Infoteca's E-Journal

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

CONTENTS

Femininity, Salvaged
By GINIA BELLAFANTE

In the early 1970s Lillian Bassman, among the most important fashion photographers of the 20th century, made the decision to dispose of her career, quite literally. Artists do this all the time without the intent — giving themselves over to excess, retreating to ashrams — but Ms. Bassman's approach was aggressive and determined. Disillusioned by the costuming of the late 1960s, she had had enough of fashion and expressed her disdain by destroying decades' worth of negatives and placing others in a trash bag in the coal room of her Upper East Side carriage house. Her era of furtive eroticism was over, and there was no point in scrapbooking it.

Years later Ms. Bassman, who is 92, relented and retrieved her discarded images, seeking creative ways to reprint them. Some of these pictures will be on view at a new show at KMR Arts in Washington Depot, Conn. (which begins Saturday and runs through Sept. 5), juxtaposed with an anatomically resonant series on sidewalk cracks that she produced in the '70s. The exhibition serves as a preamble to a moment of renewed interest in Ms. Bassman's career; this fall Abrams will publish a book of her work, "Lillian Bassman: Women," which will accompany a show at the Staley-Wise Gallery. And in November the Deichtorhallen museum in Hamburg, Germany, will mount a retrospective of her photography, along with that of her husband, Paul Himmel, who died in February.

Ms. Bassman took her most significant pictures from the late '40s to the early '60s; most were published in Harper's Bazaar under the stewardship of the magazine's influential art director Alexey Brodovitch and belong distinctly to the era of "Mad Men" New York. The clothes have a structured beauty; the gloves are mandatory; the necks are long. Elegant men with cigarettes between their fingers occasionally enter the frame, encountering women who appear utterly indifferent to their attention. The perversions of inequality are absent; what appears instead is the glamour of a protracted cultural moment in which

women were free from any expectation of sexual pursuit. The power of Ms. Bassman's photographs is the power of a woman who is never moved to make a call.

At the same time that she was turning out editorial work Ms. Bassman was having a considerable impact on advertising, photographing lingerie for Warner's and other purveyors in a manner that abandoned the pharmaceutical aesthetic that then prevailed in the industry's marketing. (These pictures form a large part of the show at KMR.) In place of heavy-set women constraining themselves in what was essentially equipment, Ms. Bassman deployed immeasurably lithe models, conveying a world in which women seemed to linger in the pleasures of their own sensuality. In her eye the undergarment emerges as a wardrobe unto itself, as if anything else in a woman's closet were simply an imposition.

It is easy to see why Ms. Bassman would have found little appeal in the uniform of the sexual revolution, first the childlike clothes of Mod style and then the hippie's caftans, which seemed intended to counter the mass libidinal energy that had been the whole point. Hers was a world of adult sexuality that wasn't ranted about. And the new breed of models coming of age in the late '60s and '70s unnerved her as well.

"I got sick of them," she said recently in the living room in her house in the East 80s. "They were becoming superstars. They were not my kind of models. They were dictating rather than taking direction."

Ms. Bassman did not need a prepackaged sexual freedom movement; she'd lived her own version years earlier. Born in 1917, the child of Russian émigrés who moved from New Haven to Brooklyn to Greenwich Village, she was given ample rein over her romantic life at an early age.

Ms. Bassman first met Mr. Himmel splashing about at Coney Island; she was 6, and he was 9. When she saw him again a several years later, she fell incurably in love, and after a brief resistance her father permitted her to live with her suitor when she was 15. The couple divided their week between her family's apartment on 13th Street and his parents' place two blocks away. They married when Ms. Bassman was 25, and were together until Mr. Himmel's death in February at 94, their relationship having spanned 77 years. "He never bored me," Ms. Bassman explained.

As teenagers they spent every weekend at the Metropolitan Museum of Art, where Ms. Bassman was drawn to the attenuated limbs of El Greco. She skipped a good deal of school, reading whatever Mr. Himmel and his friends were picking up when he was at City College. "When I'd get up in class and talk about Aldous Huxley, the teachers were astounded," she said. "I'd hoodwinked everyone into thinking I knew something when I didn't know anything."

By the '40s Ms. Bassman was working as a graphic designer, but Richard Avedon, a friend of the couple's, encouraged her in her career as a photographer. During a trip he made to Paris a few years after the war, he lent her both his studio and his assistant.

In the period dominated by Avedon and Irving Penn, Ms. Bassman was one of the few female photographers in the fashion business, and her work had a distinctly different cast from the outset, one less distancing. In most of the lingerie pictures, for example, the faces are averted or obscured, the result of the Ford agency's insistence that its models not be identifiable in such provocative advertising. The effect of this constraint is not cold anonymity but an unusual intimacy that leaves the images feeling almost entirely divorced from commodity, as if they were the visual entries in the personal journals of the women photographed.

Being a woman advantaged her, Ms. Bassman felt. "The models thought about this a lot," she said. "It was a sexually very different thing when they worked with men. They felt a charge. They were posing for men. I caught them when they were relaxed, natural, and I spent a lot of time talking to them about their husbands, their lovers, their babies."

Ms. Bassman's interests were not conducive to having babies of her own however. She did not want a family, but her husband did, so she sought psychotherapy to resolve the issue. After six weeks, she said, she was inspired to motherhood. The couple had two children, Eric, a book editor, and Lizzie, a photographer and archivist of her parents' work.

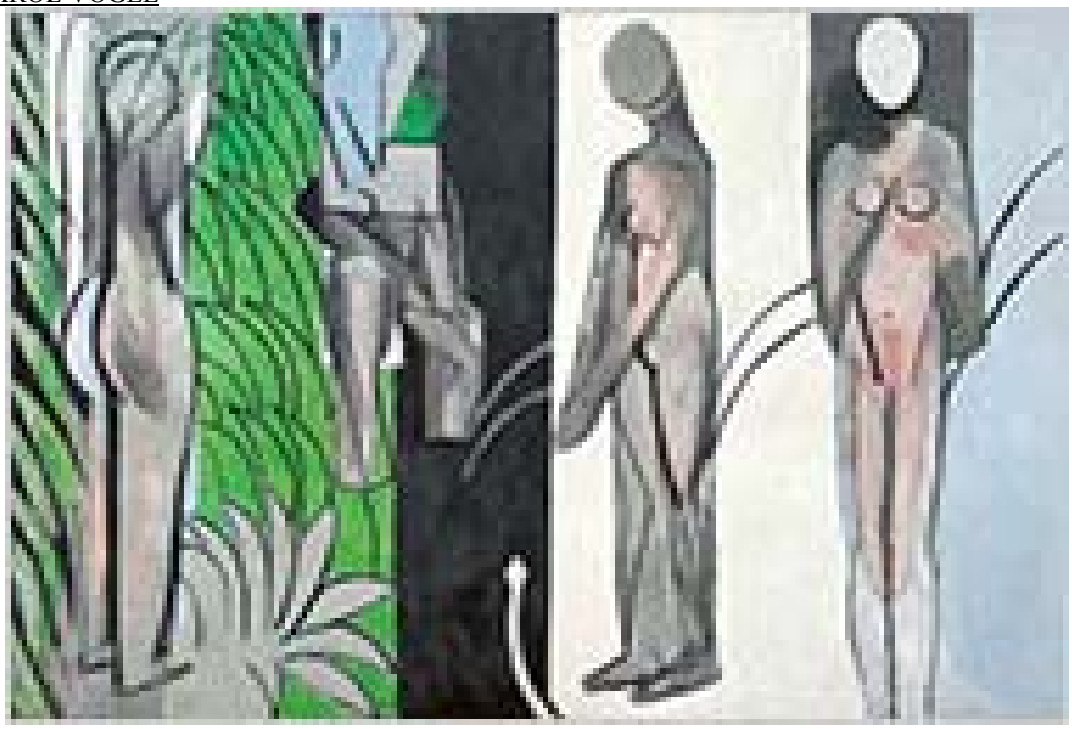
Mr. Himmel's passion for photography predated his wife's, whose introduction to the field began when she was assigned the job of washing his prints in the bathtub. He produced both fashion and documentary images; several of his pictures were included in Edward Steichen's "Family of Man" exhibition at the Museum of Modern Art in 1955. But when he turned 57, he set his camera aside indefinitely — and then permanently — to return to school for a master's degree in social work. For much of the rest of his life he worked first as psychiatric caregiver, treating schizophrenics in the city's public hospitals and later seeing patients in private practice.

Ms. Bassman, though, ultimately returned to fashion photography, in the early '90s, after her friend the painter Helen Frankenthaler, who had been renting studio space from her, found the bag of negatives that had been sequestered in the carriage house. Ms. Bassman, who had always been drawn to the manipulation of images, began altering the pictures, bleaching out backgrounds, for instance, to produce dramatic contrasts. As a result they now seem even more ethereal than they did in their original form, and immune to the beholder's efforts to carbon-date them.

Five years ago, at 87, Ms. Bassman discovered the glories of Photoshop and so began a new chapter in digital photography. She works every day in her studio, toying and reconfiguring from about 11 in the morning until dinnertime, and claims a proud proficiency with her computer. It is a skill however that does not extend to the use of e-mail or Google. "I'm not interested," she said, "in any of that."

http://www.nytimes.com/2009/07/17/arts/design/17bassman.html?ref=design

Unsolved Mysteries of Matisse the Austere
By CAROL VOGEL



Two years ago when curators and conservators at the Art Institute of Chicago began studying Matisse's "Bathers by a River," they were trying to solve art historical mysteries that have hung over this painting for decades.

Historians knew that Matisse had worked on the canvas in stages, beginning in 1909 when it was commissioned by the Moscow collector Sergei Shchukin as part of what Matisse hoped would be three panels for Shchukin's residence. But after seeing a watercolor study for "Bathers," Shchukin rejected it. Matisse kept working anyway, changing "Bathers" over eight years.

"We had good anecdotal history that this picture was related to the two others, 'Dance II' and 'Music,' that were part of the original Shchukin commission, both of which are in the Hermitage in St. Petersburg," said Stephanie D'Alessandro, the curator of modern art at the Art Institute. "When we looked at the surface of 'Bathers,' we could see places where Matisse had reworked it."

But nobody knew how much.

Their investigation and the clues they gathered led Ms. D'Alessandro and John Elderfield, chief curator emeritus at the Museum of Modern Art in New York, who organized the blockbuster Matisse retrospective there in 1992, to examine other paintings by him. Their findings eventually morphed into an exhibition, "Matisse: Radical Invention, 1913-1917," that will open at the Art Institute of Chicago in March before coming to MoMA a year from now. It will include more than 120 paintings, sculptures, drawings and prints.

Although scholars knew Matisse had made a number of other paintings as studies for "Bathers," no one was sure of all the stages "Bathers" went through between 1909 and 1916. In addition they were hoping the painting would shed light on Matisse's life during World War I, when he came into contact with an influential younger generation of artists, including Picasso and Gris.

As the study got under way, conservators set about cleaning the painting. Once they had removed the varnish, they were able to examine tiny cross sections of paint. They could see outlines of figures beneath the painting's surface that they then compared with photographs taken at different times in 1913 showing how the painting was changing.

Scientists, conservators and curators could also see that beneath the painting's top layer there was a palette similar to that of the two paintings at the Hermitage and "Dance" at MoMA. And by using infrared technology and X-rays they discovered different palettes under the surface. "Once the varnish came off 'Bathers' we could see bright reds and blues," Mr. Elderfield said. "So we encouraged other museums to take the varnish off their Matisses too, so that it would be clearer what the surface color of these paintings really were."

"The popular view of Matisse is still that he is an artist of color and light and hedonism," Mr. Elderfield said. "And this Matisse, the one between 1913 and 1917, is a different artist. He's more austere, more anxious, more radical in many ways than the artist he popularly became. It was during this amazing five-year period that he became the artist of geometry and synthesis."

Not only has this new study of "Bathers" revealed much about the artist's methods — how he painted and repainted a canvas — but Ms. D'Alessandro and Mr. Elderfield also found unexpected connections between that work and several others, particularly two in MoMA's collection, "The Moroccans," from 1915-16, and "The Piano Lesson" from 1916.

In the case of "The Moroccans" Mr. Elderfield said that it was long thought to have been painted in 1915-16, but during a recent trip to Issy-les-Moulineaux, a Paris suburb where Matisse's family archives are stored, Ms. D'Alessandro and Mr. Elderfield unearthed letters indicating he first conceived of the painting in 1912 on one of two visits to Morocco, where he made sketches for it. But he didn't start painting it until years later.

Because there is a connection in style and technique to "Bathers" and "The Moroccans" and because a letter about "The Moroccans" refers to a beach, for a while historians thought that perhaps the two canvases had been one, or that maybe Matisse had started "Bathers" and changed it into the painting we know as "The Moroccans" today.

"But in fact he hadn't," Mr. Elderfield said, adding later: "The discovery of the photographs of Matisse working on 'Bathers" in early 1913 at the same time as him writing about having frustrations about 'The Moroccans' made it clear the two projects were separate." And while much has been learned from this recent study, there are still many unanswered questions, like whether Matisse made more paintings in 1915 than we know about or whether some are wrongly dated.

"It's like a continuing detective story without an ending," Mr. Elderfield said.

VIDEO FOR MUSSORGSKY

In 1874, when Mussorgsky wrote his piano suite "Pictures at an Exhibition," he took his inspiration from a show in St. Petersburg, Russia, of drawings and watercolors by a friend, the artist and architect Victor Hartmann, who had died a year earlier.

Now Mussorgsky's music is inspiring a collaboration involving art. Robin Rhode, the South African-born artist, and Leif Ove Andsnes, the Norwegian pianist, have joined forces, pairing this beloved composition with a visual component that includes a video and six abstract paintings. The result — "Pictures Reframed" — will be performed at Alice Tully Hall at Lincoln Center on Nov. 13 and 14 before going on tour.

"The music can stand on its own," Mr. Andsnes said. "I've played it a lot, but I wanted to explore different ways of presenting a recital." So he approached Jane Moss, vice president for programming at Lincoln Center, about the possibility of working with a video artist.

After some research Ms. Moss suggested that Mr. Andsnes contact Mr. Rhode because she knew the artist was open to different kinds of collaborations.

Mr. Rhode and Mr. Andsnes began meeting in September 2007 in different places: a derelict factory in Berlin, where Mr. Rhode started to draw on a bare wall, and in Norway, where Mr. Andsnes performed the piece in an abandoned shipyard with water flooding the piano as part of the narrative (a theme explored in Mr. Rhode's video projection).

Mr. Rhode ended up creating a 35-minute video that unfolds in chapters, similar to the structure of the composition and the works in the St. Petersburg show.

"Each drawing that inspired Mussorgsky was my starting point," Mr. Rhode said. After research, he said, he learned that a lot of Hartmann's works were actually reflections on his social consciousness. One drawing, "Bydlo," which is also the title of a movement in Mussorgsky's suite, shows a Polish ox cart in a Jewish slum. "It's a symbol of the struggling of Polish people in 19th-century Russia," he said.

http://www.nytimes.com/2009/07/17/arts/design/17vogel.html?ref=design

Suspected, Pursued. Innocent?
By MICHIKO KAKUTANI

THE GIRL WHO PLAYED WITH FIRE

By Stieg Larsson

503 pages. Alfred A. Knopf. $25.95.

Lisbeth Salander, the angry punk hacker in Stieg Larsson's 2008 best seller, "The Girl With the Dragon Tattoo," was one of the most original and memorable heroines to surface in a recent thriller: picture Angelina Jolie's Lara Croft endowed with Mr. Spock's intense braininess and Scarlett O'Hara's spunky instinct for survival. She and the middle-aged, down-on-his-luck reporter Mikael Blomkvist made quite the odd couple, and their chemistry fueled that earlier novel, driving it through its hurried, contrived ending.

Now Salander is back in "The Girl Who Played With Fire" in an even more central role. This time she is less detective than quarry, as she becomes the chief suspect in three murders. Hunted by the police and enemies from her past, she goes underground, while Blomkvist, one of the few people to believe in her innocence, races to find her — and clues to the real killer.

Though this novel lacks the sexual and romantic tension that helped spark "Dragon Tattoo" — Salander and Blomkvist share few scenes here — it boasts an intricate, puzzlelike story line that attests to Mr. Larsson's improved plotting abilities, a story line that simultaneously moves backward into Salander's traumatic past, even as it accelerates toward its startling and violent conclusion.

The three people murdered are Nils Erik Bjurman, a lawyer and Salander's guardian, who once brutally raped her; Dag Svensson, a writer finishing an explosive article about the sex trade for Blomkvist's magazine (an article that threatens to ruin the reputations of several policemen, five lawyers, a prosecutor, a judge and three journalists); and Svensson's girlfriend and researcher, Mia Johansson. In his last conversation with Blomkvist, Svensson mentioned he had a new lead on a mysterious gangster, known as Zala, whom he wanted to track down before his article went to press.

Like many thriller writers, Mr. Larsson — who died in 2004, shortly after turning in this novel, "Dragon Tattoo" and a third companion volume — is overly fond of coincidence, and this is certainly the case

here. Salander has just come back from a year of traveling: she had left Stockholm after falling in love with Blomkvist, who had taken up with another woman, and was furious with herself for falling prey to an emotion that goes against her image of herself as unsentimental and tough as nails.

Upon returning, she hacks into Blomkvist's computer to check up on him and discovers an e-mail message from Svensson mentioning Zala, who just happens to be a dreaded figure from her own past. Hours before Svensson and Johansson are found dead — by Blomkvist, of all people — Salander pays them a surprise visit, determined to find out what they know about Zala. The police discover her fingerprints on the gun used to kill them — a gun, we learn, that belonged to her former guardian, Bjurman, who is later found dead in his apartment, naked and draped over his bed.

By cutting cinematically from one set of characters to another, Mr. Larsson builds suspense, while tracking the progress of several simultaneous investigations: the campaign of a likable criminal inspector named Bublanski and his team to track down Salander, whom they regard as their chief suspect; Blomkvist's quest to exonerate Salander and find the real killer, who he suspects must have had something at stake in the pending publication of Svensson's exposé; the efforts of a private security investigator named Armansky, who once employed Salander, to track down her whereabouts; and Salander's own crusade to find Zala, exact revenge and finally come to terms with the horrors of her childhood.

As he did in "Dragon Tattoo," Mr. Larsson — a former journalist and magazine editor — mixes precise, reportorial descriptions with lurid melodramatics lifted straight from the stock horror and thriller cupboard. He gives us an immediate sense of the sleek, yuppified world inhabited by Blomkvist and his married business associate and sometime lover, Erika Berger and the daily rigors of publishing a monthly magazine. He gives us a detailed, "CSI"-type understanding of the investigative methods employed by the police and the computer pyrotechnics performed by Salander. At the same time Mr. Larsson has his characters talk in portentous tones of things like "All the Evil." And he gives us two cartoony James Bondian villains: a hulking blond giant, incapable of feeling pain, and his evil, physically disfigured master, who happens to be a former Soviet agent with ties to the underworld.

The ending of "The Girl Who Played With Fire" — like the revelation about Salander's past, which gives the book its title — comes straight out of a horror movie: it's gory, harrowing and operatically over the top. The reason it works is the same reason that "Dragon Tattoo" worked: Mr. Larsson's two central characters, Salander and Blomkvist, transcend their genre and insinuate themselves in the reader's mind through their oddball individuality, their professional competence and, surprisingly, their emotional vulnerability.

http://www.nytimes.com/2009/07/17/books/17book.html?ref=books

Immune therapy Alzheimer's hope

An immune system therapy given to cancer patients could have the added benefit of reducing the risk of Alzheimer's disease, a study suggests.

A US team found patients who had received antibody treatment had more than 40% less risk of Alzheimer's than people who had not.

Writing in Neurology, they said a bigger study was needed to confirm their findings.

UK experts said immunotherapy was an important area of research.

So far, scientists have been looking at it as a way of treating people who already have Alzheimer's.

The idea is that immune based therapies affect the formation of beta-amyloid plaques in the brain, which are characteristic of Alzheimer's, possibly by suppressing the inflammatory response in the brain.

People with the disease have lower levels of anti beta-amyloid antibodies, so experts are looking at ways of boosting levels - including immunisation.

But this study investigated whether or not people who had been given the treatment already, for another condition, had some protection.

'Treat the cause'

The team from Mount Sinai School of Medicine in New York looked at the records of 847 people who had been given at least one intravenous immunoglobulin

(IVIg) treatment for cancers, such as leukaemia, or immune system disorders.

All were over 65 and had received the treatment between April 2001 and August 2004.

Their records were then compared with those of 847,000 people who had not needed the therapy who were similar Alzheimer's risk factors to the treated group.

The records were held by a medical insurance company, and so detailed the illnesses and treatments people had claimed payments for.

Patients were followed up to August 2007. It was found that only 2.8% of those treated with IVIg developed Alzheimer's, compared with 4.8% of those not treated.

Dr Howard Fillit, who led the study, said: "IVIg has been used safely for more than 20 years to treat other diseases but is thought to have an indirect effect on Alzheimer's disease by targeting beta-amyloid, or plaques in the brain.

"Our study provides evidence that previous IVIg treatments may protect against Alzheimer's disease.

"The current Alzheimer's drugs on the market treat the symptoms of the disease. Immunization could treat the underlying cause."

But he added: "These findings do not constitute an endorsement of IVIg treatment for Alzheimer's disease. A large scale clinical trial is underway to determine whether IVIg could be an effective treatment for Alzheimer's."

Neil Hunt, chief executive of the Alzheimer's Society, said: "This is a really encouraging epidemiological study.

"Clinical trials are now underway in this area and we look forward to the results."

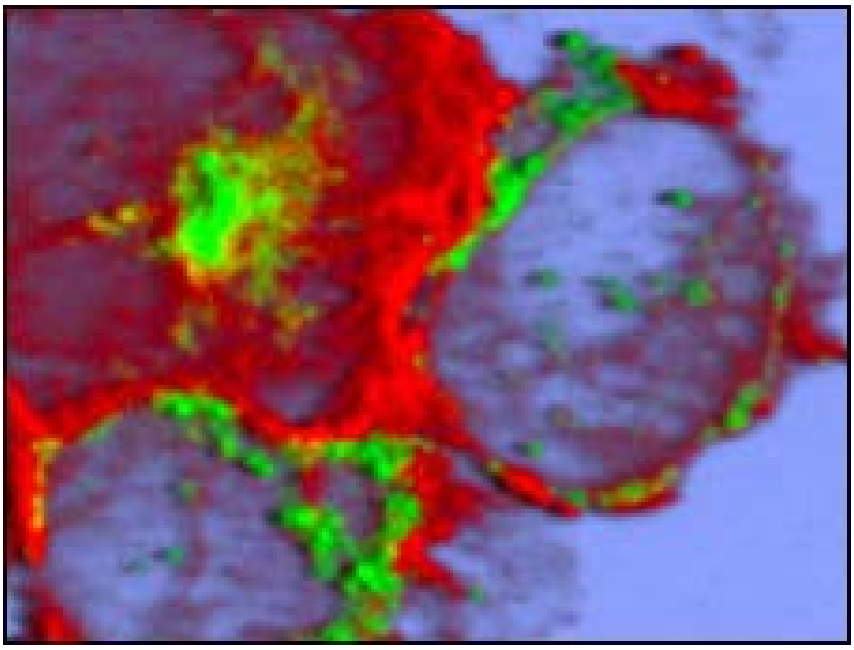
But he added: "Introducing large amounts of antibodies could cause serious side effects so important questions will need to be answered before this treatment becomes available."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8155845.stm

Published: 2009/07/21 01:06:56 GMT

Potent cancer drug hopes raised

A new way of making cancer cells die has been discovered by UK scientists, raising hopes of potent new treatments.



The use of antibodies to target cancer has already had great success, and the latest discovery promises to make the approach even more effective.

Antibodies were known to mobilise the immune system to attack cancer cells and destroy them.

But the Journal of Clinical Investigation study found they can also kill cancer cells directly themselves.

" **The discovery of the unique pathway used by antibody therapies to kill cancer cells has for the first time revealed why they are more effective than chemotherapy** "
Dr David Grant Leukaemia Research

It is hoped that the work, by the universities of Southampton and Manchester, will lead to new treatments, increasing doctors' options for treating a range of cancers.

This could prove invaluable in combating resistance to current treatments.

It has been known for sometime that antibodies can bind to cancer cells, and flag them up as a target for destruction by the disease-fighting cells of the immune system.

Doctors have harnessed this ability to develop a number of antibody-based treatments for cancer over the last decade, which have produced very impressive results.

But the latest study, based on an analysis of leukaemia and lymphoma cells, showed that antibodies can also kill off cancer cells in a much more direct way.

It showed that when an antibody binds to a cancer cell it can trigger small, acid-containing sacs called lysosomes inside the cell to swell and burst, releasing their deadly contents and killing the cell.

Significant findings

Researcher Dr Mark Cragg said: "Our findings are significant and open up the possibility of applying the knowledge of how antibodies can be developed to trigger cell death and may enable us to design treatments for other cancers."

Dr Mark Matfield, of the Association for International Cancer Research, said: "The discovery of a new mechanism by which cancer cells kill themselves is an important step forward in cancer research.

"Killing the cancer cells is the basis of all successful cancer treatments."

Dr David Grant, of Leukaemia Research, said: "The discovery of the unique pathway used by antibody therapies to kill cancer cells has for the first time revealed why they are more effective than chemotherapy.

"This may lead to new treatments for patients with blood cancers who cannot be cured using conventional chemotherapy."

Dr Lesley Walker, of the charity Cancer Research UK, said: "Although it's at an early stage, this research provides valuable clues as to how monoclonal antibodies kill cancer cells, and could lead to more effective treatments for cancer in the future."

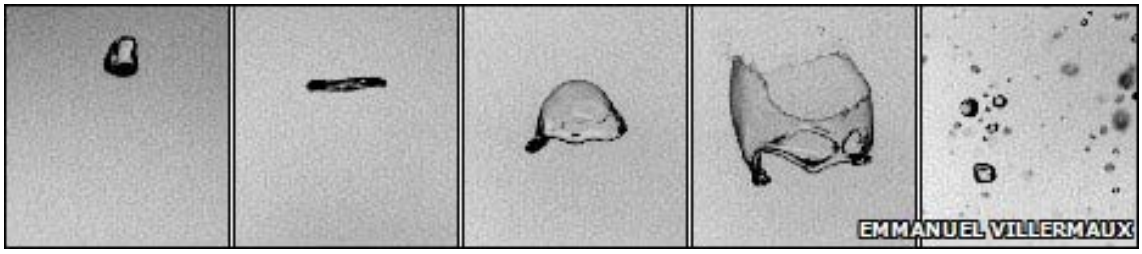
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8158847.stm

Published: 2009/07/21 01:03:47 GMT

Why raindrops come in many sizes

By Victoria Gill
Science reporter, BBC News

We might never consider the size of the raindrops as we hurry for cover, but their variety has puzzled scientists for many years.



Now, by filming one falling raindrop, researchers in France have explained why the drops are an array of so many different sizes.

Reporting in the journal Nature Physics, the team described how the drop deformed and burst as it fell.

Its fragments matched the size and distribution of drops in natural rain.

Scientists previously believed that the drops collided with each other as they descended, and that these interactions produced a variety of drop sizes.

But the lead author of this study, Emmanuel Villermaux from Aix-Marseille University, explained that there were always "shortcomings" in this idea.

"The drops are not likely to collide that often," he told BBC News. Real raindrops are so sparse, he said, that it is likely a drop would "fall on its own and never see its neighbours".

"So we said OK - let's look at what's happening on the scale of a single drop."

With a high-speed camera, Dr Villermaux and his colleagues filmed a single falling drop of water - about six millimetres in diameter.

They recorded how air resistance caused it to deform and eventually break up.

The large, round drop fell, gradually flattened out and, as it got wider, eventually "captured" the air in front of it to form the shape of an upturned bag.

This bag finally "inflated" and burst apart into many smaller droplets - all within six hundredths of a second.

This happened because drops were too large and heavy to remain intact.

Each large, heavy drop accelerates as it falls and "has to displace the air molecules" on its way down, explained Dr Villermaux. "This produces the air resistance or drag."

At a certain speed, the number of air molecules - and therefore the intensity of this drag - is greater than the surface tension holding the round drop together, so the drop starts to deform.

"When it bursts, the fragments match exactly what we find in raindrops," said Dr Villermaux. "This is a precise, quantitative explanation for their distribution and size."

Dr Ewan O'Connor, a scientist from the University of Reading, who studies clouds - taking measurements to improve weather modelling and forecasting - described this as a a very nice way of showing exactly what happens.

"But this is unlikely be what happens all of the time in the UK (for example), as we don't get raindrops of this size that often," he told BBC News.

"When raindrops get to a certain size... you will get this break-up. And this is likely to happen often in the tropics."

But, Dr O'Connor added, "this doesn't explain drizzle, where the droplets are much smaller, but there are many more of them."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8155883.stm

Published: 2009/07/20 17:07:54 GMT

Making Home a Safer Place, Affordably

By LESLEY ALDERMAN

Stay put or sell?

That's the question many older people ponder as they move into their 70s and beyond.

Most older people settle on staying put, according to a recent survey by the Home Safety Council, a nonprofit organization dedicated to preventing home-related injuries. (From the source of the survey, you can see where this column is heading, right?)

Staying put makes economic sense. It is not only more comfortable to live out your life in your own home, it's much more affordable. The average annual fee at an assisted-living facility — a place where older people live independently but also receive a host of services like medication monitoring and meals — is $34,000. And in the nation's most expensive metropolitan areas, including New York, the costs may be closer to $70,000.

But while home might be cozier and cheaper than a residential center, it's not always safer. Every year in this country about 7,000 elderly people die in home-related accidents, and millions are seriously injured. Falls are the leading cause of injuries, but the elderly are also at risk for being burned by the stove, scalded by hot water or drowning in the tub.

The home "environment can be a great support to independent living," says Jon Pynoos, professor of gerontology at the University of Southern California. "Or it can be a health care hazard."

After Maryann Connelly's mother fell and hurt herself two years ago, Ms. Connelly considered moving her to an assisted-living facility.

But the mother, Catherine Fisher, who is in her 80s and has lived on her own for 18 years, had a two-word response — "No way!" — even though her rheumatoid arthritis made it difficult to walk up and down stairs and get in and out of chairs.

So Ms. Connelly and her siblings hired an occupational therapist to modify Ms. Fisher's two-story townhouse in Newton, N.J., to make it safer and easier for her to navigate. The therapist added, among other things, an electric stair lift and grab bars throughout the house. The total cost, for the therapist's fee, equipment and installation, was $4,500.

As Ms. Connelly learned, an entire service industry is slowly taking shape around the goal of letting people age in place. If you want to make your own home or an older relative or friend's home a safer, more supportive place to live, here are basic guidelines to the most efficient and cost-effective approaches. TAKING STOCK Learn where the potential hazards lie and how you can reduce them. For starters, go to the Home Safety Council's site, MySafeHome.net, and take the house tour, which points out possible dangers room by room. Many of the changes the site suggests are simple and inexpensive, like removing area rugs and installing brighter bulbs in hallways.

AARP also has an interactive home safety checklist created with the National Association of Homebuilders.A PROFESSIONAL ASSESSMENT If you have multiple medical issues, say arthritis and poor vision, ask your doctor for a referral to an occupational therapist — an O.T., as they're known — who specializes in home modifications. The O.T. can analyze your potential challenges and your home's shortcomings to come up with a plan that a contractor or handyman can easily follow.

"An O.T. is your best source for doing the right thing," said Professor Pynoos, who is also the co-director of the Fall Prevention Center of Excellence, a state-supported organization in California. Gregg Frank, the O.T. who helped Ms. Connelly's mother, "was able to analyze my mother's needs in a way we never would have been able to," Ms. Connelly said. Mr. Frank raised the height of Ms. Fisher's chairs to make getting in and out them easier, for example, and installed threshold ramps and railings at the front door to make it safer for her to leave and enter the house on her own.

An O.T. can also supply you with an invoice that lists the medical necessity of each improvement — a document that you might need to get reimbursed, say, from a long-term care insurer. LONG-TERM CARE COVERAGE If you were far-sighted enough to have such a policy, call your insurance agent and ask whether home modifications are covered under your plan and what documentation you need to be reimbursed. A policy will not pay for upgrades if you are still healthy.

In general, regular health insurance does not cover physical upgrades to the home, though it often will pay for an occupational therapist to come in and do an assessmentTAPPING HOME EQUITY If you want to make substantial changes to your home, but don't have the cash to pay for them, consider taking out a home equity loan. For information on ways you can tap into your home equity, go to LongTermCare.gov, a site run by the Department of Health and Human Services.

While a home equity loan is your best option, if a bank won't give you such a loan, another possibility is a reverse mortgage. Available to people over 62, a reverse mortgage lets you convert the equity in your home into cash. But the fees can be substantial, so be sure to speak with a financial planner before taking out this type of mortgage. WHEN MONEY IS SCARCE Contact your local department of aging and inquire about home modification loans and services available to seniors. Use the federal government's elder care locator — www.eldercare.gov — to find your local office, or call 800-677-1116.

Some government agencies make low-interest loans to those with low or moderate incomes. In addition, get in touch with Rebuilding Together (www.rebuildingtogether.org, or 1-800-473-4229), a national nonprofit organization that helps people with low incomes improve their homes. The organization's Safe at Home program was created specifically to help older people do just that: stay safe at home.

http://www.nytimes.com/2009/07/18/health/18patient.html?_r=1&nl=health&emc=healthupdateema1

Harry Potter and the Hallowed Halls

By: Sharon Kaplan

Did you hear that noise? That was the sound of box office records being shattered for the midnight opening of the sixth installment of the juggernaut franchise that is Harry Potter. *Harry Potter and Half-Blood Prince*, the movie adaptation J.K. Rowling's book about a boy wizard, raked in a gasp-worthy $22.2 million on its first night.But the Potter series isn't just a pop-culture phenomenon. The academic world is under its spell, too, and now that the seventh book, 2007's *Harry Potter and the Deathly Hallows* has been released in paperback, scholars have had some time to study it in its entirety from a variety of disciplines. Courses are being taught, papers are being written, studies are being done and books about the books are being written.

"I can report that the academic study of Harry Potter — both as the series and as a cultural phenomenon — is thriving and not likely to disappear any time soon," said Karin Westman, department head and associate professor in the department of English at Kansas State University.

But ... it is a classic?

"Thanks to Rowling's fans, the series has established itself as a classic," Westman said. "It is a seven-volume novel that has already exerted an influence on its successors, a seven-volume novel that new readers discover and to which past readers return."Even before the series was complete, scholars jumped in with both feet. Westman, along with KSU English professor Philip Nel, began teaching a literature course in Harry Potter in 2005. (Nel quilled *JK Rowling's Harry Potter Novels A Reader's Guide* way back in 2001.) In 2007, before the final book was released, Rebekah Richert, an assistant professor of psychology at the University of California, Riverside, delved into the relationship between children and how they process the content of fantasy novels and the worlds those books create.

More recently, a paper by professors John Erni and Anthony Fung, "Class, Consumption, and Reading Formations of Harry Potter in Urban China," focused on critical reception of the books by Chinese

children, and the social and cultural impact of "Pottermania" in urban cities like Hong Kong and Shanghai. It was presented at the annual meeting of the International Communication Association.

