend to be more understanding.

The crux of the situation is this, says Sharara. "Dancing in some minds is belly dancing. Belly dancing equals obscenity. So people think that if there is a girl dancing, it means she is going to be a prostitute. As for the boys, dancing means being effeminate and this is not approved."

"We got the hope"

Back in the studio, the dancers are starting to sweat through their stretchy cotton practice clothes. It may be art, but it is damn hard work to create. Aouni is on both feet, bent over, jumping backwards. It looks a little crazy, but as he says, you have to be a little crazy to survive as a dancer in Egypt. Everything new seems bizarre at first, people just need to get used to it, Aouni says. Egypt is ready to embrace modern dancing, Antar says. "People are tired. They want to change."

A modern dance festival made up completely of Egyptian dance companies this year was definitely a milestone. "In the end, it's really good to see Egyptians doing their own performances for the first time — the first time it is all Egyptian and this is amazing," says Kessam.

The 2008 festival was the result of the past five years' steady increase in the number of small dance companies. Young people with talent are getting together and putting shows together.

"It is a lot of people working independently," Antar says. "They work with not much money and cheap materials, but it is good art, they work with the power of the human being, power of their talent. That is what is happening in Cairo."

"It's coming a little bit late, but better late than never," he adds. "Now we got the hope."

http://www.egypttoday.com/printerfriendly.aspx?ArticleID=8181

'Deadly Dozen' Reports Diseases Worsened By Climate Change

Western lowland gorillas and Ebola: There is significant evidence that outbreaks of Ebola in western lowland gorillas and other primates--including humans--are related to unusual variations in rainfall/dry season patterns, potentially caused by climate change. (Credit: Thomas Breuer/Wildlife Conservation Society-Max Planck Institute for Evolutionary Anthropology)

ScienceDaily (Oct. 8, 2008) — Health experts from the Wildlife Conservation Society have released a report that lists 12 pathogens that could spread into new regions as a result of climate change, with potential impacts to both human and wildlife health and global economies. Called The Deadly Dozen: Wildlife Diseases in the Age of Climate Change, the new report provides examples of diseases that could spread as a result of changes in temperatures and precipitation levels.

The best defense, according to the report's authors, is a good offense in the form of wildlife monitoring to detect how these diseases are moving so health professionals can learn and prepare to mitigate their impact.

"The term 'climate change' conjures images of melting ice caps and rising sea levels that threaten coastal cities and nations, but just as important is how increasing temperatures and fluctuating precipitation levels will change the distribution of dangerous pathogens," said Dr. Steven E. Sanderson, President and CEO of the Wildlife Conservation Society. "The health of wild animals is tightly linked to the ecosystems in which they live and influenced by the environment surrounding them, and even minor disturbances can have far reaching consequences on what diseases they might encounter and transmit as climate changes. Monitoring wildlife health will help us predict where those trouble spots will occur and plan how to prepare."

The "Deadly Dozen" list—including such diseases as avian influenza, Ebola, cholera, and tuberculosis—is illustrative only of the broad range of infectious diseases that threaten humans and animals. It builds upon the recommendations included in a recently published paper titled "Wildlife Health as an Indicator of Climate Change," which appears in a newly released book, Global Climate Change and Extreme Weather Events: Understanding the Contributions to Infectious Disease Emergence, published by the National Academy of Sciences/Institute of Medicine. The study examines the nuts and bolts of deleterious impacts of climate change on the health of wild animals and the cascading effects on human populations.

In addition to the health threats that diseases pose to human and wildlife populations, the pathogens that originate from or move through wildlife populations have already destabilized trade to a large extent and caused significant economic damage. For instance, several livestock diseases that have reemerged since the mid-1990s (including avian influenza) have caused an estimated $100 billion in losses to the global economy.

WCS's Global Health Programs currently leads an international consortium that helps to monitor the movements of avian influenza through wild bird populations around the world. The GAINS program (Global Avian Influenza Network for Surveillance) was created in 2006 with support from the United States Agency for International Development (USAID) and now involves dozens of private and public partners that monitor wild bird populations for avian influenza around the world.

"Emerging infectious diseases are a major threat to the health and economic stability of the world," said Congresswoman Rosa L. DeLauro (D-CT3), a champion for the GAINS Program "What we've learned from WCS and the GAINS Program is that monitoring wildlife populations for potential health threats is essential in our preparedness and prevention strategy and expanding monitoring beyond bird flu to other deadly diseases must be our immediate next step."

"The monitoring of wildlife health provides us with a sensitive and quantitative means of detecting changes in the environment," said Dr. William Karesh, Vice President and Director of WCS's Global Health Programs. Wildlife health monitoring provides a new lens to see what is changing around us and will help governments, agencies, and communities detect and mitigate threats before they become disasters."

The report was released at the IUCN World Conservation Congress, held in Barcelona, Spain.

The deadly dozen

Many wildlife pathogens have been the focus of monitoring efforts, but few data exist on how diseases will spread in response to climate change. The following list includes those pathogens that may spread as a result of changing temperatures and precipitation levels. Monitoring efforts for these diseases need to be examined in tandem with meteorological data to uncover climate-related trends. The list is not a comprehensive one, and subsequent studies may eliminate pathogens from the list of those enabled by climatic factors.

Avian influenza: Like human influenza, avian influenza viruses occur naturally in wild birds, though often with no dire consequences. The virus is shed by infected birds via secretions and feces. Poultry may contract the virus from other domestic birds or wild birds. A highly pathogenic strain of the disease—H5N1—is currently a major concern for the world's governments and health organizations, specifically because it has proven deadly to domestic and wild birds, as well as humans, and has the potential to evolve into a strain that can spread from human to human. Current data indicate that the movement of H5N1 from region to region is largely driven by the trade in poultry, but changes in climate such as severe winter storms and droughts can disrupt normal movements of wild birds and can bring both wild and domestic bird populations into greater contact at remaining water sources.

Babesiosis: Babesia species are examples of tick-borne diseases that affect domestic animals and wildlife, and Babesiosis is an emerging disease in humans. In some instances, Babesia may not always cause severe problems by themselves but when infections are severe due to large numbers of ticks, the host becomes more susceptible to other infectious diseases. This has been seen in large die-offs of lions in East Africa due to canine distemper. Climate factors fostered heavy infestations of ticks on wild buffalo and subsequent spill-over infection of lions. The lions then became more susceptible to infections with the distemper virus. In Europe and North America, the disease is becoming more common in humans, also linked with tick distributions. Diseases that have previously been thought to have limited impact, such as babesiosis, must be watched closely in a changing climate to assess how environmental conditions may tip the scale and cause more significant impacts on ecosystems, animals, and people.

Cholera: Cholera is a water-borne diarrheal disease affecting humans mainly in the developing world. It is caused by a bacterium, Vibrio cholerae, which survives in small organisms in contaminated water sources and may also be present in raw shellfish such as oysters. Once contracted, cholera quickly becomes deadly. It is highly temperature dependent, and increases in water temperature are directly correlated with occurrence of the disease. Rising global temperatures due to climate change are expected to increase incidence of this disease.

Ebola: Ebola hemorrhagic fever virus and its closely related cousin—the Marburg fever virus—easily kill humans, gorillas, and chimpanzees, and there is currently no known cure. Scientists continue to work on finding the source of the disease and to develop vaccines for protection. There is significant evidence that outbreaks of both diseases are related to unusual variations in rainfall/dry season patterns. As climate change disrupts and exaggerates seasonal patterns, we may expect to see outbreaks of these deadly diseases occurring in new locations and with more frequency. WCS's work on Ebola in Central Africa has been supported by the US Fish and Wildlife Service.

Intestinal and external parasites: Parasites are widespread throughout terrestrial and aquatic environments. As temperatures and precipitation levels shift, survival of parasites in the environment will increase in many places, infecting an increasing number of humans and animals. Many species of parasites are zoonotic, spread between wildlife and humans. The nematode, Baylisascaris procyonis, is spread by the common raccoon and is deadly to many other species of wildlife and humans. A close relative, Baylisascaris schroederi, causes death in its natural host—the critically endangered giant panda. Monitoring of parasite species and loads in wildlife and livestock help us identify transmission of these infections between domestic and wild animals and humans.

Lyme disease: This disease is caused by a bacterium and is transmitted to humans through tick bites. Tick distributions will shift as a result of climate change, bringing Lyme disease into new regions to infect more animals and people. Although effects of the disease on wildlife have not been documented, human-induced changes in the environment and on population patterns of species such as white-tailed deer that can carry infective ticks greatly affect the distribution of this disease. Monitoring of tick distributions will be necessary to assess the impacts of climate change on this disease.

Plague: Plague, Yersinia pestis—one of the oldest infectious diseases known—still causes significant death rates in wildlife, domestic animals, and humans in certain locations. Plague is spread by rodents and their fleas. Alterations in temperatures and rainfall are expected to change the distribution of rodent populations around the globe, which would impact the range of rodent-born diseases such as plague.

"Red tides": Harmful algal blooms off global coasts create toxins that are deadly to both humans and wildlife. These occurrences—commonly called "red tides"—cause mass fish kills, marine mammal strandings, penguin and seabird mortality, and human illness and death from brevetoxins, domoic acid, and saxitoxins (the cause of "paralytic shellfish poisoning"). Similar events in freshwater are caused by a species of Cyanobacteria and have resulted in animal die-offs in Africa. Altered temperatures or food-web dynamics resulting from climate change will have unpredictable impacts on the occurrences of this

worldwide phenomenon. Effects of harmful algal blooms on sea life are often the first indicators that such an event is taking place.

Rift Valley Fever: Rift Valley fever virus (RVFV) is an emerging zoonotic disease of significant public health, food security, and overall economic importance, particularly in Africa and the Middle East. In infected livestock such as cattle, sheep, goats and camels, abortions and high death rates are common. In people (who can get the virus from butchering infected animals), the disease can be fatal. Given the role of mosquitoes in transmission of the virus, changes in climate continue to be associated with concerns over the spread of RVFV.

Sleeping sickness: Also known as trypanosomiasis, this disease affects people and animals. It is caused by the protozoan, Trypanosoma brucei, and transmitted by the tsetse fly. The disease is endemic in certain regions of Sub-Saharan Africa, affecting 36 countries, with estimates of 300,000 new cases every year and more than 40,000 human deaths each year in eastern Africa. Domestic cattle are a major source of the disease, but wildlife can be infected and maintain the disease in an area. Direct and indirect effects (such as human land-use patterns) of climate change on tsetse fly distributions could play a role in the distribution of this deadly disease.

Tuberculosis: As humans have moved cattle around the world, bovine tuberculosis has also spread. It now has a global distribution and is especially problematic in Africa, where it was introduced by European livestock in the 1800s. The disease infects vital wildlife populations, such as buffalo and lions in Kruger National Park in South Africa, where tourism is an integral part of local economies. The disease also infects humans in southern Africa through the consumption of un-pasteurized milk. Human forms of tuberculosis can also infect wild animals. Climate change impacts on water availability due to drought are likely to increase the contact of wildlife and livestock at limited water sources, resulting in increased transmission of the disease between livestock and wildlife and livestock and humans.

Yellow fever: Found in the tropical regions of Africa and parts of Central and South America, this virus is carried by mosquitoes, which will spread into new areas as changes in temperatures and precipitation levels permit. One type of the virus—jungle yellow fever—can be spread from primates to humans and vice-versa via mosquitoes that feed on both hosts. Recent outbreaks in Brazil and Argentina have had devastating impacts on wild primate populations. In some countries in South America, monitoring of wild primates has resulted in early detection of disease activity and allowed vaccination programs to be rapidly implemented to protect humans.

Adapted from materials provided by Wildlife Conservation Society, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com:80/releases/2008/10/081007073928.htm

How Many Earthquakes Are There?

ScienceDaily (Oct. 8, 2008) — A new method for estimating the capability of a network to detect earthquakes suggests that the seismic monitoring network for Southern California, as an example, does not accurately reflect all earthquakes that register a magnitude of 3.3 or smaller within southern California, thereby giving seismologists an incomplete picture of recent and current seismicity.

The study, published in the October issue of the Bulletin of the Seismological Society of America, provides a new empirically-based approach for seismologists to understand the detection capabilities of seismic networks.

While today's improved seismic networks detect earthquakes down to low magnitudes in regions of the densest coverage, seismologists need to estimate the completeness magnitude which varies in space and time. This magnitude of completeness indicates the magnitude below which the earthquake catalog does not contain all events that occurred..

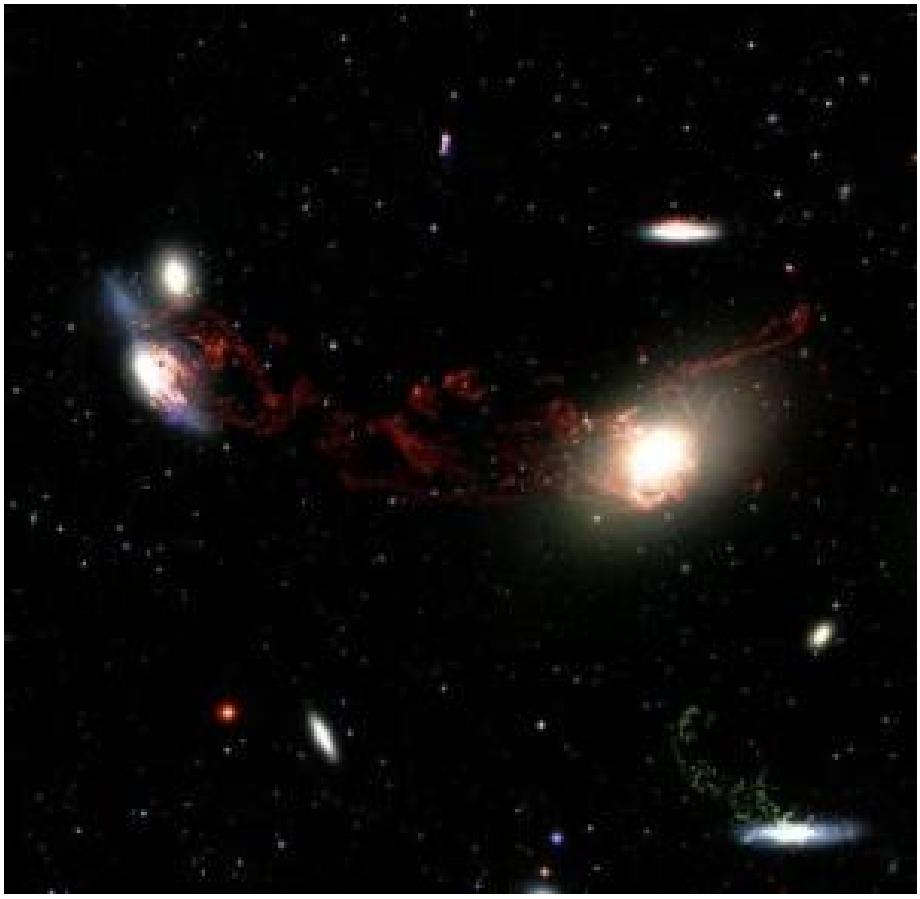
D. Schorlemmer of the University of Southern California (USC) and J. Woessner of the Swiss Seismological Service present a new approach to estimate the magnitude of completeness which will enable scientists to develop a richer understanding of the distribution of smaller earthquakes. The authors' new approach uses an analysis based on the actual performance of seismic stations rather than a theoretical assessment based on sampling of earthquakes.

This advancement is important because one way scientists estimate the number of large, damaging earthquakes is to study the distribution of small earthquakes. Without an accurate understanding of how likely the seismic networks are detecting earthquakes of different magnitudes, scientists may obtain incorrect seismic hazard estimates for an area.

Adapted from materials provided by Seismological Society of America, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081003081641.htm

Stars Stop Forming When Big Galaxies Collide



M86-NGC4438 complex: A deep image of part of the Virgo cluster revealing tendrils of ionized hydrogen gas 400,000 light-years long that connect the elliptical galaxy M86 (right) and the disturbed spiral galaxy NGC 4438 (left). Taken with the wide-field Mosaic imager on the National Science Foundation's Mayall 4-meter telescope at Kitt Peak National Observatory. (Credit: Tomer Tal and Jeffrey Kenney/Yale University and NOAO/AURA/NSF)

ScienceDaily (Oct. 8, 2008) — Astronomers studying new images of a nearby galaxy cluster have found evidence that high-speed collisions between large elliptical galaxies may prevent new stars from forming, according to a paper to be published in a November 2008 issue of The Astrophysical Journal Letters.