Westman and Nel teach the "Harry Potter's Library" course. The objective, according to their syllabus is to "examine the Harry Potter phenomenon by reading the novels themselves and the works of Rowling's antecedents, influences, and contemporaries." When they started teaching the class, the series was still being written. So, how has the class changed now that the Potter saga is complete?

Westman says that when she began teaching the course, when the books were still being written, "... each time I was constantly introducing new material into our experience of the series, especially new cultural references," Westman said. And the series' influence on pop culture has, in turn, influenced the coursework. "This past spring, for instance, we were looking at media reports about Barack Obama reading Harry Potter with daughter Malia and First Lady Michelle Obama sitting next to author J.K. Rowling during a state visit to London."

Indeed, Lana Whited, author of *The Ivory Tower and Harry Potter* originally went to press before *Harry Potter and the Goblet of Fire* came out. "Several of the contributors and I incorporated the fourth book in the series into revisions, and my book finally appeared in print in November 2002," Whited recalled. She's also added new material and written a new afterword since publication of *Harry Potter and the Order of the Phoenix*. She and her editor are considering incorporating a second volume of essays now that the series is complete, but in the meantime, she is working on a book-length manuscript on the theme of race and persecution in the series."I got the idea for the book about race during the time that I was working on the manuscript of my first [Potter] book and did feel that I would need to wait until the series was complete, in order to see how the theme of race played out," Whited said. "I think any work of criticism that focuses on the theme of a series of literary works is only possible (and advisable) when the series is complete."

Rowling's books are unique in literary terms not just because of their popularity, but also because movies of the books were being made in real time as the books were being written. Westman says this does have an impact on scholarly study of the series for both teacher and student. "When enrolling now for the class, students are likely to have seen all the films even if they haven't read all of the books. As a result, they report that their experience in class enriches their view of Rowling's fictional world: They often discover so much more going on in the novels than the films can accommodate."Westman is completing a book-length study titled "J.K. Rowling's Library: Harry Potter in Context" that will put the series in the context of Rowling's stated preferences in British literature. Other literary analyses are also under way, the book *Reading Harry Potter: Critical Essays* appeared in 2005, while a plethora of articles have already appeared in academic and popular journals. The journal of children's literature *The Lion and the Unicorn* has made a sort of cottage industry out of Harry, publishing papers like *"McGonagall's Prophecy Fulfilled: The Harry Potter Critical Library," "The Liberty Tree and the Whomping Willow: Political Justice, Magical Science, and Harry Potter,"* and *"Harry Potter and the Extraordinariness of the Ordinary,"* to name just some.

Fans of Harry Potter have been known to absorb the book with more than just a casual fancy. They possess an eye for detail and recall that a crime scene investigator would envy — moreso than, say, a fan of Geoffrey Chaucer or Mark Twain or Jack Kerouak. Westman says a few of those students have taken her class, and she's glad they're there. "There are always a few hardcore fans who enroll for the class ... but there are also a couple of students who enroll, as they put it, 'to find out what all the fuss is about.'

"In between are students who know the series in varying degrees. The result is a great balance of viewpoints for the semester's discussions. Personally, I always appreciate having a few fans in the room — they're the ones who will be able to remember exactly where a certain scene or character appears within a particular volume, or the name of a particular spell or charm. They are invaluable close readers to have on hand!"

http://www.miller-mccune.com/culture_society/harry-potter-and-the-hallowed-halls-1349

'Squeeze' Against the Machine

By: Amy R. Ramos

"The silver lining — if there is one — in this horrible [financial] crisis is that for years, the country just wasn't paying attention to how the typical worker was doing," declares *New York Times* labor and workplace correspondent Steven Greenhouse."There was so much focus on the wizards of Wall Street and the brilliant entrepreneurs of Silicon Valley, but very, very little attention paid to how the average worker was doing. I think the recession has gotten the nation to realize that things are really bad for millions and millions of average workers."

Greenhouse has described that pinch in *The Big Squeeze: Tough Times for the American Worker*, his chronicle of everything that's wrong with the modern U.S. workplace: "stagnant wages, worsening benefits, horrible treatment," as he put it in an interview with Miller-McCune.com.

"There are a lot of unfair, often illegal things going on in the workplace," says Greenhouse, who also holds a law degree from New York University. Some of the legal violations he details in his new book include forcing employees to work off the clock, union busting and sexual discrimination and harassment. *The Big Squeeze* has been described by Nobel Prize-winning economist Joseph Stiglitz as "shocking and important"; *American Conservative* magazine, which would be more likely to be critical of the work, said, "Greenhouse's picture should unnerve anyone committed to a stable future for American democracy." Although, it added: "Greenhouse can offer only unsatisfactory suggestions for redressing the plight of America's workers."

Toil and Trouble

Relating the accounts of actual people and their experiences working for some of the nation's best-known companies, Greenhouse doesn't just round up the usual suspects — although he does devote considerable space to Wal-Mart, writing that "its low wages and benefits have created a downward pull on the way that many companies treat their workers."

Broadening his focus beyond low-wage workplaces with relatively low-skilled jobs, Greenhouse — who says he requested the labor-and-workplace beat after a stint covering economic and foreign policy for the *Times* because he hankered to return to "reporting about flesh-and-blood people" — also details questionable employment practices of firms typically regarded as employee-friendly.

Federal courts, for example, have ruled that the FedEx Ground division of the package delivery giant — listed on *Fortune*'s "100 Best Companies to Work For" — improperly classified drivers (among them a three-time cancer survivor interviewed by Greenhouse) as independent contractors in order to cut costs.

Greenhouse also profiles a woman who spent more than a decade working full-time as a so-called temp, "receiving lesser pay, benefits, and status than regular workers," for Hewlett-Packard, a company whose corporate culture, "the HP Way," was once widely celebrated for valuing workers.Some of the other workers he describes in his book toil in what Greenhouse calls a "workplace hell," where store managers for national retailers erase hours from workers' time sheets to cut payroll costs, and a plastics manufacturer's flouting of safety rules results in four workers losing fingers in little more than a year.

Despite such conditions, and the U.S. unemployment rate reaching 9.5 percent in July, Greenhouse cites reasons for optimism — among them, the rising demand for "green jobs." He concedes that green industries may still involve some offshore production: "Solar panels have a lot of complicated electronic guts," he says, so companies "might find it easier to make that in China than here." But many green jobs — installing solar panels, retrofitting houses, erecting wind turbines — will be immune to outsourcing, he says, because they have to be done here.

But he's not content to let most manufacturing move overseas. Greenhouse sees the new emphasis on green jobs as an opportunity to rebuild the moribund U.S. manufacturing sector, pointing to the Spanish wind energy company Gamesa, which is building wind turbines in a formerly shuttered U.S. Steel plant in Bucks County, Pa."We as a nation have to get serious about rebuilding our manufacturing sector, because it provides a lot of good middle-class jobs with good wages and good benefits," he declares. Even though two of Detroit's Big Three are freshly emerged from bankruptcy, he hopes that in the next three to seven years domestic automakers will have narrowed the Japanese lead in hybrid car technology.

He also applauds the current administration's renewed focus on enforcement.

"[Labor Secretary] Hilda Solis and the new head of the Wage and Hour Division [Administrator-designate Lorelei Boylan] are very serious about laws being enforced. I think OSHA will become much more serious about enforcement. We've had a real 25-, 28-year era of declining regulation under Reagan, the two Bushes and President Clinton, and I think we'll see more regulation, especially because we see how busted the system is in so many ways right now."In addition to stricter enforcement, Greenhouse favors increasing fines for workplace violations. "Many employers see very little reason not to break the law, because their chances of getting caught are very small and the penalties are minimal. That's why ... you need higher penalties." (In his book, Greenhouse notes the federal fine for falsifying wage documents is a "puny" $1,000.)Greenhouse believes that unions can improve the lives of workers, especially those in low-wage industries; he cites Service Employees International Union's drive to organize 5,000 Houston janitors and the success of the Culinary Workers union in Las Vegas in elevating legions of dishwashers, chambermaids and busboys into the middle class.But he forecasts difficulty for organized labor in accomplishing one of its primary legislative goals: passage of the Employee Free Choice Act, the so-called card-check law that would make it easier for unions to organize workplaces by eliminating the need for a secret-ballot vote.

"Even top Democrats acknowledge that there aren't the 60 [Senate] votes to enact that legislation as written," Greenhouse says. "[Iowa Democratic Representative] Tom Harkin is holding intense discussions with many Senate Democrats to figure out what changes or compromises are needed to reach 60. One thing being discussed is to replace card check with fast elections — another idea is to have workers mail in signed cards, the way voters can vote by mail. The idea is that would make it very hard for union organizers to pressure workers to sign pro-union cards."

Still Lean, Less Mean?
The news from the cubicles, assembly lines and retail aisles isn't all bad.

In his book, Greenhouse profiles several successful companies with benevolent workplace policies. Diverse employers like accounting firm Ernst & Young, shoemaker Timberland and membership warehouse Costco offer employee benefits such as flexible schedules, paid family leave and above-market wages — resulting in low turnover and generally sterling corporate reputations."A question that's often asked of me is, 'If Costco, [activewear maker] Patagonia and Ernst & Young are doing so well by treating their workers well, why doesn't everyone do that?' And I say companies have a lot to learn from the Costcos and the Patagonias, but some feel that the low-road route is best for them."

He recognizes the difficulties public companies face.

"Wall Street investment banks will be somewhat humbled by this crisis, but I still think there may well be just as much pressure as before on companies from Wall Street for maximum profits. ... With the rise of the institutional investor, when companies do not perform well on their profits or stock price, a lot of pressure is brought to bear, more than in other decades, to get profits up, and that often translates into an order to cut costs," frequently resulting in outsourcing and layoffs.

"You really saw the shift in the '80s and '90s, where a lot of more aggressive, more cutthroat, cost-cutting CEOs replaced their predecessors because people thought you've got to try much harder to maximize share price and maximize profits," he said.Greenhouse cites "Neutron" Jack Welch and "Chainsaw" Al Dunlap as exemplars of this CEO model, men who earned their monikers for laying off thousands of workers (at GE and Scott Paper, respectively) and jettisoning the existing notion of corporate loyalty.

But the relentless drive to cut costs may hurt consumers even as it lowers prices. Asked about the recent National Transportation Safety Board hearings into the fatal February crash of a commuter plane near Buffalo that revealed regional carrier Colgan Air's low wages, poor working conditions and failure to enforce its own policies (for example, against pilots sleeping in airport crew lounges), Greenhouse agreed that "Wal-Martization" has come to the airline industry."Clearly an important reason that the major airlines have subcontracted with commuter airlines is they know they can set up a lower pay scale for pilots that way," Greenhouse says. He echoes NTSB member Kitty Higgins' contention that, "When you put together the commuting patterns [of the pilots], the pay levels, the fact that the crew rooms aren't supposed to be used [for sleeping] but are being used — I think it's a recipe for an accident, and that's what we have here."For his part, Greenhouse — who describes himself as "one of the few remaining full-time labor reporters in the country" — knows that the pay and working conditions of retail store managers, assembly line workers, and software testers will never captivate public attention like the exploits of celebutantes and wealthy Wall Street titans.

Still, he says, the media and politicians need to start paying real attention to workers, instead of using them as photo opportunities during presidential campaigns. Although Greenhouse faults the Obama administration's handling of the executive bonus scandal ("I think Geithner and company know they screwed up on AIG but they won't admit it"), he also sees a positive shift in the administration's approach to workers. "If you look at what's happening in Detroit right now, the Obama administration has pushed for a deal that I think is more favorable to the workers — the union — than the Bush administration would have. I'm sure the Bush administration would have favored the bondholders more. But I think Obama's vision is, you've got to do right by the workers. ... There's been a recalibration, a rebalancing, a refocusing on workers' interests."

http://www.miller-mccune.com/business_economics/squeeze-against-the-machine-1336

Ponderous Polluters Let A Little Light Shine In

By: John Perlin

Driving a Prius down the highway and passing those gas-guzzling SUVs gives a sense of greenness that owning an automobile has never provided before. Those who install SunTech solar panels or other brands from overseas enjoy a similar pride in their commitment for a cleaner world; they feel greener than those bare-roofed people next door. Knowing of the cloud of emissions pouring from the smokestacks of the container ships that brought these commodities to their doorstep might give them second thoughts.

But they shouldn't feel too bamboozled. When negotiating the Kyoto Protocol, climate change experts intuitively thought that the 90,000 ships plying the seas contributed but a miniscule amount of global warming gases compared to the world's 760 million cars. Dismissing shipping as trivial to global warming, no one considered reducing its carbon footprint while negotiating the agreement.

New research though tells a different story, revealing that sea trade contributes nearly 40 percent as much carbon dioxide to the atmosphere as do automobiles. It dwarfs their sulfur dioxide emissions. Currently, ships burn a sludge-like fuel that has a sulfur content as high as 27,000 parts per million, while fuel in the United States used by cars and trucks contains no higher than 15 parts per million.

Vehicles only out-pollute ships when it comes to nitrogen oxides — and not by very much. Worse, 50 percent of ships' particulate emissions are sooty black carbon, which has 60 percent of the warming effect of carbon dioxide.

Furthermore, as more and more of the Arctic ice melts away, shipping lanes may move further north, bringing pollution with them. Soot emitted by ships in this region would blacken a goodly portion of the remaining ice. The dark ice would lose it solar reflectivity. It would therefore absorb sunlight and emit solar heat instead, causing the earth to warm even faster.

Mix the present danger with ever increasing ship traffic due to the rise of world trade with China, and many experts expect shipping will soon account for 40 percent of the world's air pollution. The fact that

70 percent of ship traffic occurs within 250 miles of coastline has caused authorities in the United States to take action. Responding to recent studies that show the human cost of pollution from ships — 60,000 extra deaths per year worldwide and costing more than $300 billion annually in health expenditures due to pulmonary and cardiovascular diseases — the U.S. government has proposed a 230-mile clean-air exclusion zone around both coasts. Only ships that burned cleaner fuels and adopted emission control technologies could enter.

Such strong demand for cleaner ships has led, for example, to the construction of the world's first solar-powered cargo ship, the MW Auriga Leader, which just visited the Port of Long Beach on its maiden voyage.

Its 328 solar panels placed on the ship's deck help power the vessel's main electrical grid while at sea and in port. They provide up to 10 percent of the ship's power and reduce fuel consumption by 6.5 percent. The Auriga Leader was built for Nippon Yusen K.K., Japan's largest shipping line. A car carrier, the ship's cargo consisted of 6,400 Priuses. Nippon Yusen and Toyota installed the panels as a demonstration project to draw attention to reducing diesel emissions from large ships.

If the experiment succeeds, others will follow suit, leading to the widespread solarization of the world's fleets. Hybrid ships could significantly scale down the amount of pollution currently produced. Nippon Yusen hopes to halve its emissions and fuel consumption by next year. Perhaps not far in the future clean cars and solar panels will be delivered by clean running, possibly solar-powered ships, and the idea of free trade will include clean trade.

http://www.miller-mccune.com/science_environment/ponderous-polluters-let-light-shine-in-1350

The Potential Militant Extremist Inside Each of Us

By: Lee Drutman

Ever since 9/11, the threat of militant extremism has loomed large in the American psyche. But how much do we really know about the militant-extremist mindset?

According to one new study, we may actually be able to learn more than we think just by looking in the mirror. That's the conclusion from group of psychologists who presented undergraduates in two countries with a broad range of framings common to militant extremist fanatical groups. In survey after survey, students generally failed to strongly dissociate themselves from the sentiments.

"If, in fact, extremist thinking is something bizarre, you'd expect people to disagree with the statements," said Gerard Saucier, a professor of psychology at the University of Oregon and the lead researcher on the study. "What you get instead is that they're failing to disavow them. A typical showing is a mixture of agree and disagree." The findings are reported in the May issue of *Perspectives on Psychological Science*.

In order to determine what goes into the militant-extremist mindset, Saucier and his colleagues (a pair of Oregon psychology grad students, Laura Geuy Akers and Seraphine Shen-Miller; Goran Knezevic, a professor of psychology at the University of Belgrade; and Lazar Stankov, currently a visiting professor at National Institute of Education, Singapore, formerly a research scientist with Educational Testing Service) first read widely. They examined the published materials of 13 militant extremist groups, which they defined as groups that combine fanatical beliefs and values and advocacy of extremist means, including violence.

The extremists came from across regions, religions and cultures. They ranged from the Baader-Meinhof Gang (Germany) to Meir Kahane and followers (Palestine and Israel) to the Lord's Resistance Army (Uganda) to the Tamil Tigers (Sri Lanka) to Aum Shinrikyo (Japan) to the Shining Path (Peru) to home-grown U.S. extremists like the Unabomber and Timothy McVeigh.

The researchers then extracted 16 key themes that occurred over and over in the texts. Taken together, the themes cohere into what Saucier and colleagues describe as a "seductive narrative": The modern world has fallen into a catastrophic state. The ordinary mechanisms of change are no longer valid. Only extreme, violent measures can save things. This is a war of us against them, a war of good versus evil, a war of necessity. Any and all means are not only justified, they are glorified. God is on our side. In the end utopia will be restored.

"The persuasive force comes from the storyline," Saucier said. "When I tried putting all the themes together to get a composite storyline, it was kind of striking. What struck me was the highly emotional kind of thinking. It has a lot of a kind of motivational force to it." (In the journal article, Saucier and colleagues call this story "the seductive narrative in militant-extremist thinking" and write that it "may seem like a dramatic comic book.")

Then, the researchers asked 215 American undergraduates and 297 advanced high school students from Serbia how much they agreed or disagreed with statements. On a five-point scale (going from strongly disagree to strongly agree), American undergraduates averaged 2.5, with nobody averaging higher than a 4; Serbian students averaged 2.95, with only very few scoring 4 or higher.

"The simple but unattainable position is to see militant extremists as some kind of maverick freaks or severely mentally disturbed people or exceptionally evil," said Knezevic, the University of Belgrade psychology professor, in an e-mail. But, he noted, "the psychological constituents of it are omnipresent in humans. ... Consequently, the immense recruiting potential for all sorts of future extreme and destructive political programs will continue to be present in human societies."

A depressing statement, perhaps, but the researchers hope that by identifying the dangerous thought patterns, they can promote modes of thinking that they call "antithetical to militant extremism."

These include the general virtues of toleration, respect for rules and ethical responsibility for actions, as well as being comfortable with the imperfections of the world and not longing for some glorified past or future utopia or dwelling on some current catastrophe. They describe 16 such modes in the journal article. "The pattern of thinking should be promoted everywhere as part of educational standards," Knezevic said.

Saucier suggested that better understanding militant extremist thinking can help "to defuse the phenomenon, because the story line may be a kind of a key glue in how movements operate, and so a big piece is just understanding that." Saucier also thought that such an understanding might allow pollsters to better design questions to gauge the levels of support for such movements internationally.

But while militant extremist thinking may lie dormant in many people, it takes certain conditions to activate the thinking. One is the general condition in society. "Failed states, oppressive governments, factors like that," Saucier said. "There is a good chance those broad contextual factors will heighten tendencies towards extremist patterns." This explains why brutal regimes often gain popular support when a society descends into chaos.

The other is the social context. "It depends on who you hang around with," Saucier said. If someone prone to militant extremist thinking falls in with a group of similarly minded folks, the individuals are likely to feed off each other.

Recently, far-right nationalist parties have been gaining ground in some European countries as the economy continues to struggle. For example, in the Netherlands, the nationalist Freedom Party did surprisingly well. And in the United Kingdom, two members of the British National Party who were just elected to the European Parliament recently made news by saying the EU should sink boats of African immigrants in order to stop Europe from being "swamped by the Third World." Such sentiments may lead to more widespread militant extremist thinking.

"I see indications that ethnonationalism is a pretty good place-setter for militant extremism wherever the ethnonationalists feel particularly obstructed and adopt an angry and aggressive tone," said Saucier, who is now beginning to explore the psychological construct behind such thinking. "It is pretty easy to see that ethnonationalism can easily get one well into a militant-extremist thinking pattern because of the emphasis on fervor-promoting themes like an obstructed group, an illegitimate government, a glorious past and so on."

In the larger context of personality research, the militant-extremism study is also an attempt, as Stankov put it, to ask: "Is there something new that captures that militant mindset of terrorists or can it be understood in terms of the well-established constructs from the broad areas of personality and social psychology?"

The question of evil, of course, is a longstanding one in modern psychology. Following World War II, a lot of psychological research investigated if there was a particular fascist mindset or personality that would explain the rise of brutal totalitarian states. Theodore Adorno, for example, developed a theory of the authoritarian personality, and came up with a set of tests to rank one's propensity to this kind of thinking. Stanley Milgram's famous Obedience to Authority experiments, meanwhile, seemed to suggest given the "right" conditions, most people would follow orders even when the orders were to administer a potentially fatal electric shock.

Saucier and colleagues, however, draw more inspiration from a 1951 work by Eric Hoffer called The True Believer: Thoughts on the nature of mass movements, which posits fanaticism as something different from Nazi/Fascist/Communist authoritarianism, but no less dangerous.

"Hoffer's work is based on a much broader look at fanatical groups," Saucier said. "And one of the things that is going on in this work is that we're going back to a different foundation looking at attitudes, one not coming out of the fascism-authoritarian school, but one with a much broader background."

Finally, in an era in which so much psychological research focuses on happiness, Stankov notes that it is important to remember that most people also have a dark side that would be dangerous to ignore.

"Our work can be seen as a reaction to what is sometimes called 'positive psychology.'" Stankov said. "What we are doing is saying that 'hate' is still around and it can be harmful and we need to understand its nature and its workings in society."

http://www.miller-mccune.com/culture_society/potential-militant-extremist-inside-1343

Salting it Away (and Other Problems with Nuclear Waste)

- By: Michael Scott Moore | July 29, 2009 |

Germany's vaunted salt mine solution for low-level nuclear waste has proven to be full of holes.

Rock salt, at least while it's underground, has two main properties: It can be soft and easy to mine, and it can form a watertight seal. This helps explain why the West German government started forklifting thousands of metal drums of "low-to-medium" radioactive waste into an abandoned salt mine called Asse II during the 1960s.

Asse II is named after its mountain range in the state of Lower Saxony. The mine plunges deep into the hills near Braunschweig (aka Brunswick), in the center of Germany, and politicians in Bonn regarded it during the Cold War as a test site for storage of nuclear waste. An overhead layer of rock salt would shield the mine from groundwater, and the shifting salt itself, over centuries, would seal up any fractures and finally pack the nuclear waste in a safe geological bed.

But that's not what's happening.

Around 12,000 liters of groundwater leak into the mine every day. Some of it mixes with the radioactive waste. A few weeks ago, the Federal Office for Radiation Protection (BfS) finally admitted that some brine collected in Asse II had traces of tritium and caesium 137.

But last year the German public learned that the group in charge of maintaining Asse II at the time had known about the accumulation of suspect water since 2005 — and even tried to mitigate the threat to its employees by pumping it to a deeper level of the mine. Heinz-Jörg Haury, spokesman for the Hemholtz Institute for Scientific Research, tried to explain in mid-2008 why Helmholtz had made no public announcement. "We believed no one was in danger, inside or outside the mine," he said.

The public outrage led German politicians to take the mine out of the Helmholtz Institute's hands and place it under the BfS. But Asse II has also leaked groundwater since at least 1988 — meaning, at the

very least, that decades of Cold War research conducted there failed to solve some of the most basic problems of nuclear storage. Sigmar Gabriel, Germany's environment minister, has called the mine "the most problematic nuclear facility in Europe." Experts say chemical reactions between the brine and the radioactive waste could soften the salt rock and lead to a partial collapse of Asse II by 2014.

No doubt Asse II has been mismanaged, and some lessons from the "research facility" have been learned. Along with 120,000-odd barrels of radioactive slop, according to a report last year, highly radioactive plutonium waste and even a few spent fuel rods were dumped in the mine.

"The standards that were set [in the early days of Asse II] would be completely unacceptable today," said a state environment minister for Lower Saxony, Stefan Birkner, to a TV news reporter in 2008. But the debacle has reawakened anti-nuclear sentiment in Germany. Asse II was supposed to be impermeable for tens of thousands, if not millions, of years.

American salt storage facilities are generally in better shape. James Conca, a geophysicist at New Mexico State University, likes to hand out little bags of salt rock mined from the impressive Waste Isolation Pilot Plant deep under the New Mexico desert. The salt crystals contain bubbles of water from a Paleozoic sea. "Permeability is not just very low but zero," he told a reporter from Scientific American.

WIPP, like Asse II, contains no waste from nuclear power plants, but its safety record is so impressive that Conca sees it as an alternative to Yucca Mountain for future fuel rod storage. Yucca Mountain, of course, looked good to the Bush administration in 2002, but less good to a federal appeals court two years later, which said the government had failed to prove that spent fuel rods would be safe under the Nevada desert for up to a million years.

But it's hubris for a government to think it can safely store nuclear waste beyond the lifetime of the government itself. The trouble with Asse II has been a chastening example. Political promises, stern-sounding policies, and even scientific assessments from 1989 (which said the mine had no leaks) all proved to be as full of holes as the mine itself.

Right now the radioactive brine in Asse II lies almost a kilometer below the surface of the earth, far from the "biosphere," where people live. It hasn't contaminated drinking water. It hasn't bubbled up into anyone's yard. But the mine may have to be sealed with concrete or clay — or even, oddly, flooded (with water and certain taming chemicals) — before it collapses. What happens in 500 years will then be hard to predict.

http://www.miller-mccune.com/europe/Salting-it-away-1370

'Mozart Effect' Real — For Some

- By: Tom Jacobs | July 30, 2009 |

Researchers from the University of London concluded that listening to Mozart can indeed spark a certain type of intelligence, but the effect is limited to non-musicians.Miroslav Tolimir

A new study finds listening to Mozart can indeed provide a boost for the brain — but only in non-musicians.

Since it entered the public consciousness in 1993, the "Mozart effect" — the notion that listening to the Austrian composer's sublime music can boost brainpower, particularly in children — has spawned a small industry of books and CDs. But its reception among researchers has been anything but harmonious, with many expressing skepticism that a sonata could supply significant cerebral stimulation.

Researchers from the University of London have tested a thesis that may explain why studies of this phenomenon have produced such inconsistent results. In a study just published in the journal *Psychology of Music*, they conclude that listening to Mozart can indeed spark a certain type of intelligence, but the effect is limited to non-musicians. The reason, it appears, has to do with the different ways musicians and non-musicians process music in the brain.

The term "Mozart effect" can be traced back to a 1993 study, in which a research team led by Frances Rauscher reported that a group of college students outperformed their peers on a test measuring a specific kind of spatial intelligence after listening to one of the Austrian composer's works: The *Sonata for Two Pianos, K. 448*.

The test subjects were asked to mentally unfold a piece of paper that had been folded over several times and then cut. Those who listened to Mozart were able to identify the correct shape of the unfolded paper more quickly than those who had sat in silence for 10 minutes, or those who had listened to a tape of relaxing sounds.

In the years since, "several studies have found evidence for an enhancement in spatial cognitive abilities after listening to Mozart, but several other studies have failed to replicate the results," reports the researchers, led by psychologist Afshin Aheadi. They gathered a group of 100 university students — 50 musicians and 50 non-musicians — and had them listen to the same sonata used in the seminal 1993 study. The participants then performed a "mental rotation task," in which they looked at drawings and were asked questions that required them to rotate the images in their minds.

The results: "Listening to Mozart benefited the non-musicians, but not the musicians," the researchers report. In part, this is due to the fact that "musicians were more proficient than non-musicians at the mental rotation task" in practice trials before they began listening to the sonata.

"This result is wholly consistent with past literature showing that early musical training leads to gains in intellectual abilities," they said.

But if the spatial processing skills of non-musicians were boosted by listening to the music, why didn't that hold true for the musicians as well? Even if they had a head start over the non-musicians, why didn't they leap even further ahead?

The researchers note that trained musicians "tend to process music in both hemispheres," while non-musicians tend to process it in exclusively in the right hemisphere — the same part of the brain where spatial processing takes part. So the non-musicians got a particularly large jolt of stimulation in the precise part of the brain they needed for the test.

The researchers caution that "only one type of cognitive task was used in the present study, and we cannot conclude from this that all spatial cognitive skills would improve in non-musicians after listening to Mozart. Indeed, another reason for the disparate results found with the Mozart effect in the past may have to do with the number of different tests used."

Also on that topic, the scholars reason "it may be that musicians are more likely to be interested in the Mozart effect and thus more likely to volunteer for experiments to examine it." Their results suggest that if the pool of test subjects for some prior experiments were dominated by musicians, it is not surprising that the Mozart effect failed to register.

They add one other caveat regarding the new study: The participants were all right-handed. The scholars note that left-handed people "tend towards much more bilateral processing" in the brain, meaning the Mozart effect may have less of an impact on them.

So for at least one sizable segment of society — right-handed non-musicians — the Mozart effect appears to be real. Ironically, the composer was not only a musician, but also, by most reports, left-handed.
So Mozart would have been immune to his own effect.

http://www.miller-mccune.com/news/mozart-effect-real-for-some-1394

What If It's Not Raining Men?

Guys wait longer to get married where women are in abundance, but get hitched sooner when females are scarcer.

- By: Lee Drutman |

Guys wait longer to get married where women are in abundance, but get hitched sooner when females are scarcer, according to evolutionary psychologist Daniel Kruger.Nicholas Sutcliff

A few years back, evolutionary psychologist Daniel Kruger was wandering around Manhattan when a *Time Out New York* cover grabbed his eye — a Godzilla-sized woman in a red dress rampaging through the city streets next to the headline: "Attack of the Single Women!" Inside: an article about the plight of the unmarried women in a metro region where they outnumber potential male mates by three-quarters of a million (about a 10-to-9 ratio)

Kruger, a research professor at the University of Michigan's School of Public Health, wondered: "What if there really were a lot more single women than single men? What would that do to population dynamics, to male and female romantic relationships, to negotiating sexual relations and commitment?"

As it turns out, such an imbalance makes men in their 20s less likely to get married, but men in their 30s more likely to get hitched, at least as compared to in the regions where men slightly outnumber women. Kruger's findings are published in *The Journal of Social, Evolutionary, and Cultural Psychology*.

To understand why, one needs to know something about the often conflicting evolutionary motivations that drive male and female reproductive strategies, and how they change (particularly for men) over the course of a lifetime.

In young men, the selfish gene seeks to spread itself far and wide, mostly because it often can (and with minimal investment of resources) — hence, the rakish male tendency to love 'em and leave 'em. Women, on other hand, tend to be more discriminating. They're the ones who have to carry the baby around for

nine months, then nurse it to independence. In women, the selfish gene prefers a mate with both the wherewithal and the resources to stick around and raise the kid.

Translation? "Men will be looking for short-term uncommitted relationships, women will be looking for relationship commitment," said Kruger. "These are the things that have driven evolution. ... Because of different interests, women offer a sexual relationship in exchange for commitment, and men offer commitment in exchange for sex." (In a separate study, Kruger surveyed undergraduates to learn that, indeed, females were much more likely to admit to having traded sex for "investment," while males were much more likely to have done the reverse)

But if reproduction is a kind of bargaining game, it means that when guys become scarcer they can drive a harder bargain. "The more women are around, the more opportunities there are for men, and the men can lower their offers for commitment and investment because they know they are likely to find another partner," said Kruger. "But women can't put their foot down and say 'marry me or else' because this guy has other alternatives."

On the other hand, in places where men outnumber women, young fellows who find a suitable gal are more likely to want to make sure they hold onto her. Hence, the higher marriage rates among 20-something men in cities where dudes abound.

Around age 30 or so, however, men start to become more interested in long-term relationships, and they switch from acting like cads to acting like dads. This is because, as their features soften and their testosterone levels fall, men lose their desirability as one-night-stand material, Kruger argues. The theory goes that if women are going to be loved and left, they want it to be with a virile young man. That way, at least the child will be genetically fit, even if the guy doesn't stick around. Older men, then, are left only with the good-provider card to play.

"So guys shift strategies," said Kruger. "But in female-biased populations, they still have the advantage of market scarcity." Meanwhile, in the male-biased populations, there are even fewer mates left for those who waited. Hence, the lower rates of marriage among 30-somethings in those populations.

Gender balances also have consequences for social norms, an argument that was originally put forth by Marcia Guttentag and Paul Secord in a 1983 book called *Too Many Women*? In times and places where men are scarce, competition among women leads them to be more forward in their seduction. Sexual mores grow looser. Historically, hem lines rise. But at the same time, not being tied down often gives women more freedom to pursue their careers and education, and develop their own independence.

Perhaps it's not a coincidence, suggests Kruger, that when women began to outnumber men in the United States after World War II, the cultural and feminist revolution of the 1960s soon followed.

On the other hand, in places and times when women are in shorter supply, men do their best to promote chastity and to treat women as the fairer sex to be cherished and protected.

Think Southern belles, said Kruger: "In the South, where you have had a heavily male-biased population [because of the agricultural economy] women were valued and adored for their physical beauty. They were put on a pedestal but also shackled to that pedestal. ... If guys didn't have control over women then you'd see polyandry — women having relationships with multiple guys. Guys keep social norms rigid because they are terrified of that happening."

Excess males in the population also tend to turn men more aggressive, generally, and make men more likely to engage in all kinds of risky behaviors that actually result in higher male mortality rates, mostly from accidents, homicides and suicides. "If you go to Alaska [male to female ratio of 107-to-100, highest of any U.S. state]," warned Kruger, "be on your guard. These guys are sensitive to threats to their relationship status."

Much worse than Alaska, however, is China, where the male-to-female ratio is now 120-to-100 and Chinese government has expressed concerns "about the consequences of large numbers of excess men for social stability and security." Kruger is worried too: "That is a real danger sign. Historically it's been associated with warfare with other groups. ... You can't have all these single guys who aren't getting any sexual satisfaction; it's a very volatile situation." (Historically, a shortage of women has often been followed by a period of conquest.)

On the other hand, when women outnumber men, said Kruger, "They do get depressed and go inward, though the adverse consequences are less likely to be violent. You won't see a marauding band of women streaming from Manhattan to invade the neighboring population." So much for the imaginative cover designers at *Time Out New York*.

To one New York City dating expert, however, there's more to the dating game than just the numbers. "Statistically, the research makes sense," said Arthur Malov, the head dating coach at New York Dating Coach. "But people are emotional, and so I think it doesn't take into consideration all the factors such as attractiveness, such as density and how many times women get approached."

Malov finds that in his experience, men are more than anything interested in a pretty face, whereas women are more likely to consider a larger package of attributes. So, as long the as long as a girl is cute, she can be choosy, too.

Women also benefit from the population density of a place like New York, says Malov, because there are just so many opportunities for them to get noticed. "If you live in small-or medium-sized town, everything is so spread out, and women do not get approached as much," said Malov. "And when a girl's not being approached all the time, it's actually easier for guys to meet women. I speak to guys all the time, and guys from other states complain it's harder to meet girls here than in the Midwest or the South."

http://www.miller-mccune.com/culture_society/not-raining-men-1366

Can This Fishery Be Saved? Yes!

The death spiral for global fish that has been reported with glum glee by the media can be reversed, according to a blue-ribbon panel of marine scientists.

- By: Julia Griffin | July 30, 2009

After two years, an unprecedented collaboration between two top fisheries scientists sheds new, more rigorous and more hopeful light on the status of the world's fisheries.Eric Gevaert

There is reason to have hope in the long-term sustainability of the world's fisheries, which a few years ago were predicted to collapse in the next four decades.

According to a brand-new analysis of the most comprehensive fisheries database to date suggests a balance between fishing and conservation is possible even in extremely overfished regions — when the right combination of management techniques are employed.

And to the josucy of sushi eaters, there is evidence these strategies already are helping fish populations rebound in some parts of the world.

The analysis is described in the July 31 issue of Science in a paper by 21 co-authors from around the world led by two heavyweights in the world of fisheries — Boris Worm and Ray Hilborn. It's a remarkable partnership considering that three years ago, the two were locked in a well-publicized debate on the status of the world's fisheries.

In the Year 2048
In 2006, Worm, a marine biologist from Dalhousie University, was lead author on a *Science* article that — while focusing on the declining rates of biodiversity around the world — predicted that all commercial seafood stocks fished today would collapse by the year 2048.

The press glommed onto that conclusion and very specific date, even though it was really just a side note in the larger paper. "Seafood May Be Gone by 2048, Study Says," read one headline on the National Geographic Web site, hardly a bastion of sensationalism. But that was how the study was promoted: "By 2048 all current fish, seafood species projected to collapse," read a press release on the study. The year 2048 continues to be a go-to fact for journalists, environmental groups and policymakers.

The same month that Worm's paper was published, Hilborn — a fisheries scientist from the University of Washington — authored an essay in the journal *Fisheries* harshly criticizing high-profile scientific publications like Science and Nature for what he perceived was a trend of selective research publication based not on merit but on "publicity value."

"It criticized what I called 'the litany of fisheries disasters.' There was a long series of papers about declines in the world's fisheries that were exaggerations and often not even correct, and Worm, et al., seemed to be another one of these," Hilborn recalled. "They argued that fisheries management was failing, and yet at the same time all through the '90s and 2000s people in fisheries agencies have basically been busting their butts to decrease fishing rates."

A clash of the fisheries world titans quickly developed since the debate between Worm and Hilborn began to reflect differences in views among fisheries scientists and marine ecologists. Fisheries scientists, like Hilborn, tend to focus on the sustainable use of marine ecosystems as resources; marine ecologists, like Worm, generally seek means of returning ecosystems to as pristine and un-fished a state as possible.

Hilborn and other fisheries scientists criticized the 2048 conclusion, questioning the data and methods used by Worm and his colleagues, and complaining that the analysis completely ignored areas, like Australia, where overfishing trends had reversed.They also took issue with the definition of fishery collapse — when fish catches fall to 10 percent of historic levels — used by Worm and his co-authors, saying that it did not take into account management policies that reduce fish catches or the fact that categories of species have gotten more specific over time (i.e. sharks went from a category unto itself to specific, smaller species categories).

Then, in late 2006, as NPR's Tom Ashbrook interviewed both Worm and Hilborn for his program, *On Point*, the scientists saw their agreements as stronger than their differences.

"Boris and I were on this NPR talk show and we realized that we actually had a lot of agreement on things, so we said let's get together," remembered Hilborn. "Let's get data on abundance from surveys and stock assessments; let's look regionally and see if we could come to agreement ... and [the National Center Ecological Analysis and Synthesis] proved a good venue to do that."

NCEAS, a grant-supported institution in Santa Barbara, Calif., provided a "neutral territory" for the 21 marine ecologists, fisheries biologists, economists and modelers who authored the new study as they developed and analyzed a new database of the world's fisheries."What has enabled this group [to work together] is the curiosity to find out more about the [fisheries] world by looking together at all the available data, and the conviction that we need to join forces to make a difference," said Worm.

"To scientists, nothing is as rewarding as engaging in a big piece of analysis like this and coming up with new answers."

A Brighter Picture for Global Fisheries

After two years, the unprecedented collaboration between the fisheries scientists produced a novel assessment of global marine ecosystems, described in the new *Science* paper, that sheds new, more rigorous and more hopeful light on the status of the world's fisheries.

"It was the first attempt to do global synthesis of trends, abundance and exploitation rate," said Hilborn, referring to the fraction of fish in the ocean harvested each year. "All of the earlier work had only always

relied on the global data, which was catch. We realized that catch data was just too crude a measure of what was going on in fisheries, we needed to look at abundance."

Through the working groups at NCEAS, the 21 co-authors assimilated stock assessment data with scientific trawl surveys, catch data and fishery models to examine exploitation rates and species abundance in 20 ecosystems, primarily Western industrial fisheries.

In the end, there was sufficient data to fully analyze 10 ecosystems including the California coast, the Baltic Sea and Southeast Australia. Of these 10, two ecosystems — the Bering Sea and New Zealand shelf — had never been overfished. Over the past three decades, the other eight ecosystems been fished below the ecosystems' maximum "sustainable yield" — the amount of sea life that can be caught each year without allowing the population to decline.

Recently, however, said Hilborn, "Five of those ecosystems have shown quite significant reductions in the fraction [of fish] harvested, so now they are in the range of exploitation rates that would produce ecosystem-wide maximum sustainable yield."

In three of those — Iceland, the Northeast U.S. shelf and the California current — he said they're seeing "significant recovery in the number of fish."

New Approach to Fisheries Management

Having shown that by reducing exploitation not all global fisheries need decline, the co-authors sought to identify what approaches to fisheries management were most successful, not just for an individual species but a marine ecosystem as a whole.One conclusion they all agreed upon was that limiting fishery takes at the maximum sustainable yield for each species was not working. It's often treated as a goal — a goal often exceeded due to political pressure from the fishing industry — rather than as an upper limit. (Think about revving you car's engine to the red line at all times instead of just on rare occasions and what that might do to engine life.)

"The problem with maximum sustainable yield is that it often leads to the collapse of less productive stocks," explained Worm. "Our ecosystem models [from this paper] suggest that if you fish an ecosystem for maximum yield, up to a third of the stocks are likely to collapse."

However, fishing at the maximum sustainable yield for an ecosystem as a whole or "multi-species maximum sustainable yield," say the authors, presents its own limitations. Maximizing the yield from the ecosystem as a whole accounts for interactions between species, but also means less productive species will be over-exploited while high-productivity species will be significantly under-fished.

"The societal question is, do we want to maximize the amount of food we draw from the ocean or do we want to make sure that nothing is overexploited?" Hilborn asked rhetorically. "If we want to make sure that nothing is overexploited (as is done in the United States under the Magnuson Stevens Act), we have to fish much, much less, and we're going to give up most of the catch.

"As a scientist, I can tell you those are the tradeoffs, but I can't tell you which one to do."

The group was able to agree, however, that the best strategy to increasing species stocks is to fish below multi-species maximum sustainable yield. "We were able to agree within our group that if you were fish with two-thirds the effort that would produce the maximum sustained yield, you'll get 90 percent of the catch," said Hilborn. "But you'll get a lot less ecosystem impact."

Strategies similar to this recommendation have already been implemented in Australia and New Zealand, where fishery stocks are either recovering or already under-exploited. Accepting that a significant fraction

of the unproductive stocks will be overexploited, these countries believe this management strategy will maximize the amount of food taken from their ocean waters while still remaining sustainable.

In the future, the authors hope, research might reveal a way to protect underproductive stocks while still catching more of the productive ones.

Good for the Ecosystem, Good for Economics

The authors write that fishing below the maximum sustainable yield makes economic sense for the fishing industry, even if it entails short-term pain like reduced income and lost jobs.

Deliberately lowering catch levels decreases the average amount of effort each fishermen uses to land each pound of seafood, since the amount of work it takes to catch a fish increases when there are fewer fish to be found. Less effort means less time on the water for fishermen and lower fuel use, while the reduced pressure on fish stocks allows a species' numbers to rebound while fewer fish in the marketplace pushes prices up for the species.

"[Fishermen] are generally receptive to reduced exploitation if they can see there are clear economic benefits to them," said Hilborn. "Increases in abundances, catch rates and higher prices can offset the [initial] loss of reduced catch."

Of course, higher prices create an incentive to overfish, but that's a loser's strategy, Worm believes.

"Where the rate of exploitation is too high, both fishermen and ecosystems suffer," he said. "The short-term cost of rebuilding is lost catch and revenue, the long-term gain is a sustainable source of income, and the ability to plan ahead. With overfishing it's the other way around: Short-term gain is offset by long-term pain."Unfortunately, the study offers no "magic bullet" for the best way to reduce overfishing in a specific ecosystem. "Successful management requires a combination of approaches to reduce exploitation rate and protect depleted or vulnerable species," said Worm.

The authors suggest a combination of strategies, such as catch quotas, area closings, time restrictions and gear restrictions, be used to manage fisheries and ecosystems on a place-to-place basis. And of course those strategies only work where national control and enforcement exist; "Unfortunately, effective controls on exploitation rates are still lacking in vast areas of the ocean, including those beyond national jurisdiction," according to the paper.

They caution that as fisheries management improves in developed nations, especially Europe and the United States, fishing boats will likely move from newly regulated ecosystems to those of developing countries where laws and enforcement are weaker.

The problem is particularly evident in African fisheries, where increased illegal fishing and competition from foreign fleets could threaten biodiversity and local food security.

Now that it has been shown proper management can help previously overfished stocks to recover, said Worm, "Global oversight is needed to avoid simple displacement of fishing effort into countries with weaker governance."In a comment solicited by *Science*, the principal investigator for the Sea Around Us project, the University of British Columbia's Daniel Pauly, suggests the next step won't be up to marine scientists. "This work shows very convincingly that researchers, as a rule, understand marine ecosystems and fisheries well enough to design effective remedies to overfishing," he was quoted. "What is mostly lacking, and sorely needed nowadays, is the political support to apply these remedies to the many fisheries that still operate as if there were no tomorrow."

http://www.miller-mccune.com/science_environment/can-this-fishery-be-saved-yes-1395

Opinion: Do you believe in miracles?

- 05 August 2009 by **Hugh McLachlan**
- Magazine issue 2720.

THESE days most people think it unscientific to believe in "miracles", and irreligious not to believe in them. But would the occurrence of miracles really violate the principles of science? And would their non-occurrence really undermine religion? David Hume and Richard Dawkins have attempted to answer these questions in their different ways, but I am not convinced by their arguments, and for me they remain open questions.

In 1748, in one of his key essays, *An Enquiry Concerning Human Understanding*, the Scottish philosopher David Hume gave an account of the philosophy of miracles that impressed and influenced many thinkers. Hume defines a miracle as "a violation of the laws of nature...a transgression of a law of nature by a particular volition of the Deity, or by the interposition of some invisible agent".

He does not say that miracles could not or do not occur, but that we are unlikely to be able to prove that one has occurred. He argues that whenever we hear a report of a miracle, it is more probable that the reporter is deceived or deceitful than that their report is true. And he suggests that his arguments must undermine religion because they remove what adherents consider to be one of the rational grounds of religious belief.

Hume is right to argue that there is something dubious about miracles, but not quite for the reasons he suggests. The very notion of a miracle is either unintelligible or it has a meaning other than that given by Hume. And it is far from clear that Hume's arguments have any bearing on how rational it is to accept or reject religious beliefs.

I would argue that, by definition, "laws of nature" are universal laws of the form "if A, then B", or "all As are Bs". Logically, they cannot be violated or transgressed, not even by God. If, even on one occasion, for whatever reason, there was an A without a B, then it would not be true to say "if A, then B". What had been thought of as a natural law would in fact not be one.

Hume continues: "That no testimony is sufficient to establish a miracle, unless the testimony be of such a kind, that its falsehood would be more miraculous than the fact, which it endeavours to establish: And even in that case, there is a mutual destruction of arguments, and the superior only gives us an assurance suitable to that degree of force, which remains, after deducting the inferior."

This might sound impressive but it is mere rhetoric and bluster. For example, if a miracle is a violation of a law of nature, there cannot be degrees of miraculousness. In terms of his definition, something either is or is not a miracle. When Hume says it would need to be more miraculous that a report was false than that a miracle had not occurred, he is oscillating between meanings of the term - between his own specific use and the vague, undefined usage of common speech.

Moreover, we do not normally, as Hume suggests, accept or reject our theories on the basis of the number of examples cited to support a proposition (remember, just one black swan undoes the theory that all swans are white), or by trying to calculate the probability that those who report observations are telling the truth. "Laws" that appear firmly established are often overturned in science, yet we do not need to argue that a miracle must have occurred, assuming whoever reported the apparent overturning is telling the truth. Instead, the rational thing to do is to abandon the natural law or modify what we considered to be a true statement of it.

Which is where Dawkins comes in. In *The God Delusion*, he writes: "I suspect that alleged miracles provide the strongest reason many believers have for their faith: and miracles, by definition, violate the principles of science." This looks at things the wrong way round. People do not believe in religion because they accept occurrences such as miracles. Surely it is because people believe in particular religions that some interpret some particular occurrences as miracles.

But believers need not mean by "miracles" what Hume and Dawkins mean by them. And belief in miracles need not be inconsistent with an acceptance of science. I have already argued that Hume's definition of miracles violates the principles of logic rather those of science. And anyway, Hume never argued that miracles violate the principles of science.

Belief in miracles need not be inconsistent with an acceptance of science

Dawkins, however, does. In *The God Delusion*, he asks: "Did Jesus have a human father, or was his mother a virgin at the time of his birth? Whether or not there is enough surviving evidence to decide it, this is still a strictly scientific question with a definite answer in principle: yes or no."

I think there is a lot of truth here. Even so, what Dawkins says does not completely settle the matter, far less settle it in favour of atheism. Suppose the correct answer is: no, Jesus did not have a human father. This would no more establish the truth of religion than the opposite falsifies it. If Jesus was born of a virgin, it does not follow that a law of nature was violated. To say "if A, then B" is not to say that there will be a B only if there is an A.

For instance, human clones could be born of virgins - without violating a universal law. In the Humean sense of a violation of a law of nature, virgin births and the examples of "miracles" that Dawkins gives are not, if they occurred, necessarily violations of natural laws. They are uncommon, possibly astonishing, but as Hume himself said when he was defending suicide, all that occurs is natural, whether or not it occurs frequently.

As for the link between believing in God and believing in miracles, people may believe in God without believing in miracles in any sense of the term. Similarly, people may be scientifically minded and yet ask and give answers to non-scientific questions. The notion "only scientific statements are rational ones" (implicit in so much western thinking) is not itself a scientific statement, it is a false philosophical one.

Consider the Azande, an African tribe whose members believe all deaths and misfortunes are caused by either witchcraft or sorcery. Suppose a falling branch kills someone. On one level, the tribe accepts a scientific account of the incident in terms of, say, the effect of termites on wood. But on another level, they ask why did it come about that the particular person happened to be standing under the tree when the branch happened to fall?

We are unlikely to ask that particular question, and unlikely to accept their particular explanation, but it is not at all clear why we should say that questions of that sort are inappropriate. There is no apparent clash with science or hostility to it, as the British anthropologist Edward Evans-Pritchard, who studied the Azande, was keen to stress.

People might accept a scientific account of why a particular event occurred, yet ask similar sorts of questions about why there are particular juxtapositions of occurrences. Much of this speculation and theorising will be baseless, but there seems no justification for saying all such thinking is nonsensical. By analogy: most conspiracy theories are groundless, but not all of them are.

So some people might think of "miracles" as particular juxtapositions of events, each of which has a correct and acceptable scientific explanation. This might be nonsensical, but it would be interesting to discover wherein the nonsense lies. We should be open not only to possible observations and experiences that might dislodge some of our accepted theories but to thoughts and ways of thinking that may challenge our notion of what acceptable theories and explanations can be like. We deceive ourselves if we imagine science has established that only scientific explanations are valid or that scientific explanations can take only one particular form.

Profile

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http://www.newscientist.com/article/mg20327207.000-opinion-do-you-believe-in-miracles.html?full=true

Found: A pocket guide to prehistoric Spain

- 05 August 2009 by **Charles Choi** and **Catherine Brahic**
- Magazine issue 2720.

MODERN humans have got it easy. Anyone with a computer can look up just about any location and within seconds bring up a map complete with step-by-step directions from A to B.

The internet and centuries of map-making mean getting to, say, the prehistoric painted caves of France and Spain is child's play. "But imagine a group of hunter-gatherers, returning to an area they had not been to for a long time. How do you find a particular cave, especially if the vegetation has changed and its entrance may be masked?" asks independent archaeologist Paul Bahn.

The answer may be that hunter-gatherers had their own maps. A team of archaeologists have matched etchings made 14,000 years ago on a polished chunk of sandstone in northern Spain to the landscape in which it was found. They claim to have the earliest known map of a region in western Europe - a prehistoric hunting map.

The rock, roughly hand-sized and 14,000 years old, bears a mess of overlapping etchings. It was found in a cave in Navarre on the southern side of the Pyrenees and it took Pilar Utrilla of the University of Zaragoza, Spain, and colleagues the better part of 10 years to disentangle the lines and make sense of them (*Journal of Human Evolution*, DOI: 10.1016/j.jhevol.2009.05.005).

Above recognisable depictions of reindeer, a stag and some ibex are what Utrilla's team believe is a representation of the landscape surrounding the cave. Several etched lines resemble the shapes of mountains that are visible from the cave. Long, meandering etches match the course of a river that runs at the foot of one of the mountains and splits into two tributaries. A series of strokes that cut across the river near the mountain could represent places where it was easily crossed, or even bridges, the researchers say.

See a picture of the etchings

"This is a pretty spectacular find," says prehistoric archaeologist Lawrence Straus of the University of New Mexico in Albuquerque. "It may give us a glimpse into the ways in which people navigated and

explained their territories." He says the slab was etched during a period of enormous cultural activity in northern Spain. "The human range was expanding northward and population density was increasing after people nearly died off in the last glacial maximum about 20,000 to 17,000 years ago. People were perhaps having to cooperate, carving up territories among different bands. They had to live by their wits and what the landscape provided." Strauss says engravings and paintings would have helped with territorial definition, hunting, human aggregation and mobility, and generally making sense of the world.

This spectacular find may give a glimpse into the way people navigated and explained their territories

"The interpretation is, of course, pure speculation, as with all other such claims for Ice Age maps," says Bahn. "On the other hand, it would be extremely surprising if these people did not produce rough maps. They were as intelligent as we are and were constantly moving around the landscape." He agrees the stone is the best bet for a prehistoric western European map so far.

Others take issue with this interpretation. According to Jill Cook, head of the prehistory division at the British Museum in London, hundreds of similar etchings have been found sprinkled across Europe.

"Multiple lines positioned over animal figures is not unusual in slabs of this period. We haven't traditionally considered them to be maps." She also doesn't believe humans at the time had any need for maps (see next week's issue of *New Scientist*). "Their intimacy and knowledge of the landscape, including the location of individual trees and plants, would be such that maps would be less vital to them. On the whole, art of this period doesn't include landscape elements - no trees, rivers or hills - so this interpretation is very brave," she told *New Scientist*.

Archaeologist Jean Clottes, an expert for the International Council on Monuments and Sites, agrees that prehistoric humans probably had excellent mental maps to help them navigate. He has an alternative explanation for the engravings. Clottes believes that instead of connecting the artist to the physical world, they may have acted as a bridge to another, spiritual world. "For these people, their landscape was likely sacred. A map might not have helped them go from one place to another, but instead could have marked the places of very significant sacred places."

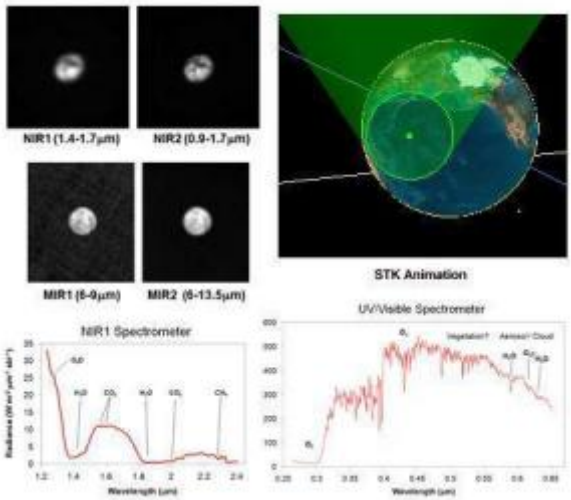
Maps through the millennia

There's no doubt our ancestors relied on maps. Here are some of the oldest known examples.

- The oldest map found in Europe, discovered in Pavlov in the Czech Republic, is about 25,000 years old. It depicts a mountain, river, valleys and routes around the region.
- A schematic 6200-year-old drawing of Çatalhöyük in Turkey may be the oldest known city map.
- The oldest known map of the world dates to 600 BC. It is inscribed on a clay tablet discovered in the city of Sippar in southern Iraq, is centred around Babylon and shows the world as a circle surrounded by "bitter water": the salty sea.
- The oldest complete star atlas, measuring 2 metres across, was discovered in China in 1907. It dates from the 7th century AD and marks the position of 1339 stars, including clearly recognisable groups such as Orion and the big dipper.

http://www.newscientist.com/article/mg20327204.400-found-a-pocket-guide-to-prehistoric-spain.html

Looking Back At Earth: LCROSS Spacecraft Successfully Detects Life On The Blue Planet



Shown above (upper left) are images of the Earth from a distance of approximately 360,00 km. At this range the Earth's diameter is approximately 2.2 degrees. Also shown (lower graphs) are spectra from the downward looking Near Infrared Spectrometer and Ultraviolet/Visible Spectrometer. (Credit: NASA/Ames Research Center)

ScienceDaily (Aug. 10, 2009) — On Saturday, Aug. 1, 2009, the LCROSS spacecraft successfully completed its first Earth-look calibration of its science payload. An additional Earth-look and a moon-look are scheduled for the remainder of the cruise phase of the mission.

The purpose of the LCROSS Earth-look was to perform a routine health check on the science instruments, refine camera exposure settings, check instrument pointing alignment, and check radiometric and wavelength calibrations.

From its vantage point of 223,700 miles (360,000 km) from Earth, the LCROSS science team changing exposure and integration settings on the spacecraft's infrared cameras and spectrometers and performed a crossing pattern, pushing the smaller fields of view of the spectrometers across the Earth’s disk. At this range, the Earth was approximately 2.2 degrees in diameter.

"The Earth-look was very successful," said Tony Colaprete, LCROSS project scientist. "The instruments are all healthy and the science teams was able to collect additional data that will help refine our calibrations of the instruments."

During the Earth observations, the spacecraft's spectrometers were able to detect the signatures of the Earth's water, ozone, methane, oxygen, carbon dioxide and possibly vegetation.

Adapted from materials provided by NASA.

http://www.sciencedaily.com/releases/2009/08/090806091014.htm

Novice Parents Overlook Many Child-injury Risks

Researchers report that new parents identified less than half of the safety hazards in a simulated home environment, and most perceived that their children were less vulnerable to injuries than other children. (Credit: iStockphoto/Renee Lee)

ScienceDaily (Aug. 10, 2009) — University of Alabama at Birmingham (UAB) Department of Psychology researchers report that new parents identified less than half of the safety hazards in a simulated home environment, and most perceived that their children were less vulnerable to injuries than other children.

The findings will be published in an upcoming issue of the journal *Accident Analysis and Prevention*. UAB doctoral student Joanna Gaines, M.A., is the lead author of the study, and UAB pediatric psychologist David Schwebel, Ph.D., is its co-author.

The study found that parents recognized only 47 percent of the safety hazards placed inside a home setting.

"While there were no benchmarks to assess whether this is a good or bad rate of recognition, it is concerning if it approximates behavior in real homes," the authors said. "One would hope that parents might recognize all or almost all of the safety hazards present. If they don't recognize hazards, they cannot act for prevention, thus placing their children at risk of serious injury."

Surprisingly, when asked to identify hazards they considered dangerous for their own children, the parents identified only 40 percent of the hazards. The study's authors said that after the test, many of the

parents made statements such as “My child isn’t curious about the toilet,” or “My child knows not to play with matches.” The results suggest that parents tend to perceive their children as being somewhat invulnerable or smarter, safer or developmentally more advanced than other children, Gaines said.

Home InjuriesUnintentional injuries are the leading cause of death for toddlers in the United States, according to the National Center for Injury Prevention and Control (NCIPC). In fact, the NCIPC reports that more than 1,300 1- and 2-year-old American children died from accidental injuries in 2005.

The Study

Researchers tested 94 individuals, including 44 parents whose oldest child was 12-36 months, 30 day-care workers and 20 health-care professionals. A living room and a typical toddler’s bedroom were created in the laboratory to simulate a home environment. For a third room, they used an existing bathroom with a working sink, shower and toilet. In each room, the researchers placed items that were safety hazards for young children such as prescription medication, shower cleaner, a pair of scissors, overloaded electrical outlets and marbles.

Each participant was asked to place stickers on all items in the three rooms that they believed would be a hazard to children ages 12-36 months. Researchers also asked the parents to complete a second task to identify hazards they believed would be dangerous for their own toddlers. The order the two tasks performed was alternated randomly.

The parents answered questions about their level of education, knowledge of CPR, attendance at parenting classes and the number of hours each week spent reading parenting magazines.

The study found that formal education was not related to hazard recognition, Gaines said. Parents with fewer years of education recognized safety hazards just as well as parents with more education. But the study also found that more hazards were identified by adults with more parent-related education, which suggests these classes and magazine articles focused on injury prevention may benefit child safety.

The parents, however, recognized more hazards than the professionals who worked with children daily, the study authors said. The health professionals recognized only 29 percent of the hazards, and the day-care workers recognized 37 percent. Some explanations may include the fact that parents spend more time with toddlers than day-care employees and parents have more invested in safeguarding their own children. In addition, parents have more experience watching children in a home environment than most child-care professionals.

Adapted from materials provided by University of Alabama at Birmingham.

http://www.sciencedaily.com/releases/2009/08/090804190501.htm

From Nerve Roots To Plant Roots: Research On Hereditary Spastic Paraplegia Yields Surprises

Arabidopsis thaliana. (Credit: Image courtesy of Wikimedia Commons)

ScienceDaily (Aug. 10, 2009) — Sprouting. Branching. Pruning. Neuroscientists have borrowed heavily from botanists to describe the way that neurons grow, but analogies between the growth of neurons and plants may be more than superficial. A new study from the National Institutes of Health and Harvard Medical School suggests that neurons and plant root cells may grow using a similar mechanism.

The research also sheds light on the hereditary spastic paraplegias (HSP), a group of inherited neurological disorders in which some of the longest neurons in the body fail to grow and function properly. The genes behind HSP and their roles inside neurons are poorly understood. However, the study suggests that several forms of HSP share an underlying defect with each other – and with abnormal root hair development in a plant widely used for agricultural research.

The strange implication is that the plant, *Arabidopsis thaliana* (mouse-ear cress), could prove useful for further research on HSP.

"This study provides us with valuable new insights that will stimulate research toward therapies for hereditary spastic paraplegias," says Craig Blackstone, M.D., Ph.D., an investigator at NIH's National Institute of Neurological Disorders and Stroke (NINDS) and an HSP expert. Dr. Blackstone performed the study in collaboration with William Prinz, Ph.D., an investigator at the NIH's National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), and Tom Rapoport, Ph.D., a Howard Hughes Medical Institute investigator and a professor of cell biology at Harvard Medical School.

HSP primarily affects corticospinal neurons, which extend projections called axons from the brain's cerebral cortex to the spinal cord. The longest corticospinal axons extend nearly all the way down the spinal cord – a distance up to about three feet – in order to control movement in the legs. In HSP, these

long axons develop abnormally or they degenerate later in life, causing muscle stiffness and weakness in the legs. HSP exists in many forms in different families, and more than 40 genes have been implicated in the disease.

In the new study, published in *Cell*, the researchers propose that defects in the shaping of a subcellular structure known as the endoplasmic reticulum (ER) are a common cause of HSP. The ER – named for its reticulated (or net-like) shape – is a cellular factory, where molecules such as proteins and lipids that are vital to cell growth are made and packaged for shipping to various cellular destinations. The researchers theorize that in several forms of HSP, the ER loses its complex shape and is unable to support the growth or maintenance of long corticospinal axons.

Several years ago, other researchers showed that similar ER defects in Arabidopsis impair the growth of the plant's root hairs. These are wispy, microscopic projections that grow from the plant's individual root cells.

The new study focuses on a gene called atlastin. This gene is defective in about 10 percent of HSP cases, and in previous research, Dr. Blackstone's group showed that it has a role in axon growth. The new study reveals that the atlastin protein is necessary for maintaining the shape of the ER in mammalian cells, and that an analogous protein called Sey1p performs the same function in baker's yeast.

The researchers demonstrate that ER shaping defects have general relevance for HSP, by showing a connection between atlastin and a group of proteins known as the DP1 family. Years ago, Drs. Prinz and Rapoport reported that a yeast analog of DP1 regulates the shape of the ER in yeast. Meanwhile, others researchers had independently reported that mutations in REEP1, a member of the DP1 family, cause 3 percent to 8 percent of HSP cases. The new study shows that atlastin interacts physically with DP1 in mammalian cells, and that Sey1p (the yeast atlastin) interacts with the DP1 analog in yeast.

Finally, Dr. Blackstone's study notes that Arabidopsis has an analog of atlastin, called Root Hair Defective 3 (RHD3). Mutations affecting RHD3 cause the plant to grow short, wavy root hairs.

If this connection between axon growth and root hair growth withstands further study, Arabidopsis could be a useful tool for investigating mechanisms of HSP. Arabidopsis is easy to raise in the lab, and the short root hairs of the RHD3 mutant are easy to observe, compared to the growth defects in atlastin-deficient neurons and yeast. Dr. Blackstone hopes to collaborate with other researchers to initiate a search for genes and compounds that correct root hair development in the RHD3 mutant, which might provide valuable therapeutic insights into HSP.

Journal reference:

1. Hu J, Shibata Y, Zhu P-P, Voss C, Rismanchi N, Prinz W, Rapoport TA, and Blackstone C. **A Class of Dynamin-Like GTPases Involved in the Generation of the Tubular ER Network**. *Cell*, Vol. 138, August 7, 2009

Adapted from materials provided by NIH/National Institute of Neurological Disorders and Stroke, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/08/090806121724.htm

Scientists Devise Efficient Way Of Learning About Complex Corn Traits

There's no "silver bullet" gene or gene region that controls so-called complex traits in maize, commonly known as corn. (Credit: iStockphoto/Graham Klotz)

ScienceDaily (Aug. 10, 2009) — There's no "silver bullet" gene or gene region that controls so-called complex traits in maize, commonly known as corn.

Instead, in two research papers recently published in the journal *Science*, North Carolina State University crop scientists and colleagues show that lots of small changes in a number of gene regions affect complex traits – like flowering time or reproductive ability – in corn.

Finding out more about the mechanisms behind complex traits like flowering time – as well as even more difficult-to-map traits like yield or drought tolerance, for example – has the potential to help plant breeders build the best traits into tomorrow's corn plants, says Dr. Jim Holland, NC State professor of crop science, research geneticist for the U.S. Department of Agriculture-Agriculture Research Service (USDA-ARS) and one of the lead authors of the Science papers.

Holland and Dr. Major Goodman, NC State professor of crop science, joined with researchers from Cornell University, the University of Missouri and other institutions to assemble a set of genetic maize varieties called the maize nested association mapping population. They found a number of chromosomal regions – called quantitative trait loci (QTL) – affecting flowering time in corn.

Identifying QTLs can help scientists get closer to figuring out the actual genes involved in certain traits. Holland likened it to looking for a specific house in a large city, with the QTL providing the correct street, but not necessarily the right house.

The scientists found that an average of 29 to 56 QTLs affected flowering time; the effects of these QTLs were small.

That finding contrasts with studies of Arabidopsis, or mustard weed, the ubiquitous lab rat of the plant world. In that plant, small numbers of QTLs have large effects on genetic variance.

The scientists also studied more than 1,100 marker genes that characterize genetic inheritance. In other words, the researchers wanted to know if genes from one parent are inherited more frequently than genes from another parent.

While they predicted that more genes from one parent would be inherited, the study showed that, for the vast majority of the genome, each parent contributed about half. But subtle deviations from this were often observed, indicating that many genes had small effects on reproductive success.

Holland says that the nested association mapping population will be a resource for scientists to both build a better corn plant and to show how changes in the genome produce differences in individual plant families. That, in turn, will help scientists make more accurate predictions about complex traits.

"These findings will be a big help in the future," Holland says. "We can now take a complicated trait, identify gene regions involved in the trait, and then use that information in breeding to ensure the best combinations of genes from different sources or varieties."

The research was funded by the National Science Foundation and the USDA-ARS.

Journal references:

1. James Holland and Major Goodman et al. **The Genetic Architecture of Maize Flowering Time**. *Science*, Aug. 7, 2009
2. James Holland and Major Goodman et al. **Genetic Properties of the Maize Nested Association Mapping Population**. *Science*, Aug. 7, 2009

Adapted from materials provided by North Carolina State University.

http://www.sciencedaily.com/releases/2009/08/090806141522.htm

1930s Home Goes Green

A 1930s house built in 2008 is about to undergo the first of three energy efficiency upgrades which will ultimately convert an energy inefficient house into a zero carbon home. (Credit: Image courtesy of University of Nottingham)

ScienceDaily (Aug. 10, 2009) — A 1930s house built in 2008 is about to undergo the first of three energy efficiency upgrades which will ultimately convert an energy inefficient house into a zero carbon home designed to meet the Government's 2016 CO_2 targets for all new housing. The results of this research will be relevant to millions of householders across the UK.

The University of Nottingham had to seek special planning permission to build the house to 1930s specification. Over the next two weeks it will be upgraded with cavity wall insulation, loft insulation, draft proofing and double glazing together with a host of other energy saving devices and equipment.

The three year research project is being led by experts from the School of the Built Environment together with the energy firm E.ON.Dr Mark Gillott, who is leading the research, said: "The house provides us with a unique test facility to measure the exact cost benefit, energy efficiency and carbon reduction figures achieved through the various upgrade measures we are implementing over the next two weeks — valuable information when deciding on which of the many energy efficiency measures are the most cost effective."

The 1930s semi is an icon of its age. Three million were built and they are still a major part of our current housing stock.

The E.ON 2016 House is the most comprehensive 'big brother' study of its kind. This 1930s style house bristles with more than 100 sensors to monitor energy use, temperature and humidity, making it one of the most sophisticated research houses in the world.

The house was designed as a typical 1930s semi — with open fires, single glazed windows, inefficient gas or electric water heating and no insulation. For the last eight months Changhong Zhan, a research fellow at the University, and his family have been living there while researchers monitored their energy consumption and the building's energy loss.

He said: "In general it's a bit uncomfortable living in the E.ON House. We have no central heating, only electrical heaters. To save electricity and money we tried to stay in one room, normally the dining room, and turned off electrical heaters in other rooms. If we moved into other room we would feel cold, especially when having a bath or a shower. When we went out we had to check that each electrical heater was switched off. A hot-water bottle was often used at night to keep warm and save electricity. To prevent cold air coming into the room, we squeezed papers into gaps of windows and doors."