Led by Jeffrey Kenney, professor and chair of astronomy at Yale, the team saw a spectacular complex of warm gas filaments 400,000 light-years-long connecting the elliptical galaxy M86 and the spiral galaxy NGC 4438 in the Virgo galaxy cluster, providing striking evidence for a previously unsuspected high-speed collision between the galaxies. The view was constructed using the wide-field Mosaic imager on the National Science Foundation telescope at Kitt Peak National Observatory near Tucson, Arizona.

"Our data show that this system represents the nearest recent collision between a large elliptical galaxy and a large spiral galaxy," said Kenney, who is lead author of the paper. "This discovery provides some of the clearest evidence yet for high-speed collisions between large galaxies, and it suggests a plausible alternative to black holes as an explanation of what turns off star formation in the biggest galaxies."

Previously, scientists had seen the filaments of gas around both galaxies, but had not seen or inferred any connection between the two galaxies located approximately 50 million light-years from Earth. The new image shows extended and faint emissions that directly connect the two galaxies — and there are no obvious stars in the filaments.

As in most elliptical galaxies, gas within M86 is extremely hot, and radiates X-rays in a long plume, which had previously been interpreted as a tail of gas being stripped as M86 falls into the Virgo cluster. The new image suggests that most of the disturbances in M86 are instead due to the collision with NGC 4438.

"Like with a panoramic camera, the view from the telescope using the wide-field imager at Kitt Peak let us see the bigger picture," said Kenney. "We needed to look deep and wide to see the M86 complex."

A current mystery in astronomy is what causes the biggest galaxies in the universe —primarily elliptical galaxies like M86 — to stop forming stars. "Something needs to heat up the gas so it doesn't cool and form stars," Kenney says. "Our new study shows that gravitational interactions may do the trick."

According to the authors, low-velocity collisions between small- or medium-sized galaxies often produce an increase in the local star formation rate, but in high-velocity collisions that happen naturally between large galaxies, the energy of the collision can cause the gas to heat up so much that it cannot easily cool and form stars.

"The same physical processes occur in both strong and weak encounters, and by studying the observable effects in extreme cases like M86 we can learn about the role of gravity in the heating of galaxy gas, which appears to be quite significant," Kenney adds.

Co-authors of the study include Yale graduate student Tomer Tal, former Yale student Hugh Crowl, now at the University of Massachusetts, WIYN Observatory Director George Jacoby, and John Feldmeier of Youngstown State University.

Kitt Peak National Observatory is part of the National Optical Astronomy Observatory (NOAO), which is operated by the Association of Universities for Research in Astronomy (AURA) under a cooperative agreement with the National Science Foundation. The founding members of the WIYN Observatory partnership are the University of Wisconsin, Indiana University, Yale University, and NOAO.

Adapted from materials provided by Yale University.

http://www.sciencedaily.com/releases/2008/10/081007120431.htm

Mysterious Snippets Of DNA Withstand Eons Of Evolution

So-called "ultraconserved" regions of DNA are about 300 times less likely than other regions of the genome to be lost during mammalian evolution, according to new research. (Credit: iStockphoto/Sunagatov Dmitry)

ScienceDaily (Oct. 7, 2008) — Small stretches of seemingly useless DNA harbor a big secret, say researchers at the Stanford University School of Medicine. There's one problem: We don't know what it is. Although individual laboratory animals appear to live happily when these genetic ciphers are deleted, these snippets have been highly conserved throughout evolution.

"The true function of these regions remains a mystery, but it's clear that the genome really does need and use them," said Gill Bejerano, PhD, assistant professor of developmental biology and of computer science. In fact, these so-called "ultraconserved" regions are about 300 times less likely than other regions of the genome to be lost during mammalian evolution, according to research from Bejerano and graduate student Cory McLean.

Although some of the ultraconserved regions, which were first identified by Bejerano in 2004, are involved in the regulation of the expression of neighboring genes, previous research has shown that mice missing each of four regions seem perfectly normal.

"It's very surprising that none of the four has any observable phenotype," said Bejerano. "In some ways it just doesn't make sense."

This lack of effect is usually taken as a strong argument against an important functional role for the missing segments of DNA — either because they don't do much or because other bits of DNA serve as understudies when the primary actors are missing. But in this most recent study, evolution roars over the squeak of the seemingly contented mice.

"When we tried to determine whether similar deletions occur in the wild," said Bejerano, "we found that this is almost never seen in nature."

McLean and Bejerano compared the likelihood that ultraconserved elements of at least 100 base pairs shared by humans, macaques and dogs would have been deleted in rats and mice, with the likelihood of a similar pattern in non-conserved DNA. Less than one-tenth of 1 percent of segments completely identical among the primates and dog were missing in the rodents. In contrast, about 25 percent of non-conserved segments were absent in the mice and rats.

It's not that these regions are somehow protected against change: they are mutated in about one in 200 healthy humans. Rather, these changes seem to be swept away over time by the tides of evolution in a process called "purifying selection." Bejerano and McLean believe that something similar may be happening in the laboratory mice on a scale too subtle to be seen under carefully controlled experimental conditions.

After establishing how infrequently the ultraconserved segments are deleted, the researchers investigated whether the degree of homology (the percent of nucleotides shared between species) or the extent of conservation (the evolutionary distance between species that share a version of the sequence) correlated most closely with the likelihood that it would be lost in primates or rodents.

Sequences shared among many distantly related species are likely to be older than sequences found only in closely related species. The researchers found that less-highly conserved sequences shared among several distantly related species — including opossum, platypus, chicken, frog and fish — are more likely to also occur in humans than are more-homologous sequences that occur in only a few closely related species. The likelihood that a sequence will be found in humans increases as the evolutionary age of the sequence increases."Interestingly," said Bejerano, "the longer the sequence has been in us, the less likely it is to be lost. It's almost like the bricks in the foundation of a building, which hold up the rest of the structure."

Clearly there remains a lot to be discovered. The upcoming availability of several additional well-sequenced mammalian genomes will give the researchers even more data with which to work. And subjecting the laboratory mice missing the ultraconserved regions to a variety of conditions, such as changes in diet or living conditions, may make more noticeable any differences between them and the mice without changes."Evolution is a lot of fun," said Bejerano, who plans to continue the investigation into what the ultraconserved segments might be doing. "You answer one question, and five others pop up. But one of the most rewarding things to me is the fact that we're developing a growing appreciation for how much these regions actually matter."

The research was supported by a Stanford Bio-X graduate fellowship to McLean and an Edward Mallinckrodt, Jr. Foundation junior faculty grant. Bejerano is a Sloan research fellow and a Searle scholar.

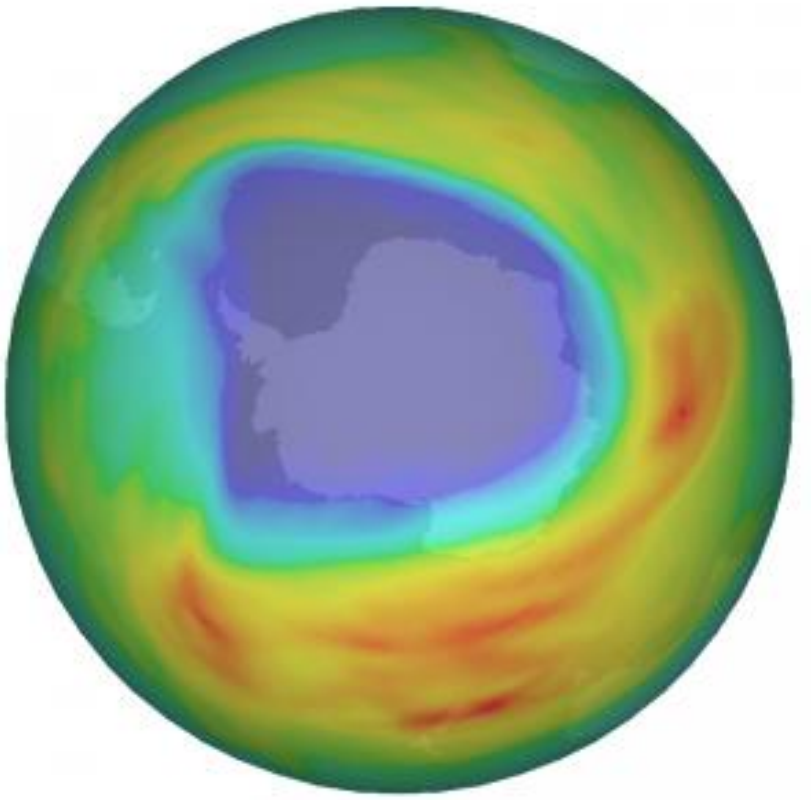
Journal reference:

1. McLean, C., and Bejerano, G. **Dispensability of mammalian DNA**. *Genome Res.*, (in press) DOI: 10.1101/gr.080184.108

Adapted from materials provided by Stanford University Medical Center.

http://www.sciencedaily.com/releases/2008/10/081001181306.htm

2008 Ozone Hole Larger Than Last Year



Ozone hole during 7 October 2008 as measured by the Scanning Imaging Absorption Spectrometer for Atmospheric Cartography (SCIAMACHY) atmospheric sensor onboard ESA's Envisat. (Credit: KNMI/ESA)

ScienceDaily (Oct. 7, 2008) — The 2008 ozone hole – a thinning in the ozone layer over Antarctica – is larger both in size and ozone loss than 2007 but is not as large as 2006.

Ozone is a protective atmospheric layer found in about 25 kilometres altitude that acts as a sunlight filter shielding life on Earth from harmful ultraviolet rays, which can increase the risk of skin cancer and cataracts and harm marine life.

This year the area of the thinned ozone layer over the South Pole reached about 27 million square kilometres, compared to 25 million square kilometres in 2007 and a record ozone hole extension of 29 million square kilometres in 2006, which is about the size of the North American continent.

The depletion of ozone is caused by extreme cold temperatures at high altitude and the presence of ozone-destructing gases in the atmosphere such as chlorine and bromine, originating from man-made products like chlorofluorocarbons (CFCs), which were phased out under the 1987 Montreal Protocol but continue to linger in the atmosphere. Depending on the weather conditions, the size the Antarctic ozone hole varies every year. During the southern hemisphere winter, the atmosphere above the Antarctic continent is kept cut off from exchanges with mid-latitude air by prevailing winds known as the polar vortex – the area in which the main chemical ozone destruction occurs. The polar vortex is characterized by very low temperatures leading to the presence of so-called stratospheric clouds (PSCs).

As the polar spring arrives in September or October, the combination of returning sunlight and the presence of PSCs leads to a release of highly ozone-reactive chlorine radicals that break ozone down into individual oxygen molecules. A single molecule of chlorine has the potential to break down thousands of molecules of ozone.

Julian Meyer-Arnek of the German Aerospace Centre (DLR), which monitors the hole annually, explained the impact of regional meteorological conditions on the time and range of the ozone hole by comparing 2007 with 2008.

"In 2007 a weaker meridional heat transport was responsible for colder temperatures in the stratosphere over the Antarctic, leading to an intensified formation of PSCs in the stratosphere," Meyer-Arnek said. "Therefore, we saw a fast ozone hole formation in the beginning of September 2007."

"In 2008 a stronger-than-usual meridional heat transport caused warmer temperatures in the Antarctic stratosphere than usual, reducing the formation of PSCs. Consequently, the conversion of chemically inactive halogens into ozone-destroying substances was reduced. As a result in the beginning of September 2008, the ozone hole area was slightly smaller than average," he continued.

"Since the polar vortex remained undisturbed for a long period, the 2008 ozone hole became one of the largest ever observed."

Minimum values of the ozone layer of about 120 Dobson Units are observed this year compared to around 100 Dobson Units in 2006. A Dobson Unit is a unit of measurement that describes the thickness of the ozone layer in a column directly above the location of measurement.

DLR's analysis is based upon the Scanning Imaging Absorption Spectrometer for Atmospheric Cartography (SCIAMACHY) atmospheric sensor onboard ESA's Envisat, the Global Ozone Monitoring Experiment (GOME) aboard ESA's ERS-2 and its follow-on instrument GOME-2 aboard EUMETSAT's MetOp.

Scientists say that since the size and precise time of the ozone hole is dependent on the year-to-year variability in temperature and atmospheric dynamics, the detection of signs of ozone recovery is difficult.

"In order to detect these signs of recovery, a continuous monitoring of the global ozone layer and in particular of the Antarctic ozone hole is crucial," Meyer-Arnek said.

In order to train the next generation of atmospheric scientists to continue the monitoring, students at ESA's Advanced Atmospheric Training Course, held 15–20 September at University of Oxford, UK, were given the task of analysing this year's ozone hole with Envisat sensors.

Studying the Envisat data, the students' findings were in line with atmospheric scientists that the south polar vortex was more concentric in 2008 than in 2007, leading to a relatively late onset of ozone depletion, and that the size of this year's hole is similar to previous years.

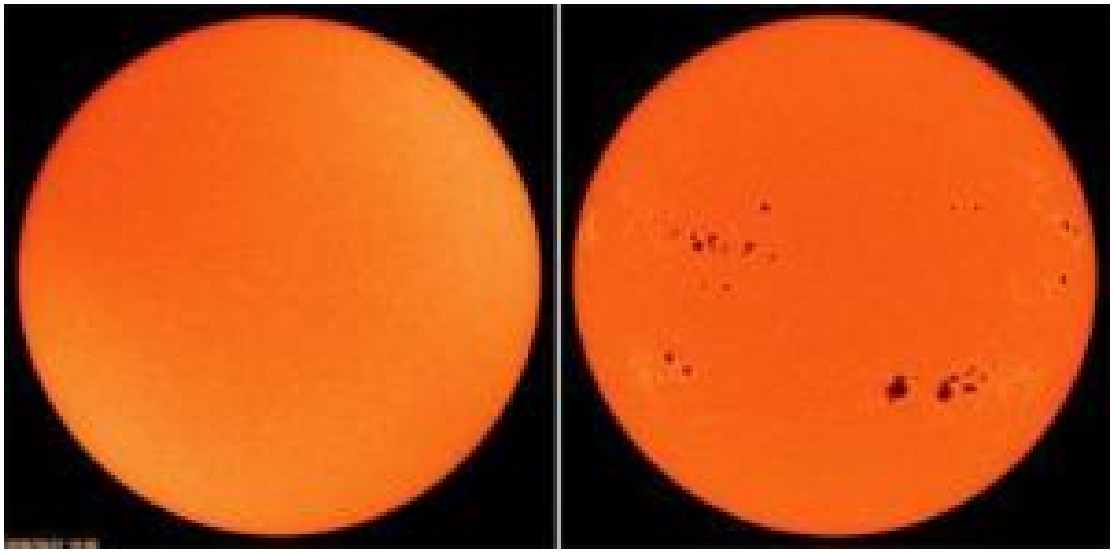
"This exercise led us to realise that although many questions have been answered and much has been learned about the stratospheric chemistry and atmospheric dynamics driving ozone hole behaviour, many new questions must be raised especially concerning ozone hole recovery," said Deborah C Stein Zweers, a post-doc satellite researcher from the Royal Netherlands Meteorological Institute (KNMI) who attended the course.

"We want to know when the ozone hole will recover, how its recovery will be complicated by an environment with increasing greenhouse gases and how atmospheric dynamics will shape future ozone holes. These and many other questions will attract the attention of our generation of scientists for the next several decades."

Adapted from materials provided by European Space Agency.

http://www.sciencedaily.com/releases/2008/10/081007102853.htm

Spotless Sun: Blankest Year Of The Space Age



Left: A photo of the sun taken Sept. 27, 2008. The face of the sun is "blank," i.e., completely unmarked by spots. Right: The sun on Sept. 27, 2001. The sun's face is peppered with colossal sunspots, all crackling with solar flares. (Credit: ESA/NASA Solar and Heliospheric Observatory (SOHO))

ScienceDaily (Oct. 7, 2008) — Astronomers who count sunspots have announced that 2008 is now the "blankest year" of the Space Age.

As of Sept. 27, 2008, the sun had been blank, i.e., had no visible sunspots, on 200 days of the year. To find a year with more blank suns, you have to go back to 1954, three years before the launch of Sputnik, when the sun was blank 241 times.

"Sunspot counts are at a 50-year low," says solar physicist David Hathaway of the NASA Marshall Space Flight Center. "We're experiencing a deep minimum of the solar cycle."