Dave Clarke, Head of Research and Development at E.ON said: "Recently we've been attempting to find out where the house was losing hot air by pressurising the building and then attempting to monitor where the worst of the heat loss was. What we found was that we simply couldn't pressurise the house — there were so many leaks that, as soon as we pumped air in, it was coming out.

"This might be the extreme example but millions of us live in homes like this. Our homes are responsible for almost a third of the CO^2 emitted in the UK, so any benefits we identify here could go on to lower the bills and the carbon footprint of millions of families." Once the upgrade is complete the project team will be back to assess the benefits of the low carbon technologies which can be fitted to existing homes, and the impact of using natural resources such as the sun, wind and rain.

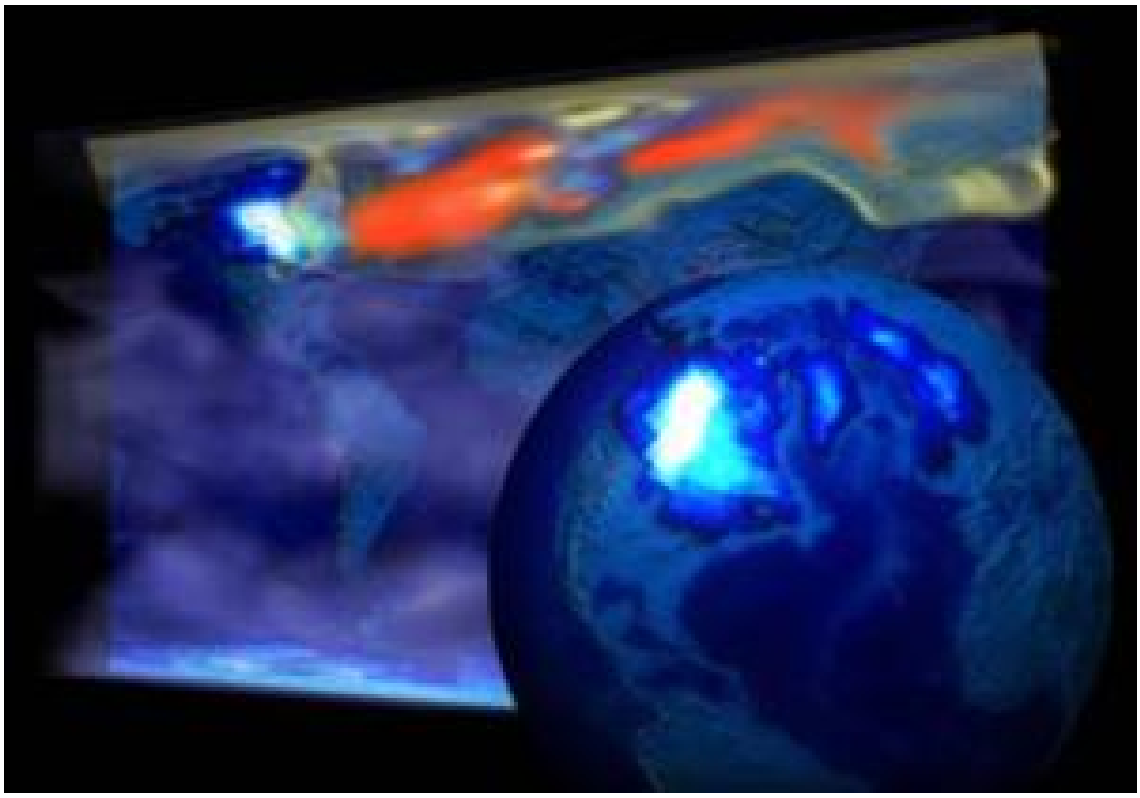
The work will be carried out from August 3 2009 to August 14 2009.

The E.ON 2016 House is part of the Creative Energy Homes project which has seen a total of six new homes built on University Park. Green Close showcases innovative state-of-the-art energy efficient housing of the future. The project is testing of different aspects of modern methods of construction including layout and form, cladding materials, roof structures, foundations, glazing materials, thermal performance, building services systems, sustainable and renewable energy technologies, lighting systems, acoustics and water supply. The project aims to stimulate sustainable design ideas and promote new ways of providing affordable, environmentally sustainable housing that are innovative in their design.

Adapted from materials provided by University of Nottingham.

http://www.sciencedaily.com/releases/2009/08/090805075644.htm

'Motion Picture' Of Past Warming Paves Way For Snapshots Of Future Climate Change



Supercomputer simulations of the Earth's most recent natural global warming (more than 14,000 years ago) show melting ice sheets and a 15-degree Celsius temperature spike over the course of a few centuries. Extended 200 years into our future, the simulations – led by University of Wisconsin-Madison climatologists – will provide insight on climate changes in our own time. (Credit: Image by Jamison Daniel, National Center for Computational Sciences)

ScienceDaily (Aug. 9, 2009) — By accurately modeling Earth's last major global warming — and answering pressing questions about its causes — scientists led by a University of Wisconsin-Madison climatologist are unraveling the intricacies of the kind of abrupt climate shifts that may occur in the future.

"We want to know what will happen in the future, especially if the climate will change abruptly," says Zhengyu Liu, a UW-Madison professor of atmospheric and oceanic sciences and director of the Center for Climatic Research in the Nelson Institute for Environmental Studies. "The problem is, you don't know if your model is right for this kind of change. The important thing is validating your model."

To do so, Liu and his colleagues run their mode back in time and match the results of the climate simulation with the physical evidence of past climate.

Starting with the last glacial maximum about 21,000 years ago, Liu's team simulated atmospheric and oceanic conditions through what scientists call the Bølling-Allerød warming, the Earth's last major temperature hike, which occurred about 14,500 years ago. The simulation fell in close agreement with conditions — temperatures, sea levels and glacial coverage — collected from fossil and geologic records.

"It's our most serious attempt to simulate this last major global warming event, and it's a validation of the model itself, as well," Liu says.

The results of the new climate modeling experiments are presented July 17 in the journal *Science.*

The group's simulations were executed on "Phoenix" and "Jaguar," a pair of Cray supercomputers at Oak Ridge National Laboratory in Oak Ridge, Tenn., and helped pin down the contributions of three environmental factors as drivers of the Bølling-Allerød warming: an increase in atmospheric carbon dioxide, the jump-start of stalled heat-moving ocean currents and a large buildup of subsurface heat in the ocean while those currents were dormant.

The climate dominoes began to fall during that period after glaciers reached their maximum coverage, blanketing most of North America, Liu explains. As glaciers melted, massive quantities of water poured into the North Atlantic, lowering the ocean salinity that helps power a major convection current that acts like a conveyor belt to carry warm tropical surface water north and cooler, heavier subsurface water south.

As a result, according to the model, ocean circulation stopped. Without warm tropical water streaming north, the North Atlantic cooled and heat backed up in southern waters. Subsequently, glacial melt slowed or stopped as well, and eventually restarted the overturning current — which had a much larger reserve of heat to haul north.

"All that stored heat is released like a volcano, and poured out over decades," Liu explains. "That warmed up Greenland and melted (arctic) sea ice."

The model showed a 15-degree Celsius increase in average temperatures in Greenland and a 5-meter increase in sea level over just a few centuries, findings that squared neatly with the climate of the period as represented in the physical record.

"Being able to successfully simulate thousands of years of past climate for the first time with a comprehensive climate model is a major scientific achievement," notes Bette Otto-Bliesner, an atmospheric scientist and climate modeler at National Center for Atmospheric Research (NCAR) and co-author of the Science report. "This is an important step toward better understanding how the world's climate could change abruptly over the coming centuries with increasing melting of the ice caps."

The rate of ice melt during the Bølling-Allerød warming is still at issue, but its consequences are not, Liu says. The modelers simulated both a slow decrease in melt and a sudden end to melt run-off. In both cases, the result was a 15-degree warming.

"That happened in the past," Liu says. "The question is, in the future, if you have a global warming and Greenland melts, will it happen again?"

Time — both actual and computing — will tell. In 2008, the group simulated about one-third of the last 21,000 years. With another 4 million processor hours to go, the simulations being conducted by the Wisconsin group will eventually run up to the present and 200 years into the future.

Traditional climate modeling approaches were limited by computer time and capabilities, Lieu explains.

"They did slides, like snapshots," Liu says. "You simulate 100 years, and then you run another 100 years, but those centuries may be 2,000 years apart (in the model). To look at abrupt change, there is no shortcut."

Using the interactions between land, water, atmosphere and ice in the Community Climate System Model developed at NCAR, the researchers have been able to create a much more detailed and closely spaced book of snapshots, "giving us more of a motion picture of the climate" over millennia, Liu said.

He stressed the importance of drawing together specialists in computing, oceanography, atmospheric science and glaciers — including John Kutzbach, a UW-Madison climate modeler, and UW-Madison doctoral student Feng He, responsible for modeling the glacial melt. All were key to attaining the detail necessary in recreating historical climate conditions, Liu says.

"All this data, it's from chemical proxies and bugs in the sediment," Liu said. "You really need a very interdisciplinary team: people on deep ocean, people on geology, people who know those bugs. It is a huge — and very successful — collaboration."

The new study was funded by the U.S. National Science Foundation, with additional support from the U.S. Department of Energy.

Adapted from materials provided by University of Wisconsin-Madison.

http://www.sciencedaily.com/releases/2009/07/090716141138.htm

Chemists Discover Ozone-boosting Reaction: Newfound Chemistry Should Be Added To Atmospheric Models, Experts Say

Burning of fossil fuels pumps chemicals into the air that react on surfaces such as buildings and roads to create photochemical smog-forming chlorine atoms, scientists report. Under extreme circumstances, this previously unknown chemistry could account for up to 40 parts per billion of ozone -- nearly half of California's legal limit on outdoor air pollution. (Credit: iStockphoto/Patrick Herrera)

ScienceDaily (Aug. 9, 2009) — Burning of fossil fuels pumps chemicals into the air that react on surfaces such as buildings and roads to create photochemical smog-forming chlorine atoms, UC Irvine scientists report in a new study.

Under extreme circumstances, this previously unknown chemistry could account for up to 40 parts per billion of ozone – nearly half of California's legal limit on outdoor air pollution. This reaction is not included in computer models used to predict air pollution levels and the effectiveness of ozone control strategies that can cost billions of dollars.

Ozone can cause coughing, throat irritation, chest pain and shortness of breath. Exposure to it has been linked to asthma, bronchitis, cardiopulmonary problems and premature death.

"Realistically, this phenomenon probably accounts for much less than 40 parts per billion, but our results show it could be significant. We should be monitoring it and incorporating it into atmospheric models," said Barbara Finlayson-Pitts, Distinguished Professor of Chemistry and lead author of the study. "We still don't really understand important elements of the atmosphere's chemistry."

When fossil fuels burn, compounds called nitrogen oxides are generated. Previously, scientists believed these would be eliminated from the atmosphere upon contact with surfaces.

But UCI scientists discovered that when nitrogen oxides combine with hydrochloric acid from airborne sea salt on buildings, roads and other particles in the air, highly reactive chlorine atoms are created that speed up smog formation.

Hydrochloric acid also is found indoors in cleaning products. When it interacts with nitrogen oxides from appliances such as gas stoves, chlorine compounds form that cause unusual chemistry and contribute to corrosion indoors.

The study was undertaken by scientists involved with AirUCI, an Environmental Molecular Sciences Institute funded by the National Science Foundation. UCI's Jonathan Raff conducted experiments; Bosiljka Njegic and Benny Gerber made theoretical predictions; and Wayne Chang and Donald Dabdub did the modeling. Mark Gordon of Iowa State University also helped with theory.

Said Finlayson-Pitts: "This is a great example of how our unique collaborative group can produce some really great science."

Adapted from materials provided by University of California - Irvine.

http://www.sciencedaily.com/releases/2009/07/090720190728.htm

Primate Archaeology Sheds Light On Human Origins

A chimpanzee mother cracks a nut using a rock hammer and anvil in Republic of Guinea. (Credit: Tetsuro Matsuzawa, Kyoto University)

ScienceDaily (Aug. 9, 2009) — A University of Calgary archaeologist who is one of the few researchers in the world studying the material culture of human beings' closest living relatives – the great apes – is joining his colleagues in creating a new discipline devoted to the history of tool use in all primate species in order to better understand human evolution.

Julio Mercader, holder of the Canada Research Chair in Tropical Archaeology in the U of C's Department of Archaeology, is a coauthor of a new paper titled "Primate archaeology" published recently in the journal *Nature*. Mercader is one of 18 co-authors from universities including Cambridge, Rutgers, Kyoto University and schools in Spain, Italy and France. They argue that recent discoveries of tool use by a wide variety of wild primates and archaeological evidence of chimpanzees using stone tools for thousands of years is forcing experts to re-think the traditional dividing lines between humans and other primate species as well as the belief that tool use is the exclusive domain of the genus Homo. The researchers advocate for a new inter-disciplinary field of primate archaeology to examine tool use by primates in a long-term, evolutionary context.

"There is a need for systematic collaboration between diverse research programs to understand the broader questions in human evolution and primatology," Mercader says. "For example, few archaeologists have seen a wild primate use a tool, while few primatologists have taken part in archaeological excavations," he explains.

Mercader was the lead author of a team that laid the foundations of the emerging discipline of chimpanzee archaeology in two previously-published papers in *Science* and the *Proceedings of the National Academy of Sciences (PNAS*). He is the archaeologist who uncovered the first prehistoric evidence of chimpanzee technology in 2007 — a 4,300-year-old nut-cracking site in the rainforests of Côte D'Ivoire, West Africa that provides proof of a long-standing chimpanzee "stone age" that likely emerged independently of influence from humans.

"It's not clear whether we hominins invented this kind of stone technology, or whether both humans and the great apes inherited it from a common forebear," says Mercader. "We used to think that culture and,

above anything else, technology was the exclusive domain of humans, but this is not the case. We need comparable methods of data collection among researchers dealing with 2 million year old hominin sites and modern primatological assemblages."

The official inauguration of the new field of primate archaeology marks the culmination of several years of work on the part of the handful of researchers including Mercader, who joined the U of C in 2002 with the support of the Canada Research Chairs program and the Canada Foundation for Innovation.

"This is truly at the vanguard of archaeology and I am so pleased these agencies and the University of Calgary had the vision seven years ago to be a part of creating a new discipline that is seeing its birth now," Mercader says.

The paper is the result of the international symposium "Palaeoanthropology meets Primatology" held on Oct. 18, 2008 at Cambridge.

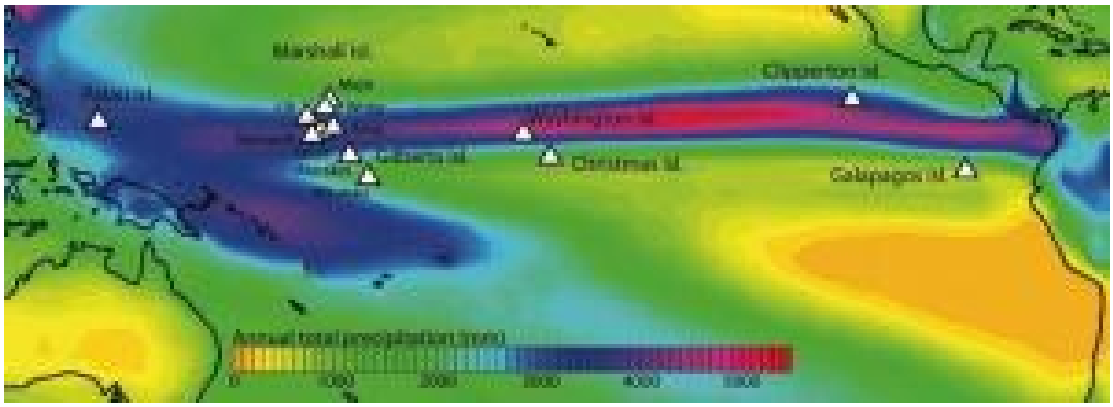
Journal reference:

1. Michael Haslam, Adriana Hernandez-Aguilar, Victoria Ling, Susana Carvalho, Ignacio de la Torre, April DeStefano, Andrew Du, Bruce Hardy, Jack Harris, Linda Marchant, Tetsuro Matsuzawa, William McGrew, Julio Mercader, Rafael Mora, Michael Petraglia, Helene Roche, Elisabetta Visalberghi & Rebecca Warren. **Primate archaeology**. *Nature*, July 16, 2009

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

http://www.sciencedaily.com/releases/2009/07/090715131437.htm

Earth's Most Prominent Rainfall Feature Creeping Northward



The band of heavy precipitation indicates the intertropical convergence zone. The new findings are based on sediment cores from lakes and lagoons on Palau, Washington, Christmas and Galapagos islands. (Credit: Image courtesy of University of Washington)

ScienceDaily (Aug. 9, 2009) — The rain band near the equator that determines the supply of freshwater to nearly a billion people throughout the tropics and subtropics has been creeping north for more than 300 years, probably because of a warmer world, according to research published in the July issue of *Nature Geoscience.*

If the band continues to migrate at just less than a mile (1.4 kilometers) a year, which is the average for all the years it has been moving north, then some Pacific islands near the equator – even those that currently enjoy abundant rainfall – may be drier within decades and starved of freshwater by midcentury or sooner. The prospect of additional warming because of greenhouse gases means that situation could happen even sooner.

The findings suggest "that increasing greenhouse gases could potentially shift the primary band of precipitation in the tropics with profound implications for the societies and economies that depend on it," the article says.

"We're talking about the most prominent rainfall feature on the planet, one that many people depend on as the source of their freshwater because there is no groundwater to speak of where they live," says Julian Sachs, associate professor of oceanography at the University of Washington and lead author of the paper. "In addition many other people who live in the tropics but farther afield from the Pacific could be affected because this band of rain shapes atmospheric circulation patterns throughout the world."

The band of rainfall happens at what is called the intertropical convergence zone. There, just north of the equator, trade winds from the northern and southern hemispheres collide at the same time heat pours into the atmosphere from the tropical sun. Rain clouds 30,000 feet thick in places proceed to dump as much as 13 feet (4 meters) of rain a year in some places. The band stretching across the Pacific is generally between 3 degrees and 10 degrees north of the equator depending on the time of year. It has recently been hypothesized that the intertropical convergence zone does not reside in the southern hemisphere for reasons having to do with the distribution of land masses and locations of major mountain ranges in the world, particularly the Andes mountains, that have not changed for millions of years.

The new article presents surprising evidence that the intertropical convergence zone hugged the equator some 3 ½ centuries ago during Earth's little ice age, which lasted from 1400 to 1850.

The authors analyzed the record of rainfall in lake and lagoon sediments from four Pacific islands at or near the equator.

One of the islands they studied, Washington Island, is about 5 degrees north of the equator. Today it is at the southern edge of the intertropical convergence zone and receives nearly 10 feet (2.9 meters) of rain a year. But cores reveal a very different Washington Island in the past: It was arid, especially during the little ice age.

Among other things, the scientists looked for evidence in sediment cores of salt-tolerant microbes. On Washington Island they found that evidence in 400- to 1,000-year-old sediment underlying what is now a freshwater lake. Such organisms could only have thrived if rainfall was much reduced from today's high levels on the island. Additional evidence for changes in rainfall were provided by ratios of hydrogen isotopes of material in the sediments that can only be explained by large changes in precipitation.

Sediment cores from Palau, which lies about 7 degrees north of the equator and in the heart of the modern convergence zone, also revealed arid conditions during the little ice age.

In contrast, the researchers present evidence that the Galapagos Islands, today an arid place on the equator in the Eastern Pacific, had a wet climate during the little ice age.

They write, "The observations of dry climates on Washington Island and Palau and a wet climate in the Galapagos between about 1420-1560/1640 provide strong evidence for an intertropical convergence zone located perennially south of Washington Island (5 degrees north) during that time and perhaps until the end of the eighteenth century."

If the zone at that time experienced seasonal variations of 7 degrees latitude, as it does today, then during some seasons it would have extended southward to at least the equator, Sachs says. This has been inferred previously from studies of the intertropical convergence zone on or near the continents, but the new data from the Pacific Ocean region is clearer because the feature is so easy to identify there.

The remarkable southward shift in the location of the intertropical convergence zone during the little ice age cannot be explained by changes in the distribution of continents and mountain ranges because they were in the same places in the little ice age as they are now. Instead, the co-authors point out that the Earth received less solar radiation during the little ice age, about 0.1 percent less than today, and speculate that may have caused the zone to hover closer to the equator until solar radiation picked back up.

"If the intertropical convergence zone was 550 kilometers, or 5 degrees, south of its present position as recently as 1630, it must have migrated north at an average rate of 1.4 kilometers – just less than a mile – a year," Sachs says. "Were that rate to continue, the intertropical convergence zone will be 126 kilometers – or more than 75 miles – north of its current position by the latter part of this century."

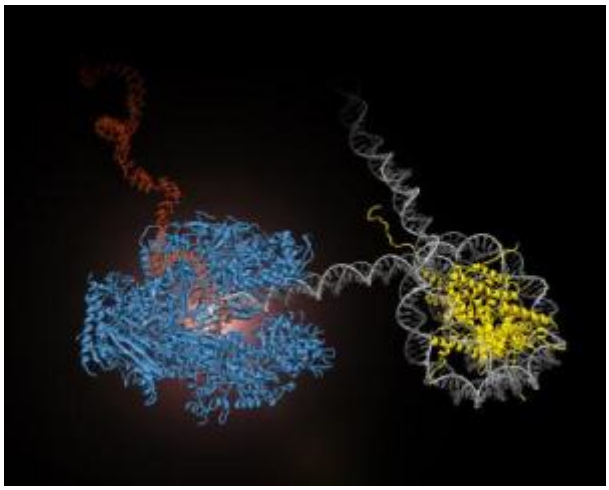
Other co-authors of the paper that went online June 28 are three of Sachs' former postdoctoral students, Dirk Sachse at the University of Potsdam, Germany; Rienk Smittenberg at the Swiss Federal Institute of Technology Zurich, Switzerland; and Zhaohui Zhang at the Nanjing University, China; as well as Stjepko Golubic of Boston University; and David Battisti, UW professor of atmospheric sciences.

The work was funded by the National Science Foundation, National Oceanic and Atmospheric Administration and the Gary Comer Science and Education Foundation.

Adapted from materials provided by University of Washington.

http://www.sciencedaily.com/releases/2009/07/090701135535.htm

Gene Transcribing Machine Takes Halting, Backsliding Trip Along The DNA



RNA polymerase II (blue) performs the first step of gene expression by moving along the cell's DNA (gray) and transcribing it into messenger RNA (red). During this process, the polymerase encounters obstacles, such as nucleosomes, which tightly wrap the DNA around histone proteins (yellow) and prevent continued transcription. UC Berkeley researchers have developed methods to directly observe this process in real time. (Credit: Courtney Hodges & Lacra Bintu/UC Berkeley)

ScienceDaily (Aug. 9, 2009) — The body's nanomachines that read our genes don't run as smoothly as previously thought, according to a new study by University of California, Berkeley, scientists.

When these nanoscale protein machines encounter obstacles as they move along the DNA, they stall, often for minutes, and even backtrack as they transcribe DNA that is tightly wound to fit inside the cell's nucleus.

The findings come from delicate measurements of molecular-scale forces exerted on individual proteins that move along DNA to perform the first step of gene expression. These proteins, called RNA polymerase II (Pol II), slide along the DNA's double helix, reading the genetic code and transcribing it into RNA, which is used as a blueprint to build proteins or as a switch to regulate other genes.

The measurements, which employed optical tweezers to grab both the polymerase and the end of a single molecule of DNA, are reported in the July 31 issue of the journal Science. In collaboration with the laboratory of Mikhail Kashlev at the National Cancer Institute, UC Berkeley graduate students Courtney Hodges, Lacra Bintu and their advisor, UC Berkeley's Carlos Bustamante, developed an optical tweezers assay to directly watch individual Pol II complexes as they move along single molecules of DNA. Optical tweezers use laser light to trap and follow a single polymerase in real time, revealing that it truly acts like a biological nanoscale machine as it moves along our genes.

The main obstacle to smooth operation of Pol II is the nucleosome, a bundle of eight histone proteins around which DNA wraps tightly . Tens of thousands of nucleosomes are bundled together into a chromosome, efficiently packaging six feet of DNA into a nucleus a million times smaller. The researchers were able to place a single nucleosome in front of the polymerase and then use the optical tweezers to observe what happens when the polymerase encounters this roadblock.

"For over 30 years, scientists had wondered how the polymerase responded to the nucleosome, and we were finally able to observe this process directly," Hodges said. "People thought that the polymerase is a powerful motor that would blow through the nucleosome like a bulldozer, but it's surprisingly delicate in its response; if anything is in the way, Pol II stops and backs up."

Bintu noted that this halting movement – 20-50 steps forward, then a couple of steps back – could be a key part of how gene expression is regulated. Nucleosomes are highly regulated by other proteins and can provide signals that control Pol II, much like a traffic light regulates street traffic, she said. Regulatory proteins may bind to the nucleosome and make the DNA unwind more easily, or could latch onto Pol II and prevent it from backsliding. Either would speed up transcription, while regulatory proteins that compact DNA and nucleosomes further slow down or even stop transcription.

Scientists have for years imagined that nucleosomes must be "loosened up" to allow for gene expression, and the authors note that their results give a more detailed, mechanistic insight into this process.

"Our study indicates that modulation of the wrapping/unwrapping equilibrium of DNA around the histone octamer constitutes the physical basis for regulation of transcription through nucleosomal DNA," the authors wrote. On the flip side, disturbances in nucleosome regulation could lead to disease.

"Transcription is a central point of control for gene expression, since everything from coordination of development to prevention of uncontrolled cell growth, that is, cancer, involves a highly regulated program of transcription by Pol II," Bintu said. "When transcription goes haywire, pathologies like cancer and developmental abnormalities usually follow."

Hodges and Bintu compare the DNA in the nucleosome to a band of sticky Velcro looped a couple of times around the histone proteins. The DNA is constantly being pushed around, however, and tends to peel off and then reattach to the histones. When the DNA is bound to the histones, Pol II cannot read it and transcription pauses. The polymerase restarts transcription only when the DNA briefly comes off the histones and, acting like a ratchet, works its way along the DNA throughout the entire nucleosome. At some point, the nucleosome leapfrogs over Pol II and the nanomachine trundles along unhindered.

The researchers also tugged on the two ends of a DNA molecule after transcription to see what had happened to the nucleosome. They found that the nucleosome was frequently ejected from the DNA because the tension prevented the DNA from forming loops that would have allowed the nucleosome to skip over Pol II. "We found that even a very small amount of tension in the DNA – 3 to 5 piconewtons – during transcription results in Pol II removing the nucleosome from DNA like a pair of wire strippers," Hodges said. "It's very likely that the DNA in our bodies is very taut at some places and loose in others, so we think it's possible that the cell uses tension in the genome to alter the dynamics of nucleosomes in certain genes."

"These experiments give a much more dynamic picture of the nucleosome, showing that it isn't a static bead-on-a-string but an active structure that can regulate when and how our genetic information is read," Bintu said. "This is just one single nucleosome, but it is the first step in understanding epigenetic effects that make one cell behave differently from another."

Hodges is in the biophysics graduate group, and Bintu is a graduate student in physics. Both are part of Bustamante's Jason L. Choy Laboratory of Single-Molecule Biophysics, named after a chemistry graduate student who died in an automobile accident in 2005. Bustamante is a professor of physics, chemistry and of molecular and cell biology, a Howard Hughes Medical Institute investigator and an affiliate of the California Institute for Quantitative Biosciences (QB3).

The work is supported by the National Institutes of Health.

Adapted from materials provided by University of California - Berkeley.

http://www.sciencedaily.com/releases/2009/07/090730141603.htm

No Daily Or Weekly Pattern To Earthquakes In Western U.S.

ScienceDaily (Aug. 9, 2009) — Daily traffic and noisy machines mask the vibrations caused by earthquakes, making seismic stations unable to detect many M >1 earthquakes. As a result, more earthquakes appear to happen on Sundays and late at night when people and machines are at rest, according to a new study of the apparent daily and weekly periodicity of seismic activity.

"People may think they feel more earthquakes at night or on Sundays, but that's just because it's quiet," says Stephen S. Gao, professor of geological sciences at the Missouri University of Science and Technology (Missouri S&T) and co-author of a study published today in the August issue of the Bulletin of the Seismological Society of America. He co-authored the study with Ali H. Atef and Kelly H. Liu, also of Missouri S&T.

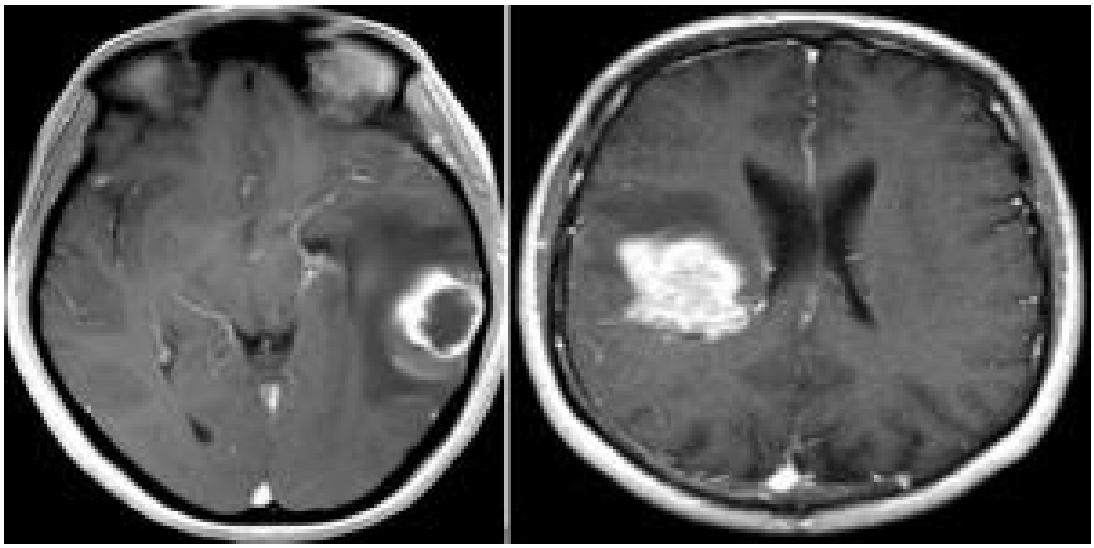
The study used a catalogue of 790,232 earthquakes for the period 1963-2008 which were recorded in Nevada, California and the adjacent Pacific Ocean and found significant peaks for Sundays and the early morning hours. While cyclical patterns do exist in nature, such as the Earth rotating around the Sun, there are no known cyclical events that would explain daily or hourly variations for earthquakes in Western United States. The authors looked to human activity to explain the apparent temporal pattern and found that when cultural noise – or sound made by human activity – was high, such as during the morning rush hour, the ability of seismic networks to detect earthquake activity is low. Moving vehicles on freeways were not the sole source of noise. Busy factories and mines, machinery such as lawn mowers and shaking buildings, caused by the movement of people, contribute to the ambient background noise.

Ali H. Atef, Kelly H. Liu and Stephen S. Gao, Missouri University of Science and Technology were authors of the Bulletin of the Seismological Society of America paper, "Apparent Weekly and Daily Earthquake Periodicities in the Western United States."

Adapted from materials provided by Seismological Society of America, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/08/090806184052.htm

New Method Predicts Which Brain Tumors Will Respond To Drug



Left image: Good prognosis. This brain scan shows the wavy borders of a dying tumor in white at right. Dying cells leak fluid, causing swelling and water movement linked to a good response to Avastin therapy. Right image: Poor prognosis. This brain scan shows the white mass of a solid tumor at left. The lack of water movement in the tumor and surrounding tissue suggests that this tumor would not be a good candidate for treatment by Avastin. (Credit: UCLA/Pope lab)

ScienceDaily (Aug. 8, 2009) — UCLA researchers have uncovered a new way to scan brain tumors and predict which ones will be shrunk by the drug Avastin -- before the patient ever starts treatment. By linking high water movement in tumors to positive drug response, the UCLA team predicted with 70 percent accuracy which patients' tumors were the least likely to grow six months after therapy.

Bronnie McNabb, 57, considers himself lucky. When his aggressive brain cancer returned after chemotherapy and radiation, his UCLA doctor prescribed the off-label use of Avastin, a drug shown to quell cancers in the breast, colon and lung.

One month later, McNabb's tumors had shrunk by 95 percent. Subsequent brain scans show no trace of his cancer at all. The former marathon runner, ordained minister and father of two says he hasn't felt this good since his diagnosis last winter.

In welcome news for patients like McNabb, the U.S. Food and Drug Administration approved the use of Avastin last month for the treatment of brain cancer. The powerful drug shrinks tumors by choking off their blood supply. Half of patients don't respond to the therapy, though, exposing them to unnecessary side effects and medication costing up to $10,000 per month.

Now UCLA scientists have uncovered a new way to image tumors and forecast which patients, like McNabb, are most likely to benefit from Avastin before starting a single dose of treatment. The findings are published in this month's issue of the journal Radiology.

"Avastin is an expensive drug, yet only 50 percent of patients with recurring brain cancers respond to it," said lead author Dr. Whitney Pope, assistant professor of radiological sciences at the David Geffen School of Medicine at UCLA. "Until now, there has been no good way to identify these patients in advance. Our work is the first to suggest that we can predict which tumors will respond before the patient ever starts therapy."

Pope and his colleagues focused on glioblastoma, the most common and deadly form of adult brain tumor, striking 12,000 Americans a year. Despite therapy with surgery, radiation and chemotherapy, the average glioblastoma patient lives only 12 to 15 months after diagnosis.

Survival rates drop even lower if the tumor returns. Conventional therapies produce little benefit; only 8 to 15 percent of patients survive without tumor growth six months after treatment.

The UCLA team studied 82 patients who had undergone surgery and radiation therapy to remove glioblastoma. Half of the patients received infusions of Avastin every two weeks. All underwent monthly brain scans by magnetic resonance imaging (MRI) to monitor change.

The researchers analyzed the MRI scans of the patients whose tumors returned. Explaining what the team saw requires an understanding of how the tumor creates an independent blood supply.

Cancer cells secrete a growth factor called VEGF that spurs the growth of new blood vessels to supply the tumor with oxygen and nutrients. Avastin blocks VEGF, essentially starving the tumor to death.

This process launches a chain of events that is detectable by MRI. Oxygen-starved cells produce more VEGF, which causes blood vessels to leak fluids into the tumor and surrounding tissue. This results in swelling, which boosts water's ability to move freely in the tumor and brain tissue. As cells disintegrate, they no longer pose a physical barrier to water movement.

"We theorized that tumors with more water motion would also have higher VEGF levels," explained Pope. "Because Avastin targets VEGF, it made sense that the drug would work better in tumors with high levels of the growth factor."

By measuring the amount of water motion within the tumor, the researchers were able to predict with 70 percent accuracy which patients' tumors would progress within six months and which would not. They detected greater water movement in the tumors of those persons who later responded best to Avastin.

"When we realized that high levels of VEGF are linked to greater cell death and increased water movement, we were able to predict the patients' response to Avastin before they began treatment," explained Pope. "We were correct 70 percent of the time. Previously, identifying which patients would respond was like flipping a coin. This is a huge improvement."

The research finding presents clear clinical benefits to the patient, says Pope. "Knowing this information ahead of time will help doctors personalize therapy for each patient and decrease exposure to side effects," he noted.