The image taken on Sept. 27, 2008 by the Solar and Heliospheric Observatory (SOHO) shows a solar disk completely unmarked by sunspots. For comparison, a SOHO image taken seven years earlier on Sept. 27, 2001, is peppered with colossal sunspots, all crackling with solar flares. The difference is the phase of the 11-year solar cycle. 2001 was a year of solar maximum, with lots of sunspots, solar flares and geomagnetic storms. 2008 is at the cycle's opposite extreme, solar minimum, a quiet time on the sun.

And it is a very quiet time. If solar activity continues as low as it has been, 2008 could rack up a whopping 290 spotless days by the end of December, making it a century-level year in terms of spotlessness.

Hathaway cautions that this development may sound more exciting than it actually is: "While the solar minimum of 2008 is shaping up to be the deepest of the Space Age, it is still unremarkable compared to the long and deep solar minima of the late 19th and early 20th centuries." Those earlier minima routinely racked up 200 to 300 spotless days per year.

Some solar physicists are welcoming the lull.

"This gives us a chance to study the sun without the complications of sunspots," says Dean Pesnell of the Goddard Space Flight Center. "Right now we have the best instrumentation in history looking at the sun. There is a whole fleet of spacecraft devoted to solar physics--SOHO, Hinode, ACE, STEREO and others. We're bound to learn new things during this long solar minimum."

As an example he offers helioseismology: "By monitoring the sun's vibrating surface, helioseismologists can probe the stellar interior in much the same way geologists use earthquakes to probe inside Earth. With sunspots out of the way, we gain a better view of the sun's subsurface winds and inner magnetic dynamo."

"There is also the matter of solar irradiance," adds Pesnell. "Researchers are now seeing the dimmest sun in their records. The change is small, just a fraction of a percent, but significant. Questions about effects on climate are natural if the sun continues to dim."

Pesnell is NASA's project scientist for the Solar Dynamics Observatory (SDO), a new spacecraft equipped to study both solar irradiance and helioseismic waves. Construction of SDO is complete, he says, and it has passed pre-launch vibration and thermal testing. "We are ready to launch! Solar minimum is a great time to go."

Coinciding with the string of blank suns is a 50-year record low in solar wind pressure, a recent discovery of the Ulysses spacecraft. The pressure drop began years before the current minimum, so it is unclear how the two phenomena are connected, if at all. This is another mystery for SDO and the others.

Who knew the blank sun could be so interesting?

Adapted from materials provided by NASA/Goddard Space Flight Center.

http://www.sciencedaily.com/releases/2008/10/081006184638.htm

New Prenatal Test For Down Syndrome Less Risky Than Amniocentesis, Scientists Say

A newly developed method requires only a maternal blood sample to spot chromosomal disorders such as Down syndrome. (Credit: iStockphoto/James Charron)

ScienceDaily (Oct. 7, 2008) — Pregnant women worried about their babies' genetic health face a tough decision: get prenatal gene testing and risk miscarriage, or skip the tests and miss the chance to learn of genetic defects before birth.

But a new prenatal test could make this dilemma obsolete. The new method, developed by scientists at Stanford University, the Howard Hughes Medical Institute and Lucile Packard Children's Hospital, requires only a maternal blood sample to spot chromosomal disorders such as Down syndrome.

"Right now, people are risking their pregnancies to get this information," said Yair Blumenfeld, MD, a postdoctoral medical fellow in obstetrics and gynecology and co-author of a paper describing the technique. Current prenatal gene tests, such as amniocentesis and chorionic villus sampling, require inserting a needle in the uterus and carry a miscarriage risk of around half a percent.

"Non-invasive testing will be much safer than current approaches," said Stephen Quake, PhD, professor of bioengineering and the study's senior author. The new technique, which takes advantage of fragments of fetal DNA in the woman's blood, will be published online the week of Oct. 6 in the Proceedings of the National Academy of Sciences. Safety may not be the only gain. Quake hopes the test will spot genetic problems much earlier in gestation than the other methods.

The new method scans for fetal aneuploidy, an abnormality in the number of fetal chromosomes. Humans typically inherit 46 chromosomes, half from each parent. Errors in chromosome number cause serious problems in physical and mental development. Down syndrome, for example, arises from an extra copy of chromosome 21.

The Stanford/Packard team developed a way to count chromosomes using bits of fetal DNA in a pregnant woman's blood. Other scientists had struggled to tease these tiny genetic clues apart from a mom's DNA,

said Quake, who is also an HHMI investigator. His team made an ingenious simplification: their new method has no need to distinguish between maternal and fetal DNA.

First, using samples from 12 women with aneuploid pregnancies and six with normal pregnancies, the researchers separated maternal blood into cells and plasma. They discarded the blood cells, focusing on the liquid plasma's DNA fragments, which come from both the mom and the fetus. They counted the number of DNA fragments and used DNA sequencing to read each one.

"You randomly sequence whatever is there," explained Christina Fan, a doctoral student in bioengineering who was the study's lead author. The DNA fragments are 25-30 base pairs long, she said, long enough to match each fragment to a specific chromosome. The researchers tallied how many gene fragments originated from each chromosome. Women with Down syndrome pregnancies had more chromosome-21 fragments in their blood than women with normal pregnancies. Other forms of aneuploidy could be detected, too.

Because fetal DNA shows up in maternal blood quite early in pregnancy, the team says their technique could provide a much earlier diagnosis for fetal aneuploidy than is now available.

"The earlier you know you've got a fetus with Down syndrome, the better able you are to prepare," Quake said, noting that the benefit holds both for women who keep and those who terminate such pregnancies.

The next step, the scientists say, is to repeat their study in a larger number of women. If their technique holds up in further research, they expect that it would be simple and inexpensive to use in clinical settings, especially as other forms of genetic testing also become popular. Quake expects it will take the new test two to three years to reach the clinic, assuming that the larger trial is successful.

"This technique is on the leading edge of a flood of different ways that rapid DNA sequencing will be used in medicine," Quake said.

Stanford is filing a patent application for the new technique, and Quake consults for two potential licensees. In addition to Fan and Blumenfeld, Quake's team included Usha Chitkara, MD, professor of obstetrics and gynecology at Stanford and Packard Children's, and Louanne Hudgins, MD, director of perinatal genetics at Packard Children's and professor of pediatrics. The study was funded by the Wallace H. Coulter Foundation and the NIH Director's Pioneer Award.

Adapted from materials provided by Stanford University Medical Center.

http://www.sciencedaily.com/releases/2008/10/081006180801.htm

How And Why Some Children Become Chronically Abused By Peers

ScienceDaily (Oct. 7, 2008) — As soon as children are old enough to interact socially, some become entrenched in chronic and increasing patterns of victimization by their peers, according to a new report. Children who are aggressive in infancy and are from families with harsh parenting styles and insufficient income appear more likely to be consistently victimized.

As many as one in 10 youth are the direct target of physical attacks, hostile words and social aggression from peers during school years, according to background information in the article. "Studies also show that peer victimization becomes increasingly stable over time, with the same children enduring such negative experiences throughout childhood and adolescence," the authors write. "The consequences associated with high and chronic victimization are manifold and include depression, loneliness, low self-esteem, physical health problems, social withdrawal, alcohol and/or drug use, school absence and avoidance, decrease in school performance, self-harm and suicidal ideation [thoughts and behaviors]."

Edward D. Barker, Ph.D., of the University of Alabama, Tuscaloosa, and colleagues studied 1,970 children (51 percent boys) born in Québec, Montreal, Canada, between October 1997 and July 1998. Participating children were assessed at ages 4.5 months, 16.6 months, and 2.4, 3.4, 4.1, 5.1, 6.2 and 7.2 years. At each point, mothers provided information on factors such as victimization, family adversity, parenting styles, physical aggression, hyperactivity and internalizing symptoms. At age 7.2 years, teachers and children reported on victimization by classmates.

"Three trajectory groups were identified with respect to victimization by peers between 3.4 and 6.2 years of age," the authors write. "As expected, most of the children (71 percent) fell on a low/increasing trajectory, whereas 25 percent and 4 percent of the children followed moderate/increasing and high/chronic trajectories, respectively. The overall age-related increase in preschool peer victimization is consistent with the view that, as preschool children progressively spend more time interacting with peers, they are more likely to experience negative peer experiences."

Children who were on the high/chronic and moderate/increasing trajectory according to their mothers' reports at young ages also had the highest levels of victimization at age 7.2, as reported by themselves and their teachers. Children who were aggressive at a young age (17 months) were more likely to become victims in preschool than children who were less aggressive, but neither early internalizing symptoms (for example, sadness, fear and anxiety) or hyperactivity were associated with later victimization. Children exposed to harsh parenting were more likely to be chronic victims, and insufficient family income also predicted high/chronic and moderate/increasing victimization trajectories.

In addition to identifying factors associated with victimization, "the present results also suggest that multiple forms of victimization may be the norm for victimized children, i.e., children with a high/chronic trajectory had harsh, reactive parents and were victimized by peers in preschool and after school entry. Other forms of victimization are likely to occur for these children, both within the school (e.g., verbal bullying by teachers) and within the community, particularly within low socioeconomic contexts," the authors write. "These results suggest that early preventive interventions should target both child- and parent-level risks and focus on alternatives to harsh and aggressive interactions."

This research was based on the Québec Longitudinal Study of Child Development and was supported by the Institute de la Statistique du Québec, the Québec Ministry of Health and Social Services, the Québec Ministry of Families and Seniors, the Canadian Institutes for Health Research, the Social Science and Humanities Research Council of Canada, the Québec Fund for Research on Society and Culture, the Québec Health Research Fund and the Canada Research Chair Program. Analyses were supported by a grant from the Medical Research Council, London.

Journal reference:

1. Edward D. Barker, PhD; Michel Boivin, PhD; Mara Brendgen, PhD; Nathalie Fontaine, PhD; Louise Arseneault, PhD; Frank Vitaro, PhD; Catherine Bissonnette, MSc; Richard E. Tremblay, PhD. **Predictive Validity and Early Predictors of Peer-Victimization Trajectories in Preschool**. *Arch Gen Psychiatry*, 2008;65(10):1185-1192 [link]

Adapted from materials provided by JAMA and Archives Journals.

http://www.sciencedaily.com:80/releases/2008/10/081006180658.htm

Air Pollution May Increase Risk Of Appendicitis

ScienceDaily (Oct. 7, 2008) — Could there be a link between high levels of air pollution and the risk of appendicitis? New research presented at the 73rd Annual Scientific Meeting of the American College of Gastroenterology in Orlando, suggests a novel connection.

"Adult onset appendicitis is a common condition whose cause is unclear and almost universally requires surgery," explained Dr. Gilaad G. Kaplan of the University of Calgary.

Dr. Kaplan and his colleagues identified more than 5,000 adults who were hospitalized for appendicitis in Calgary between 1999 and 2006. The team used data from Environment Canada's National Air Pollution Surveillance (NAPS) monitors that collect hourly levels of ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, and particulate matter of varying sizes. Regression analysis was used to evaluate whether short-term daily changes in air pollution levels were related to the development of appendicitis.

More Appendicitis Hospitalizations on "High Ozone" Days

When researchers compared the 5-day average of ozone concentrations prior to admission to the hospital, patients were approximately 15 percent more likely to be hospitalized for appendicitis on days of highest ozone concentrations compared to days of lowest ozone concentrations. Similar findings were seen for sulfur dioxide, nitrogen dioxide, and particulate matter, though with lower effect. Notably, the effect of air pollution was strongest during the summer months, when people were more likely to be outside.

Exposure to air pollutants, particularly ozone, was associated with a modest increased risk of developing appendicitis. Previous studies have shown that air pollution may promote other disease states through inflammation, and this may be the mechanism by which air pollution increases the risk of appendicitis.

"If the relationship between air pollution and appendicitis is confirmed, then improving air quality may prevent the occurrence of appendicitis in some individuals," said Dr. Kaplan.

Adapted from materials provided by American College of Gastroenterology, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081006102537.htm

Impact Of Geology On The U.S. Civil War: War From The Ground Up

Antietam. "What's so striking at Antietam," says Whisonant, is that "two geologic units underlie [that area]. One is a very, very pure limestone that as it erodes it literally melts. Mostly what you get with that is a very even, level, open surface -- there just aren't a lot of deep holes and high hills that give soldiers a place to hide." On one area of this flat surface, known as Miller's Cornfield, "armies just shot each other to pieces until absolute exhaustion set in." (Credit: iStockphoto/Andrew Klafter)

ScienceDaily (Oct. 7, 2008) — The connection between geology and the history of the Civil War has fascinated Robert Whisonant since his undergraduate days, and now Whisonant has teamed up with geomorphologist Judy Ehlen, both of Radford University, to take history, military history in particular, a step deeper -- into the geology beneath the soldiers' feet.

Whisonant and Ehlen examined the geomorphology of several battlefields and compared the terrain to known casualties for each day of fighting. The question, says Whisonant, is whether a correlation exists between the geology of the battlefield and casualties taken there. For some battles in the Civil War, the story told by the shape of the land is clear: soldiers were at greater risk in some areas because the underlying geology created a more dangerous terrain.

"Gettysburg is a good example where the Union had the high ground, but one disadvantage was the hard rock that forms that high ground is so close to the surface that the soldiers couldn't dig trenches." They were open targets for artillery assault by the Confederates. But the disadvantage didn't just go one way: "Those Confederate soldiers had to go up an open slope formed on more erodible rock with nothing to get behind when they finally had to attack." That's what Whisonant and Ehlen mean by their presentation title, "No Place to Run, No Place to Hide."

Whisonant and Ehlen also studied the terrain at Antietam, the site of the bloodiest battle in the Civil War, where on 17 September 1862 up to 23,100 soldiers were killed, wounded, or declared missing. "What's so striking at Antietam," says Whisonant, is that "two geologic units underlie [that area]. One is a very, very

pure limestone that as it erodes it literally melts. Mostly what you get with that is a very even, level, open surface -- there just aren't a lot of deep holes and high hills that give soldiers a place to hide." On one area of this flat surface, known as Miller's Cornfield, "armies just shot each other to pieces until absolute exhaustion set in."

Nearby, however, a different formation lies beneath the terrain, made up of limestone and dolomite with some shale. "It makes for a very different kind of topography -- dissected topography" that provides good cover and concealment, and according to this study, "the casualties are much lower on that part of the battlefield."

In their talk on 5 October at the 2008 Joint Meeting of The Geological Society of America, Soil Science Society of America-American Society of Agronomy-Crop Science Society of America, Gulf Coast Association of Geological Societies, in Houston, Texas, Whisonant and Ehlen will present details of their of Civil War geomorphology and casualties, linking history and geology in a very striking way.

When asked why this topic creates such a draw for people, Whisonant says, "I just think there's an innate interest in the wars that we've been involved in -- especially the Civil War -- that's just a part of our national 'who we are.' I think we've got a built in audience. … Using geology to connect to something people understand is really gratifying -- I love to talk to my students about the planet they live on and make connections to something they would know something about.

Adapted from materials provided by Geological Society of America.

http://www.sciencedaily.com/releases/2008/10/081001145032.htm

Gene That May Contribute To Improved Rice Yield Identified

The researchers created transgenic lines of rice (G-2 and G-8) in which the GIF1 gene was overexpressed. Compared to normal strains (WT), they found that the transgenic rice had larger and heavier grains. In this figure, the grains on the top are from white rice and the grains on the bottom are from brown rice. (Credit: Zuhua He, Chinese Academy of Sciences)

ScienceDaily (Oct. 7, 2008) — A team of scientists, including Penn State Distinguished Professor of Biology Hong Ma, has identified a gene in rice that controls the size and weight of rice grains. The gene may prove to be useful for breeding high-yield rice and, thus, may benefit the vast number of people who rely on this staple food for survival.

"Our work shows that it is possible to increase rice's yield by enhancing the expression of a particular gene," said Ma.

The researchers first searched for and identified mutant strains of rice that exhibited underweight grains. "We found a particular mutant that is defective in its ability to produce normal-sized grains," said Zuhua He, a biology professor at the Chinese Academy of Sciences and the leader of the team. The group then examined the mutant and found that it carried a mutation within the GIF1 gene. "The GIF1 gene is responsible for controlling the activity of the enzyme invertase, which is located in the cell wall and converts sucrose to substances that then are used to create starch," said He. "Invertase is important in the formation of starch within developing grains of rice. If invertase is not active, the rice plant cannot produce edible grains."

Next, to test the ability of the GIF1 gene to control the production of invertase, the team measured the activity of invertase within a normal strain of rice, in which the GIF1 gene lacked any mutations, and within a mutant strain of rice, in which the GIF1 gene contained a mutation that caused a defect in the invertase activity. The scientists found that invertase activity in the mutant strain was only 17 percent of the activity that was observed in the normal strain, suggesting that the GIF1 gene does, indeed, control

invertase activity. The team then created transgenic lines of rice in which the GIF1 gene is overexpressed and found that, compared with normal strains, the transgenic rice had larger and heavier grains.

According to Ma, the team was surprised to find that the GIF1 gene was so specialized in controlling invertase activity in a particular part of the grain -- the vascular tissue, which transports nutrients, including sugars generated by invertase, to the developing grain. "The expression pattern was not expected, in part, because invertase is a general enzyme that is used by many cell types. In fact, the corresponding gene in wild rice is not expressed specifically."

The team also found that the GIF1 gene is one of the genes that were selected during the domestication of rice. "By selectively growing only those strains of rice with heavier grains, humans for thousands of years unknowingly have been increasing the frequency of rice populations that had modifications in the GIF1 gene," said Ma. "This process has caused GIF1 to be expressed specifically in the vascular tissue and, thus, to produce larger rice grains," said Ma.

The scientists hope that their findings will help others to create hybrid varieties of rice that produce even larger grains. In the meantime, they plan to perform additional analyses that will help them to understand how other genes might be involved in the process of improving rice yield. "The goal is to understand what controls grain weight and other factors, and to look for ways to increase yield," said Ma.

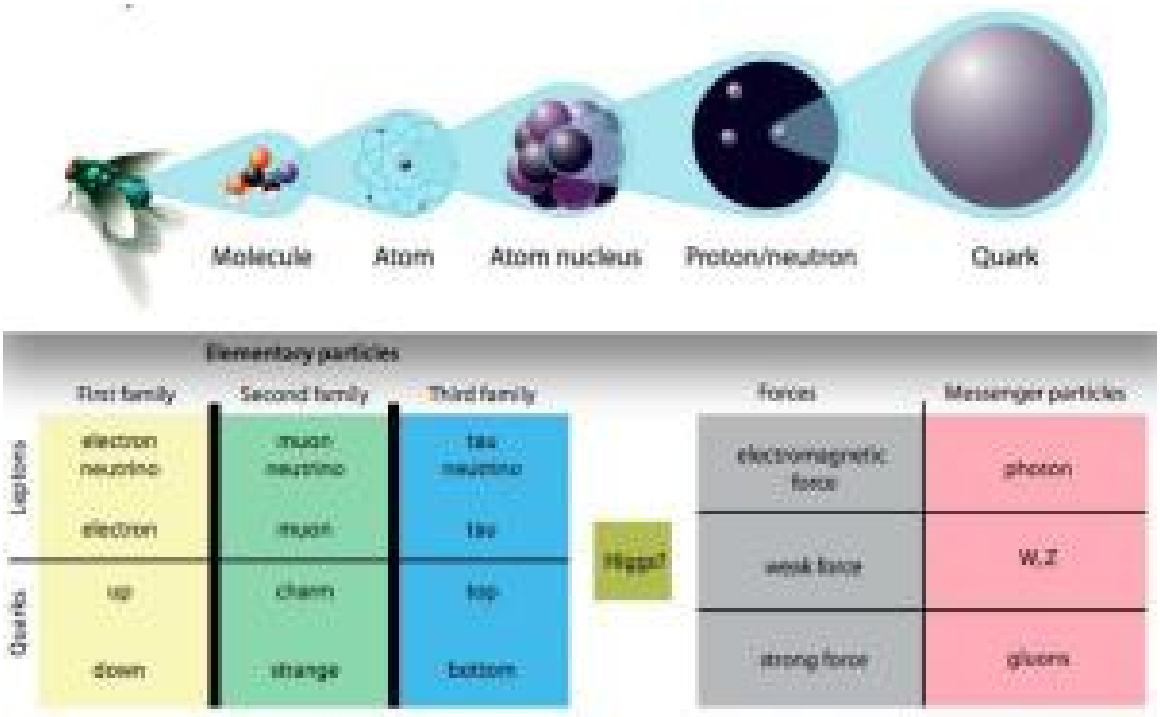
The team's results will be published on 28 September 2008 in an early online edition of the journal Nature Genetics, and in the November print issue of the journal.

This research was supported by grants from the Ministry of Science and Technology of China, the National Science Foundation of China, and the Shanghai Institutes for Biological Sciences.

Adapted from materials provided by Penn State.

http://www.sciencedaily.com/releases/2008/09/080928145607.htm

Discovery Of 'Broken Symmetry' At Subatomic Level Earns 2008 Nobel Prize In Physics



Electrons and quarks are the smallest building blocks of all matter. The Standard Model today unifies all the fundamental building blocks of matter and three of the four fundamental forces. While all known matter is built with particles from the first family, the other particles exists but only for extremely short time periods. To complete the Model a new particle is needed -- the Higgs particle -- that the physics community hopes to find in the new built accelerator LHC at CERN in Geneva. (Credit: Image courtesy of Nobel Foundation)

ScienceDaily (Oct. 7, 2008) — The Royal Swedish Academy of Sciences has awarded the Nobel Prize in Physics for 2008 with one half to Yoichiro Nambu, of the Enrico Fermi Institute at the University of Chicago, "for the discovery of the mechanism of spontaneous broken symmetry in subatomic physics," and the other half jointly to Makoto Kobayashi, of Japan's High Energy Accelerator Research Organization (KEK) and Toshihide Maskawa, of the Yukawa Institute for Theoretical Physics (YITP) at Kyoto University, "for the discovery of the origin of the broken symmetry which predicts the existence of at least three families of quarks in nature."

Passion for symmetry

The fact that our world does not behave perfectly symmetrically is due to deviations from symmetry at the microscopic level.

As early as 1960, Yoichiro Nambu formulated his mathematical description of spontaneous broken symmetry in elementary particle physics. Spontaneous broken symmetry conceals nature’s order under an apparently jumbled surface. It has proved to be extremely useful, and Nambu’s theories permeate the Standard Model of elementary particle physics. The Model unifies the smallest building blocks of all matter and three of nature’s four forces in one single theory.

The spontaneous broken symmetries that Nambu studied, differ from the broken symmetries described by Makoto Kobayashi and Toshihide Maskawa. These spontaneous occurrences seem to have existed in nature since the very beginning of the universe and came as a complete surprise when they first appeared in particle experiments in 1964.

It is only in recent years that scientists have come to fully confirm the explanations that Kobayashi and Maskawa made in 1972. It is for this work that they are now awarded the Nobel Prize in Physics. They explained broken symmetry within the framework of the Standard Model, but required that the Model be extended to three families of quarks. These predicted, hypothetical new quarks have recently appeared in physics experiments.

As late as 2001, the two particle detectors BaBar at Stanford, USA and Belle at Tsukuba, Japan, both detected broken symmetries independently of each other. The results were exactly as Kobayashi and Maskawa had predicted almost three decades earlier.

A hitherto unexplained broken symmetry of the same kind lies behind the very origin of the cosmos in the Big Bang some 14 billion years ago. If equal amounts of matter and antimatter were created, they ought to have annihilated each other.

But this did not happen, there was a tiny deviation of one extra particle of matter for every 10 billion antimatter particles. It is this broken symmetry that seems to have caused our cosmos to survive.

The question of how this exactly happened still remains unanswered. Perhaps the new particle accelerator LHC at CERN in Geneva will unravel some of the mysteries that continue to puzzle us.

Yoichiro Nambu, a US citizen, was born in 1921 in Tokyo, Japan. He obtained his D.Sc. in 1952 at University of Tokyo, Japan. And he is now Harry Pratt Judson Distinguished Service Professor Emeritus at Enrico Fermi Institute, University of Chicago.

Makoto Kobayashi, a Japanese citizen, was born in 1944 in Nagoya, Japan. He obtained his Ph.D. in 1972 at Nagoya University, Japan. And he is now Professor Emeritus at High Energy Accelerator Research Organization (KEK), Tsukuba, Japan.

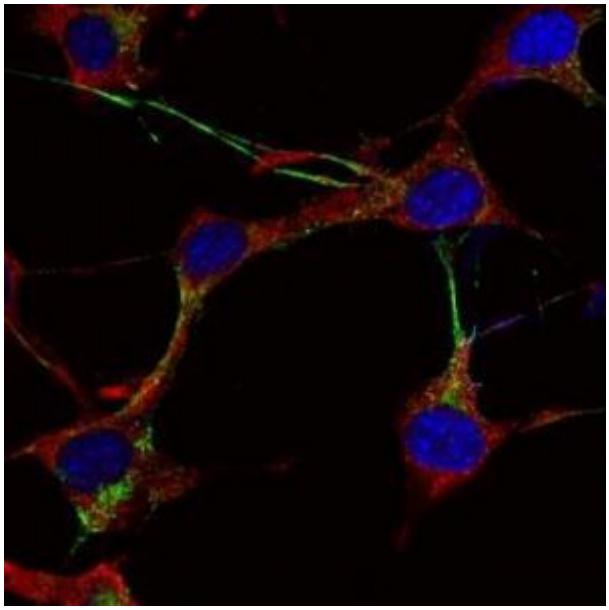
Toshihide Maskawa, also a Japanese citizen, was born in 1940. He obtained his Ph.D. in 1967 at Nagoya University, Japan. And he is now Professor Emeritus at Yukawa Institute for Theoretical Physics (YITP), Kyoto University, Japan.

The prize amount is SEK 10 million. Nambu receives one half and Kobayashi and Maskawa share the other half.

Adapted from materials provided by Nobel Foundation.

http://www.sciencedaily.com/releases/2008/10/081007104921.htm

Receptor Could Halt Blinding Diseases, Stop Tumor Growth, Preserve Neurons After Trauma



GPR91 receptor. (Credit: Image courtesy of University of Montreal)

ScienceDaily (Oct. 7, 2008) — An international team of researchers has discovered what promises to be the on-off switch behind several major diseases.

In the advance online edition of Nature Medicine, scientists from Sainte-Justine Hospital Research Center, the Université de Montréal and the Institut national de la santé et de la recherche médicale (INSERM) in France report how the GPR91 receptor contributes to activate unchecked vascular growth that causes vision loss in common blinding diseases. These findings could also have wide-ranging and positive implications for brain tissue regeneration.

While investigating the molecular mechanisms that lead to vision loss, the research team uncovered that the GPR91 receptor can mediate irregular vascular growth that is responsible for some of the main causes of blindness in the industrial world: retinopathy of prematurity in infants, diabetic retinopathy in adults (vision loss or blindness that affects up to 90 percent of diabetics) or age-related macular degeneration in seniors (central vision loss).

"We found that GPR91 is a master regulator of blood vessel growth, which upon enhanced activation leads to the unchecked and anarchic proliferation of vascular networks, which is the hallmark of retinopathies. This uncontrolled overgrowth can ultimately cause the retina to detach and a person to lose their sight," says Dr. Mike Przemyslaw Sapieha, the study's lead author and a scientist at the Sainte-Justine Hospital Reserch Center and the Université de Montréal.

"With the identification of GPR91 as a key player in this disease process, we can move forward in designing treatments that block the receptor and consequently stop vision loss," adds Dr. Sapieha. "Inhibition of GPR91 has a great therapeutic potential to halt these blinding diseases."

GPR91 to preserve neurons

The team's study also provides promise that the GPR91 receptor could preserve neurons. "Neurons are key sensors in retina oxygenation and serve as key players in the repair process of the retina," explains

Dr. Sylvain Chemtob, director of the study and a neonatal researcher at the Sainte-Justine Hospital Research Center and professor at the Université de Montréal's Department of Pediatrics, Ophthalmology, Pharmacology and the School of Optometry.

"Given the similarities between the retina and the brain, we can envisage applying our findings in retina to the brain," says Dr. Chemtob. "Activation of the GPR91 receptor could be beneficial in helping salvage neurons in damaged brain tissue in stroke or head injury victims."

GPR91 to stop cancer growth

This study is the first to examine the wide-ranging implications of GPR91 and to investigate how the receptor, which is present in neurons, responds to stresses and adjust when in its oxygenation state is compromised. "This is a new concept in vascular biology," says Dr. Sapieha, noting it is conceivable that interfering with the GPR91 receptor could be used to stop cancer growth. "If you stop GPR91 from allowing blood vessels to expand and supply a tumour with nutrients and oxygen, one can significantly hamper growth of the cancer."

While these promising investigations on GPR91 were conducted in animals, the receptor is also found in humans, and Dr. Chemtob surmises that extension of the research to human clinical investigations could be in three to fours years. "We expect these findings to have an enormous impact," he says.

This study was funded through grants from the Canadian Institutes of Health Research, the Heart and Stroke Foundation of Quebec, the Fonds de la recherche en santé du Québec, the Heart and Stroke Foundation of Canada, the March of Dimes Birth Defects Foundation, the Robert A. Welch Foundation and the Foundation Fighting Blindness.

Journal reference:

1. Sapieha et al. **The succinate receptor GPR91 in neurons plays a major role in retinal angiogenesis**. *Nature Medicine*, Published online: 5 October 2008 DOI: 10.1038/nm.1873

Adapted from materials provided by University of Montreal.

http://www.sciencedaily.com/releases/2008/10/081006112103.htm

Seeing Race And Seeming Racist? Whites Go Out Of Their Way To Avoid Talking About Race

ScienceDaily (Oct. 7, 2008) — White people – including children as young as 10 -- may avoid talking about race so as not to appear prejudiced, according to new research. But that approach often backfires as blacks tend to view this "colorblind" approach as evidence of prejudice, especially when race is clearly relevant.

These results are from two separate sets of experiments led by researchers from Tufts University and Harvard Business School. Their findings are reported in the October issue of the Journal of Personality and Social Psychology and the September issue of Developmental Psychology. Both journals are published by the American Psychological Association.

"Efforts to talk about race are fraught with the potential for misunderstandings," said the studies' lead author, Evan Apfelbaum, a PhD candidate at Tufts University. "One way that whites try to appear unbiased is to avoid talking about race altogether, a tendency we refer to as strategic colorblindness."

In one study, 101 white undergraduate students were paired with either a white or black female partner who pretended to be another participant. The pairs were presented with 30 photographs of faces that varied in race, gender and background color. Each white participant's objective was to guess which of the photographs the partner was holding by asking as few yes-or-no questions as possible.

Even though asking about the race of the person in the photograph was a sound strategy for completing the task, white participants were far less likely to do so with a black versus a white partner. Moreover, when the black partner was the first one to have a turn asking questions, whether she mentioned race had a dramatic effect. White participants whose black partner asked about race mentioned race on their own turn 95 percent of the time. When the black partner never asked about race, white participants only did so 10 percent of the time.

"There was clear evidence the white participants' behavior was influenced by the precedent set by their partner, but especially when that partner was black," said Samuel Sommers, assistant professor at Tufts and co-author of both papers. "Whites are strategically avoiding the topic of race because they're worried that they'll look bad if they admit they notice it in other people."

The researchers also wanted to see how outsiders interpreted such interactions. In another experiment, 74 black and white college students evaluated videos of whites engaging in the photo task. The results showed that whites' effort to appear colorblind backfired. Black observers rated whites' avoidance of asking about race as being evidence of prejudice. What's more, when the researchers showed silent video clips of whites from the study to another group of individuals, those whites who avoided asking about race were judged as less friendly, just on the basis of their nonverbal behavior.

"The findings suggest that when race is clearly relevant, whites who think that it is a wise social strategy to avoid talking about race should think again," said Apfelbaum.

Even children appear to adopt this strategically colorblind approach. In another set of experiments, 101 white children between the ages of 8 and 11 were asked to perform a similar photo task. The children were told that asking as few yes-or-no questions as possible would mean they would get a higher score on the task.

The results showed that the older children, ages 10 and 11, avoided asking about race more than the younger children, even though this led them to perform less efficiently than their younger counterparts on the task. In a control version where all the faces in the photos were white, the older children outperformed the younger children, as expected. "This result is fascinating because it shows that children as young as

10 feel the need to try to avoid appearing prejudiced, even if doing so leads them to perform poorly on a basic cognitive test," said Kristin Pauker, a PhD candidate at Tufts and co-author of this study.

The authors associated with both studies said their findings offer several important implications. "Our findings don't suggest that individuals who avoid talking about race are racists," Apfelbaum explained. "On the contrary, most are well-intentioned people who earnestly believe that colorblindness is the culturally sensitive way to interact. But, as we've shown, bending over backward to avoid even mentioning race sometimes creates more interpersonal problems than it solves."