Pope and his colleagues plan to confirm their findings in a larger study. The team will also test the new method's ability to identify responsive patients prior to surgical removal of their tumor.

Pope's coauthors included Dr. Timothy Cloughesy, Hyun Kim, Jing Huo, Jeffry Alger, Matthew Brown, David Gjerson, Dr. Victor Sai, Jonathan Young, Leena Tekchandani, Dr. Paul Mischel, Dr. Albert Lai, Dr. Phioanh Nghiemphu, Dr. Syed Rahmanuddin and Dr. Jonathan Goldin. All authors are affiliated with UCLA, which funded the research.

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

http://www.sciencedaily.com/releases/2009/07/090730073609.htm

How To Manage Dental Erosion Caused By Everyday Beverages

Orange juice can be acidic. For some people, the damage and problems associated with drinking sodas, citric juices or certain tea may have already begun to take effect. The question remains: What can be done to restore teeth already affected? (Credit: iStockphoto)

ScienceDaily (Aug. 8, 2009) — Researchers have warned people to beware of the damage that acidic beverages have on teeth. Yet, for some, the damage and problems associated with drinking sodas, citric juices or certain tea may have already begun to take effect. The question remains: What can be done to restore teeth already affected?

In a recent study that appeared in the May/June 2009 issue of *General Dentistry*, the AGD's clinical, peer-reviewed journal, lead author, Mohamed A. Bassiouny, DMD, MSc., PhD, outlined the acidic content of beverages, such as soda; lemon, grapefruit and orange juice; green and black tea; and revealed three steps to rehabilitate teeth that suffer from dental erosion as a result of the excessive consumption of these products.

Dr. Bassiouny instructs those who are experiencing tooth erosion to first, identify the culprit source of erosion, possibly with the help of a dental professional. Then, the individual should determine and understand how this source affects the teeth in order to implement measures to control and prevent further damage. Lastly, the person should stop or reduce consumption of the suspected food or beverage to the absolute minimum. He notes that information about the acid content of commonly consumed foods or beverages is usually available online or on the product's label. It is also recommended to seek professional dental advice in order to possibly restore the damaged tissues.

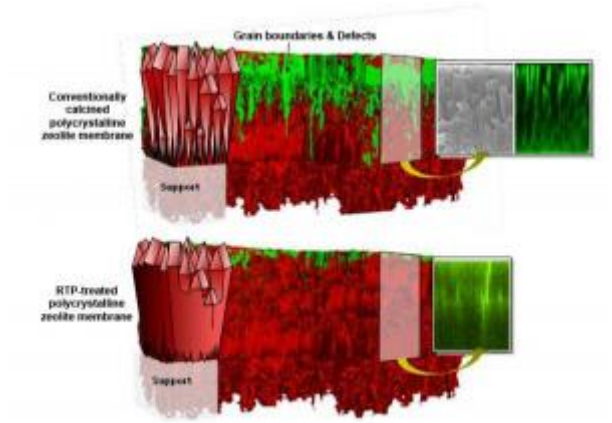
"Dental erosion," according to Dr. Bassiouny, "is a demineralization process that affects hard dental tissues (such as enamel and dentin)." This process causes tooth structure to wear away due to the effects that acid has on teeth, which eventually leads to their breakdown. It can be triggered by consumption of carbonated beverages or citric juices with a low potential of hydrogen (pH), which measures the acidity of a substance. Excessive consumption of the acidic beverages over a prolonged period of time may pose a risk factor for dental health. "Some may not even realize a problem exists when their teeth are in the early stages of dental erosion," says Kenton Ross, DDS, FAGD, a spokesperson for the AGD. "Without proper diagnosis by a general dentist, more serious oral health issues could occur."

"Visiting your general dentists twice a year can help maintain healthy teeth as well as uncover and prevent future problems," says Dr. Ross.

Adapted from materials provided by Academy of General Dentistry, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/07/090717150252.htm

Membrane Breaks Through Performance Barrier



Shown in the image are depictions of (top) a conventionally calcined c-oriented silicalite-1 zeolite membrane and (bottom) an identically oriented membrane that has undergone rapid thermal processing (RTP). Red and green regions in the 3D schematics are indicative of zeolite crystal grains and defects/grain boundaries, respectively. A scanning electron microscopy (SEM) image of the membrane cross-section is shown, as well as representative cross-sectional images collected of dye-saturated membranes via laser scanning confocal microscopy. The schematics and representative data highlight the accessibility and inaccessibility of grain boundaries, respectively, in the conventionally calcined and RTP treated membranes. (Credit: Jungkyu Choi, University of California, Berkeley; Mark A. Snyder, Lehigh University; and Michael Tsapatsis, Univerity of Minnesota)

ScienceDaily (Aug. 8, 2009) — Engineers have developed a new method for creating high-performance membranes from crystal sieves called zeolites; the method could increase the energy efficiency of chemical separations up to 50 times over conventional methods and enable higher production rates.

The ability to separate and purify specific molecules in a chemical mixture is essential to chemical manufacturing. Many industrial separations rely on distillation, a process that is easy to design and implement but consumes a lot of energy.

Researchers led by chemical engineer Michael Tsapatsis of the University of Minnesota reported this discovery in the July 31, 2009, issue of *Science.*

Tsapatsis's team developed a rapid heating treatment to remove structural defects in zeolite membranes that limit their performance, a problem that has plagued the technology for decades.

"Using membranes rather than energy-intensive processes such as distillation and crystallization could have a major impact on industry," said NSF program officer Rosemarie Wesson. This discovery could increase the energy efficiency of producing important chemical solvents such as xylene and renewable biofuels such as ethanol and butanol.

Creating Zeolite Membranes

Researchers create zeolite membranes by growing a film of crystals with small organic ions added to direct the crystal structure and pore size--two zeolite properties that help determine which molecules can pass through the material. Then they slowly heat the zeolite film in a process called calcination to decompose the ions and open the pores.

However, Tsapatsis explained, "This method for creating zeolite films often leaves cracks at the boundaries between grains of zeolite crystals." These defects have prevented zeolite films from being

used effectively as membranes, because molecules of unwelcome chemicals that are rejected by the zeolite pores can still penetrate through the membrane defects.

"While it may be possible to correct some of these defects, the repair process is difficult and expensive," Wesson said. Currently zeolite membranes have found use only in specialized, smaller-scale applications, such as the removal of water from alcohols or other solvents.

In an effort to minimize the formation of cracks and other defects, the heating rate during calcination is very gentle, and the process can take as long as 40 hours--typically a material is heated at a rate of 1 degree Celsius per minute up to a temperature between 400 and 500 degrees Celsius, where it is held steadily for several hours before being allowed to slowly cool. Because conventional calcination is time-consuming and energy-intensive, it has been difficult and expensive to produce zeolite membranes on a large scale.

Hotter and Faster

Tsapatsis's team developed a treatment called Rapid Thermal Processing (RTP), a treatment in which zeolite film is heated to 700 degrees Celsius within one minute and kept at that temperature for no more than two minutes. Acting as an annealing method, RTP refines the granular structure of the zeolite crystal film. When the researchers examined the RTP-treated films, they found no evidence of cracks at grain boundaries. Although they found other types of defects, these don't seem to affect the membrane properties or performance.

In a comparison to conventionally-made zeolite membranes, Tsapatsis said, "We observed a dramatic improvement in the separation performance of the RTP-treated membranes." A second round of RTP treatment improved separation performance even further, to a level on par with current industry separation methods.

Tsapatsis involved several graduate students in this project: Jungkyu Choi, now a postdoctoral fellow at the University of California, Berkeley, performed most of the experiments; Hae-Kwon Jeong, now an assistant professor at Texas A&M University, performed some early RTP treatments while a postdoctoral fellow at the University of Illinois at Urbana-Champaign with engineering professor Richard Masel; and Jared Stoeger, currently a doctorate candidate with Tsapatsis, performed permeation measurements using stainless steel tube supported membranes. Mark Snyder, now an assistant professor at Lehigh University, performed confocal microscopy experiments while a postdoctoral fellow in Tsapatsis's group.

The researchers demonstrated the RTP process on relatively thick (several micrometers) zeolite membranes. Tsapatsis and collaborators are now working towards making zeolite membranes 10 to 100 times thinner to allow molecules to pass through more quickly. They hope to eventually implement RTP treatment with its beneficial effects to these membranes as well.

Journal reference:

1. Jungkyu Choi, Hae-Kwon Jeong, Mark A. Snyder, Jared A. Stoeger, Richard I. Masel, and Michael Tsapatsis. **Grain Boundary Defect Elimination in a Zeolite Membrane by Rapid Thermal Processing**. *Science*, July 31, 2009 DOI: 10.1126/science.1176095

Adapted from materials provided by National Science Foundation.

http://www.sciencedaily.com/releases/2009/07/090730160932.htm

People With Lots Of Working Memory Are Not Easily Distracted

University of Oregon psychologist Ed Vogel studies working memory, which he likens to a computer's random access memory. People with a lot of RAM are able to stay on task easier. (Credit: University of Oregon)

ScienceDaily (Aug. 8, 2009) — "That blasted siren. I can't focus." That reaction to undesired distraction may signal a person's low working-memory capacity, according to a new study.

Based on a study of 84 students divided into four separate experiments, University of Oregon researchers found that students with high memory storage capacity were clearly better able to ignore distractions and stay focused on their assigned tasks.

Principal investigator Edward K. Vogel, a UO professor of psychology, compares working memory to a computer's random-access memory (RAM) rather than the hard drive's size -- the higher the RAM, the better processing abilities. With more RAM, he said, students were better able to ignore distractions. This notion surfaced in a 2005 paper in *Nature* by Vogel and colleagues in the Oregon Visual Working Memory & Attention Lab.

In experiments with some variations in approaches -- detailed in the July 8 issue of the Journal of Neuroscience -- students' brain activity was monitored using electroencephalography (EEG) while they studied images on a computer screen, recognizing a shape with a missing component, and then identifying the object after it moved simply to another location or amid distractions. Using a "task irrelevant probe" -- a 50 millisecond-long flash of light -- Vogel and Keisuke Fukuda, a doctoral student of Vogel's and lead author, were able to determine where exactly a subject's attention was focused.

All of the subjects were able to quickly and accurately identify the targets when the objects moved around the screen, but as distracting components were added some maintained accuracy while others diverted their attention and slipped in performing the assigned tasks.

Vogel is quick to say that the findings don't necessarily signify problems for an easily distracted person, although people who hold their focus more intensely tend to have higher fluid intelligence; they score higher on achievement tests, do better in math and learn second languages easier than peers who are captured by interruptions. Vogel currently is working with other UO researchers to explore if the easily distracted indeed have a positive side, such as in artistic creativity and imagination.

The new research, funded by the National Science Foundation, zeroed in on the brain's prefrontal cortex -- a region linked to executive function and under scrutiny for its association with many neurological

disorders -- and the intraparietal sulcus (IPS), which is involved in perceptual-motor coordination, including eye movements.

The IPS, Vogel said, acts as a pointer system that seeks out goal-related cues, and it possibly is the gateway for memory circuitry in the brain.

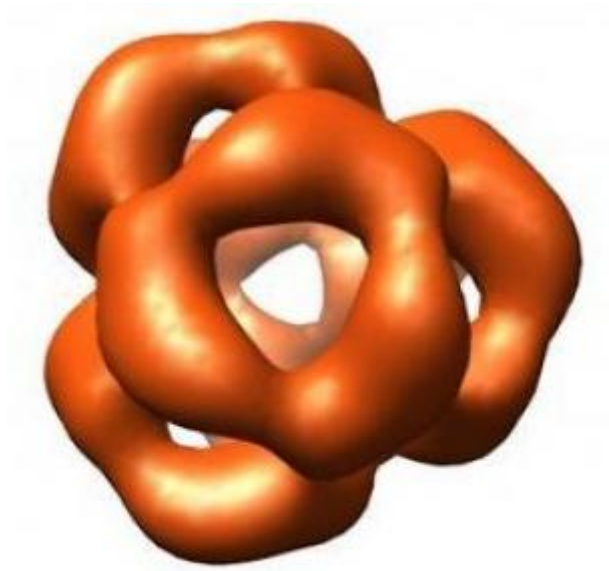
"Our attention is the continual interplay between what our goals are and what the environment is trying to dictate to us," Vogel said. "Often, to be able to complete complex and important goal-directed behavior, we need to be able to ignore salient but irrelevant things, such as advertisements flashing around an article you are trying to read on a computer screen. We found that some people are really good at overriding attention capture, and other people have a difficult time unhooking from it and are really susceptible to irrelevant stimuli."

Vogel theorizes that people who are good at staying on focus have a good gatekeeper, much like a bouncer or ticket-taker hired to allow only approved people into a nightclub or concert. Understanding how to improve the gatekeeper component, he said, could lead to therapies that help easily distracted people better process what information is allowed in initially, rather than attempting to teach people how to force more information into their memory banks.

Adapted from materials provided by University of Oregon.

http://www.sciencedaily.com/releases/2009/08/090806141712.htm

Heat Shock Proteins Provide Protection Against Cataracts



This is a three-dimensional reconstruction of ±B crystallin by electron microscopy reveals a sphere-like structure with large openings to the interior of the protein. In the human eye, this molecular machine serves as a "chaperone" to guide protein folding and prevent aggregation such as that responsible for cataracts. Better understanding of this 3-D structure could serve as the basis for comparing healthy and disease-promoting mutants and, based on this, for clarifying the way they function. The scientists hope that this will lead to the discovery of new treatments. (Credit: Dept. of Chemistry, Technische Universitaet Muenchen (TUM) Used by permission of the Dept. of Chemistry, Technische Universitaet Muenchen (TUM), all rights reserved.)

ScienceDaily (Aug. 8, 2009) — The human eye lens consists of a highly concentrated mix of several proteins. Protective proteins prevent these proteins from aggregating and clumping. If this protective function fails, the lens blurs and the patient develops cataracts. Two research groups at the Department of Chemistry of the Technische Universitaet Muenchen (TUM) have succeeded in explaining the molecular architecture of this kind of protective protein.

Their findings, which are published online in the current early edition of *PNAS (Proceedings of the National Academy of Sciences*), shed new light on the work of these proteins and may be able to help in the development of new treatments.

Cells have a variety of protein complexes that manage vital tasks. The functions of these "molecular machines" depend largely on their three-dimensional structure. In the first instance, proteins are long chains of amino acids, like a long piece of woolen thread. So-called chaperones help them to fold in the desired three-dimensional form after their production. If this folding process fails, the protein thread becomes an inextricable, useless tangle.

Small heat shock proteins (sHsps) are a particularly important group of chaperones. They prevent the clumping of proteins under stress conditions. αB-crystallin and the related sHsp αA-crystallin are the main representatives of the sHsps found in humans. Whereas αA-crystallin mainly occurs in the eye lens, αB-crystallin is also very common in the brain and in the heart and muscle tissue. In the eye lens, they counteract diseases like cataracts. Malfunctions of the αB-crystallin in tissue cells can give rise to cancer and neurological defects, including Alzheimer's disease.

Many research groups have focused their work on the α-crystallins due to their medical relevance. Despite intensive efforts, up to now, none of them have managed to determine the molecular architecture

of these proteins. However, TUM biochemists have now succeeded in producing αA-crystallins and αB-crystallins recombinantly in bacteria and in obtaining uniform, clearly-structured complexes. A detailed structural analysis of these proteins was carried out in cooperation with the Chemistry Department's Center of Electron Microscopy. The research groups were able to show for the first time here that, contrary to previous suppositions, αB-crystallin forms a defined globular structure comprising 24 subunits, which are reminiscent of a perforated soccer ball.

Thanks to the identification of the three-dimensional structure of αB-crystallin, which is currently being further refined, the basis has now been established for comparing healthy and disease-promoting mutants and, based on this, for clarifying the way they function. The scientists hope that this will lead to the discovery of new treatments.

This work was supported by the German Research Foundation (DFG grant SFB594, to J.B., M.H., and S.W.) and the Fonds der chemischen Industrie (J.B. and M.H.). J.P. acknowledges a scholarship from the Studienstiftung des deutschen Volkes.

Journal reference:

1. Jirka Peschek, Nathalie Braun, Titus M. Franzmann, Yannis Georgalis, Martin Haslbeck, Sevil Weinkauf, Johannes Buchner. **The eye lens chaperone %u03B1-crystallin forms defined globular assemblies**. *PNAS, Early Edition*, July 27, 2009 DOI: 10.1073/pnas.0902651106

Adapted from materials provided by Technische Universitaet Muenchen, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/07/090731103328.htm

Taking The Hard Work Out Of Software

ScienceDaily (Aug. 8, 2009) — Developing software is a complicated and laborious process. A new European platform automates much of the tricky building and testing phases of programming.

Computer software has come a long way. The first-ever 'computer program' was a very short one written by Ada Lovelace in 1842-3 to calculate Bernoulli numbers. In the early days, programming was more often than not an individual effort carried out by enthusiasts.

Today, software development is so complex and sophisticated that entire teams work for years to develop a program. Building, testing and releasing software consumes an ever-growing amount of time and resources. According to one EU-funded project, the answer lies in the automation of these processes.

The ETICS project is taking a giant leap towards automation. "By automating many of their day-to-day tasks, the ETICS system supports software managers, developers and testers in obtaining higher quality software," notes Alberto Di Meglio of CERN, the European organisation for nuclear research, who is managing the project. This means new software can reach the market faster and cost less in development.

No manual needed

This all-in-one solution allows software developers, managers and users to automate as much as possible the way their software is built and the way their tests are executed. This out-of-the-box system employs the latest in "grid" software and distributed computing infrastructure and can operate on multiple platforms. It is also open source, so it can easily be customised and further developed.

The system's client interface is designed to be simple to install. Not only can results from round-the-clock "builds" and tests be monitored via the web, the configuration metadata of the software being developed can be browsed and edited via a secured web application.

The ETICS platform has been developed in two phases (ETICS and ETICS 2) over three years and continuously refined in collaboration with users.

New functions are also being developed for ETICS 2 that will enable software developers to design and run complex tests over distributed networks – a rarity even in high-end commercial test and management applications.

The ETICS 2 team is now working together with users to enhance ETICS' interoperability testing features.

ETICS is supported by the EU's Seventh Framework Programme for research.

Adapted from materials provided by ICT Results.

http://www.sciencedaily.com/releases/2009/07/090729140241.htm

Breast-Feeding Linked to Lower Cancer Risk

By RONI CARYN RABIN

There is new evidence that breast-feeding is associated with a lower incidence of breast cancer among a group of younger women who are at particularly high risk: those with breast cancer in the family.

Although several studies have found that lactation is protective against breast cancer, the new report found little effect for premenopausal women over all. But for women with an immediate relative, like a mother or a sister, who had breast cancer, those who breast-fed had a 59 percent lower risk of premenopausal breast cancer. That is closer in line with the risk for women who had no disease in the family, the study found.

"I was sort of stunned," said Dr. Alison M. Stuebe, the first author of the study and an assistant professor of obstetrics and gynecology at the University of North Carolina, Chapel Hill. "It's an impressive reduction in risk. Other studies either hadn't looked at this or didn't include enough women with a family history to find a statistically significant difference."

The new study, published in The Archives of Internal Medicine, used information from 60,075 participants in the second Harvard Nurses' Health Study. More research is needed to replicate the findings and to show that the reduced risk is the result of breast-feeding, rather than some other factor common to women who breast-feed. But Dr. Stuebe suggested that breast-feeding may prove just as effective a strategy for high-risk women as the use of Tamoxifen, a drug that interferes with estrogen activity and is often used in high-risk women to reduce breast cancer risk.

Though breast-feeding is promoted primarily because it is linked to better health in babies, mothers seem to accrue long-term advantages. Studies have found that women who breast-fed are less likely to develop osteoporosis and ovarian cancer, as well as high blood pressure and heart disease decades later.

Because women who breast-feed tend to be more educated and to have higher incomes than those who bottle-feed, disentangling the effects of lactation from those of other habits and behaviors can be difficult.

In the latest study, the data came from women who participated in the Nurses' Health Study from 1997 to 2005. The women had all given birth and provided detailed information about their habits and medical history, including breast-feeding, in 1997, before any had developed breast cancer. About 87 percent of the women had breast-fed for at least some period. By June 2005, premenopausal breast cancer had been diagnosed in 608 women. The women who had breast cancer in their immediate family but who had breast-fed had developed only 41 percent as many cancers as those who had an affected relative but refrained from breast-feeding.

But there was no greater benefit if women breast-fed exclusively or for longer periods of time, raising questions about the study's conclusions, said Dr. Louise Brinton, chief of the National Cancer Institute's hormonal and reproductive epidemiology branch.

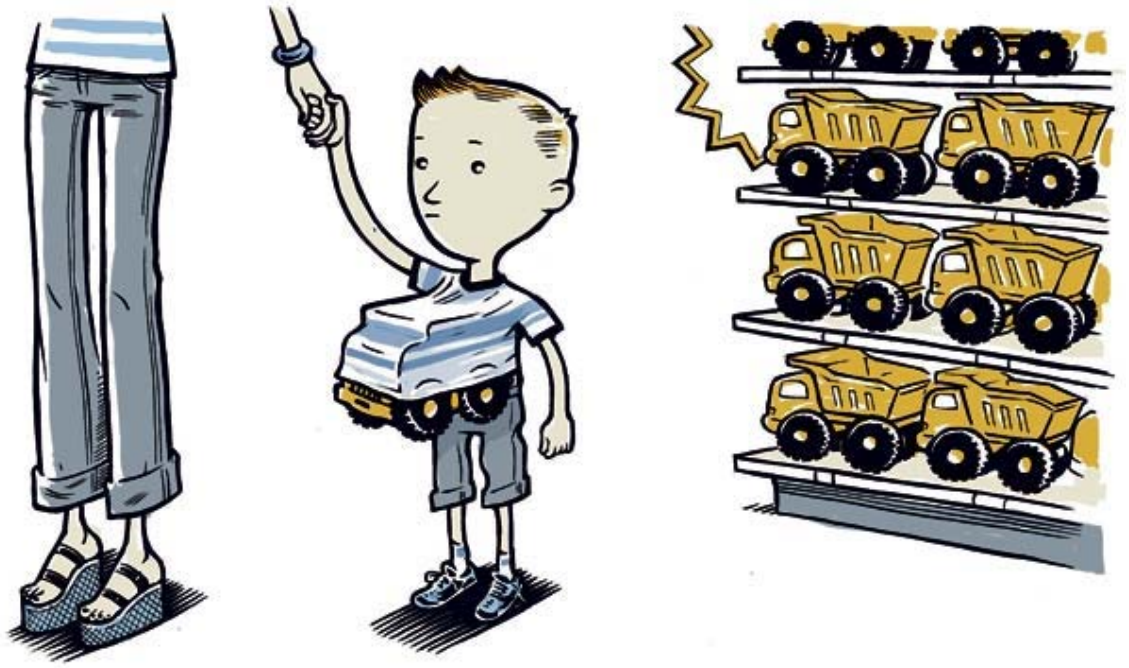
"I would be cautious in interpreting this," Dr. Brinton said. "You would expect to see a dose-response relationship with breast-feeding if it is a really causal protective factor."

Interestingly, women who took drugs to prevent the formation of milk were at lower risk for breast cancer than those who refrained from breast-feeding but did not use lactation-suppressing drugs, the study found.

http://www.nytimes.com/2009/08/11/health/research/11cancer.html?nl=health&emc=healthupdateema3

Stealing in Childhood Does Not a Criminal Make

By PERRI KLASS, M.D.



By the time a worried parent asked me about a child who had stolen something, I had some answers — because I had already been a worried parent and had asked my own pediatrician.

In our house we had gone through the usual process, but I had no idea how usual it was. First the casual inquiry, one parent to another: Did you take any money out of my wallet? Then the little rat's nest of bills accidentally discovered in the 7-year-old's room. The worrying, the questioning, the self-doubt: How do we handle this? What does it mean? Does this tell us something we don't want to know about our child's character? About ourselves? Is something really wrong?

"Most children will take something sometime," said Dr. Barbara Howard, cheerfully.

Dr. Howard is an assistant professor of pediatrics at Johns Hopkins School of Medicine, and some years after my own family crisis, I attended an educational talk she gave for pediatricians on behavior and development. Stealing was included matter of factly along with sleep problems, tantrums and all the rest.

A 2-year-old who takes something, she said, is probably going to be described as not being good at sharing, rather than as a thief, at least by a parent with a reasonable sense of child development. I see it, I want it, I take it, it's mine.

Setting limits is a big part of taking good care of children this age. No, everything you want does not become yours, and sticky-fingered possession (these metaphors become the literal truth with small children) is not even one-tenth of the law. But what about the somewhat older child, the 5- or 6- or 7-year-old, who clearly knows the rules and takes something from another child, from the classroom or even from a store — the child who makes some effort to hide the ill-gotten gains, and when confronted, perhaps flatly denies the crime?

This turns out, once again, to be extremely common. I had a 6-year-old patient once whose mother cried while spelling out the word shoplift in front of the daughter, who had walked out of a store with, I believe, a hair accessory. I see it, I want it, I take it.

But developmentally, there is something more complex going on.

“The next phase is a testing phase,” Dr. Howard said. “Kids are trying to find out what happens if you get caught, and one of the biggest problems is if you don’t catch them. They’re trying to find out what the rules are, and if nobody catches them and says, ‘That’s wrong, you have to give that back or pay for it,’ they don’t get a sense of being properly supervised.” Dr. Martin T. Stein, another expert on behavior and development, and a professor of pediatrics at the University of California San Diego/Rady Children’s Hospital, used a favorite pediatrician’s phrase to talk about those 5- to 8-year-olds who steal: “It’s really a teachable moment,” he said.

It’s your moment as a parent to talk about standards and ethical behavior, and to make those concepts real by requiring that a child apologize and make restitution. “That’s really a great opportunity,” Dr. Stein said, “and it does give the message it’s not proper behavior and it’s not something we condone.”

More worrisome is a child who steals for less obviously acquisitive motives. A hair ornament that she imagines sparkling on her ponytail or another child’s toy that he envies — this kind of stealing, while it needs to be discussed and corrected, is less troubling than so-called symbolic stealing.

An angry child might steal someone else’s treasured possession and destroy it — flush a piece of Mom’s jewelry down the toilet, or incinerate a sibling’s special project. A child who is worried about school performance might steal something from the class superstar. A child who keeps on taking things is a child with a problem, and as children get older, this all becomes much more serious. If a child in middle school is stealing money, you have to worry, already, about drugs and alcohol and the other influences in that child’s life.

And what about true antisocial behavior? A young child’s stealing is in no way the equivalent of setting fires or torturing animals or any of the other frightening prospects that flash across some parents’ minds in that first did-I-just-see-you-take-something-from-the-store moment. On the other hand, a pattern of stealing without any remorse can mark a serious problem — and that child needs help right away.

But the parents of most young children can be confident that stealing is a pretty routine behavior. “It might be unusual for a child to go through childhood without ever stealing anything, though the parent may not know,” Dr. Stein said. Once you do know, Dr. Howard says, you shouldn’t do as some parents have, and rush out to organize a “scared straight” tour of the local correctional facilities to show your 7-year-old where a life of crime will lead.

“They need to be stopped, they need to pay it back and they need to apologize,” she said, “but they shouldn’t be taken to the county jail or treated as if they’re bound to be criminals forever.”

So the onus is on us — the parents — to strike the right balance. “Often the parent is embarrassed or humiliated, they don’t want to tell anybody that their child stole,” Dr. Howard said. “Doing too much or doing too little, either is bad.”

So when we found the cache of stolen cash, I did ask my pediatrician, who told me, kindly, that this was strictly routine. Take it seriously, he said, talk about consequences, extract an apology, but don’t act as if you think it means your child is a criminal.

Which is exactly what I said to the first parent who asked me this in the exam room, and to all the parents who came after.

http://www.nytimes.com/2009/08/11/health/11klass.html?nl=health&emc=healthupdateema1

Online Treatment May Help Insomniacs

By AMANDA SCHAFFER

You can do almost anything on the Internet these days. What about getting a good night's sleep?

It might be possible, some researchers say. Web-based programs to treat insomnia are proliferating, and two small but rigorous studies suggest that online applications based on cognitive behavioral therapy can be effective.

"Fifteen years ago, people would have thought it was crazy to get therapy remotely," said Bruce Wampold, a professor of counseling psychology at the University of Wisconsin. "But as we do more and more things electronically, including have social relationships, more therapists have come to believe that this can be an effective way to deliver services to some people."

The first controlled study of an online program for insomnia was published in 2004. But the results were hard to interpret, because they showed similar benefits for those who used the program and those in the control group. The two new studies, from researchers in Virginia and in Canada, advance the evidence that such programs can work.

In the Virginia study, called SHUTi, patients enter several weeks of sleep diaries, and the program calculates a window of time during which they are allowed to sleep. Patients limit the time they spend in bed to roughly the hours that they have actually been sleeping.

The goal is to consolidate sleep, then gradually expand its duration — the same technique that would be used in face-to-face therapy, said Lee Ritterband, a psychologist at the University of Virginia, who developed the program.

Stella Parolisi, 65, a registered nurse in Virginia and a patient in the study, said sticking to the restricted sleep schedule was hard, "but toward the end, it started to pay off."

"Before, if I was exhausted, I would try to get to bed earlier and earlier, which was the wrong thing," she said. "It just gave me more time to toss and turn."

But after using the program, she began to sleep for at least one four-hour stretch a night.

The SHUTi program, which spans nine weeks, advises patients to get out of bed if they wake and are unable to return to sleep for more than 15 minutes. It also uses readings, vignettes, animation and interactive exercises to help patients deal with factors that interfere with sleep. For example, the program helps patients manage anxious thoughts, like the idea that they cannot function without eight solid hours of sleep. It also reinforces the message that they should not do work or watch TV in bed, should limit the light in the bedroom and should avoid stimulants like caffeine late in the day.

In a small, randomized, controlled study, which included 45 adults, those who were assigned to try the online program reported significantly greater increases in sleep efficiency and decreases in nighttime wakefulness than those who remained on the waiting lists.

Specifically, participants' sleep efficiency, a measure of the proportion of time spent asleep relative to the total time in bed, improved by 16 percent and their nighttime wakefulness (minutes awake during the night) decreased by 55 percent; neither measure changed significantly for the control group. The findings appeared last month in The Archives of General Psychiatry.

"The outcomes were very impressive, almost unbelievable," said Jack Edinger, a psychologist at Duke University Medical Center.

The Canadian study tested a five-week program that also emphasized sleep restriction, controlling negative thoughts and avoiding stimuli like light and noise in the bedroom. It also included readings, and audio and video clips to teach and reinforce its messages.

Led by Norah Vincent, a psychologist at the University of Manitoba, the study included 118 adults who were randomly assigned to complete the program or remain on a waiting list.

"I liked that it was over the Internet," said one participant, Kelly Lawrence, 51, of Winnipeg, "because when you don't get your sleep you don't want to have to get up and go to appointments. You don't want to be out there on the roads."

The online format made it easier to work around child care and other responsibilities, and to "pause the program and go back to something any time I needed to," she added.

Thirty-five percent of those who completed the program described their insomnia as "much improved" or "very much improved," compared with just 4 percent of those who remained on the waiting list. The findings were published in June in the journal Sleep.

Dr. Ritterband says he plans to make the online program publicly available, though not until after further study. Dr. Vincent also said she planned to commercialize her program, charging participants roughly $20 to $30.

Other online programs offering cognitive behavioral therapy for sleeplessness include CBTforinsomnia.com, developed and run by Gregg Jacobs, an insomnia specialist at University of Massachusetts Medical School, and "Overcoming Insomnia," created by HealthMedia, a company based in Michigan.

In-person cognitive behavioral therapy is not readily available to many of the sleepless, whether because they do not have access to a trained therapist or because their schedules make it hard to keep the appointments.

"The sleep community recognizes that if everyone with insomnia showed up on our doorstep today, we wouldn't be able to help them all," said Lawrence Epstein, an instructor at Harvard Medical School and medical director of Sleep HealthCenters in Boston.

Still, Dr. Wampold, of Wisconsin, said some people were bound to be skeptical of online therapy. Therapists who tend to see "the interpersonal relationship between patient and clinician as a key source of motivation and change are likely to be suspicious," he said.

For many insomniacs, he said, "the actual sleep disturbance is just an indication of more or other problems that need to be addressed."

"And you can't do that," he added, "without more clinician contact and flexibility."

http://www.nytimes.com/2009/08/11/health/11slee.html?nl=health&emc=healthupdateema3

People 'get happier as they age'

Most people get happier as they grow older, studies on people aged up to their mid-90s suggest.

Despite worries about ill health, income, changes in social status and bereavements, later life tends to be a golden age, according to psychologists.

They found older adults generally make the best of the time they have left and have learned to avoid situations that make them feel sad or stressed.

The young should do the same, they told the American Psychological Association.

Ageing society

The UK is an ageing nation - in less than 25 years, one in four people in the UK will be over 65 and the number of over-85s will have doubled.

And it is expected there will be 30,000 people aged over 100 by the year 2030.

" **For many people, older age and later life is often looked upon with dread and worry** "
Andrew Harrop Head of public policy at Age Concern and Help the Aged

According to University of California psychologist Dr Susan Turk Charles, this should make the UK a happier society.

By reviewing the available studies on emotions and ageing she found that mental wellbeing generally improved with age, except for people with dementia-related ill health.

Work carried out by Dr Laura Carstensen, a psychology professor at Stanford University, suggested why this might be the case.

Dr Carstensen asked volunteers ranging in age from 18 to mid-90s to take part in various experiments and keep diaries of their emotional state.

She found the older people were far less likely than the younger to experience persistent negative moods and were more resilient to hearing personal criticism.

They were also much better at controlling and balancing their emotions - a skill that appeared to improve the older they became.

TIPS FOR A HAPPY OLD AGE
- Envisage ways to thoroughly enjoy the years ahead and imagine living to a healthy and happy 100
- Design your life and daily routines to reinforce this goal
- Don't put all your "social" eggs in one basket - invest time outside of your family and career too

Dr Charles explained: "Based on work by Carstensen and her colleagues, we know that older people are increasingly aware that the time they have left in life is growing shorter.

"They want to make the best of it so they avoid engaging in situations that will make them unhappy.

"They have also had more time to learn and understand the intentions of others which helps them to avoid these stressful situations."

Dr Carstensen said the young would do well to start preparing for their old age now.

This includes adopting a healthy daily routine and ensuring some social investment is spent outside of the workplace and family home.

Andrew Harrop, head of public policy at Age Concern and Help the Aged, said the findings were encouraging. "For many people, older age and later life is often looked upon with dread and worry. HAVE YOUR SAY As you get older you can get more frustrated and grumpy but more importantly you gain a sense of perspective ***John Uriel, Wallasey*** "Far too many younger people assume that getting older is a process that will inevitably mean sickness, frailty and lack of mobility and greater dependence. However, this is far from the truth in very many cases.

"Many older people lead active, healthy lives enriched by experience and learning.

"This positive advantage can be brought to bear across so many aspects of daily life which - in turn - hugely benefits our ageing society. "It's vital that there is growing acceptance that just because someone is getting older, it doesn't mean they no longer have a significant contribution to make.