Journal references:

1. Apfelbaum, Evan P.; Sommers, Samuel R.; Norton, Michael I. **Seeing race and seeming racist? Evaluating strategic colorblindness in social interaction.**. *Journal of Personality and Social Psychology*, 2008; 95 (4): 918 DOI: 10.1037/a0011990
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Adapted from materials provided by American Psychological Association.

http://www.sciencedaily.com/releases/2008/10/081006092518.htm

The Green Sahara, A Desert In Bloom

Dr. Rik Tjallingii investigates the Earth's climatic past by analysing sediment cores from the sea floor; here at the Institute of Geosciences at Kiel University. (Credit: CAU, J. Haacks)

ScienceDaily (Oct. 7, 2008) — Reconstructing the climate of the past is an important tool for scientists to better understand and predict future climate changes that are the result of the present-day global warming. Although there is still little known about the Earth's tropical and subtropical regions, these regions are thought to play an important role in both the evolution of prehistoric man and global climate changes.

New North African climate reconstructions reveal three 'green Sahara' episodes during which the present-day Sahara Desert was almost completely covered with extensive grasslands, lakes and ponds over the course of the last 120.000 years. The findings of Dr. Rik Tjallingii, Prof. Dr. Martin Claussen and their colleagues will be published in the October issue of Nature Geoscience.

Scientists of the MARUM – Center for Marine Environmental Research in Bremen (Germany) and the Alfred-Wegener-Institute in Bremerhaven (Germany) studied a marine sediment core off the coast of Northwest Africa to find out how the vegetation cover and hydrological cycle of the Sahara and Sahel region changed. The scientists were able to reconstruct the vegetation cover of the last 120.000 years by studying changes in the ratio of wind and river-transported particles found in the core. "We found three distinct periods with almost only river-transported particles and hardly any wind dust particles, which is remarkable because today the Sahara Desert is the world's largest dust-bowl," says Rik Tjallingii.

He now works at Kiel University, researching within the cluster of excellence 'The Future Ocean'. The scientists explain these periods by an increase of the precipitation that resulted in a much larger vegetation cover resulting in less wind dust and stronger river activity in the Sahara region. The green Sahara episodes correspond with the changing direction of the earth's rotational axis that regulates the solar energy in the tropical Atlantic Ocean. Periods of maximum solar energy increased the moisture production while pushing the African monsoon further north and increasing precipitation in the Sahara.

To validate their interpretations, the scientist compared their geological reconstruction with a computer model simulation of the Sahara vegetation cover, performed by the research group of Prof. Dr. Martin Claussen. Dr. Claussen is Director of the Max-Planck-Institute of Meteorology in Hamburg and chairs the cluster of excellence 'Integrated Climate System Analysis and Prediciton' at the University of Hamburg.

The computer model simulation shows three periods with an almost completely vegetated Sahara at the same time as seen in the geological record. This supports the interpretation of geologists and, in turn, demonstrates the value of computer model results. Additionally, the computer model indicates that only a small increase in precipitation is sufficient to develop a vegetation cover in the Sahara.

Computer model simulations for the future suggest an expansion of the vegetation cover in the Sahara Desert if human-driven climate change leads to aggressive global warming. However, it is difficult to conclude that the Sahara will actually become greener than it is today, as the simulations do not account for the influence of human activity in this area.

Adapted from materials provided by Christian-Albrechts-Universitaet zu Kiel.

http://www.sciencedaily.com/releases/2008/09/080930081357.htm

Are Bad Times Healthy?

By TARA PARKER-POPE

Most people are worried about the health of the economy. But does the economy also affect your health?

It does, but not always in ways you might expect. The data on how an economic downturn influences an individual's health are surprisingly mixed.

It's clear that long-term economic gains lead to improvements in a population's overall health, in developing and industrialized societies alike.But whether the current economic slump will take a toll on your own health depends, in part, on your health habits when times are good. And economic studies suggest that people tend not to take care of themselves in boom times — drinking too much (especially before driving), dining on fat-laden restaurant meals and skipping exercise and doctors' appointments because of work-related time commitments.

"The value of time is higher during good economic times," said Grant Miller, an assistant professor of medicine at Stanford. "So people work more and do less of the things that are good for them, like cooking at home and exercising; and people experience more stress due to the rigors of hard work during booms."

Similar patterns have been seen in some developing nations. Dr. Miller, who is studying the effects of fluctuating coffee prices on health in Colombia, says that even though falling prices are bad for the economy, they appear to improve health and mortality rates. When prices are low, laborers have more time to care for their children."When coffee prices suddenly rise, people work harder on their coffee plots and spend less time doing things around the home, including things that are good for their children," he said. "Because the things that matter most for infant and child health in rural Colombia aren't expensive, but require a substantial amount of time — such as breast-feeding, bringing clean water from far away, taking your child to a distant health clinic for free vaccinations — infant and child mortality rates rise."

In this country, a similar effect appeared in the Dust Bowl during the Great Depression, according to a 2007 paper by Dr. Miller and colleagues in The Proceedings of the National Academy of Sciences.

The data seem to contradict research in the 1970s suggesting that in hard times there are more deaths from heart disease, cirrhosis, suicide and homicide, as well as more admissions to mental hospitals. But those findings have not been replicated, and several economists have pointed out flaws in the research.

In May 2000, the Quarterly Journal of Economics published a surprising paper called "Are Recessions Good for Your Health?" by Christopher J. Ruhm, professor of economics at the University of North Carolina, Greensboro, based on an analysis measuring death rates and health behavior against economic shifts and jobless rates from 1972 to 1991.Dr. Ruhm found that death rates declined sharply in the 1974 and 1982 recessions, and increased in the economic recovery of the 1980s. An increase of one percentage point in state unemployment rates correlated with a 0.5 percentage point decline in the death rate — or about 5 fewer deaths per 100,000 people. Over all, the death rate fell by more than 8 percent in the 20-year period of mostly economic decline, led by drops in heart disease and car crashes.

The economic downturn did appear to take a toll on factors having less to do with prevention and more to do with mental well-being and access to health care. For instance, cancer deaths rose 23 percent, and deaths from flu and pneumonia increased slightly. Suicides rose 2 percent, homicides 12 percent.

The issue that may matter most in an economic crisis is not related to jobs or income, but whether the slump widens the gap between rich and poor, and whether there is an adequate health safety net available to those who have lost their jobs and insurance.During a decade of economic recession in Japan that began in the 1990s, people who were unemployed were twice as likely to be in poor health than those with secure jobs. During Peru's severe economic crisis in the 1980s, infant mortality jumped 2.5 percentage points — about 17,000 more children who died as public health spending and social programs collapsed.In August, researchers from the Free University of Amsterdam looked at health studies of twins in Denmark. They found that individuals born in a recession were at higher risk for heart problems later in life and lived, on average, 15 months less than those born under better conditions.

Gerard J. van den Berg, an economics professor who was a co-author of the study, said babies in poor households suffered the most in a recession, because their families lacked access to good health care. Poor economic conditions can also cause stress that may interfere with parent bonding and childhood development, he said.He noted that other studies had found that recessions can benefit babies by giving their parents more time at home."This scenario may be relevant for well-to-do families where one of the parents loses a job and the other still brings in enough money," he said. "But in a crisis where the family may have to incur huge housing-cost losses and the household income is insufficient for adequate nutrition and health care, the adverse effects of being born in a recession seem much more relevant."

In this country, there are already signs of the economy's effect on health. In May, the market research firm Information Resources reported that 53 percent of consumers said they were cooking from scratch more than they did just six months before — in part, no doubt, because of the rising cost of prepared foods. At the same time, health insurance costs are rising. With premiums and co-payments, the average employee with insurance pays nearly one-third of medical costs — about twice as much as four years ago, according to Paul H. Keckley, executive director of the Deloitte Center for Health Solutions.

In the United States, which unlike other industrialized nations lacks a national health plan, the looming recession may take a greater toll. About 46 million Americans lack health insurance, Dr. Keckley says, and even among the 179 million who have it, an estimated 1 in 7 would be bankrupted by a single health crisis.

The economic downturn "is not good news for the health care industry," he said. "There may be slivers of positive, but I view this as sobering."

http://www.nytimes.com/2008/10/07/health/07well.html?nl=8hlth&emc=hltha1

Small Intestine Can Sense And React To Bitter Toxins In Food

Timothy Osborne identified regulatory proteins in the small intestine (background) that slows digestion of food toxins. (Credit: Photo by Daniel A. Anderson)

ScienceDaily (Oct. 10, 2008) — Toxins in food often have a bad, bitter taste that makes people want to spit them out. New UC Irvine research finds that bitterness also slows the digestive process, keeping bad food in the stomach longer and increasing the chances that it will be expelled.

This second line of defense in the gut against dietary toxins also triggers the production of a hormone that makes people feel full, presumably to keep them from eating more of the toxic food.

This discovery has the potential to help scientists develop better therapies for ailments ranging from cancer to diabetes, and it may explain why certain isolated populations around the world have adapted to eat and enjoy local foods that taste bad to outsiders and make them sick.

The study, appearing online Oct. 9 in the Journal of Clinical Investigation, was performed with mice, and the results probably translate to humans, said Timothy Osborne, molecular biology and biochemistry professor and study senior author.

"We have evolved mechanisms to combat the ingestion of toxins in our food," Osborne said. "This provides a framework for an entirely new area of research on how our bodies respond to what is present in our diets."

Mammals have evolved to dislike the bitter taste of toxins in food. This response is particularly important when they eat a lot of plant material, which tends to contain more bitter-tasting, potentially toxic ingredients than meat.

Examples of bitter-tasting toxins include phenylthiourea, a compound that destroys the thyroid gland, and quinine, found in tonic water, which can be deadly in large doses.

If toxins are swallowed, bitter-taste receptors in the gut sense them and trigger the production of a hormone called cholecystokinin that both suppresses appetite and slows the movement of food from the stomach to the small intestine.

Interestingly, the UCI scientists found that cholesterol regulates the activity of bitter-taste receptors in the intestine, and diets high in plant material and potential toxins naturally are low in cholesterol, compared to low-toxin, high-cholesterol, meat-based diets.

In small intestine cell cultures, low levels of cholesterol triggered a stronger receptor response – meaning they worked better – while high levels caused a weaker response.

The same response was observed in mice that were given drugs to stop the production and absorption of cholesterol. Not only were their receptors more active, their small intestine cells produced two to three times the amount of the appetite-suppressing hormone in the presence of bitter food, compared to normal mice.

Scientists say that regulation of taste receptors by dietary constituents likely explains why groups of people taste certain foods differently.

"One group of people may think something tastes great and can metabolize it just fine, but a group from the outside may think it tastes horrible and get sick," Osborne said. "The first group likely adapted to the food through a change in the expression and pattern of their dietary sensing molecules."

With this knowledge, scientists could make medicines less bitter, which in turn would allow for increased palatability and quicker absorption. Drugs used to treat cancer sometimes include molecules that taste bitter. Also, changing the patient's eating habits could improve the effectiveness of such drugs.

In addition to the appetite-suppressing hormone, bitter-taste receptors in the gut activate the production of glucagon-like peptide 1, a protein that stimulates insulin secretion in the pancreas. Drugs currently are on the market that attempt to stabilize this protein in people with diabetes, and therapies aimed at increased production are attractive therapeutic targets.

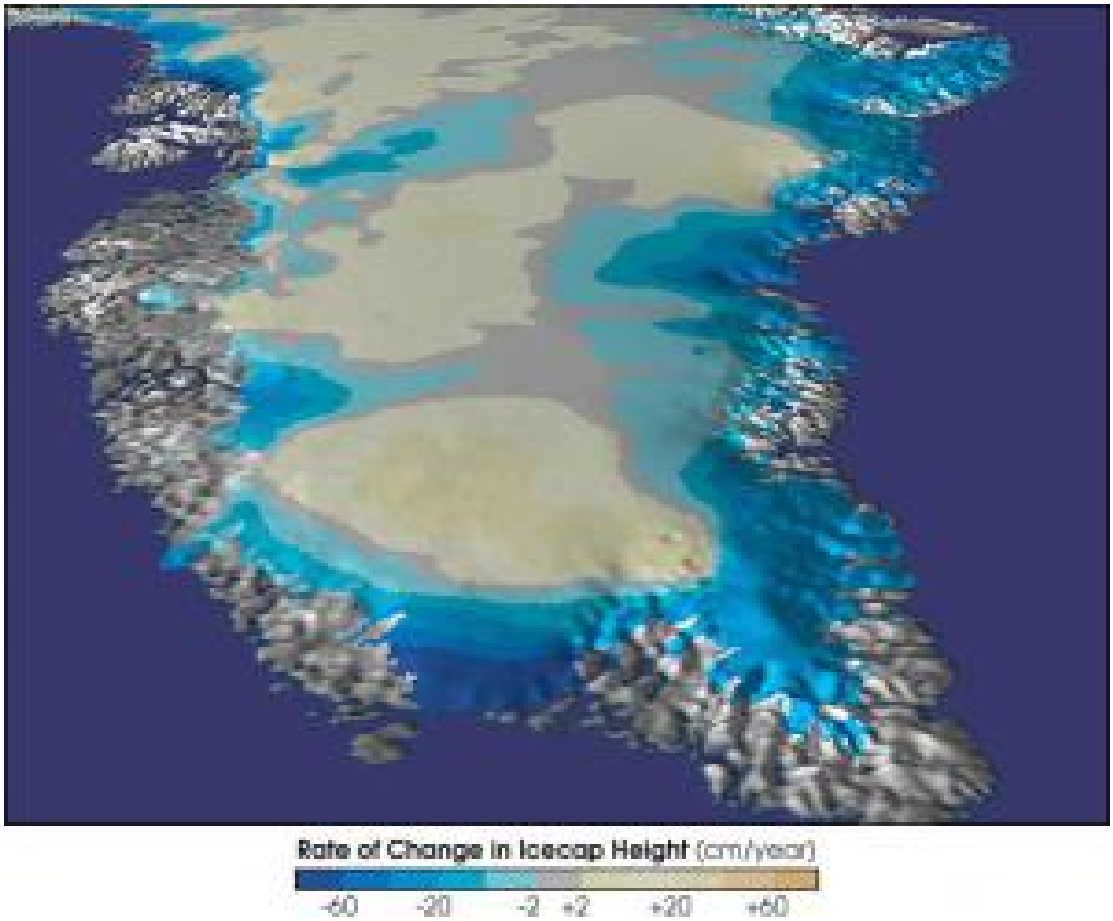
"Because bitter-taste receptors are expressed in the gut, a new avenue exists to identify ways to stimulate production of GLP-1," Osborne said. "It could be very beneficial for the treatment of diabetes and possibly other diseases."

UCI scientists Tae-Il Jeon, Bing Zhu and Jarrod Larson also worked on this study, which was funded by the National Institutes of Health.

Adapted from materials provided by University of California - Irvine.

http://www.sciencedaily.com/releases/2008/10/081009185032.htm

Thinning Of Greenland Glacier Attributed To Ocean Warming Preceded By Atmospheric Changes



Thinning Greenland icecap, year 2000. The sudden thinning in 1997 of Jakobshavn Isbræ, one of Greenland's largest glaciers, was caused by subsurface ocean warming, according to new research. (Credit: Earth Observatory, NASA)

ScienceDaily (Oct. 10, 2008) — The sudden thinning in 1997 of Jakobshavn Isbræ, one of Greenland's largest glaciers, was caused by subsurface ocean warming, according to research published in the journal Nature Geoscience. The research team traces these oceanic shifts back to changes in the atmospheric circulation in the North Atlantic region.

The study, whose lead author was David Holland, director of the Center for Atmosphere Ocean Science, part of New York University's Courant Institute of Mathematical Sciences, suggests that ocean temperatures may be more important for glacier flow than previously thought.

The project also included scientists from the Wallops Flight Facility, Canada's Memorial University, the Danish Meteorological Institute, and the Greenland Institute of Natural Resources.

Jakobshavn Isbræ, a large outlet glacier feeding a deep-ocean fjord on Greenland's west coast, went from slow thickening to rapid thinning beginning in 1997. Several explanations have been put forward to explain this development. The scientists in the Nature Geoscience study sought to address the matter comprehensively by tracing changes in ocean temperatures and the factors driving these changes.

In doing this, they relied on previous results published by others that used NASA's Airborne Topographic Mapper, which has made airborne surveys along a 120-kilometer stretch in the Jakobshavn ice-drainage basin nearly every year since 1991. While many other glaciers were thinning around Greenland, these surveys revealed that Jakobshavn Isbræ thickened substantially from 1991 to 1997. But, after 1997, Jakobshavn Isbræ began thinning rapidly. Between 1997 and 2001, Airborne Topographic Mapper surveys showed an approximately 35-meter reduction in surface elevations on the glacier's 15-kilomater floating ice tongue. This is far higher than thinning rates of grounded ice immediately upstream.

The researchers reported that these changes coincided with jumps in subsurface ocean temperatures. These temperatures were recorded by the Greenland Institute of Natural Resources from 1991 to 2006 over nearly the entire western Greenland continental shelf. These data indicate a striking, substantial jump in bottom temperature in all parts in the survey area during the second half of the 1990s. In particular, they show that a warm water pulse arrived suddenly on the continental shelf on Disko Bay, which is in close proximity Jakobshavn Isbræ, in 1997. The arrival coincided precisely with the rapid thinning and subsequent retreat of Jakobshavn Isbræ. The warm water mass remains today, and Jakobshavn Isbræ is still in a state of rapid retreat.

The remaining question, then, is what caused the rise in water temperatures during this period.

The researchers traced these oceanic changes back to changes in the atmospheric circulation in the North Atlantic region. The warm, subsurface waters off the west Greenland coast are fed from the east by the subpolar gyre—or swirling water—of the North Atlantic, by way of the Irminger current. The current flows westward along the south coast of Iceland. Since the mid-1990s, observations show a warming of the subpolar gyre and the northern Irminger Basin, which lies south of Greenland. The researchers attributed this warming to changes in the North Atlantic Oscillation (NAO), which is a large-scale fluctuation in the atmospheric pressure system situated in the region. The surface pressure drives surface winds and wintertime storms from west to east across the North Atlantic affecting climate from New England to western Europe.

Specifically, they noted a major change in the behavior of the NAO during the winter of 1995?, which weakened the subpolar gyre, allowing warm subpolar waters to spread westward, beneath colder surface polar waters, and consequently on and over the west Greenland continental shelf.

"The melting of the ice sheets is the wild card of future sea level," Holland explained, "and our results hint that modest changes in atmospheric circulation, possibly driven by anthropogenic influences, could also cause future rapid retreat of the Antarctic Ice Sheet, which holds a far greater potential for sea level rise."

The research was supported by a grant from the National Science Foundation's Office of Polar Programs.

Adapted from materials provided by New York University, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/09/080929093754.htm

Population Growth Puts Dent In Natural Resources

Researcher Robert Criss says politicians are ignoring the issue of population growth, and both the United States and the world will suffer consequences. (Credit: iStockphoto/Alex Slobodkin)

ScienceDaily (Oct. 10, 2008) — It's a 500-pound gorilla that Robert Criss, Ph.D., professor of earth and planetary sciences in Arts & Sciences at Washington University in St. Louis, sees standing on the speaker's dais at political rallies, debates and campaigns. Its name is population growth.

"Population growth is driving all of our resource problems, including water and energy. The three are intertwined," Criss says. "The United States has over 305 million people of the 6.7 billion on the planet. We are dividing a finite resource pie among a growing number of people on Earth. We cannot expect to sustain exponential population growth matched by increased per capita use of water and energy. It's troubling. But politicians and religious leaders totally ignore the topic."

Criss specializes in hydrogeology, the geology of water and systems of water. Much of his work has an environmental slant. He investigates the transport of aqueous fluids in environments such as rivers, cool potable groundwater systems essential to civilization, and deeper, hotter hydrothermal systems. The results may be combined with physical, chemical or geologic data to infer numerous aspects about the origin of waters and the processes that subsequently affect them.

A major focus for Criss and his associates is the origin, character and behavior of river and floodwaters in the Mississippi, Missouri and Meramec River basins. Since 1990, the mid-continent experienced floods of such severity that they would not, under normal circumstances, be expected to have all occurred in a

period of less than several centuries. Criss and a colleague have proven that engineering modifications of waterways have increased the frequency and severity of floods on most Midwestern rivers.

For decades, he has taught a popular non-major course for undergraduates, Human Use of the Earth.

The United States is experiencing rapid population growth — at a rate higher than almost any other developed country — along with increased food production, Criss says. In many areas, especially the West, the practice of "mining" ground water to irrigate arid or semiarid land, which won't work in the long run, is becoming commonplace. "Energy and water use are intimately related," he says. "As water tables decline, you have to use more energy to lift the water out of the ground. That's what a pump has to do in places like Arizona where water levels have dropped many hundreds of feet. More people, more water use, more food, more energy. It's not sustainable."

Criss says approximately 150 million Americans use ground water, most of which is nonrenewable. When a well cannot pass drinking water standards, it is shut down and another one is drilled. Ground water extraction leads to dropping water levels in many places, and subsidence (saltwater intrusion) in others. The latter is the case in some of Florida's coastal cities, where salt water mixed with ground water has made drinking water unpalatable.

"Ground water, fossil fuel resources, cropland and forests are all being depleted or degraded," he says. "Thoughtful arguments can be made that for a sustainable world, we already have too many people, far more than can live by decent standards."

He says that, worldwide, the rates of increases of water and energy use have risen faster than population growth for the past 50 years. The fertility rate has actually lowered in much of the world, but the United States rate of 2.1 children for every woman of child-bearing age between 15 and 49, is now not much below the world's average, which is 2.6.

Despite what might appear as progress, Criss is disappointed that the United States has not contributed to the United Nations Population Fund for the past seven years. The Population Fund, begun in 1969, enables people in participating countries to learn about population growth and reproductive health.

"These U.N. projects have made great progress without any help from the United States." Criss says. "Many countries are seeing reduced growth rates. Africa still has a bad problem, but things are not as bleak as seven years ago. There are many medical, logistical and environmental reasons that these efforts should be supported. It's a considerable embarrassment to me that my country isn't chipping in."

Criss says there is a dearth of thoughtful dialogue on mankind's pressing problems in the political arena. The politicians, he thinks, see the 500-pound gorilla but ignore it.

"Having children when you're too young, too old, or having too many children, is not good for the world," he says. "Some of the candidates seem to have world views incompatible with the realities of the world. It's obvious there are too few resources to go around now. The notion that we can just continue to grow and grow and grow is not realistic."

Criss says real change can come if the country can grasp the great risks involved with our present approach.

"There's an old saw that the definition of insanity is doing the same thing over and over and expecting a different result," he says. "Oddly enough, that is our current energy policy, and it's not a winner."

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

http://www.sciencedaily.com/releases/2008/10/081008091127.htm

Deep Magma Matters: Volcanic Eruptions More Complex And Harder To Predict

Pyroclastic flow across old city of Plymouth from the Soufrière Hills volcano on the island of Montserrat in the Caribbean. (Credit: iStockphoto/Sean Hannah)

ScienceDaily (Oct. 9, 2008) — New research by a team of US and UK scientists into volcanoes has found that they function in a far more complex way than previously thought, making future eruptions even harder to predict.

Although the Soufrière Hills volcano on the Caribbean island of Montserrat exhibits cycles of eruption and quiet, the international team of researchers found that magma is continuously supplied from deep in the crust but that a valve acts below a shallower magma chamber, releasing lava to the surface periodically.

"Continuous records of surface deformation are available for only a few volcanoes," says Derek Elsworth, professor of energy and geo-environmental engineering, Penn State. "The Soufrière Hills volcano has been erupting since 1995 and provides a peek into the processes occurring deep beneath this stratovolcano."

Stratovolcanoes are one of the most common forms of volcano on Earth. They are cone-shaped with steep sides created by episodic eruptions of magma that flow down from the cone a short way and create layer upon layer of volcanic material.

The researchers, who include Elsworth; Barry Voight, professor emeritus of geology and geological engineering, and Joshua Taron, a doctoral student in energy and geo-environmental engineering, Penn State; Glen Mattioli, professor of geosciences, University of Arkansas, and Richard Herd, senior lecturer in geophysical Earth observation, University of East Anglia, UK, report on using measurements of ground inflation and deflation as a window to the transfer of magma deep within the crust. From these observations, "it is apparent that the major changes in magma storage that have supplied the eruption are

from depth, with the lower reservoir contributing only a third of the erupted volume," they say in the journal Science.

In 1995, the Soufrière Hills volcano began the current series of eruptions and pauses. The November 1995 event lasted until March 1998, during which time a dome of andesite – a volcanic rock – grew continuously. From March 1998 until November 1999, there was a pause in above ground volcanic activity and the lava dome collapsed from its own weight and inactivity. Beginning in December 1999, the second episode continued until mid-July 2003, followed by a pause until October 2005. The third episode began then and ended in March 2007.

"The pause that began in 2007 apparently ended in August 2008 with the slow extrusion of lava on the western flank of the dome," says Elsworth.

The pattern of eruptions and pauses might suggest that the magma beneath the Earth behaves in a stop-and-start pattern but the data indicate that magma production beneath the volcano is continuous and relatively constant. During eruptive pauses, the magma supply inflates the deep chamber until this stored magma is released into the upper chamber where it forces a renewed eruption. These observations implicate the deep reservoir in setting the timing of eruptions, rather than the shallow chamber, as had previously been considered.

The researchers believe that the upper reservoir is open and that there is a "valve" between it and the lower reservoir because the lower reservoir can refill while the upper reservoir is open and unaffected. It is unknown whether a build-up of heat or the pressure of gas breaches the valve from the lower to upper reservoir.

Analysis of the data collected on the Soufrière Hills volcano also indicates that the periodic eruptions deplete only the lower magma reservoir, not the upper reservoir. During lulls in eruption, the deep reservoir refills but at only half the rate that the magma was lost. Because the pauses between eruptions are shorter than the eruptions, the deep magma chamber does not make up the pre-eruption volume and the deep magma chamber, over time, contains less and less magma.

The National Science Foundation supported this work.

Journal reference:

1. Derek Elsworth, Joshua Taron and Barry Voight (all Penn State University), Richard Herd (University of East Anglia) and Glen Mattioli (University of Arkansas). **Implications of Magma Transfer Between Multiple Reservoirs on Eruption Cycling**. *Science*, October 10, 2008

Adapted from materials provided by Penn State.

http://www.sciencedaily.com/releases/2008/10/081009144101.htm

Researchers Discover How Infectious Bacteria Can Switch Species

Dr Nick Waterfield and Dr Maria Sanchez-Contreras are investigating bacteria that infect the Tobacco Hawk Moth caterpillar. (Credit: Image courtesy of University of Bath)

ScienceDaily (Oct. 9, 2008) — Scientists from the Universities of Bath and Exeter have developed a rapid new way of checking for toxic genes in disease-causing bacteria which infect insects and humans. Their findings could in the future lead to new vaccines and anti-bacterial drugs.

They studied a bacterium called Photorhabdus asymbiotica, which normally infects and kills insects, but which can also cause an unpleasant infection in humans.

By testing groups of genes from the bacteria against three types of invertebrates (insects, worms and amoebae) and mammalian cells, the scientists were able to identify toxins and other molecules, called virulence factors, made by the bacteria that allow it to infect each type of organism.

By pinning down the genes responsible for each of these possible virulence factors and comparing them with the genes of well known bacteria, the scientists have been able to map out which regions of the bacteria's DNA control its ability to infect and damage invertebrates, and also potentially humans.

The researchers from Bath and Exeter are publishing their findings in the prestigious journal Proceedings of the National Academy of Sciences of the United States of America.

Dr Nick Waterfield from the University of Bath's Department of Biology & Biochemistry said: "Many bacteria have evolved to infect one particular type of plant or animal and most of the toxins they use to do this also have an effect in other hosts.

"Some of the toxins they use for infecting can also allow the bacteria to jump across into another species like humans, perhaps with fatal consequences."

Dr Maria Sanchez-Contreras, who works with Dr Waterfield at the University of Bath said: "We have developed a new way of discovering a greater number of previously unknown toxins and measuring how dangerous or virulent these bacteria are. Identifying the genes responsible for the production and secretion of these bacterial toxins will allow us find ways to prevent disease.

"Our new technique, called Rapid Virulence Annotation (RVA), allows us to make faster assessments of the disease-causing agents in multiple types of organism; it lets us pinpoint sequences of genes which may pose a risk to humans; and it gives us a powerful tool to identify virulence genes in other known bacteria.

"Finally, it helps us identify new targets for drugs to fight these diseases and control pests, and for developing preventive vaccines."

Richard ffrench-Constant, Professor of insect microbiology from the University of Exeter's Cornwall Campus adds: "RVA allows us to look for virulence factors that are totally novel and does not rely upon traditional searches based on factors already known from other bacteria. We have already discovered that some totally unexpected genes are indeed involved in bacterial virulence. This technique should prove to be a gold mine for potential vaccine candidates."

The scientists are already using this relatively cheap and highly accurate RVA technique in other disease-causing bacteria to identify the genes which allow some diseases to jump the species barrier.

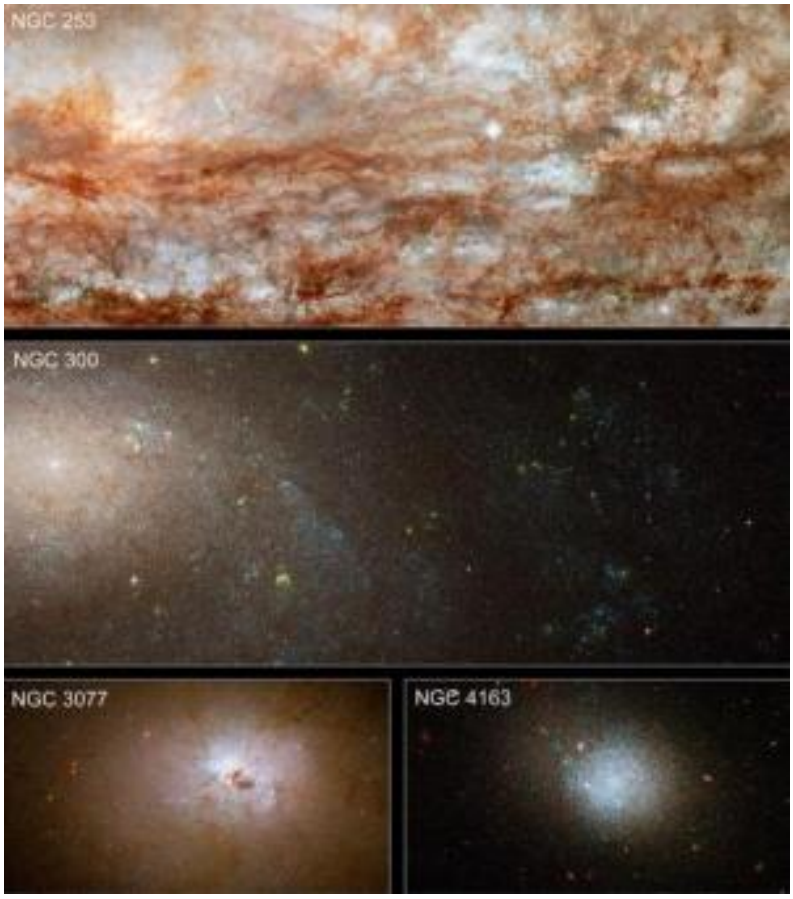
Journal reference:

1. Waterfield et al. **Rapid Virulence Annotation (RVA): Identification of virulence factors using a bacterial genome library and multiple invertebrate hosts**. *Proceedings of the National Academy of Sciences*, 2008; DOI: 10.1073/pnas.0711114105

Adapted from materials provided by University of Bath.

http://www.sciencedaily.com/releases/2008/10/081009072716.htm

When It Comes To Galaxies, Diversity Is Everywhere



These images taken with the NASA/ESA Hubble Space Telescope are close-up views of four galaxies from a large survey of nearby galaxies. In the composite image at the top, NGC 253 is ablaze with the light from thousands of young, blue stars. The spiral galaxy is undergoing intense star formation. The image demonstrates the sharp "eye" of the Advanced Camera, which resolved individual stars. The dark filaments are clouds of dust and gas. NGC 253 is the dominant galaxy in the Sculptor Group of galaxies and it resides about 13 million light-years from Earth. In the view of the spiral galaxy NGC 300, second from top, young, blue stars are concentrated in spiral arms that sweep diagonally through the image. The yellow blobs are glowing hot gas that has been heated by radiation from the nearest young, blue stars. NGC 300 is a member of the Sculptor Group of galaxies and it is located 7 million light-years away. The dark clumps of material scattered around the bright nucleus of NGC 3077, the small, dense galaxy at bottom, left, are pieces of wreckage from the galaxy's interactions with its larger neighbours. NGC 3077 is a member of the M81 group of galaxies and it resides 12.5 million light-years from Earth. The image at bottom, right, shows a swarm of young, blue stars in the diffuse dwarf irregular galaxy NGC 4163. NGC 4163 is a member of a group of dwarf galaxies near our Milky Way and is located roughly 10 million light-years away. (Credit: NASA, ESA, J. Dalcanton & B. Williams (University of Washington))

ScienceDaily (Oct. 9, 2008) — A group of galaxies in our cosmic backyard has given astronomers clues about how stars form. A thorough survey using the NASA/ESA Hubble Space Telescope has observed around 14 million stars in 69 galaxies. Some galaxies were found to be full of ancient stars, while others are like sun-making factories.