"This study is one of many which shows that later life can be a enormously positive experience."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8183522.stm

Published: 2009/08/07 23:06:22 GMT

Equation 'to spot small placenta'

A measurement to spot small placentas could act as an early warning system and potentially stop babies dying in the womb, a study suggests.

Yale University researchers say they have developed an equation to work out the volume of the placenta with a high degree of accuracy.

They hope their measurement could spot problems with the organ, which nourishes the growing foetus.

The paper appears in the American Journal of Perinatology.

Very small placentas have been associated with foetal death, although many healthy babies are born of below-average size placentas and, conversely, sickly infants from larger ones.

Doing the maths

Harvey Kliman from Yale's department of obstetrics said he was inspired to develop an accurate means of measuring the organ after learning it was difficult to gauge on ultrasound screens.

" **It would be most useful if the calculation could be made earlier on in the pregnancy - later on we have a good idea of the health of the baby just by looking at it** "
Patrick O'Brien RCOG

The sum involves estimates of the maximum width, height and thickness of the placenta to produce the Estimated Placenta Volume (EPV), and is reported to predict its actual volume by up to 89%.

"The method works best during the second and early third trimesters," said Dr Kliman.

"I hope that the EPV test becomes routine for pregnant women."

At present there is nothing that can be done to improve or increase the size of placenta, but once it is noted a pregnancy could be monitored more carefully.

Patrick O'Brien, of the Royal College of Obstetricians and Gynaecologists, said the proposition had potential.

"It would be most useful if the calculation could be made earlier on in the pregnancy - later on we have a good idea of the health of the baby just by looking at it.

"I would like to see this as a study carried out on a large group of women to see if it does flag up problems at the outset. It certainly looks interesting."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8179135.stm

Published: 2009/08/09 23:06:43 GMT

Freak wave 'hot spots' identified
By Griet Scheldeman
Science reporter, BBC News

Scientists in the US have made a major advance in their understanding of so-called freak waves.

These monster waves present a major risk to ships and offshore platforms.

A computer simulation developed by oceanographers in the US could help locate where and when these "rogue" phenomena are most likely to occur.

The theoretical study shows that coastal areas with variations in water depth and strong currents are hot spots for freak waves.

The history of seafaring is littered with tales of rogue waves capable of rending ships asunder.

A freak wave is one that measures roughly three times higher than other swells on the sea at any one time. These phenomena can measure up to 18m (60ft) - the height of a six-storey building.

The new computer simulation was developed by Tim Janssen of San Francisco State University (SFSU) and Thomas HC Herbers of the Naval Postgraduate School in Monterey, California.

Their findings are published in the Journal of Physical Oceanography.

Focal zone

Sandbanks and strong currents may cause waves to change direction and speed. This concentrates wave energy into a single point, which oceanographers call a "wave focal zone".

This zone is like a burning glass, Dr Janssen explained, where the light comes in and focuses all the energy on a single point, forming a hot spot.

The same happens when a wave travels over, for example, a sandbank, or over a current. The energy is being focused on to a single point.

The researchers found these hot spots were much more likely to drive the formation of extreme waves.

"In a normal wave field, on average, roughly three waves in every 10,000 are extreme waves," Dr Janssen explained.

"In a focal zone, this number could increase to about three in every 1,000 waves."

The scientists fed data on real waves into their computer model. Then, they repeated a single experiment over and over, each time using different data.

The SFSU oceanographer said he next hoped to go to known freak wave hotspots such as the Cortez Banks on the coast of California to test whether his simulations held true.

"What's really important about this research, is that it is easy to validate. We have a theory now, a prediction, and we can go to areas and actually measure whether this happens or not," he told BBC News.

Vital knowledge

Understanding where and when freak waves are most likely to occur could assist shipping and navigation in coastal areas.

The knowledge could be used for marine weather forecasts and could also inform the design of offshore platforms.

"If you know that a certain area is very prone to freak waves, then you might wish to stay away from it," Dr Janssen said.

"Anybody out in the ocean would like to [have this information]."

However, Dr Janssen was keen to stress that the study is theoretical.

"We have tried to be as realistic as we could, but we are a long way away from making a prediction solid enough for people to actually use. However, it might be something to work towards," he said.

Dr Janssen added that the word "freak wave" was unfortunate, as it suggests these types of wave are unexpected. But, he explained, the random nature of ocean waves means that any size of wave can happen at any time.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8188550.stm

Published: 2009/08/09 22:06:58 GMT

'Radical rethink' needed on food
By Mark Kinver
Science and environment reporter, BBC News

A "radical rethink" of how the UK produces and consumes its food is needed, Environment Secretary Hilary Benn has warned.

He was speaking at the launch of the government's assessment of the threats to the security of what we eat.

The food supply was currently secure but population growth and climate change could have an impact, he warned.

Producers, supermarkets and consumers have been invited to suggest how a secure food system should look in 2030.

Some of the findings from the consultation are expected to be published in the autumn.

" **We have to feed another two and a half to three billion mouths over the next 40 to 50 years** "
Hilary Benn

As well as launching the consultation process, the Department for Environment, Food and Rural Affairs (Defra) has published a scorecard-style assessment of the current state of the UK's food supply.

"It is to stimulate a debate within the UK on what a food policy should be, and how do we define and look at food security more broadly," said Defra's chief scientific adviser Professor Robert Watson.

"Food is absolutely essential, and over the past few years we did see a food price increase - not only in the UK, but across the globe," he told BBC News.

"We think it is time to have a debate with consumers, farmers, the private sector... on what the food policy should be for the UK.

"We are clearly food secure in the UK today," he observed. "We produce about 60-65% of our own food [and] import about 20% from Europe.

"So the [test] for us will be, as the Earth's climate changes, what will be the challenges not only in the UK but throughout the world?" HAVE YOUR SAY More needs to be done to promote natural ways of growing food. It needs to be sustainable, seasonal and fresh ***Rui De Sousa, London***

Environment Secretary Hilary Benn said while Britain was more self-sufficient now than it was in the 1930s and 1950s, everyone had to start thinking ahead about how to produce more using less water and less fertiliser.

He said last year's sudden jump in the price of food and oil, which most fertilisers are based on, was a "wake-up call".

"We saw last year when the oil price went up and there was a drought in Australia, which had an impact on the price of bread here in the UK, just how interdependent all these things are," he said.

"We have to feed another two and a half to three billion mouths over the next 40 to 50 years, so I want British agriculture to produce as much food as possible."

He also encouraged British consumers to buy more UK-grown produce and called for a re-think on best before or sell by dates to reduce waste.

Food for the future

Today's food security assessment focuses on six areas, including global availability, UK food chain resilience and household food security.

It assesses the current situation in each area, and the likely situation in 5-10 years time.

One sector identified as "very unfavourable" and showing no sign of improving is global fish stocks.

Yet other areas, such as the diversity of the UK's suppliers of fresh fruit and vegetables are deemed "favourable" and likely to improve even more.

In July, the Sustainable Development Commission - the government's environmental watchdog - warned that the current food system was failing.

In its report, the commission warned that the current approach was a major source of greenhouse gas emissions, and paid little attention to soil quality and water use.

Responding to the Defra publications, the British Retail Consortium said that any strategy had to be centred around consumers.

"Without their buy-in, no plan will work," said food policy director Andrew Opie.

"We do need a sustainable supply chain, but retailers do not need government statements to wake them up to these issues, they are already taking action.

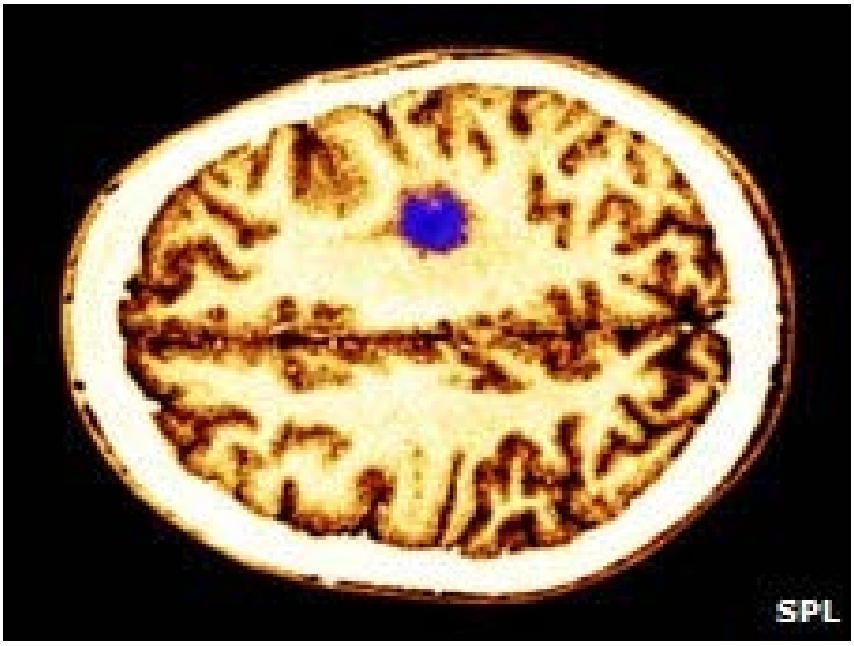
"What we need is joined-up policy with government agreeing what it wants from food across all its departments and agencies."

Most computers will open this document automatically, but you may need Adobe Reader
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8189549.stm

Published: 2009/08/10 10:34:33 GMT

Brain radiotherapy affects mind

Radiotherapy used to treat brain tumours may lead to a decline in mental function many years down the line, say Dutch researchers.



A study of 65 patients, 12 years after they were treated, found those who had radiotherapy were more likely to have problems with memory and attention.

Writing in The Lancet Neurology, the researchers said doctors should hold off using radiotherapy where possible.

One UK expert said doctors were cautious about using radiotherapy.

The patients in the study all had a form of brain tumour called a low-grade glioma - one of the most common types of brain tumour.

In these cases radiotherapy is commonly given after initial surgery to remove the tumour, but there is some debate about whether this should be done immediately or used only if the cancer returns.

" **It always depends on the patient, but if it is possible to defer radiotherapy, maybe people should** "
Dr Linda Douw, study leader

It is known that radiation treatment in the brain causes some damage to normal tissue and the study's researchers suspected it could lead to decline in mental function.

A previous study in the same patients done six years after treatment found no difference in aspects like memory, attention and the speed at which people could process information, in those who had received radiotherapy.

But the latest research, carried out more than a decade after original treatment, did find significant variation in the results of several mental tests between those who had had radiotherapy and those who had not.

In all, 53% of patients who had radiotherapy showed decline in brain function compared with 27% of patients who only had surgery.

The most profound differences were in tests to measure attention.

Delaying treatment

With an average survival of ten years for this type of tumour, the researchers said patients undergoing radiotherapy were at considerable risk of developing problem years down the road.

One option for doctors would be to delay when patients received radiotherapy, reserving it in case the tumour returned, they advised.

"It always depends on the patient, but if it is possible to defer radiotherapy, maybe people should," said study leader Dr Linda Douw, from the Department of Neurology at VU University Medical Centre in Amsterdam.

But she added that more research was needed and there were trials under way to look at other treatments such as chemotherapy.

In an accompanying article, experts from the Mayo Clinic in Rochester, USA, said it was hard to draw conclusions because radiotherapy had improved since the patients in the study had been treated, but agreed more studies were needed.

Dr Jeremy Rees, a Cancer Research UK scientist at the National Hospital for Neurology and Neurosurgery Honorary said they would usually try to avoid giving radiotherapy to patients with low-grade glioma, unless the tumour was progressing or the patient had epilepsy not controlled on standard medication.

"Surgery is generally a preferred option with chemotherapy or radiotherapy coming into play at a later stage, if the glioma progresses.

"Continued research and increased knowledge about the disease is enabling us to treat it increasingly effectively while reducing side effects."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8189327.stm

Published: 2009/08/09 23:06:34 GMT

Drink blamed for oral cancer rise

Alcohol is largely to blame for an "alarming" rise in the rate of oral cancers among men and women in their forties, say experts.

Numbers of cancers of the lip, mouth, tongue and throat in this age group have risen by 26% in the past decade.

Alcohol consumption has doubled since the 1950s and is the most likely culprit alongside smoking, says Cancer Research UK.

Each year in the UK around 1,800 people die from the disease.

There are 5,000 newly diagnosed cases per year.

Other risk factors that may be involved include a diet low in fruit and vegetables, and the sexually transmitted human papillomavirus (HPV), which also causes cervical cancer.

Figures produced by Cancer Research UK show that since the mid-1990s, rates of oral cancers have gone up by 28% for men in their forties and 24% for women.

The charity's health information manager Hazel Nunn said: "These latest figures are really alarming.

"Around three-quarters of oral cancers are thought to be caused by smoking and drinking alcohol.

"Tobacco is, by far, the main risk factor for oral cancer, so it's important that we keep encouraging people to give up and think about new ways to stop people taking it up in the first place.

" **The trend we are now seeing is likely to be linked to Britain's continually rising drinking levels** "
Hazel Nunn Cancer Research UK

"But for people in their 40s, it seems that other factors are also contributing to this jump in oral cancer rates.

"Alcohol consumption has doubled since the 1950s and the trend we are now seeing is likely to be linked to Britain's continually rising drinking levels."

Oral cancer can be treated successfully if diagnosed early enough.

The most common signs of the disease are ulcers, sores, or red or white patches in the mouth that last longer than three weeks, together with unexplained pain in the mouth or ear.

Alcohol Concern chief executive Don Shenker said: "Many people are not aware of the connection between alcohol and cancer, yet as this research shows, it can be a major contributor or cause of the disease.

"While alcoholic liver disease remains the number one killer linked to alcohol, more and more people are suffering from oral cancers - and record drinking levels have undeniably played a part."

He said it was time to introduce tobacco-style health warnings on alcohol.

"It's a consumer issue - people have a right to know the full range of health risks associated with drinking alcohol above recommended guidelines.

"This research will hopefully help people realise the full extent of the damage that alcohol can do, then they're better placed to make informed decisions about how much they drink."

Professor Ian Gilmore, president of the Royal College of Physicians and chair of the Alcohol Health Alliance, said: "These latest figures demonstrate once again that people are being struck down at ever younger ages with alcohol-related illnesses that they might never have previously associated with heavy drinking.

"There is an urgent need to rethink how we communicate the risks of misuse. The first step is to challenge the widespread notion that the only chronic health damage is suffered by a minority of older drinkers."

Professor Alan Maryon-Davis, president of the UK Faculty of Public Health, said: "The really lethal cocktail is drinking strong spirits and smoking - a carcinogenic double whammy for the delicate lining of the mouth and throat. My advice is if you drink, don't smoke - and if you must smoke, avoid spirits."

We asked you for your views on oral cancer. Please find a selection of your comments below.

The emphasis here should be public awareness of oral health and the added risk of drinking and smoking. I am a 38 year old consultant working within the NHS and seven and a half years down the line from being diagnosed with a tongue tumour. I had major surgery with half my tongue removed and then rebuilt from my forearm and a full neck dissection and all lymph nodes removed, tracheostomy and adjuvant radiotherapy. Thankfully I am still here. I didn't drink excessively, neither have I ever smoked and my diet varied and healthy. Promote public awareness, the evidence from the lofty Professor is scant and all drinkers and smokers should be extra vigilant of oral health. ***Mark, York***

My mouthwash contains alcohol! My toothpaste contains all sorts of chemicals! Comparing trends as a method of identifying a cause seems very unscientific. The total number of migrants has doubled since 1960. I am sure this has a direct link to the increase in skin cancers..!! Daft!! ***Andy B, Merseyside, England***

At the age of 57 I was diagnosed with tongue cancer. I was a moderate smoker from the age of 15 till the age of 50, when I gave up. I have always had the odd drink, but never to excess, although there have been the odd exceptions. My cancer was Stage 3. The treatment consisted of four chemotherapy sessions followed by 35 consecutive sessions of radiotherapy and two blood transfusions. I am now in remission, my treatment having been completed in November 2008. I have been advised it will take two years for the healing to take place. The treatment itself has left me with many permanent issues, such as aching joints, tinnitus, associated muscle pain within the neck area, saliva glands that no longer work and a lack of taste. For six months I was unable to swallow and had to be fed via a peg tube fitted into my stomach. I urge anyone who is currently a smoker and/or drinker to reconsider any thoughts of "Why should I give up?" My experience should be a warning to all. ***John Nelson, Maidstone UK***

What concerns me is lack of dentists. If we cannot get a check-up, that's one line of early detection removed. ***Iris, Cumbria***

My sister Rose died in 1984 at the age of 33 from oral cancer; it was originally misdiagnosed as ordinary mouth ulcers. An operation to remove half of her face was her final option which she could not bring herself to do. Rose consumed alcohol and continued to smoke throughout her life; she is sadly missed. ***Chris Straker, Padstow, UK***

Regarding the item on oral cancer, do you not think that the pub trade has already been decimated by the smoking ban? Now you are telling people that drinking is the major cause of oral cancer. What do you

think that will do for the pub trade? It will kill it. So what you are saying is that drinking will more than likely give people oral cancer. We are struggling in the pub trade with customers staying away due to the smoking ban, now how many pubs will have to close due to this item? ***Mick Cox, Bromsgrove***

I was diagnosed with oral cancer at 31. I'd previously been a heavy drinker and smoker, although I'd abstained from both for over 3 years before my diagnosis. Most people think that it's just smoking that causes these types of cancer, but alcohol can play a big part too. And when you put the two together, you are actually more than doubling your chances of developing a cancer of this type. I was lucky, it was caught early and easily treated. All I needed was two ops, and five years of regular checkups. But I've seen pictures off the Web of people who left it, and have ended up having major surgery removing parts of the neck and face. My advice is, if you suspect something see your GP straight away. Just like testicular cancer, it's a lot easier to treat in the early stages than if it's just left for far too long. ***Simon Metcalfe, Carlisle, UK***

I am a newly qualified dentist and I am glad that these alarming statistics are being reported in the national news. Oral cancer is largely preventable and if caught early can be treated, but it has generally had a very low profile compared to breast and cervical cancers for example. Every patient who has a check-up with a dentist is visually screened for oral cancer, and the dentist is best placed to notice the warning signs and refer for investigation. Another important reason to regularly visit your dentist. ***Angela Waugh, Elgin, UK***

My husband has just completed treatment for cancer of the tongue. He had major surgery and 6 weeks of radiotherapy. He has drunk alcohol in moderation - well below the weekly units recommended. He is only 36. Our dentist didn't spot the problem on two occasions and it was just lucky that he went to the doctor about a painless mark on his tongue. I feel that this illness can strike anyone and can't just be attributed to alcohol. ***Sera Byrne, Bradninch, Devon***

"Around three-quarters of oral cancers are thought to be caused by smoking and drinking alcohol" - so it's unproven then isn't it? I think Cancer Research should wait until it's been scientifically proven before publishing such scare stories, just the same as the BBC shouldn't publish PR material without checking it out first, you are supposed to be publishing the "truth" after all not just every item that someone feeds you. ***Kevin Crossinggum, Bromley, Kent.***

My husband died in 2007 at the age of 44 from squamous cell carcinoma of the tongue and neck. He was a heavy drinker and smoked hand rolling tobacco, and these were identified as the cause of his disease. He died seven months after his initial diagnosis having had part of his tongue removed, his neck cut open from ear to ear, 35 radiotherapy treatments, and eventually with half his face eaten away when the cancer returned .It is a horrible, disfiguring and agonising disease, and the survival rates are very poor, and the quality of life if you do survive is severely diminished, with facial deformities, pain, loss of speech, loss of the ability to eat ,just a few of the problems after treatment. ***Liz Arrand, Harewood West Yorkshire***

So why does alcohol get the blame? Is there any empirical research evidence to back up this claim? Other than there's been a rise in alcohol consumption and that's not research. It took years to make the link between smoking and cancer. What about the rise the number of people having piercings in their mouths, tongues, cheeks and lips and noses. Has anyone checked this out as a cause? I doubt it. Unfortunately this sounds to me like all part of the very well orchestrated lobby, of which Cancer Research UK is a part, by the Government and others to completely control our lives. Drinking is the new smoking. When do you think it will be banned? ***Mick, Leeds***

11 years ago, my grandmother died from oral cancer. She was an alcoholic and heavy smoker. She was just 72. My parents nursed her until her death in their home and it wasn't a dignified death. In July 2008, my father was diagnosed with oral cancer. He is also an alcoholic and heavy smoker. It was only discovered at Stage 4 and was in most of the mouth, tongue, throat, jawbone and it had spread to the lymph. He had a major operation in which all his teeth and most of his gums, 50% of his tongue, the floor of his mouth and part of his lower jaw were removed. He is still fighting the good fight despite turning

down any chemo or radiotherapy but his days was few. I can't do anything for them but I don't have many toxins in my mouth i.e. I don't drink very often or much and I don't smoke. I also go to the dentist regularly and try to eat a healthy diet. The saddest thing is that this cancer is treatable if it's caught in the early stages and my dad knew he was ill at least 5 years ago. It's not a nice way to die. ***Tracy, Stevenage, England***

My sister (a teetotaller) had a pre-cancerous condition in her mouth which simply went away within a few months of dumping her 'all powerful' 'whitening', 'antibacterial' toothpaste and rinse! The rise in oral cancer is more due to the massive surge in chemical additives in dentifrices, (which of course includes alcohol in mouth rinses). The amount of chemicals in toothpastes is unprecedented, many of the chemicals being known skin irritants. The pity of the health service is that there is no correlation between the sources of chronic irritation and the treatment for its consequences. The corporations who manufacture dentifrices do not bear the burden of the consequences of their products. Many toothpastes now contain bleaching agents which in conjunction with foaming agents and other chemicals have the potential to act as carcinogens. Solution: reduce alcohol AND chemicals in toothpaste etc. ***truthseeker-e, london***

I'm 32, lived the good life since 18 (drinking most weekends etc.) have never smoked but last month I was diagnosed with cancer. I can't help but think that my lifestyle of the last 14 years has played a major part. Fingers crossed for my recovery but I'm now committed to a major lifestyle change, no booze and as little junk food as possible. ***AJ, Australia***

After drinking my way through uni, I stopped and thought about why I was doing it. I looked at how much I was drinking and it surprised me. It wasn't good for my health, it meant most of the next day was a write-off and getting home was always going to be a problem. I didn't need it to have a good time when I went out. So I stopped. That was seven years ago and I don't regret my decision at all. I feel better for it and am glad I did it. New medical evidence like this just renews that. What does surprise me is society's attitude towards me when I say I don't drink, like there's something wrong with me. Some groups actually now consider me a social leper based on this! ***Ali, Hants***

My mother died of oral cancer last year , she had never smoked in her life and drink was only ever consumed on rare occasions like at a family party and then she would only have 2 - 3 drinks, her cancer started on her tongue and spread to the right side of her face it was a very aggressive cancer . ***John Charkewycz, Bolton, United Kingdom***

I am an oncology research sister working in this area and during my time spent on some head and neck wards I have noticed that this disease is affecting younger people. The public should be kept informed about oral cancers as it affects a very public area of the body. Whenever you meet a person the first place you look at is the face. These cancers are devastating and prevention advice must be given in the advertisement of any alcoholic products. ***Carly Munro, Derby***

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8193639.stm

Published: 2009/08/10 23:00:39 GMT

Optimistic women 'live longer'

Women who are optimistic have a lower risk of heart disease and death, an American study shows.

The latest study by US investigators mirrors the findings of earlier work by a Dutch team showing optimism reduces heart risk in men.

The research on nearly 100,000 women, published in the journal Circulation, found pessimists had higher blood pressure and cholesterol.

Even taking these risk factors into account, attitude alone altered risks.

Optimistic women had a 9% lower risk of developing heart disease and a 14% lower risk of dying from any cause after more than eight years of follow-up.

" **Making healthy choices such as not smoking and eating well, will have much more of an impact on your heart health than your outlook** "
Spokeswoman British Heart Foundation

In comparison, cynical women who harboured hostile thoughts about others or were generally mistrusting of others were 16% more likely to die over the same time-scale.

One possibility is that optimists are better at coping with adversity, and might, for example take better care of themselves when they do fall ill.

In the study, the optimistic women exercised more and were leaner than pessimistic peers.

Lead researcher Dr Hilary Tindle, assistant professor of medicine at the University of Pittsburgh, said: "The majority of evidence suggests that sustained, high degrees of negativity are hazardous to health."

A spokeswoman for the British Heart Foundation said: "We know that hostile emotions can release certain chemicals in the body which may increase the risk of heart disease, but we don't fully understand how and why.

"Optimistic or hostile attitudes can be linked to health behaviours such as smoking or poor diet, which may also influence heart health.

"A good thing for all women is that regardless of your outlook, making healthy choices such as not smoking and eating well, will have much more of an impact on your heart health than your outlook.

"More research is needed to explore how and why these psychological attitudes may affect health."

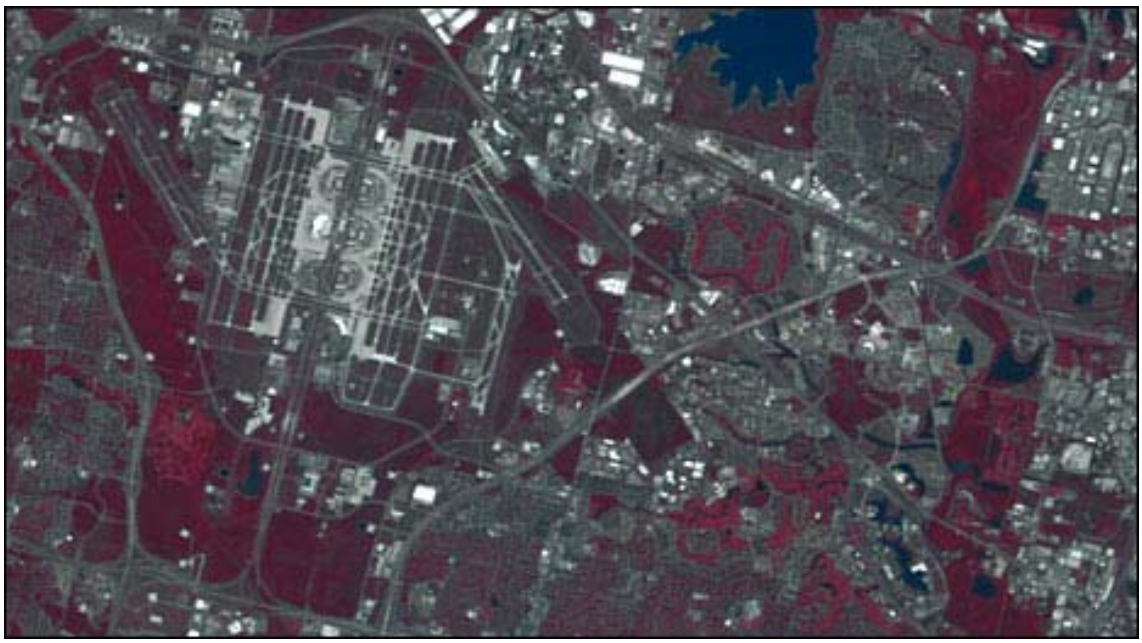
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8193180.stm

Published: 2009/08/10 23:12:26 GMT

'Crisis satellite' returns images

By Jonathan Amos
Science reporter, BBC News

Britain's latest imaging satellite has returned its first pictures.



UK-DMC2 was launched with a twin spacecraft, Deimos-1, on a Dnepr rocket from Kazakhstan last month.

The platforms have joined the Disaster Monitoring Constellation, which is used to obtain rapid information about areas struck by natural calamities.

UK-DMC2's test pictures of the US states of Texas and Oklahoma show the satellite is performing to its design specification.

The UK spacecraft and its Spanish twin can acquire better resolution pictures than their predecessors in the constellation.

Their new sensors see double the number of pixels per hectare, giving their pictures a pixel size of 22m. The satellites also achieve this detailed view over a wide swath of 650km, meaning spacecraft will return a lot of information in just one pass.

When a major natural catastrophe strikes some part of the globe, the spacecraft and the orbital assets of Disaster Monitoring Constellation will be tasked with gathering emergency pictures as fast as possible.

The imagery will be used by governments and aid agencies to co-ordinate the relief effort.

UK-DMC2 and Deimos-1 were manufactured by Surrey Satellite Technology Limited.

The constellation already includes spacecraft owned by the UK, Algeria, China and Nigeria.

When they fly over their home territories, the satellites acquire a range of data for domestic use - everything from urban planning to monitoring locust swarms. But when the platforms fly across the rest of the globe, they gather imagery which is pooled and sold on to commercial users.

The network as a whole is managed by an SSTL subsidiary, Disaster Monitoring Constellation International Imaging (DMCii).

DMCii has just been commissioned to image the whole of sub-Saharan Africa as part of Europe's Global Monitoring for Environment and Security (GMES) programme

The data will, in part, be used to keep a check on deforestation in the vast Congo Basin forest area.

As the second largest tropical rainforest after the Amazon Basin, it is an area of significant concern in the fight against deforestation and the quest to limit carbon emissions.

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Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8194179.stm

Published: 2009/08/10 23:30:11 GMT

Young Philosophers

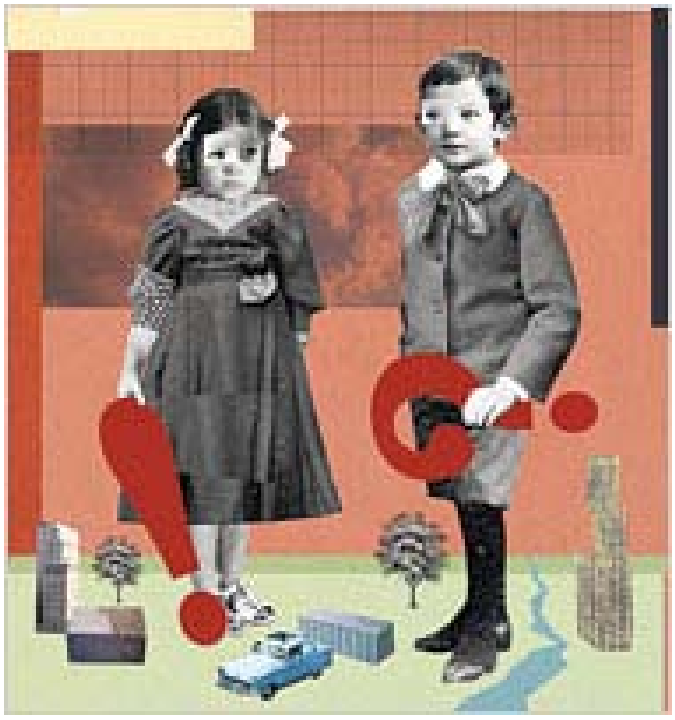
By ANTHONY GOTTLIEB
Skip to next paragraph

THE PHILOSOPHICAL BABY

What Children's Minds Tell Us About Truth, Love, and the Meaning of Life

By Alison Gopnik

288 pp. Farrar, Straus & Giroux. $25



It's always gratifying to hear a new twist on an old joke. In the Marx Brothers' "Duck Soup," Rufus T. Firefly, played by Groucho, is handed the Freedonia cabinet's treasury report: "Why, a child of 4 could understand this report. Run out and find me a 4-year-old child — I can't make head or tail of it." Alison - Gopnik, a professor of psychology at the University of California, Berkeley, has run out and found plenty of 4-year-old children. In her new book, she announces that they are in some ways "smarter, more imaginative, more caring and even more conscious than adults are."

Gopnik does not go so far as to propose that we fire Timothy Geithner and march in a phalanx of preschoolers to fix the credit crunch. She does, however, make the bold suggestion that thinking about small children can shed new light on ancient philosophical problems. Whether or not this is true, her account of what the science of recent decades has had to say about infants' minds tells a fascinating story of how we become the grown-ups that we are.

Early childhood is both familiar and mysterious. Everyone was a baby once, and most adults have spent plenty of time talking to small children. But we simply can't remember what it was like to be younger than 5 or 6, and conversation between an adult and a preschool child is far from a dialogue between equals. Our mental development is, Gopnik argues, more like a metamorphosis than an incremental

process of growth, so we butterflies can boast precious little understanding of the caterpillars in our strollers. To see what is really happening in their heads, we need grown-up science, in the form of cunningly designed and rigorously executed experiments — supplemented, where possible, with brain scans.

Thanks to such work, it seems we can now get over some of the false or misleading ideas about childhood inherited from Sigmund Freud and Jean Piaget, the pioneer of developmental psychology. They maintained, for example, that small children cannot discriminate between truth and fiction — a verdict with which it is all too easy to concur when you have just been informed by a pint-size superhero in a cape that there is a fire-breathing dinosaur in the laundry basket. But it turns out that even 2- and 3-year-olds are very good at telling pretence from reality. The experiments described by Gopnik are pretty convincing on this point (though here and elsewhere in her book it would have been interesting to hear more about how exactly Freud and Piaget managed to go so wrong).

When children are playing, they know they are just playing. Yet play is a very serious business, as Montaigne recognized: without the luxury of a uniquely long period of dependence on adults, in which we can afford to explore the world with unfettered imaginations, we would never learn how to be the most knowledgeable and powerful creatures on the planet. A recurring theme of Gopnik's is the idea that playful immersion in freely conjured hypothetical worlds is what teaches us how to make sense of the real one. She describes, for instance, how small children's grasp of "counterfactual" situations enables them to calculate the probabilities of alternative courses of action. She also discusses the invisible friends — most often found in the imaginations of children between the ages of 2 and 6 — who seem to help youngsters learn how to interpret the actions of others. Children who have imaginary friends tend to be better at predicting the thoughts and feelings of actual people. Autistic children almost never create imaginary friends or engage in any kind of pretend play.

It used to be held that small children are not only irrational but also immoral and egotistical. Again, we may have been doing them an injustice. The notion that moral ideas develop only in adolescence — as Piaget, for one, claimed — appears to be wrong. Even children as young as 2 can grasp the difference between moral rules, which are intended to avoid harm ("Don't hurt other kids"), and merely convenient regulations ("Take off your dirty shoes at the door"). Tellingly, small children recognize that it would not be O.K. to hurt another child even if a teacher said it was. This does not, of course, prevent the little devils from lashing out on occasion, but such bad behavior seems to be a matter of undeveloped self-control rather than a psychopathic lack of moral concepts. In a section that is heartening news for optimists about the human race, Gopnik reports that children are naturally empathetic from birth and tend to exhibit altruism (though fitfully) from the age of 1.

In the 1980s and '90s, Gareth Matthews, a professor of philosophy at the University of Massachusetts, Amherst, made an impressive case for regarding young children as natural-born philosophers. Matthews illustrated how much their open-ended intellectual curiosity has in common with the apparently aimless ruminations of professionals — thus, in effect, painting adult philosophy as a form of arrested development. Gopnik's surprising claim about the importance of children to philosophy is not that they ask the same questions as grown-up professors (she does not in fact mention Matthews's work), but that thinking about children can somehow provide the answers the professors are looking for.

When Socrates pondered the immortality of the soul, Gopnik argues, he should have considered the sort of afterlife that parents can obtain through their children. Similarly, she thinks moral philosophers ought to take greater cognizance of the empathetic bonds between generations, and that those skeptics who wonder how we can ever attain certain knowledge of the outside world would do well to consider the mechanisms by which children learn. As for the meaning of life, readers will not be surprised to hear that Gopnik suggests a large part of the answer is (if you have them): children.