The detailed study, called the ACS Nearby Galaxy Survey Treasury (ANGST) program, explored a region called the Local Volume, where galaxy distances range from 6.5 million light-years to 13 million light-years from Earth.

A typical galaxy contains billions of stars but looks smooth when viewed through a conventional telescope because the stars appear blurred together. In contrast, the galaxies observed in this new survey are close enough to Earth that the sharp view provided by Hubble's Advanced Camera for Surveys and Wide Field Planetary Camera 2 can resolve the brightness and colour of some individual stars. This allows scientists to determine the history of star formation within a galaxy and tease out subtle features in a galaxy's shape.

"Past Hubble observations of the local neighbourhood have provided dramatic insights into the star-formation histories of individual galaxies, but the number of galaxies studied in detail has been rather small", said Julianne Dalcanton of the University of Washington in Seattle (USA) and leader of the ANGST survey. "Instead of picking and choosing particular galaxies to study, our survey will be complete by virtue of looking at 'all' the galaxies in the region. This gives us a multi-colour picture of when and where all the stars in the local Universe formed."

Many stars in nearby galaxies are the fossil equivalents of new stars forming in the far Universe. "When we look back in time at distant, young galaxies, we see lots of vigorous star formation. However, we can only guess as to what those galaxies might eventually turn into", Dalcanton explained. "Using the galaxies in the nearby Universe as a 'fossil record', we can compare them with young galaxies far away. This comparison gives us a history of star formation and provides a better understanding of the masses, structures, and environments of the galaxies."

Early results of the ANGST survey show the rich diversity of galaxies. Some are made up entirely of ancient stars, while others have been forming stars nearly continuously during their whole lives. There are even a few examples of galaxies that have only started forming stars in the recent past. "With these images, we can see what makes each galaxy unique", said team member Benjamin Williams of the University of Washington.The ANGST survey also includes maps of many large galaxies, including M81. "With these maps, we can track when the different parts of the galaxy formed", explained Evan Skillman of the University of Minnesota (USA), describing work by students Dan Weisz of the University of Minnesota and Stephanie Gogarten of the University of Washington.

In a separate paper describing the star-formation history in M81, astronomers confirmed that massive spiral galaxies formed most of their stars in the early Universe. Analysing M81's outer disk, the astronomers found that most of the stars formed more than 7 billion years ago, when the Universe was half its present age. M81 and other mammoth galaxies also experienced rapid enrichment of chemical elements heavier than the hydrogen and helium produced during the Big Bang, such as carbon, through the deaths of massive stars in supernova explosions. "We were surprised by how quickly the elements formed and how the subsequent star-formation rate for the bulk of the stars in M81 changed after that", said Williams, the paper's lead author.

"This rich survey will add to Hubble's legacy, providing a foundation for future studies", Dalcanton added. "With this information, we will be able to trace the complete cycle of star formation in detail."

The survey's results were submitted to The Astrophysical Journal Supplement Series. Another paper that details the star-formation history in galaxy M81 has been submitted to The Astronomical Journal.

Adapted from materials provided by European Space Agency.

http://www.sciencedaily.com/releases/2008/10/081001094346.htm

Computers 'Taught' To Search For Photos Based On Their Contents

ALIPR assigned the following keywords to this photo of a dinosaur exhibit at the American Museum of Natural History in New York, New York: rock, animal, landscape, man-made, people, cave, wildlife, indoor, interior, lizard, texture, design, grass, car, and building. (Credit: Penn State)

ScienceDaily (Oct. 9, 2008) — A pair of Penn State researchers has developed a statistical approach, called Automatic Linguistic Indexing of Pictures in Real-Time (ALIPR), that one day could make it easier to search the Internet for photographs.

The public can participate in improving ALIPR's accuracy by visiting a designated Web site (http://www.alipr.com), uploading photographs, and evaluating whether the keywords that ALIPR uses to describe the photographs are appropriate.

ALIPR works by teaching computers to recognize the contents of photographs, such as buildings, people, or landscapes, rather than by searching for keywords in the surrounding text, as is done with most current image-retrieval systems. The team recently received a patent for an earlier version of the approach, called ALIP, and is in the process of obtaining another patent for the more sophisticated ALIPR. They hope that eventually ALIPR can be used in industry for automatic tagging or as part of Internet search engines.

"Our basic approach is to take a large number of photos -- we started with 60,000 photos -- and to manually tag them with a variety of keywords that describe their contents. For example, we might select 100 photos of national parks and tag them with the following keywords: national park, landscape, and tree," said Jia Li, an associate professor of statistics at Penn State. "We then would build a statistical model to teach the computer to recognize patterns in color and texture among these 100 photos and to assign our keywords to new photos that seem to contain national parks, landscapes, and/or trees.

Eventually, we hope to reverse the process so that a person can use the keywords to search the Web for relevant images."

ALIPR assigned the following keywords to this photo of a dinosaur exhibit at the American Museum of Natural History in New York, New York: rock, animal, landscape, man-made, people, cave, wildlife, indoor, interior, lizard, texture, design, grass, car, and building.

Li said that most current image-retrieval systems search for keywords in the text associated with the photo or in the name that was given to the photo. This technique, however, often misses appropriate photos and retrieves inappropriate photos. Li's new technique allows her to train computers to recognize the semantics of images based on pixel information alone.

Li, who developed ALIPR with her colleague James Wang, a Penn State associate professor of information sciences and technology, said that their approach appropriately assigns to photos at least one keyword among seven possible keywords about 90 percent of the time. But, she added, the accuracy rate really depends on the evaluator. "It depends on how specific the evaluator expects the approach to be," she said. "For example, ALIPR often distinguishes people from animals, but rarely distinguishes children from adults."

Although the team's goal is to improve ALIPR's accuracy, Li said she does not believe the approach ever will be 100-percent accurate. "There are so many images out there and so many variations on the images' contents that I don't think it will be possible for ALIPR to be 100-percent accurate," she said. "ALIPR works by recognizing patterns in color and texture. For example, if a cat in a photo is wearing a red coat, the red coat may lead ALIPR to tag the photo with words that are irrelevant to the cat. There is just too much variability out there." Li currently is pursuing some new ideas that may help her to achieve better recognition of image semantics.

This work is being supported by the National Science Foundation.

Adapted from materials provided by Penn State.

http://www.sciencedaily.com/releases/2008/10/081009072208.htm

Using Algae To Convert Sunlight Into Biofuel

ScienceDaily (Oct. 9, 2008) — Scientists at the University of California, Berkeley want to make micro-algae "less green." That is, they hope to modify the tiny organisms so as to minimize the number of chlorophyll molecules needed to harvest light without compromising the photosynthesis process in the cells.

To that end, they have identified the genetic instructions in the algae genome responsible for deploying approximately 600 chlorophyll molecules in the cell's light-gathering antennae. The Berkeley researchers figure that the algae can survive with approximately 130 molecules.

Why go to this trouble? Researcher Tasios Melis argues that a larger chlorophyll antenna helps the organism survive in the wild but is detrimental to the engineering-driven effort of using algae to convert sunlight into biofuel.

The scientists want to divert the normal function of photosynthesis from generating biomass to making biofuels, that is, into products such as lipids, hydrocarbons and hydrogen. In this regard micro-algae are ideal because of their high rate of photosynthesis; they are perhaps 10 times more efficient than land plants. Melis says that the phrase "cellular optics" describes this general effort to maximize the efficiency of the solar-to-product conversion process.

The scientists are presenting their research at the 92nd Annual Meeting of the Optical Society (OSA), being held from Oct. 19-23 in Rochester, N.Y.

Adapted from materials provided by Optical Society of America.

http://www.sciencedaily.com/releases/2008/10/081008203549.htm

Circadian Clock May Be Critical For Remembering What You Learn, Researchers Say

Without circadian rhythms, Siberian hamsters did not recognize things they had investigated before. (Credit: Courtesy of Indiana University)

ScienceDaily (Oct. 9, 2008) — The circadian rhythm that quietly pulses inside us all, guiding our daily cycle from sleep to wakefulness and back to sleep again, may be doing much more than just that simple metronomic task, according to Stanford researchers.

Working with Siberian hamsters, biologist Norman Ruby has shown that having a functioning circadian system is critical to the hamsters' ability to remember what they have learned. Without it, he said, "They can't remember anything."

Though not known for their academic prowess, Siberian hamsters nonetheless normally develop what amounts to street smarts about their environment, as do all animals. But hamsters whose circadian system was disabled by a new technique Ruby and his colleagues developed consistently failed to demonstrate the same evidence of remembering their environment as hamsters with normally functioning circadian systems.

Until now, it has never been shown that the circadian system is crucial to learning and memory. The finding has implications for diseases that include problems with learning or memory deficits, such as Down syndrome or Alzheimer's disease. The work is described in a paper published Oct. 1 online in the early edition of the Proceedings of the National Academy of Sciences. Ruby is lead author on the paper. Siberian hamsters, also known as dwarf hamsters, are about the size of a mouse.

The change in learning retention appears to hinge on the amount of a neurochemical called GABA, which acts to inhibit brain activity. All mammal brains function according to the balance between neurochemicals that excite the brain and those that calm it. The circadian clock controls the daily cycle of sleep and wakefulness by inhibiting different parts of the brain by releasing GABA.

But if the hippocampus - the part of the brain where memories are stored - is overly inhibited, then the circuits responsible for memory storage don't function properly. "Those circuits need to be excited to strengthen and encode the memories at a molecular level," Ruby said.

"What I thought was happening was that our animals were having chronically high levels of GABA because they had lost their circadian rhythm," Ruby said. "So instead of rhythmic GABA, it is just constant GABA output."

To test that idea, Ruby and his colleagues gave the circadian-deficient hamsters a GABA antagonist called pentylenetetrazole, or PTZ, which blocks GABA from binding to synapses, thereby allowing the synapses to continue firing and keeping the brain in a more excited state. It worked. The learning-impaired hamsters caught up with their intact peers to exhibit the same level of learning retention.

Research on people with Down syndrome has shown that one reason they don't perform well on cognitive tests is that they grow up with what amounts to an over-inhibited brain. Studies on mice that exhibit symptoms of Down syndrome have demonstrated that when given PTZ, the mice demonstrate improved learning and memory. That research, conducted by Fabian Fernandez, then a graduate student in the lab of Craig Garner, a professor of psychiatry and behavioral sciences at Stanford, prompted Ruby to investigate whether using PTZ to reduce GABA levels would improve memory function in the hamsters.

Other researchers working with mouse models of Alzheimer's disease have reported similar findings. When those mice were given GABA antagonists, their ability to learn was restored, suggesting a possible link with their circadian system.

Ruby's findings may also have implications for the decline in memory function that older adults in general experience.

"In aging humans, one of the big things that happens is the circadian system starts to degrade and break down," Ruby said. "When you get older, of course, a lot of things break down, but if the circadian system is a player in memory function, it might be that the degradation of circadian rhythms in elderly people may contribute to their short-term memory problems," he said. "There are a lot of things that could cause memory to fail, but the idea would be that in terms of developing therapeutic treatments, here is a new angle.

"This is also important because it is one of the first lines of evidence that shows losing your circadian timing actually does cost you something," Ruby said. "It makes it hard to learn things. And the underlying mechanism is that you have too much GABA."

Ruby said researchers have known since the early '70s that the circadian system modulates learning in humans and other animals, but no one knew what the effect would be on learning if the system was completely wiped out. Laboratory animals-rats, mice and hamsters-whose circadian systems have been disabled as part of a study typically live long and healthy lives.

"We thought it might be possible to wipe out circadian rhythms and eliminate the rhythm in learning, but that the animals could still learn something," Ruby said. "But they don't. That is what was so surprising. They actually can't remember anything. Losing their rhythms costs them a lot."

The researchers knocked the hamsters' circadian systems out of commission using a new noninvasive technique they developed involving manipulating the hamsters' exposure to light. The hamsters were first exposed to two hours of bright light late at night. Then the next day the researchers delayed the usual light/dark cycle by three hours. "It is like sending them west three time zones," Ruby said.

After the treatment, the normal light/dark cycle is resumed, but that one-time treatment is enough to wipe out their circadian system.

To assess the effect of the treatment, Ruby's team conducted a standard test called a novel object recognition task that takes advantage of animals' innate tendency to explore their environment. Using a box roughly 2 feet square, the researchers put two identical objects in adjacent corners, such as two saltshakers or two shot glasses. The hamster is then placed in the box, on the opposite side from the objects. As it explores the box and the objects, the hamster spends approximately equal amounts of time on each of the two identical objects.

After 5 minutes, the hamster is removed from the box, and one of the objects is replaced with a new, different object. After a span of time-in Ruby's study, the time was varied between 20 minutes and an hour-the hamster is put back in the box.

"A normal animal will spend time with both objects, but it will spend easily twice as much time with the new one," Ruby said. "It understands that it has seen the other one before."

But when a hamster that lacks circadian rhythms is put back in the box, it's as if it is a whole new world for the hamster. Whether the hamster is out of the box for an hour or as short a time as 20 minutes, it spends the same amount of time with each object, Ruby said.

"What that means is they don't remember the object that was in there before," he said.

The finding is even more striking when you consider that when a hamster loses its circadian system, it gets even more sleep than usual.

"What our data are showing is that these animals still performed terribly on a simple learning task, even though they're getting loads of sleep," Ruby said. "What this says is that the circadian system really is necessary for something that is deeply important: learning."

Ruby is a senior research scientist in the laboratory of H. Craig Heller, a professor of biology, who is a co-author of the paper. Other co-authors include Calvin Hwang, formerly an undergraduate in biology, now in medical school at Case Western Reserve University in Ohio; Colin Wessells, formerly an undergraduate in engineering and now a graduate student in materials science and engineering at Stanford; Fabian Fernandez, now a postdoctoral researcher at the University of Colorado-Denver; Pei Zhang, an undergraduate student in biology; and Robert Sapolsky, professor of biology and of neurology and neurological sciences.

Adapted from materials provided by Stanford University.

http://www.sciencedaily.com/releases/2008/10/081008151318.htm

Challenge To Discover Antarctica's Hidden World

Chief Pilot Alan Meredith - Chief Pilot Alan Meredith. (Credit: Image courtesy of British Antarctic Survey (BAS))

ScienceDaily (Oct. 15, 2008) — Later this month teams of scientists, engineers, pilots and support staff from British Antarctic Survey (BAS), USA, Germany, Australia, China and Japan will join forces for one of the most scientifically, technically ambitious and physically demanding Antarctic projects yet to be undertaken.

The mission of this International Polar Year (IPY) project is to uncover secrets of the enigmatic Gamburtsev subglacial mountains that are buried by up to 4 km of ice; to hunt for the oldest ice on our planet; to study subglacial lakes and to discover new clues of past, present and future climate change.

The Gamburtsev subglacial mountains are thought to be the birthplace of the vast East Antarctic Ice Sheet. This project will reveal clues to how the mountains were formed and provide scientists with the best location for future ice core drilling campaigns.

Geophysicist Dr Fausto Ferraccioli of BAS is leading the UK science effort. He says, "This is both an exciting and challenging project. It is a bit like preparing to go to Mars. Because of IPY, scientists from six countries are working together to do the unthinkable, to explore the deep interior of East Antarctica – one of the last frontier regions of our planet. For two and a half months our international teams will pool their resources and expertise to survey mountains the size of the Alps buried under the ice sheet that currently defy any reasonable geological explanation. At the same time, we will hunt for ice that is more than 1.2 million years old. Locked in this ancient ice is a detailed record of past climate change that will assist in making better predictions for our future."

Working at high altitude in temperatures of minus 40ºC, science teams will operate from two remote field camps to complete the first major geophysical survey to 'map' the mysterious landscape that lies beneath the vast ice sheet.