Nearly all the great philosophers have been men, and Gopnik claims that this helps to explain why the nature of children's minds has almost never been discussed in philosophy. But there is an alternative explanation: perhaps children have been left out simply because they are on the whole not all that

relevant. Although many philosophers have been childless men, not all were — Descartes developed a strong bond with his daughter — and Bertrand Russell ran a school. Are we really to suppose that merely being male has blinded philosophers to the gold that has been lying at their feet? Gopnik's exposition of philosophical problems is sometimes sketchy, and in the absence of more solid examples of missed great ideas than she provides here, I am not convinced that the history of philosophy would have found more useful inspiration from the study of children if only its luminaries had included Mrs. Plato, Emmanuelle Kant, Renata Descartes and Joan Locke.

Gopnik notes that parenting in today's middle-class America is unusual, because comparatively few people are involved in the care of each child and so parents are more intensely involved in it. Extended family, older siblings and neighbors play a smaller role than they did in the past and elsewhere. She interestingly suggests that this shift helps to explain why many American parents now make such a song and dance about the formerly unremarkable activity of child-rearing. One might go further and regard our absorption in our own offspring as a flimsily disguised form of narcissism. Either way, the notion that children's minds have much to tell us about the meaning of life seems rather a fond exaggeration.

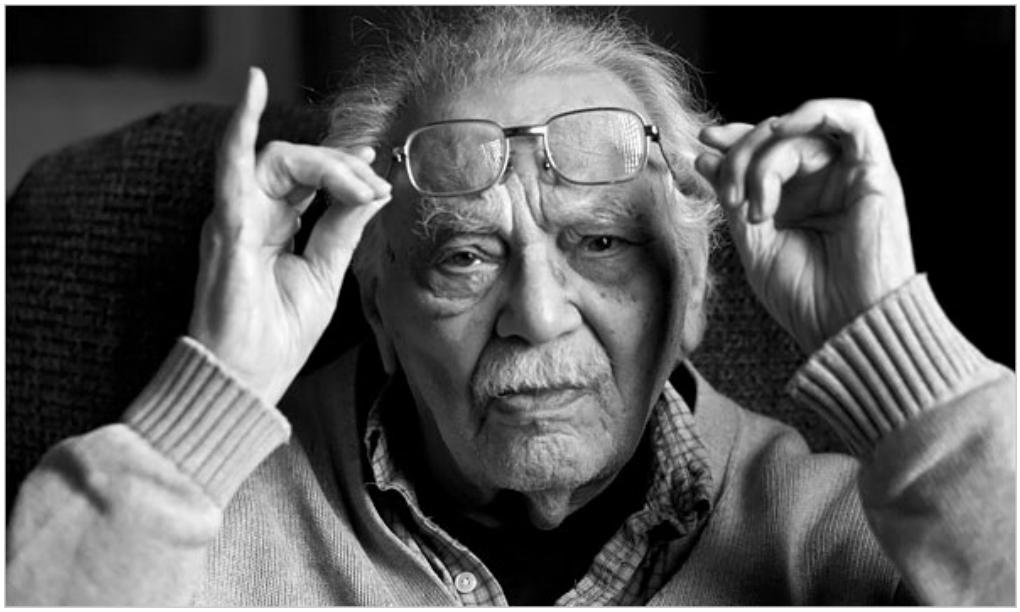
Anthony Gottlieb is the author of "The Dream of Reason: A History of Philosophy From the Greeks to the Renaissance."

http://www.nytimes.com/2009/08/09/books/review/Gottlieb-t.html?partner=rss&emc=rss

Voices Silenced, Faces Preserved

By RANDY KENNEDY

BUFFALO



ON the wall above the kitchen table in Milton Rogovin's modest home here hangs a handwritten sign listing some of the notable events of 1909: Geronimo's death in prison; the first full year of production for Ford's Model T; the founding of what was to become the N.A.A.C.P.; the birth in New York City of Milton Rogovin, who, approaching 100, is one of the country's most revered social-documentary photographers.

Mr. Rogovin was an optometrist whose business was decimated and his children shunned after he refused to testify before the House Un-American Activities Committee in 1958. An article published that year in The New York Times reported that friendly witnesses described him as "the chief Communist in the area." He turned to photography because his "voice was essentially silenced," as he once said. What followed was more than 40 years of powerfully straightforward pictures of others without voices: the poor and working class of Buffalo's East Side and Lower West Side, Appalachia, Mexico, Chile and other countries. Visiting Mr. Rogovin has long been a rite for photographers, curators, historians, activists and writers. These days, in tenuous health, he no longer actively photographs. His wife of 61 years, Anne, an educator and writer who was an active partner in his projects, died in 2003. And his basement darkroom is now mostly empty, his negatives, contacts and prints having moved to institutions like the J. Paul Getty Museum and the Library of Congress. (He has been nominated to receive this year's National Medal of Arts, the kind of establishment recognition a former card-carrying Communist never expected.)

Over lunch recently with his daughter, Ellen Rogovin Hart, Mr. Rogovin opened his picture notebooks as if they were family albums, to take another visitor through an exceptional half-century record of struggle, suffering, determination and hope. "I made a lot of use of that darkroom down there, oh boy," he said, adding with a smile, "Well, enough is enough."

http://www.nytimes.com/2009/08/09/arts/design/09kenn.html?ref=design

The Auto as Architect's Inspiration

By INGRID STEFFENSEN

COLLECTING exotic cars is practically a prerequisite for celebrities, but Jerry Seinfeld and Jay Leno have no patent on that pastime. Frank Lloyd Wright, the architect whose birth in 1867 preceded the gasoline-powered automobile's by about 20 years, was an early adopter of the internal-combustion engine and an auto aficionado all his life.

He was also eerily prophetic in understanding how the car would transform the American landscape, and his designs reflect this understanding. Wright often designed both for and around automobiles, and his masterpiece, the Guggenheim Museum in New York, owes its most distinctive feature, the spiral of its rotunda, to his love for the automobile.

This year is the 50th anniversary of both Wright's death and the opening of the Guggenheim, which is presenting an exhibition of his work, "Frank Lloyd Wright: From Within Outward." After a half-century, the Guggenheim still stands as a testament to how the automobile helped transform architectural space.

Wright was seduced by the combination of beauty, power and speed, whether powered by hay or by gas. He owned horses, and his first car, a yellow Model K Stoddard-Dayton roadster, was the same model that in 1909 won the very first automobile race at the Indianapolis Motor Speedway. Called the Yellow Devil by his neighbors, this was a 45-horsepower car capable of going 60 miles an hour. Wright and his sons seemed to enjoy that horsepower with abandon: "Dad was kept busy paying fines," his son John observed. So enamored was Wright of his automobile that he installed gas pumps in the garage of his home and studio in Oak Park, Ill. At least one of them can still be seen today.

In 1909, Wright left his wife and six children to go to Europe with Martha Cheney, who was known as Mamah and was the wife of one of his clients. John Wright actually laid some of the blame on the Stoddard-Dayton for encouraging the affair. "I think this car had something to do with Papa's leaving

home," he wrote in his book "My Father Who Is on Earth." "Papa was a handsome figure in the driver's seat with linen duster, goggles and his wavy hair dancing in the breeze. One night he took his fair companion riding and kept right on going."

Despite setbacks, his architectural career continued to grow, along with his love of luxurious cars. In the early 1920s, Wright owned a custom-built Cadillac and later bought a 1929 Cord L-29, which he praised for its sensible front-wheel drive. Besides, "It looked becoming to my houses," he wrote in his book "An Autobiography." He seemed to have a special bond with the Cord. "The feeling comes to me that the Cord should be heroic in this autobiography somewhere," he wrote.

Wright's Cord can be seen today at the Auburn Cord Duesenberg Museum in Auburn, Ind.

Over the course of his life, Wright also owned cars from Packard, Bentley, Mercedes and Jaguar. But the car he is probably most identified with is the Lincoln Continental.

According to the biography "Frank Lloyd Wright" by Meryle Secrest, Wright walked into a Chicago car dealership around 1940 and ordered not one but two new Lincoln Continentals, customized to his specifications and painted in Cherokee red, the signature color he used on some of his cars and homes. Other published accounts, however, say he bought the cars separately and that after one was involved in an accident, Wright had the body shop make several alterations that made the car stand out. He had the rear window filled in, had side opera windows added and reduced the height of the windshield and back seat. The car eventually ended up with the movie producer Joel Silver.

Wright designed with the automobile in mind long before it became a ubiquitous accessory to American homes. The Robie House in Chicago was designed in 1908, with an integrated three-car garage. He also coined the term carport and often incorporated them in his modest homes of the 1930s.

Though a gas station in Minnesota and Max Hoffman's Manhattan Mercedes-Benz dealership on Park Avenue are on his résumé, the architect's prescience about the place of the car in American culture emerged most fully in his theoretical work.

Wright imagined his utopian Broad-acre City in 1932 and worked on the plans until the end of his life in 1959. His fundamental idea was that the mass-produced automobile permitted universal car ownership, so that urbanism itself was a doomed concept. He wrote that the "complete mobilization of our American people is one natural asset of the machine, fast approaching," and he believed that the automobile would decentralize the American way of life.

Wright's love of the automobile inspired some of his most innovative architectural concepts and ultimately his most radical design, the Guggenheim. He recognized the most important architectural fact about the automobile: its need for smooth surfaces to travel on. The ramps developed for human movement by such International Style architects as Le Corbusier are necessary for an automobile to travel vertically.

Wright explored the spiraling ramp as early as 1924, when he designed the Gordon Strong Automobile Objective, an ambitious project for Sugarloaf Mountain in Maryland. Wright conceived it as a terminus for a scenic drive up the mountain, for, as he put it, "people sitting comfortably in their own cars in a novel circumstance with the whole landscape revolving about them, as exposed to view as though they were in an airplane."

Buried inside was a vast dome — 150 feet in diameter and housing a planetarium — that supported the cantilevered ramps whose curves tightened as they wound their way up to a viewing platform. Wright envisioned aquariums, natural history exhibits, restaurants and lounges to complete the experience. Although the Automobile Objective was never built, no previous architectural design had considered the essence of automotive mobility to such an extent.

As unlikely as it may seem, the design of the Guggenheim can also be linked to the mundane parking garage. Wright enjoyed a fruitful relationship with Edgar Kaufmann, a Pittsburgh department store magnate who is best known as the patron for Fallingwater, the beloved Wright house in Pennsylvania, which was built in the 1930s. The civic-minded Kaufmann in 1947 also enlisted the architect to design a downtown Pittsburgh redevelopment project that Wright titled "Point Park Coney Island in Automobile Scale."

Everything in it — sports arenas, theaters, shopping, gardens, aquarium, marina — was easily accessible by car, and to that end Wright designed huge bridges, ramps and parking facilities. Kaufmann also commissioned Wright in 1949 to design a parking garage for his department store. The design was a giant, off-kilter layer cake of ramps, with concrete ribbons snaking around a central parking core.

Like the mountaintop drive-up planetarium, the Kaufmann redevelopment project and parking garage were never built, but have clear design connections to the Guggenheim. Wright always intended that visitors should take an elevator to the top of the ramp inside the Guggenheim, and then allow gravity to help them in their gentle centrifugal descent as they admired the artistic scenery. The Guggenheim may not be a drive-in museum — though one is inclined to think that Wright would have loved such a challenge — but the smooth forward motion and uninterrupted spatial flow of the ramps are an architectural equivalent to automotive motion — the "automobile objective" turned outside-in.

Like a highway for art, the Guggenheim's ramps brought Wright's visionary automotive projects to reality. Here, he created a new viewing paradigm informed by our shared American love for life experienced through the windshield.

When Wright died, did he get to heaven in style? His son John (inventor of Lincoln Logs) thought that he would. In John's book, he envisioned his father arriving in heaven in the customized Lincoln: "Dad prodded his Lincoln Continental in the upward climb, up on over the heights between the peaks; up on toward the stars; on toward the Great Silence."

When Wright arrives at the pearly gates, he disapproves of their proportions, then calls out to St. Peter:

" 'Mr. Wright — Mr. Frank Lloyd Wright, waits without!'

" 'Without what?'

" 'Without gas!' "

The "Frank Lloyd Wright: From Within Outward" exhibition will be at the Guggenheim Museum at 1071 Fifth Avenue through Aug. 23. More information is available at www.guggenheim.org.

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http://www.nytimes.com/2009/08/09/automobiles/09wright.html?ref=design

Saving Fuel But Melting Ice Faster

- By: John Perlin | August 07, 2009

New trade routes through the Arctic could increase soot emissions, and soot (aka black carbon) creates dark ice, which decreases the amount of that region's solar reflectivity thus warming the Earth even faster.nasaimages.gov

Sailing from the Atlantic to the Orient across the roof of the world has been the dream of Arctic explorers and world traders for centuries. It saves fuel, too, so what's not to like? Well ...

For centuries people in the West believed, as the philosopher Gottfried Leibniz articulated in the 17th century, "Everything exquisite and admirable comes from the East Indies. Learned people have remarked that in the whole world there is no commerce comparable to that of China." Europeans therefore took to the seas to get there once the land route to the East known as the Silk Road became difficult to access in the 1400s.

The restriction on trade to the east motivated Columbus to sail west in search of a new route. Once people realized that he had not reached the East, other mariners looked for new ways to the east. Vasco da Gama sailed around Africa to India and the East Indies. Magellan found a passage between the Atlantic and the Pacific in southern South America leading to the Orient.

Would-be competitors sought shorter paths. Some searched for the fabled "Northwest Passage" that starts in present day Arctic Canada and ends in the Bering Straits, which Alaska and Russia currently face. Others tried the "Northeast Passage route," skirting the Arctic seas where Norway sits and then crossing the entire northern Russian coast.

But ice barred the way. The would-be conquerors either fled from or fell to the icebergs, fields and floes. In 1845, for example, Sir John Franklin, whose tale continues to fascinate, tried to go west: "With a hundred seamen he sailed away/To the frozen ocean in the month of May/To seek a passage around the pole/Through cruel hardships they vainly strove/ Their ships on mountains of ice were drove/The fate of

Franklin [and his men] no man may ever know." Three hundred years earlier, Hugh Willoughby came a cropper trying to go east and died having gotten no further than the vicinity of Murmansk.

Eventually explorers did successfully sail through both passages. They had to sit out the winter, though, stuck in ice before achieving their goal, something a commercial venture would never do.

Satellite pictures now show that global warming has melted the treacherous ice barrier into navigable sea water. Trade with China and the rest of Asia once again calls. Germany's Beluga Shipping will send the first commercial ship, the Beluga Fraternity, through the Northeast Passage — they're calling it the "northern sea route" — from Vladivostok to Rotterdam before the end of the summer. If the route proves routinely feasible, sailing through the passage from Bremen in northern Germany to Shanghai will shave more than 3,000 nautical miles off a similar journey on today's shipping lanes.

Shippers will see great savings in time spent sailing and money spent on fuel. But the maiden voyage does not augur good news for the planet.

While it's been documented that ships are big generators of greenhouse gases as it is, half of a cargo ship's particulate emissions are soot — and soot (aka black carbon) emitted by ships sailing in the polar region will further blacken the remaining ice. The dark ice in turn will lose more of its former solar reflectivity, absorbing sunlight and emitting solar heat instead. The Earth will then warm even faster.

Six years ago, NASA estimated black soot might be responsible for as much as a quarter of observed global warming over the past century (and last year, one study suggested even double that). Noting that "soot may be a more all-around bad actor than has been appreciated," NASA's controversial James Hansen wrote that as the ice melts soot builds up and darkens the field more, causing it to melt even faster. Plus, wet snow is darker than dry snow, adding additional "positive feedback."

"Reducing Arctic [black carbon] concentrations sooner rather than later is the most efficient way to mitigate Arctic warming that we know of, " the University of California, Irvine's James C. Flanner and three co-authors wrote in a 2007 paper in the Journal of Geophysical Research.

So that fuel savings to obtain the "exquisitely" cheap modern wares of the Orient may be a very costly in the long run.

http://www.miller-mccune.com/news/saving-fuel-but-melting-ice-faster-1414

Surely Some Flora Out There Can Fuel My Car

While the corn ethanol bubble has pretty much popped, serious efforts to find an economically sound and carbon-smart biological-based fuel continue.

- By: Doug Struck | August 07, 2009 |

Serious efforts to find an economically sound and carbon-smart biological-based fuel — such as cellulosic ethanol (like soy, pictured) or algae and bacteria-derived fuel — continue.Francois Lariviere

Biological fuels received a black eye earlier in the decade when the rush to embrace corn ethanol came to a crashing halt as the technology's economics and carbon footprint became clear, Doug Struck wrote in Part I ("Reality Pricks Corn Ethanol's Bubble").

William Frey holds up a beaker of brown slush, plucked from the clutch of an automated carousel swirling dozens of glass containers. The liquid, a mix of ground corn stocks and a microscopic organism named the Q-Microbe, may just be the fuel of the future, Frey says.

"We're on the right path. This works," says Frey, president of Qteros, a company outside Boston that is reaping ethanol in their labs from colonies of a single-celled bacteria found in the dirt beside a Massachusetts reservoir. "If money were no problem, we could build plants today."

Qteros is part of a rush to develop what one expert calls "the holy grail" of energy, a biological-based fuel that can replace petroleum. The potential reward is huge: saving the world from catastrophic climate change, powering our society with abundant new energy, and ending a global economic imbalance now tilted toward nations that happen to sit atop oil reserves.

President Obama is betting that reward can be had. He has announced an effort to promote biofuels, pledging $786.5 million dollars of stimulus money to research and development. Biofuels will be "an integral part of this new 21st-century American economy," proclaimed Obama's agriculture secretary, Tom Vilsack, in presenting the plan May 5.

The good news is that science has the answers; researchers at Qteros and dozens of other labs have succeeded in a variety of ways to make fuel from plants and organisms. The bad news is that all face daunting challenges to producing fuel in the volume we need at a price we can afford. And, as with corn ethanol, there are certain to be unforeseen consequences of ramping up to a large scale.

Corn-based ethanol succeeded quickly on an industrial scale because most of the elements were in place: vast cornfields, an infrastructure for moving corn to processors, and an age-old fermentation science used by moonshiners. The new generations of biofuels do not have all those advantages.

The search for new strategies generally falls in two camps: ways to use organic stuff other than corn to make ethanol, and ways to manipulate organisms to produce a different fuel identical to gasoline or diesel.

The search for a better ethanol — "cellulosic ethanol" — is farthest along, hitching on the experience of corn ethanol. Almost any organic matter — from the leftover corn stalks after harvest to garbage to grass to sawdust — has cellulose that can be fermented into ethanol. Researchers are exploring ways to use acid or enzymes to break the cellulose away from the lignin that gives the plant its structure. Cows and sheep do this in their stomachs naturally.

Its promoters say corn-based ethanol is only the flawed first version, and that cellulosic ethanol will end the competition of food with fuel, and spread the organic sources of ethanol over a much larger and diverse landscape.

They envision vast fields of switchgrass, a tall prairie grass, grown without water on vacant land, and harvested for fuel. They note that the lignin plant structure that is left after cellulose and carbohydrates are taken can be burned to help fuel the conversion process, giving the whole operation a much better greenhouse gas advantage than simply fermenting corn.

Congress has written this idea into the law with the same vigor that it embraced corn ethanol. In the 2007 Energy Independence and Security Act, Congress said that of the 36 billion gallons of biofuel it wants produced by 2022, 15 billion gallons must come from corn-based ethanol and at least 16 billion gallons from cellulosic biofuels.

But that view of the future of cellulosic ethanol may be rosy. There is "no way" the industry will meet even the next step on the production schedule set out by Congress, according to Ethan Zindler, head of North American research for New Energy Finance. The renewable fuel standard passed by Congress calls for 100 million gallons of cellulosic ethanol in 2010, but the actual production capacity from experimental plants is only about 3 to 4 million gallons, he said. "The expectations were not entirely realistic."

Even supporters like the Natural Resources Defense Council, which just last year had waxed enthusiastic that cellulosic ethanol is "too good to be true," are now more reserved.

"It's hard for anyone to sit down and think through the full consequences and interactions," acknowledged Nathanael Greene, director of renewable energy policy for the NRDC in New York. "If we get the accounting wrong, we won't get biofuel. That will make solving global warming very hard. On the other hand, if we get the accounting wrong, that will increase global warming."

Ethanol — no matter how it is made — has an unfortunate affinity for water, which accumulates in pipelines, so ethanol cannot be shipped in the existing fuel infrastructure. It has to be shipped by tanker truck. It also has relatively low energy density, meaning it cannot realistically power airplanes, ships or even trucks, which would have to carry too much fuel to move their mass.

And, even if cellulosic ethanol is not competing with food, there are limits to the amount of biomass that we can find or grow to make the ethanol. A 2005 study by the departments of Energy and Agriculture estimated that farming leftovers — logging waste, pulp processing waste and the harvest from 55 million acres of new crops — would produce, optimistically, about 1.3 billion tons of biomass a year. Even if every bit of that were converted to biofuels, it would replace only a portion of our transportation needs. A recent study by the government-backed Sandia National Lab estimated that one-third of our transportation fuel needs might be met by cellulosic and corn ethanol by 2030, given "aggressive" biofuel development.

And that relies on assumptions that may not make sense to a farmer, say three researchers at Iowa State. "Cellulosic ethanol is more expensive to produce (than corn ethanol), and switchgrass-based ethanol is more land intensive," said Mindy Baker, Dermot Hayes and Bruce Babcock, in a 2008 study on the economic choices facing farmers. Without higher subsidies, "rational farmers will not grow switchgrass or soybeans for biofuel production, and rational investors will not build these plants."

Despite those hurdles, supporters like Frey at Qteros are optimistic. They see small-scale cellulosic refineries located near switchgrass grown on empty fields, beside pulp paper mill plants, or linked to municipal landfills, producing ethanol and using leftover biomass for co-generation of heat.

Researchers are making strides at increasing the efficiency. By encouraging certain traits in their Q-microbe, Frey said Qteros has increased its ethanol output by 80 percent.

"There's no question our energy future is going to be more diverse than it is now. I think cellulosic ethanol will be the biggest participant," Frey said. "I think it's reasonable to be shooting for providing 50 percent of our liquid transportation fuel with sustainable fuel."

Other researchers are exploring ways to create fuels that are chemically identical to gasoline or diesel, avoiding the drawbacks of ethanol. At the Harvard Medical School, George Church (http://arep.med.harvard.edu/gmc/), a professor of genetics, is using the high-speed genetic splicing method that he developed for the Human Genome Project to produce new concepts of biofuels.

LS9, a San Francisco company founded by Church, makes what it calls "designer biofuels" by genetically re-engineering E. coli bacteria to feed on biomass and excrete fatty acids that are hydrocarbons.

LS9 mixes the engineered bacteria in vats of water with sugarcane, and the company says it can siphon the resulting biofuel off the top and put it straight into diesel gas tanks. The advantage, they say, is that these biofuels do not need the separate transport system required by ethanol, and can be produced from almost any biomass.

But such solutions still will require a massive amount of organic material, whether it is sugarcane or grass or waste wood. Church believes algae can be designed to skip the need for biomass, feeding off of sunlight and any source of carbon dioxide.

And he asserts that the science puzzle of how to create biofuels using organisms is largely finished. "Engineering microbes to make the hydrocarbons you want is a solved problem," he said in a recent interview at Harvard. "I think we know enough about metabolism that it can be handed off to an engineering team."

But the engineering is far from solved. Creation of large ponds for algae, for example, will require vast amounts of increasingly limited water. Some companies, such as Sapphire Energy in San Diego, say algae

can be developed to live in wastewater or saltwater so freshwater supplies are not tapped. Algae and other microorganisms can be finicky about temperature, can produce toxins, and the complications of growing vast amounts and harvesting biofuel from them are immense.

For example, GreenFuel Technologies, a spin-off from Harvard and Massachusetts Institute of Technology, was one of the most prominent and promising, using algae to convert industrial exhausts into biofuels. In 2007, algae in the company's Arizona greenhouse grew faster than it could be harvested. It died, one of several complications that beset GreenFuel; the company closed this spring after spending millions of dollars.

But some of energy's biggest players are convinced enough of the potential of biofuels to invest. Exxon Mobil, the oil behemoth, announced this month it would put up to $600 million in a biotech company founded by geonomics pioneer Craig Venter, who has been scouring the globe for rare microbes he hopes to implant in a new species he has called "Synthia." Chevron is working with a synthetic biology company to try to make biodiesel from synthetically altered algae, and DuPont already produces a commercial organic plastic using a synthetic organism.

Many of these companies are simply hedging their bets, spreading money on a variety of development efforts on the theory that something will work, says Zindler of New Energy Finance.

"There's a lot of moving pieces," he notes. "Which technology is best? Until we see a plant that actually produces fuel at scale and at an affordable rate, it's too soon to tell."

http://www.miller-mccune.com/business_economics/flora-to-fuel-my-car-1411

New Leaps in Research on Injuries

By GIA KOURLAS

WHEN dancers get tired, it's not supposed to show.

"I'm a sweater," the dancer Jerome Stigler warned at the New York University Langone Medical Center's Hospital for Joint Diseases, where, on a recent afternoon, driving a dancer to the point of exhaustion was the rather unusual goal. (There was, in the end, a lot of sweat.)

Taking part in a study by the Harkness Center for Dance Injuries, Mr. Stigler was wired with 22 reflective markers and electrodes on 10 muscles along his leg. A team of researchers, led by Marijeanne Liederbach, Harkness's director of research and education, scrutinized his every move during the two-hour session to document the role fatigue plays in the landing techniques of dancers and athletes.

Although the event was for research, Mr. Stigler's display was not unlike a performance. It helped that he had an audience. As Megan Richardson, a clinical specialist and research associate, monitored Mr. Stigler's muscle signals on a computer, Dr. Liederbach and others cheered. Clenching his teeth in agony, Mr. Stigler pulled his leg back against a weight.

"Pull back, pull back!" they hollered. "Even harder — go, go, go!" Then Ms. Richardson asked a question she repeated frequently throughout the session: "What is your fatigue, on a scale of zero to 10?" Mr. Stigler roared like a bear.

"I'm going to say 7," he said, panting. "No, I lied. It's 8. You got me with that one."

The Harkness Center initiated the study after Dr. Liederbach had overseen two others relating to injuries to the anterior cruciate ligament of the knee, or the A.C.L., in dance. One aspect those studies wanted to determine was whether men and women were afflicted at different rates. It has long been recognized that in sports that feature jumping, like basketball and soccer, a substantially higher percentage of women than men have A.C.L. injuries.

The first study methodically followed 298 dancers from four ballet and modern-dance organizations over a five-year period. Only 12 experienced A.C.L. ruptures, with no statistical difference between men and women. The second study evaluated landing techniques of 33 dancers (21 women and 12 men) and found no disparity between the male and female dancers' landing biomechanics. The full results of that second study will be released in the September issue of The American Journal of Sports Medicine.

"We realized that dancers aren't getting A.C.L. injuries, yet they jump a lot," Dr. Liederbach said. "Why are women in sports getting so many? We don't think this is about gender. We suspect this is more about the type or length of training and that women athletes can learn something from dancers about the way they train, the precision of their balance and jumping in terms of alignment and frequency and duration of training. We might be able to help women athletes preserve their A.C.L.'s."

As Dr. Liederbach sees it, part of the difference in injury rates between female dancers and female athletes is because of the way dancers land their jumps. "As much as there's a lot of buzz that dancers get hurt a lot," she said, "there was probably something dancers were doing rigorously for years in the way they master balance and jump, landing with mutual alignment and beautiful neuromuscular control, that is helping to protect them. As we looked more deeply at the characteristics of landing, we found that landing time — the way dancers land with a fully extended knee and make their way into the depth of a plié from the jump — is really generous."

In the third study, which is nearly three-quarters complete, the idea is to learn how deeply fatigue affects jump landings, a matter seemingly connected to the frequency of A.C.L. injuries. Dr. Liederbach discovered that although A.C.L. tears were infrequent among dancers, a common factor emerged when they did occur. Most came during performances near the end of a season and, typically, late at night after dancers had rehearsed all day.

For the study, participants like Mr. Stigler are required to execute three types of jumps in prefatigued and fatigued states. When it is completed, Dr. Liederbach will have tested 40 athletes and 40 dancers, in each case 20 men and 20 women. The next step is to find out whether there is a difference in the way dancers' fatigue compares with athletes' fatigue, and in the way women compare with men.

"Do the dancers still hold on?" Dr. Liederbach asked. "Do they erode differently under fatigue than athletes do? Or is fatigue an equal-opportunity variable?" There are inherent differences; athletes jump within the context of a game and not in a rehearsed choreographic exercise. Even so, the results of the study may help athletes and coaches understand the importance of jump training.

Women in sports often land with their knees in a valgus, or knock-kneed, position. Dancers, when airborne, stretch their legs. The tips of the toes make contact with the floor first, which allows a dancer to roll through the ball and heel incrementally as the foot maintains neutral alignment with the knee and hip joints. Years of training make the technique ingrained.

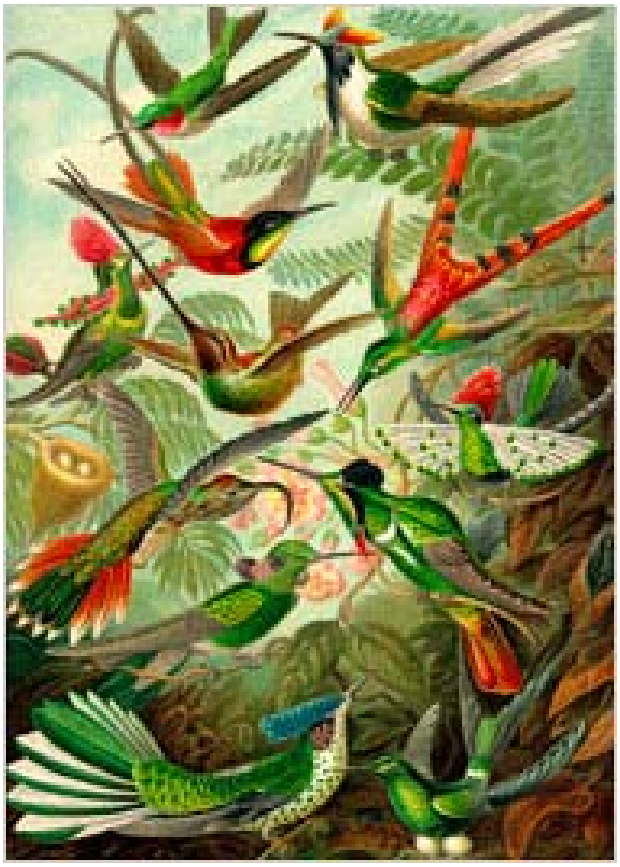
In keeping with its findings the center plans to produce a DVD, tentatively called "Land Like a Dancer." It will be directed not only to athletes but also to young dancers and to performers who don't specialize in ballet or modern dance and are inclined toward A.C.L. injuries.

"We suspect at the end of this study, if everything bears out, we will see dancers land characteristically different from athletes," Dr. Liederbach said. "There's a relationship between the length of time in training to the less risky landing position that makes common sense. It's something athletes could benefit from."

http://www.nytimes.com/2009/08/09/arts/dance/09kour.html?partner=rss&emc=rss

Reviving the Lost Art of Naming the World

By CAROL KAESUK YOON



One spring when I was a graduate student, I would go each Monday down into the bowels of the entomology building. There I would meet Prof. Jack Franclemont, an elderly gentleman always with little dog in tow, to be tutored in the ordering and naming of life — the science of taxonomy.

Professor Franclemont, a famed moth specialist, was perfectly old school, wearing coat and tie to give the day's lecture even though I was the only member of the audience. Quaintly distracted, he never quite got my name right, sometimes calling me Miss Loon or Miss Voon. After the talk, I would identify moths using a guide written in 1923, in silence or listening to stories of his dog's latest antics. I enjoyed the meditative pleasure of those hours, despite the fact that as the lone (and not terribly proficient) student of an aging teacher, I could not help feeling that taxonomy might be dying, which, in fact, it is.

Despite the field's now blatant modernity, with practitioners using DNA sequences, sophisticated evolutionary theory and supercomputers to order and name all of life, jobs for taxonomists continue to be in steady decline. The natural history collections crucial to the work are closeted or tossed.

Outside taxonomy, no one is much up in arms about this, but perhaps we should be, because the ordering and naming of life is no esoteric science. The past few decades have seen a stream of studies that show that sorting and naming the natural world is a universal, deep-seated and fundamental human activity, one we cannot afford to lose because it is essential to understanding the living world, and our place in it.

Anthropologists were the first to recognize that taxonomy might be more than the science officially founded by Carl Linnaeus, the Swedish botanist, in the 1700s. Studying how nonscientists order and name life, creating what are called folk taxonomies, anthropologists began to realize that when people

across the globe were creating ordered groups and giving names to what lived around them, they followed highly stereotyped patterns, appearing unconsciously to follow a set of unwritten rules. Not that conformity to rules was at first obvious to anthropologists who were instead understandably dazzled by the variety in folk taxonomies. The Ilongots, for example, a people of the Philippines, name gorgeous wild orchids after human body parts. There bloom the thighs, there fingernails, yonder elbows and thumbs. The Rofaifo people of New Guinea, excellent natural historians, classify the cassowary, a giant bird complete with requisite feathers and beak, as a mammal. In fact, there seemed, at first glance, to be little room even for agreement among people, let alone a set of universally followed rules. More recently, however, deep underlying similarities have begun to become apparent.

Cecil Brown, an anthropologist at Northern Illinois University who has studied folk taxonomies in 188 languages, has found that people recognize the same basic categories repeatedly, including fish, birds, snakes, mammals, "wugs" (meaning worms and insects, or what we might call creepy-crawlies), trees, vines, herbs and bushes.

Dr. Brown's finding would be considerably less interesting if these categories were clear-cut depictions of reality that must inevitably be recognized. But tree and bush are hardly that, since there is no way to define a tree versus a bush. The two categories grade insensibly into one another. Wugs, likewise, are neither an evolutionarily nor ecologically nor otherwise cohesive group. Still, people repeatedly recognize and name these oddities.

Likewise, people consistently use two-word epithets to designate specific organisms within a larger group of organisms, despite there being an infinitude of potentially more logical methods. It is so familiar that it is hard to notice. In English, among the oaks, we distinguish the pin oak, among bears, grizzly bears. When Mayan Indians, familiar with the wild piglike creature known as peccaries, encountered Spaniards' pigs, they dubbed them "village peccaries." We use two-part names for ourselves as well: Sally Smith or Li Wen. Even scientists are bound by this practice, insisting on Latin binomials for species.

There appears to be such profound unconscious agreement that people will even concur on which exact words make the best names for particular organisms. Brent Berlin, an ethnobiologist at the University of Georgia, discovered this when he read 50 pairs of names, each consisting of one bird and one fish name, to a group of 100 undergraduates, and asked them to identify which was which. The names had been randomly chosen from the language of Peru's Huambisa people, to which the students had had no previous exposure. With such a large sample size — there were 5,000 choices being made — the students should have scored 50 percent or very close to it if they were blindly guessing. Instead, they identified the bird and fish names correctly 58 percent of the time, significantly more often than expected for random guessing. Somehow they were often able to intuit the names' birdiness or fishiness.