The science teams will use a range of state-of-the-art technologies to build an unprecedented 3-dimensional view of this secret world. BAS and the US National Science Foundation (NSF) will work together with the German Federal Institute for Geosciences and Natural Resources (BGR) to deploy two survey aircraft, equipped with ice-penetrating radar, gravimeters and magnetic sensors. US, Chinese and Japanese teams will study the deeper structure under the Gamburtsev subglacial mountains using seismology.

Mounting this scientific expedition is an enormous and challenging international effort involving six countries, nine aircraft and two deep-field science camps. All this is supported from US Amundsen-Scott Station at South Pole, McMurdo Research Station, from the Australian Davis Station and the BAS Rothera Research Station. Science and support teams on the Chinese tractor-train from South Pole to Zhongshan Station will sample ice cores and decommission the UK-Australian Camp.

Professor Nicholas Owens, Director of British Antarctic Survey says, “There’s an amazing history of our planet locked in Antarctica’s ice and rocks. It’s only now that we have the technology to start uncovering the secrets from this unique natural laboratory. This is really big science and it can be done only by working with partners from other national Antarctic programmes. It’s exciting, very demanding in terms of physical hardship and logistics coordination, but this joint effort will yield the kind of information that scientists need to understand our past, present and future climate. In a changing world, with so much uncertainty about our future it is absolutely crucial for society that we find answers to fundamental questions about our Earth.”

Adapted from materials provided by British Antarctic Survey (BAS).

http://www.sciencedaily.com/releases/2008/10/081014160743.htm

Turning Freshwater Farm Ponds Into Crab Farms

Blue crab. A new kind of crab harvest is on the way – blue crabs grown and harvested from freshwater ponds, instead of from the sea. (Credit: iStockphoto/John M. Chase)

ScienceDaily (Oct. 15, 2008) — Work by researchers at North Carolina State University is leading to a new kind of crab harvest – blue crabs grown and harvested from freshwater ponds, instead of from the sea.

Crab lovers shouldn't worry, researchers say, because the pond-raised crabs look and taste just like their ocean-raised brethren.

North Carolina's native blue crab population has been at historic lows since 2000. Dr. Dave Eggleston, director of NC State's Center for Marine Sciences and Technology (CMAST) and professor of marine, earth and atmospheric sciences, looked at various methods for helping the population recover. He hit upon a solution which not only reduces pressure on existing crab populations, but also benefits farmers looking to diversify their crops: using irrigation ponds on farms to grow blue crabs.

"We started out by catching small crabs in the wild and stocking them into farm ponds loaded with bass and bluegill predators, and were still able to get 12 percent survival," Eggleston says.

"So we teamed with the University of Maryland's Center of Marine Biotechnology who had the expertise to growth hatchery-reared blue crabs, and stocked these blue crabs in freshwater experimental aquaculture ponds at NC State's Vernon James Research and Extension Center in Plymouth, N.C., where the crabs exhibited some of the highest growth rates on record."

Eggleston then noticed that a lot of farmers in Eastern N.C. were trying to diversify their crop offerings in response to the decline in tobacco demand.

"A lot of these farms have irrigation ponds, and we thought if crabs can live in fresh water, this would take some pressure off the coastal crab population and give farmers another crop, by letting their ponds work for them," he says.

Eggleston and his fellow researchers discovered that crabs can tolerate a salinity level of only .3 parts per thousand, which is about the same level found in coastal tap water. They did further work to determine the best set of circumstances for raising crab: population density, food rations, and habitat structure in ponds.

This past July, Eggleston and Ray Harris, NC State director of cooperative extension for Carteret County, had the opportunity for a large-scale test when they stocked a 10-acre lake with 40,000 hatchery-raised crabs, and a smaller pond with 4,000 crabs. The crabs will take approximately 105 days to reach maturity, and so far the endeavor looks successful.

With the rapid rate of growth for pond-raised crabs, Eggleston expects that in a given year, a farm could produce two to three harvests, as crabs don't do well in freshwater during the winter months.

"If you look at a 2 1/2 -acre pond, you could stock it with 50,000 hatchery-raised crabs and expect to harvest around 20 percent, or 10,000 fully grown crabs. At $3 per crab, that's $30,000 – and multiply that times three. It definitely adds up."

Funding for this research was provided by the N.C. Blue Crab Research Program that was established by the N.C. General Assembly and is administered by North Carolina Sea Grant.

Adapted from materials provided by North Carolina State University.
http://www.sciencedaily.com/releases/2008/10/081003191417.htm

Did Termites Help Katrina Destroy New Orleans Floodwalls And Levees?

A nest of Formosan subterranean termites. (Credit: Photo by Scott Bauer; courtesy of USDA/Agricultural Research Service)

ScienceDaily (Oct. 15, 2008) — Three years after Hurricane Katrina devastated New Orleans, people still speculate over causes of the destruction of the city's floodwall system. A new article in the fall issue of American Entomologist (Vol. 54, No. 3) suggests that Formosan subterranean termites played a large role.

Author Gregg Henderson, a professor at the Louisiana State University AgCenter, discovered Formosan subterranean termites (Coptotermes formosanus Shiraki) in the floodwall seams in August, 2000 – five years before Katrina struck – and noticed that the seams were made of waste residue from processed sugarcane. Known as bagasse, this waste residue is attractive to Formosan termites.

After the dikes were breached in 2005, Henderson and his colleague Alan Morgan inspected 100 seams for evidence of termites, including three areas where major breaks in the walls had occurred. 70% of the seams in the London Avenue Canal, which experienced two major breaks during Katrina, showed evidence of insect attack, as did 27% of seams inspected in the walls of the 17th Street Canal.

The Formosan subterranean termite originates from China, where it has been known to damage levees since the 1950s. Besides eating at bagasse seams, the termites may have contributed to the destruction of the levees of New Orleans by digging networks of tunnels, which can cause "piping," sending water through the tunnels and undermining the levee system.

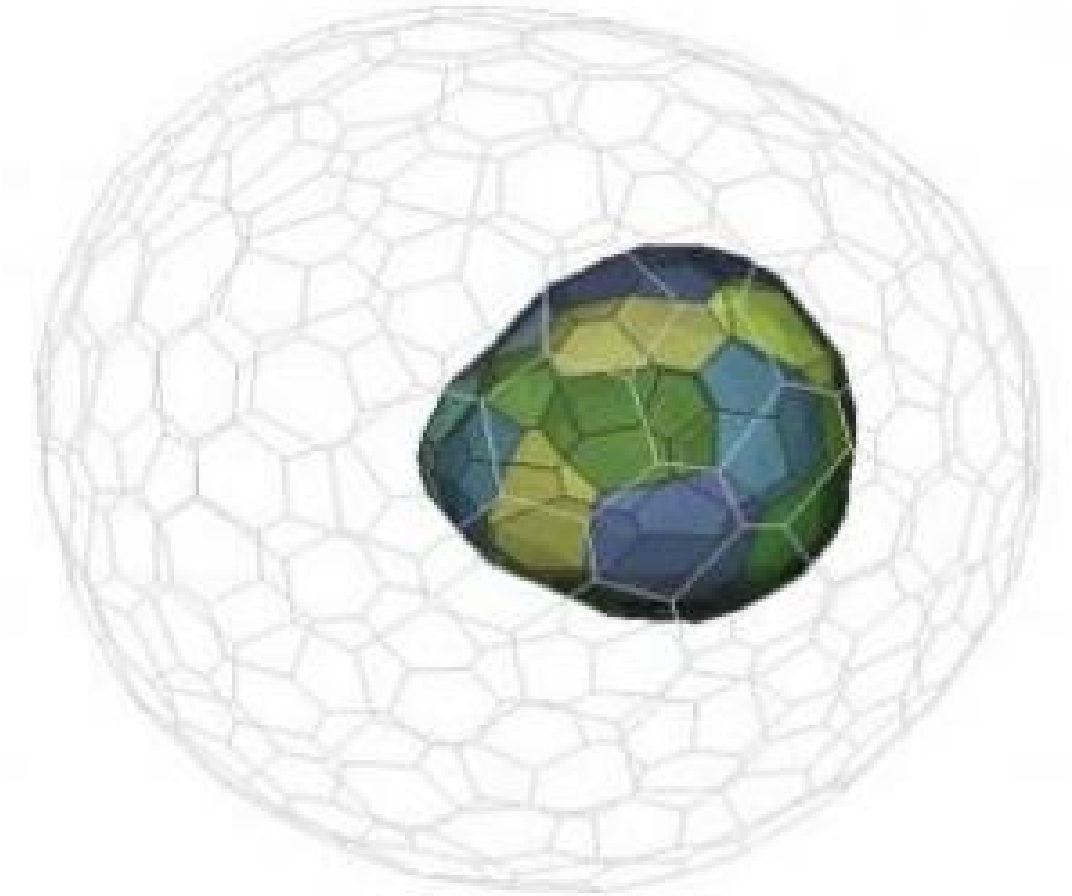
"I believe that the termites pose a continuing danger that requires immediate attention," Henderson writes. "The fact that termites cause piping in levees must be accepted."

The author further suggests that New Orleans' 350 miles of levees and floodwalls should be surveyed for termite damage, and that treatment of the floodwalls and nearby trees may be necessary to avoid future disasters. Henderson will demonstrate one survey method using ground-penetrating radar at the ESA Annual Meeting in Reno, Nevada, November 16-19.

Adapted from materials provided by Entomological Society of America.

http://www.sciencedaily.com/releases/2008/10/081014134102.htm

Surface Tension Drives Segregation Within Cell Mixtures



The output of a new 3-D computer of the cell sorting process shows a mixture of two types of cells -- one type shown in color and the other transparent -- that have separated as a result of the force of surface tension. (Credit: Shane Hutson, Vanderbilt University)

ScienceDaily (Oct. 15, 2008) — What does a mixture of two different kinds of cells have in common with a mixture of oil and water? The same basic force causes both mixtures to separate into two distinct regions.

That is the conclusion of a new three-dimensional computer model of the cell sorting process produced by Shane Hutson, assistant professor of physics at Vanderbilt University, and his colleagues at the University of Waterloo in Canada that is described in the Oct. 3 issue of the journal Physical Review Letters.

The force in question is surface tension – a property of liquids that arises from intermolecular forces – specifically an effect called the Plateau-Rayleigh Instability that explains the tendency of water to form droplets.

Mechanical interactions between cells play an important role in a number of biological processes, including the development of embryos and the spread of cancer. Understanding these interactions is particularly important in current efforts to create artificial tissues.

"In order to design and control the building of artificial tissues of any sort, we have to understand how cell/cell interactions drive shape and structure formation at a very deep level," Hutson says.

Currently, these interactions are often modeled using analogs from fluid mechanics including viscosity and surface tension. "What we have shown is a fascinating new role for surface tension in the process of cell sorting – the ability of random mixtures of two cell types to spontaneously sort themselves into two distinct domains," Hutson says.

Previous 2-D and 3-D models of cell sorting had indicated that surface tension alone was not powerful enough to drive this "unmixing" process by itself, leading researchers to propose that the cells themselves must also change shape randomly to keep the process from grinding to a halt before it is completed.

The new computer model looked at the structure of the 3-D mixtures in greater detail. It showed that in mixtures where the minority cell type makes up at least 25 percent of the mix, more than 95 percent of the minority cells are in direct contact with other minority cells instead of being totally surrounded by majority cells and found that this contact enhances the surface tension effect, allowing it to drive the sorting process without assistance from cell fluctuations.

Hutson's collaborators from the University of Waterloo are G. Wayne Brodland, Justina Yang and Denis Viens. The work was supported by the Natural Sciences and Engineering Research Council of Canada, the National Science Foundation and the Human Frontier Science Program.

Adapted from materials provided by Vanderbilt University.

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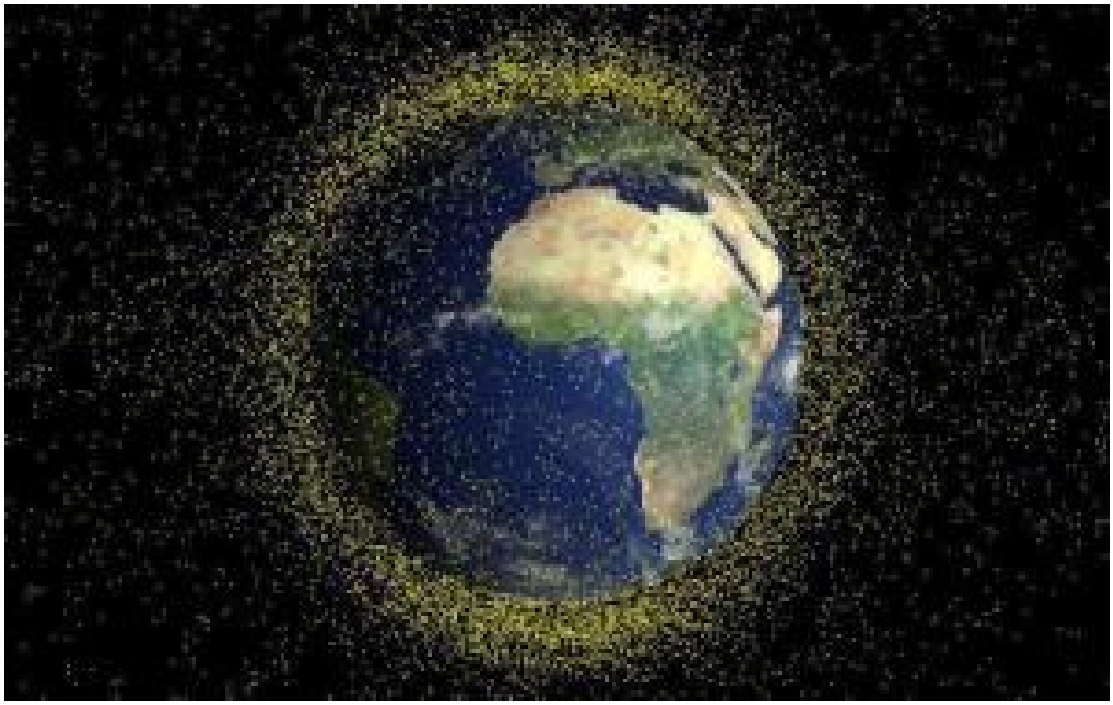
Targeting Space Debris Using Networks



Space debris. How to deal with the ever-increasing problem of space debris, poses a major challenge for space agencies, industry and academia around the globe. (Credit: Image courtesy of University of Southampton)

ScienceDaily (Oct. 14, 2008) — How to deal with the ever-increasing problem of space debris poses a major challenge for space agencies, industry and academia around the globe.

Now, research by a team from the University of Southampton's School of Engineering Sciences, suggests a new technique for identifying key pieces of debris that should be targeted for removal from orbit.

Using network theory as a mathematical tool to identify these key pieces of debris, the Southampton team's approach involves looking for objects that might cause damage based on how many potential links they have to other objects. That is, how connected they are in a network. The greater the number of links, the greater the object's potential for causing damage.

The research was presented at the 59th International Astronautical Congress (IAC) in Glasgow this week by Dr Hugh Lewis of the University's School of Engineering Sciences. His presentation was based largely on work by Southampton PhD student, Rebecca Newland.

"The space debris environment can be thought of as a network in which the pieces of debris are connected if there is a possibility of them colliding," explains Rebecca Newland. "Once a network has been built it can be analysed to identify objects that are important to the overall structure of the network.

"To destroy a network it would be necessary to identify and remove those key objects, in the same way that targeting highly connected routers for removal could cripple the internet."

Space debris consists of any man-made object that no longer serves a useful purpose in space. Examples include redundant satellites, used rocket bodies and explosion or erosion fragments. Even small pieces

have the potential to cause damage if involved in a collision, as many are travelling at speeds of around 10 kilometres per second.

"Previous modelling studies have suggested that even if no new satellites were launched, the number of objects orbiting the Earth will continue to increase as a result of predicted collisions between existing objects," comments Dr Hugh Lewis.

"For this reason, it is important to identify debris objects at risk of collision when making plans to 'clean-up' space.

"Objects need to be ranked according to the risk they pose so that they may be chosen for removal, and this is what our research aims to do."

Networks have been studied extensively in recent years as there are many that we rely on in everyday life from neural networks to the internet.

The research was undertaken by Dr Hugh Lewis, Rebecca Newland, Dr Graham Swinerd and Arrun Saunders at the University of Southampton.

Adapted from materials provided by University of Southampton.

http://www.sciencedaily.com/releases/2008/10/081013112443.htm