The most surprising evidence for the deep-seatedness of taxonomy comes from patients who have, through accident or disease, suffered traumas of the brain. Consider the case of the university student whom British researchers refer to simply as J.B.R. Doctors found that upon recovering from swelling of the brain caused by herpes, J.B.R. could no longer recognize living things.

He could still recognize nonliving objects, like a flashlight, a compass, a kettle or a canoe. But the young man was unable to recognize a kangaroo, a mushroom or a buttercup. He could not say what a parrot or even the unmistakable ostrich was. And J.B.R. is far from alone; doctors around the world have found patients with the same difficulty. Most recently, scientists studying these patients' brains have reported repeatedly finding damage — a deadening of activity or actual lesions — in a region of the temporal lobe, leading some researchers to hypothesize that there might be a specific part of the brain that is devoted to the doing of taxonomy. As curious as they are, these patients and their woes would be of little relevance to our own lives, if they had merely lost some dispensable librarianlike ability to classify living things. As it turns out, their situation is much worse. These are people completely at sea. Without the power to order and name life, a person simply does not know how to live in the world, how to understand it. How to tell the carrot from the cat — which to grate and which to pet? They are utterly lost, anchorless in a strange

and confusing world. Because to order and name life is to have a sense of the world around, and, as a result, what one's place is in it.

Today few people are proficient in the ordering and naming of life. There are the dwindling professional taxonomists, and fast-declining peoples like the Tzeltal Maya of Mexico, among whom a 2-year-old can name more than 30 different plants and whose 4-year-olds can recognize nearly 100. Things were different once. In Linnaeus's day, it was a matter of aristocratic pride to have a wonderful and wonderfully curated collection of wild organisms, both dead and alive. Darwin (who gained fame first as the world's foremost barnacle taxonomist) might have expected any dinner-party conversation to turn taxonomic, after an afternoon of beetle-hunting or wildflower study. Most of us claim and enjoy no such expertise.

We are, all of us, abandoning taxonomy, the ordering and naming of life. We are willfully becoming poor J.B.R., losing the ability to order and name and therefore losing a connection to and a place in the living world.

No wonder so few of us can really see what is out there. Even when scads of insistent wildlife appear with a flourish right in front of us, and there is such life always — hawks migrating over the parking lot, great colorful moths banging up against the window at night — we barely seem to notice. We are so disconnected from the living world that we can live in the midst of a mass extinction, of the rapid invasion everywhere of new and noxious species, entirely unaware that anything is happening. Happily, changing all this turns out to be easy. Just find an organism, any organism, small, large, gaudy, subtle — anywhere, and they are everywhere — and get a sense of it, its shape, color, size, feel, smell, sound. Give a nod to Professor Franclemont and meditate, luxuriate in its beetle-ness, its daffodility. Then find a name for it. Learn science's name, one of countless folk names, or make up your own. To do so is to change everything, including yourself. Because once you start noticing organisms, once you have a name for particular beasts, birds and flowers, you can't help seeing life and the order in it, just where it has always been, all around you.

http://www.nytimes.com/2009/08/11/science/11naming.html?ref=science

The Earth Is Warming? Adjust the Thermostat

By JOHN TIERNEY

President Obama and the rest of the Group of 8 leaders decreed last month that the planet's average temperature shall not rise more than 2 degrees Fahrenheit above today's level. But what if Mother Earth didn't get the memo? How do we stay cool in the future? Two options:

Plan A. Keep talking about the weather. This has been the preferred approach for the past two decades in Western Europe, where leaders like to promise one another that they will keep the globe cool by drastically reducing carbon emissions. Then, when their countries' emissions keep rising anyway, they convene to make new promises and swear that they really, really mean it this time.

Plan B. Do something about the weather. Originally called geoengineering, this approach used to be dismissed as science fiction fantasies: cooling the planet with sun-blocking particles or shades; tinkering with clouds to make them more reflective; removing vast quantities of carbon from the atmosphere.

Today this approach goes by the slightly less grandiose name of climate engineering, and it is looking more practical. Several recent reviews of these ideas conclude that cooling the planet would be technically feasible and economically affordable.There are still plenty of skeptics, but even they have started calling for more research into climate engineering. The skeptics understandably fear the unintended consequences of tampering with the planet's thermostat, but they also fear the possibility — which I'd call a near certainty — that political leaders will not seriously reduce carbon emissions anytime soon. The National Academy of Sciences and Britain's Royal Society are preparing reports on climate engineering, and the Obama administration has promised to consider it. But so far there has been virtually no government support for research and development — certainly nothing like the tens of billions of dollars allotted to green energy and other programs whose effects on the climate would not be felt for decades.

For perhaps $100 million, climate engineers could begin field tests within five years, says Ken Caldeira of the Carnegie Institution for Science. Dr. Caldeira is a member of a climate-engineering study group that met last year at the Kavli Institute for Theoretical Physics under the leadership of Steven E. Koonin, who has since become the under secretary for science at the United States Department of Energy. The

group has just issued a report, published by the Novim research organization, analyzing the use of aerosol particles to reflect shortwave solar radiation back into space.

These particles could be lofted into the stratosphere to reproduce the effects of sulfate aerosols from volcanic eruptions like that of Mount Pinatubo in 1991, which was followed by a global cooling of nearly 1 degree Fahrenheit. Just as occurred after that eruption, the effects would wane as the particles fell back to Earth. Keeping the planet cooled steadily (at least until carbon emissions declined) might cost $30 billion per year if the particles were fired from military artillery, or $8 billion annually if delivered by aircraft, according to the Novim report.

The idea of even testing such a system scares many people, and some scientists argue that climate-engineering research should remain theoretical. But Dr. Caldeira says that small-scale testing — perhaps an experiment intended to slightly cool the Arctic — could be safer than the alternative.

"The worst-case scenario," he says, "is one in which you have an untested system that you need to deploy quickly at large scale in a desperate attempt to ward off some sort of climate crisis. It could be much better to start testing soon at small scale and to observe what happens as the system is deployed." The sooner we start, he reasons, the more delicately we can proceed.

"Because of natural variability in weather and climate, the smaller the experiment, the longer it needs to be observed for the signal to rise out of the noise," Dr. Caldeira says. "With short testing periods, you would need to hit the system with a hammer."Another way to cool the globe would be to spray seawater mist from ships up toward low-lying clouds, which would become brighter and reflect more sunlight away from Earth. (For details, see nytimes.com/tierneylab.) This cloud-brightening technology might counteract a century's worth of global warming for $9 billion, according to J. Eric Bickel and Lee Lane. They identified it as the most promising form of climate engineering in a report published Friday by the Copenhagen Consensus Center, which is sponsoring cost-benefit analyses of strategies for dealing with climate change.

Other researchers say that it is impossible to do a cost-benefit analysis of these engineering proposals because the potential downside is so uncertain — and large. Injecting aerosols into the stratosphere or brightening clouds would do more than just cool the planet. In a paper in the current Science, Gabriele C. Hegerl and Susan Solomon point to a drop in global precipitation after the eruption of Mount Pinatubo, and warn that climate engineering could lead to dangerous droughts.

A less risky form of climate engineering would be to gradually remove enough carbon dioxide from the atmosphere to keep the planet cool. Some experts argue that the technology already exists to make this "air-capture" method reasonably economical, and that its political advantages make it the most realistic long-term strategy. What politician wants to tamper directly with the climate and risk getting blamed for the next hurricane or drought? But if the climate does become dangerously warm, there could be enormous political pressure to do something quickly. And while it wouldn't be easy reaching international agreement on how to reset the planet's thermostat, in some ways it is less daunting than trying to negotiate a global carbon treaty. If rich European countries with strong green constituencies cannot live up to their own promises to cut carbon, how much hope is there of permanently enforcing tough restrictions in the United States, much less in poor countries like India and China? If even a few nations demur or cheat, the whole system can break down.

By contrast, climate engineering does not require unanimous agreement or steadfast enforcement throughout the world. Instead of relying on politicians' promises, we might find it simpler to deal directly with Mother Earth's hot air.

http://www.nytimes.com/2009/08/11/science/11tier.html?ref=science

Paul Root Wolpe
Scientist Tackles Ethical Questions of Space Travel

By CLAUDIA DREIFUS

Q. AS NASA'S CHIEF BIOETHICIST, WHAT DOES YOUR WORK INVOLVE?

A. I'm an adviser to the chief medical officer for the agency. I don't make decisions. Instead, I analyze situations and policies and offer bioethical perspectives on specific problems.

NASA does hundreds of research studies. Every astronaut who goes into space is, essentially, a human research subject. NASA's looking at the effects of weightlessness, of G-forces and radiation on the human body. One of the things I do is look over the research protocols and make sure they are in compliance with earth-bound regulations about informed consent and health and safety. I also try to help solve some of the thorny ethical problems of medical care for astronauts in space.

Q. WHAT WOULD BE AN EXAMPLE OF THAT?

A. According to OSHA regulations, workers — including astronauts — can only be exposed to a limited amount of radiation at their workplace over their lifetime. Humans in space are subjected to much more radiation than anyone on earth would be. So there was this one case where an astronaut was close to the limit of exposure because of space travel, and then he had medical radiation treatments for cancer.

Astronauts want to fly as much as possible. That's what they do. This one didn't want the medical radiation to count against the lifetime limit because it hadn't happened in the workplace. NASA had to weigh the letter of the law against the intent of the law. I said, "Exposure is exposure." The decision ultimately went that way.

Q. MOST BIOETHICISTS WORK IN HOSPITALS. HOW IS THE NASA JOB DIFFERENT?

A. In an earth-based medical situation, the priority is the health and well-being of the patient. On a spaceship, that has to be balanced with the health and well-being of the other crew members and the

success of the mission itself. Ethics in space are more of a balancing act. You need to weigh a series of priorities and figure out which is paramount.

Imagine you had a severely injured astronaut on the surface of Mars — or a dead body. American soldiers will put themselves at great risk to retrieve a dead body. On Mars, you have a different situation. You might be endangering the entire mission by trying to retrieve the body. In that case, you might recommend that it be left behind, even if that is against our ethical traditions.

Or what do you do if someone has a psychotic episode while in space?

I've written that there has to be medication and restraints on the craft. If you have to restrain the person for a long period of time, you have to do it. You can't thank the person for their service to the country and put them out into space. You can't medicate them to insensibility for a year and a half. You have to find a reasonable way to manage the situation.

Q. YOU MENTIONED EARLIER THAT NASA DOES BIOMEDICAL RESEARCH IN SPACE. HOW DO THE ASTRONAUTS FEEL ABOUT BEING RESEARCH SUBJECTS?

A. For the most part, they want to help. There have been some who, in some situations, have refused. They are covered by something called the Common Rule, which includes the right to withdraw from an experiment at any time or to refuse to participate, without penalty — as any human research subject in the United States would be.

Astronauts have refused experiments that interfered with their getting enough sleep while in space — it's very hard to sleep in microgravity. Others opted out because they were concerned that medical information collected on them couldn't really be private and might interfere with their getting health insurance after retirement. But on a flight with seven people, if one opts out, you've cut your research population significantly. This led an advisory panel to suggest a "modification of the interpretation" of the Common Rule for astronauts.

I thought that the Common Rule was our most basic protection for human research subjects and said it was a mistake to erode it. I recommended that what NASA should do is continue to increase something they'd already started to do — involve the astronauts in every level of the research process. For a reasonable concern like health insurance, I suggested that NASA offer lifetime insurance to the astronauts, which they are trying to now do. It's a comparatively low-cost way to solve a problem. To this date, there's been no modification of interpretation of the Common Rule for astronauts.

Q. WHAT WAS THE MOST UNUSUAL QUESTION NASA HAS POSED TO YOU?

A. It wasn't an ethical question, it was a religious one. My father, the late Gerald Wolpe, was a rabbi, as are two of my brothers. There had been an Israeli on the crew of the Columbia shuttle. After it broke up, NASA wanted to know about Jewish religious standards in regard to gathering and interring remains. NASA teams were recovering pieces of bodies on the ground in Texas and Louisiana, much of it unidentifiable. And NASA wanted to know if the Israeli government would want only Ilan Ramon's flesh returned to it because, if so, NASA would have to do genotyping of every piece of tissue. That would take months.

I told them there were countervailing values. In Judaism you bury the body as soon as possible. I didn't think the Israelis would want to have months and months pass.

I've since heard that a lot of the tissue buried in the various graves of these astronauts was unidentified. There's something touching that some of what is buried in each of their resting places is tissue from all of them.

Q. DID YOUR BECOMING A BIOETHICIST HAVE ANYTHING TO DO WITH YOUR FATHER'S WORK?

A. I think so. He was very involved in bioethics, even before it was a recognized field of study. He taught a course about death and dying at a medical school. At a time when there were few dialysis machines for people with kidney disease, he was on a state commission to decide who could get priority access to them. All of that came home in 1986, when my mother had a stroke and he became her primary caregiver. It made the whole family even more aware of the stresses caregivers suffer.

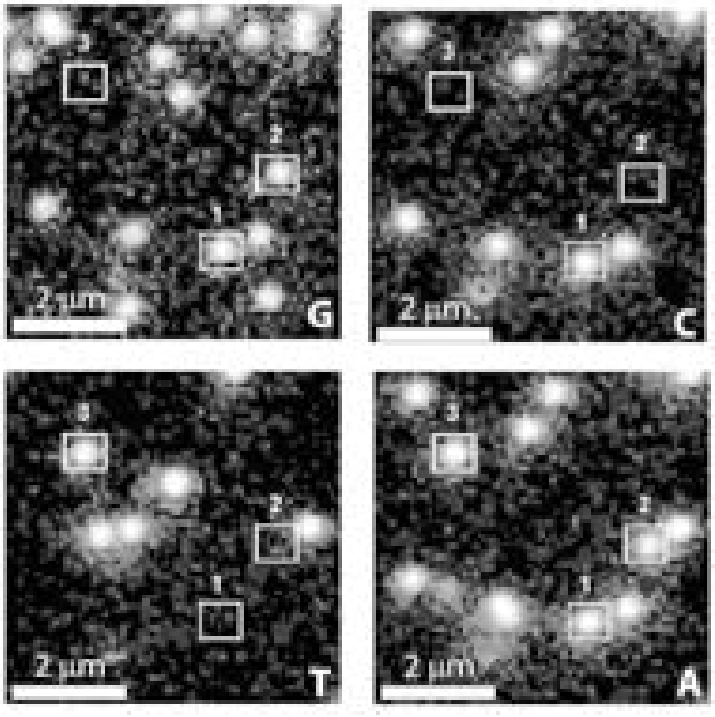
I was in graduate school at the time this happened, studying medical sociology. But I could see that this new field, bioethics, was rapidly developing. It combined everything I loved: medicine, the life sciences and the ethics I'd grown up with. For me, it was the perfect fit.

Paul Root Wolpe, 52, is a medical sociologist and bioethicist who directs the Center for Ethics at Emory University and is the first chief of bioethics for NASA. We spoke this summer in New York after Dr. Wolpe appeared at the World Science Festival and then again in Philadelphia. An edited and condensed version of the two conversations follows.

http://www.nytimes.com/2009/08/11/science/space/11conv.html?ref=science

Cost of Decoding a Genome Is Lowered

By NICHOLAS WADE



A Stanford engineer has invented a new technology for decoding DNA and used it to decode his own genome for less than $50,000.

The engineer, Stephen R. Quake, says the low cost "will democratize access to the fruits of the genome revolution" by enabling many labs and hospitals to decode whole human genomes.

Until now only companies or genome sequencing centers, equipped with large staffs and hundreds of machines, have been able to decipher the three billion units in a human genome.

Dr. Quake's machine, the Heliscope Single Molecule Sequencer, can decode or sequence a human genome in four weeks with a staff of three people. The machine is made by a company he founded, Helicos Biosciences, and costs "about $1 million, depending on how hard you bargain," he said.

Only seven human genomes have been fully sequenced. They are those of J. Craig Venter, a pioneer of DNA decoding; James D. Watson, the co-discoverer of the DNA double helix; two Koreans; a Chinese; a Yoruban; and a leukemia victim. Dr. Quake's seems to be the eighth full genome, not counting the mosaic of individuals whose genomes were deciphered in the Human Genome Project.

An article describing the decoding of Dr. Quake's genome, reported Monday in Nature Biotechnology, shows the degree of overlap between the DNA variations in his own genome and those in Dr. Venter's and Dr. Watson's.

For many years DNA was sequenced by a method that was developed by Frederick Sanger in 1975 and used to sequence the first human genome in 2003, at a probable cost of at least $500 million. A handful of next-generation sequencing technologies are now being developed and constantly improved each year. Dr. Quake's technology is a new entry in that horse race.

Dr. Quake calculates that the most recently sequenced human genome cost $250,000 to decode, and that his machine brings the cost to less than a fifth of that.

"There are four commercial technologies, nothing is static and all the platforms are improving by a factor of two each year," he said. "We are about to see the floodgates opened and many human genomes sequenced."

He said the much-discussed goal of the $1,000 genome could be attained in two or three years. That is the cost, experts have long predicted, at which genome sequencing could start to become a routine part of medical practice.

The impediment to the medical use of genomes, however, is fast becoming not the technology but the ability to understand and interpret what the technology reveals.

The quest to uncover the genetic roots of complex diseases like cancer, diabetes or Alzheimer's, a primary goal of the Human Genome Project, recently stalled. Most of those diseases turn out to be caused not by a few common variants, as many biologists expected, but by an unmanageable number of rare variants, offering for the most part no clear target for drugs or diagnosis.

That genetic complexity has thrown into disarray many plans for personalized medicine, because for complex diseases and traits there is no obvious way to predict the status of a whole person from his DNA sequence.

There is much better knowledge about the genetic basis of many simple diseases — those caused by a single genetic variant — but most of those diseases are rare and account for a small fraction of the overall burden of disease.

Still, people trying to analyze their own DNA sequence are likely to find one or more of the single gene disease variants because those are the only ones understood so far.

Dr. Quake said that analysts were annotating his genome and had found a variant associated with heart disease. Fortunately, Dr. Quake inherited the variant from only one parent; his other copy of the gene is good.

"You have to have a strong stomach when you look at your own genome," he said.

Dr. Quake said he was making his genome sequence public, as Dr. Venter and Dr. Watson have done, to speed the advance of knowledge.

"Scientists have a strong ethic for sharing data," he said. "Venter's and Watson's genomes were incredibly helpful in analyzing mine, and I hope mine will have the same utility for others."

Some experts believe the way around the current impasse in understanding the roots of complex disease will lie in sequencing the whole genomes of many people, including patients suffering from specific diseases. Cheaper methods of sequencing should help toward achieving that goal.

George Church, a leading biotechnologist at the Harvard Medical School, said that for clinical genetics, DNA sequences needed to be decoded with an accuracy of only one error in every 10,000 to 100,000 DNA units. Dr. Quake said his machine had an accuracy of one error in every 20,000 units.

A real breakthrough in technology, Dr. Church said, would be the ability to sequence a human genome for $5,000 with an accuracy of one error per 100,000 units.

Dr. Quake's DNA sequencing machine, about the size of a refrigerator, works by splitting the double helix of DNA into single strands and breaking the strands into small fragments that on average are 32 DNA units in length.

The pieces of DNA are then captured on a glass slide. On each of those tethered strands a new helix is built up unit by unit in a way that generates light. The addition of each unit is recorded by a microscope in the machine, which can follow a billion DNA fragments at a time. Because the two strands of a DNA double helix are complementary, the sequence of new units that attach to each growing strand reveals the identity of the units on the tethered strand.

A computer program then matches the billions of 32-unit fragments to the completed human genomes already on file and records the sites at which there are additions or deletions to the standard sequence, or a different DNA unit from the one most common in the population. The full set of those differences is what makes each individual unique.

http://www.nytimes.com/2009/08/11/science/11gene.html?ref=science

Five-Second Touch Can Convey Specific Emotion, Study Finds

By NICHOLAS BAKALAR

Researchers have found experimental evidence that a touch can be worth a thousand words, that fleeting physical contact can express specific emotions — silently, subtly and unmistakably.

Scientists led by Matthew J. Hertenstein, an associate professor of psychology at DePauw University, recruited 248 students, each to touch or be touched by a partner previously unknown to them to try to communicate a specific emotion: anger, fear, happiness, sadness, disgust, love, gratitude or sympathy.

The person touched was blindfolded and ignorant of the sex of the toucher, who was instructed to try to convey one of the eight emotions, and both participants remained silent. Forty-four women and 31 men touched a female partner, while 25 men and 24 women touched a male partner.

Afterward, each person touched was given the list of eight emotions and told to pick the one conveyed. There was also a ninth choice, "none of these terms are correct," to eliminate the possibility of forcing a choice of emotion when none were truly felt.

The touchers were instructed to touch any appropriate part of the body, and they chose variously to touch the head, face, arms, hands, shoulders, trunk and back.

Accurate understanding ranged from 50 percent to 78 percent, much higher than the 11 percent expected by chance and comparable to rates seen in studies of verbal and facial emotion.

The researchers also recorded a complex vocabulary of touch — a shake, a rub, a pat or a squeeze, small changes in the amount of pressure applied, variations in the abruptness of the stroke, changing rates at which the fingers moved across the skin, and differences in the location and duration of the contact.

Tiffany Field, director of the Touch Research Institute at the University of Miami, was impressed with the work. "This information is very interesting, and does add to the science of emotion and communication."

But, she continued: "It's unlikely we'd use touching as a means of expression with strangers. It's reserved to intimate kinds of interactions."

Dr. Field was not involved in the study, which will appear in the August issue of the journal Emotion.

Participants consistently chose certain kinds of touch to convey specific emotions. They often expressed fear, for example, by holding and squeezing with no movement, while sympathy required holding, patting and rubbing.

Men and women were equally adept at interpreting touch but used different actions to communicate emotions. Men rarely touched anyone's face, and then only to express anger or disgust at women, and sympathy for other men. Women, on the other hand, touched faces frequently to express anger, sadness and disgust to both sexes, and to convey fear and happiness to men.

The evolutionary reasons for such a communication system are unknown, but the authors suggest that they may have the same origin as the social grooming rituals of other primates. The authors acknowledge that their data were limited to a sample of young Americans, and that cultural differences may play an important role.

Still, Dr. Hertenstein said: "These findings have strong implications for the power of touch. Most touches were only about five seconds, but in these fleeting moments, we're capable of communicating distinct emotions, just as we are with the face. This is a sophisticated differential signaling system that we haven't previously known about."

http://www.nytimes.com/2009/08/11/science/11touch.html?ref=science

Beetroot juice 'boosts stamina'

Drinking beetroot juice boosts stamina and could help people exercise for up to 16% longer, a UK study suggests.

A University of Exeter team found nitrate contained in the vegetable leads to a reduction in oxygen uptake - making exercise less tiring.

The small Journal of Applied Physiology study suggests the effect is greater than that which can be achieved by regular training.

Beetroot juice has previously been shown to reduce blood pressure.

" **We were amazed by the effects of beetroot juice** "
Professor Andy Jones University of Exeter

The researchers believe their findings could help people with cardiovascular, respiratory or metabolic diseases - and endurance athletes.

They focused on eight men aged 19-38, who were given 500ml per day of organic beetroot juice for six consecutive days before completing a series of tests, involving cycling on an exercise bike.

On another occasion, they were given a placebo of blackcurrant cordial for six consecutive days before completing the same cycling tests.

After drinking beetroot juice the group was able to cycle for an average of 11.25 minutes - 92 seconds longer than when they were given the placebo.

This would translate into an approximate 2% reduction in the time taken to cover a set distance.

The group that had consumed the beetroot juice also had lower resting blood pressure.

Mechanism unclear

The researchers are not yet sure of the exact mechanism that causes the nitrate in the beetroot juice to boost stamina.

However, they suspect it could be a result of the nitrate turning into nitric oxide in the body, reducing how much oxygen is burned up by exercise.

Study researcher Professor Andy Jones - an adviser to top UK athlete Paula Radcliffe - said: "We were amazed by the effects of beetroot juice on oxygen uptake because these effects cannot be achieved by any other known means, including training.

"I am sure professional and amateur athletes will be interested in the results of this research.

"I am also keen to explore the relevance of the findings to those people who suffer from poor fitness and may be able to use dietary supplements to help them go about their daily lives."

Professor John Brewer, an expert on sports science at the University of Bedfordshire, said: "These findings are potentially exciting for many people involved in sport and exercise, but will almost certainly require further more extensive studies before the exact benefits and mechanisms are understood.

"We must also remember that exercise and training and a sensible diet will always remain as the essential ingredients for a balanced and healthy lifestyle."

Dr Simon Marshall, of the University of San Diego, has carried out work on exercise and health.

He said much more work was needed involving many more subjects to draw firm conclusions.

"Certainly, a diet high in nitrate-rich fruits and vegetables is good for your heart health and this study provides further evidence of this."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8186947.stm

Published: 2009/08/06 23:01:12 GMT

Scientists find an itchiness cell

US scientists have pinpointed a type of nerve cell in mice which appears to generate the itch sensation.

The finding suggests itching is not simply a low-level variation of pain - but a distinct sensation.

A team from Washington University found itch and pain signals seem to be transmitted along different pathways in the spinal cord.

The study, published online by the journal Science, raises hopes of new treatments for itching.

Many scientists have regarded itching as just a less intense version of pain.

" **It could pinpoint targets for future treatments for itch, a common and sometimes debilitating condition produced by more than 50 diseases** "
Dr Glenn Giesler University of Minnesota

They spent decades searching in vain for itch-specific nerve cells to explain how the brain perceives itch differently from pain.

The latest study finally pinpoints these cells - but shows that the low-level pain theory was wrong.

The researchers were able to knock out the itch response in mice without affecting the animals' ability to sense pain and attempt to avoid it.

Lead researcher Dr Zhou-Feng Chen said: "This finding has very important therapeutic implications.

"We have shown that particular neurons are critical for the itching sensation but not for pain, which means those cells may contain several itch-specific receptors or signalling molecules that can be explored or identified as targets for future treatment or management of chronic itching."

First gene

The same team identified an "itch gene", called GRPR, in 2007.

This time, they injected the spinal cord of mice with a toxin that killed off cells in which the gene was active.

ITCHING
- There are many causes of itch, including more than 50 diseases including shingles, Aids, gallbladder problems and Hodgkin's Disease
- The itch produced by many diseases can greatly affect quality of life and cannot always be treated
- It is not clear that itch serves any clear purpose in many cases

By doing this they were able to eliminate the scratch response in some animals completely.

However, the same animals continued to respond normally to pain.

This showed that the key cells were active in transmitting the sensation of itching, but not the sensation of pain.

There are two major types of itching. One, caused by bug bites or allergic reactions, is linked to the presence of the chemical histamine.

But most chronic, severe itching is not linked to the chemical - and does not respond to standard anti-histamine treatment.

However, mice whose itch cells had been destroyed did not scratch, regardless of the type of itching agent to which they were exposed.

Dr Glenn Giesler, an expert in itch at the University of Minnesota, said: "I believe this work is very important.

"It could pinpoint targets for future treatments for itch, a common and sometimes debilitating condition produced by more than 50 diseases."

However, Professor Gil Yosipovitch, another expert in the field at Wake Forest University in North Carolina, said the pathway uncovered by the latest study was not the only one that could transmit the itch sensation.

He said other work suggested there were other pathways which transmitted both the sensations of itch and pain.

He also warned that there was a long way to go from work on mice to the development of new drugs for humans.

However, he added: "It could surely help develop new treatments for itch.

"As yet there are no general purpose anti-pruritic (anti-itch) drugs that target the neural system."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8183516.stm

Published: 2009/08/06 23:01:19 GMT

Men with angina 'at greater risk'

Men with angina are much more likely than women to develop further serious heart problems, a study suggests.

Researchers found male patients were twice as likely to have a heart attack and almost three times as likely to suffer a heart disease-related death.

Angina, a type of chest pain, is common and can be the first sign of heart disease - but the risks are unclear.

The study of UK patients, led by the National University of Ireland, Galway, appears in the British Medical Journal.

Angina is caused by insufficient supply of blood to the heart muscle.

Recent estimates suggest that 4.8% of men and 3.4% of women aged over 16 in England have angina.

In Scotland, the figures are higher: 6.6% of men and 5.6% of women.

The Irish team identified 1,785 patients in Scotland who were diagnosed with angina between January 1998 and December 2001, and tracked their progress for five years.

They found being male, older and a smoker was associated with an increased risk of having a heart attack.

The same factors - along with obesity - were also associated with a higher risk of dying from heart disease.

Men were also more likely than women to undergo angioplasty to open up blocked arteries, or to have coronary artery bypass surgery.

Lead researcher Dr Brian Buckley said the reasons why men appeared more at risk were unclear.

Some believe the problem could be that men are less likely to follow medical advice following diagnosis.

Others suspect that men do not go to their doctor until their condition is more advanced.

Women are also thought to receive some protection from the sex hormone oestrogen.

Dr Buckley said: "We need to look at what the hell is happening here rather more closely than we have in the past.

"Hopefully, our study has demonstrated that men are at more risk -so indisputably, that more research will take place looking at why."

He said the main message from the study was that people with angina should take steps to improve their lifestyle to minimise risk of more serious disease.

He said: "If you are diagnosed with angina, you should not panic - it won't necessarily end up in a heart attack - but you ought to take what the doctor says to you seriously, both in terms of taking medication and adopting a healthier lifestyle."

Dr Mike Knapton, associate medical director of the British Heart Foundation, said the study was important because it was based on large numbers of people living in the community, rather than in a hospital setting.

He said: "It confirms that smoking and being obese greatly up your risk of dying from heart disease.

"This is good news for people living with angina, as it shows that it's never too late for them to change their lifestyles, or to stop smoking."

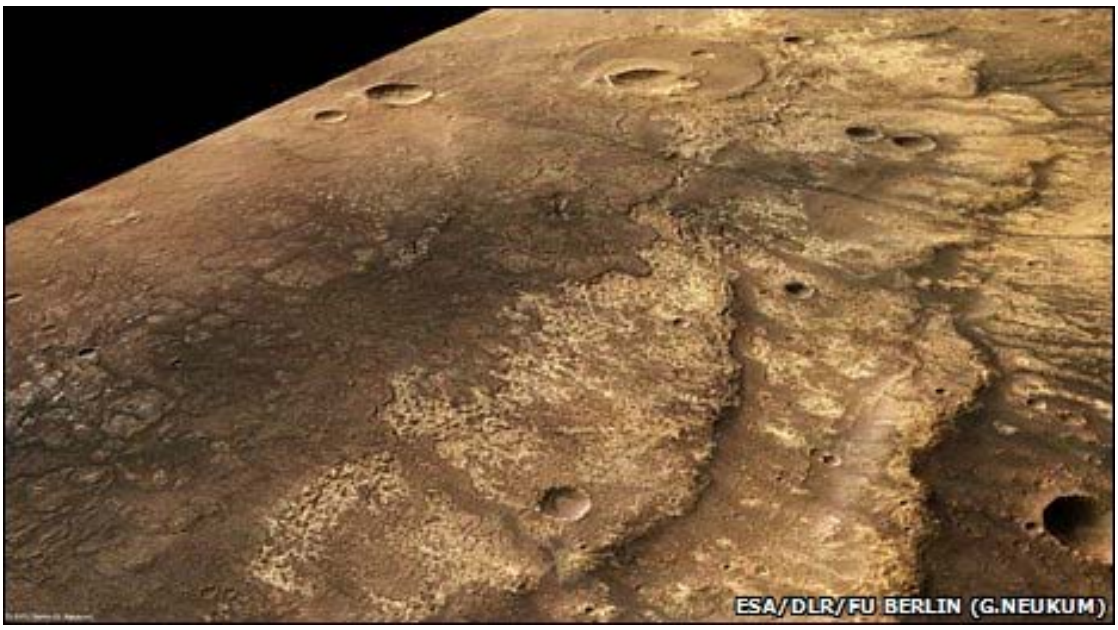
The research was carried out in collaboration with the University of Aberdeen.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8186456.stm

Published: 2009/08/06 23:01:25 GMT

Martian methane mystery deepens
By Judith Burns
Science reporter, BBC News

Methane on Mars is being produced and destroyed far faster than on Earth, according to analysis of recent data.



Scientists in Paris used a computer climate model for the Red Planet to simulate observations made from Earth.

It shows the gas is unevenly distributed in the Martian atmosphere and changes with the seasons.

The presence of methane on Mars is intriguing because its origin could either be life or geological activity - including volcanism.

Writing in the journal Nature, Franck Lefevre and Francois Forget from the Universite Pierre et Marie Curie in Paris describe how they used a computer model of the Martian climate to reconstruct observations made by a US team.

" **If the measurements are correct, we must be missing something quite important** "
Franck Lefevre, Universite Pierre et Marie Curie

Dr Lefevre says the chemistry of the Martian atmosphere is still a mystery.

He told BBC News: "We put the dynamics and chemistry as we know it in the model and tried to match the measurements, to reproduce the uneven distribution they saw from Earth."

"The problem is if we just take into account the photochemistry as we know it on Earth and if we put it in the model, then we cannot reproduce the model and that was a surprise."

"The current chemistry as we know it is not consistent with the measurements of methane on Mars."

"There is something else going on, something that lowers the methane lifetime by a factor of 600. So if the measurements are correct, we must be missing something quite important."

Dr Lefevre says the work shows that if there is a much faster loss for methane on Mars there must also be a much stronger production of methane.

But he urges caution: "It's a real challenge to measure methane on Mars from Earth and we've got only one example of this uneven distribution."

The results the French team used were published in January this year in the journal Science. They were gathered by an American team using a technique called infrared spectroscopy at three different ground-based telescopes to monitor about 90% of the planet's surface.

In 2003 "plumes" of methane were identified. At one point, the primary plume of methane contained an estimated 19,000 tonnes of the gas.

Dr Michael Mumma, director of Nasa's Goddard Center for Astrobiology and lead author on the previous paper, told BBC News it was vital to understand how methane was destroyed on Mars and to explain how so much of the gas is produced and destroyed so quickly on the Red Planet.

Dr Mumma does not rule out a biological explanation for the phenomenon but says it is possible that geology alone could be responsible.

If the methane is produced by geological activity, it could either originate from active Martian volcanoes or from a process called serpentinisation.

The latter process occurs at low temperatures when rocks rich in the minerals olivine and pyroxene react chemically with water, releasing methane.

In December, Dr Mumma's team will begin another study of the Martian surface using the new technique of adaptive optics at the European Southern Observatory's Very Large Telescope (VLT) in Chile. They hope to replicate their earlier results.

Dr Lefevre says that if the variations are confirmed it would mean the Martian surface is very hostile for organics. But this would not necessarily exclude the possibility that life or the remnants of past life persist below ground, where conditions could be more benign.

Nasa is due to launch a $2.3bn nuclear-powered rover known as Mars Science Laboratory (also called "Curiosity") to the planet in 2011.

Under one possible scenario, the European and US space agencies would then send a European orbiter to the Red Planet in 2016 to track down the sources of methane.

A subsequent 2018 launch opportunity would be taken by the European ExoMars rover, launching on a US Atlas rocket. The proposal currently being discussed is that ExoMars should be joined by a slightly smaller rover in the class of the US Spirit and Opportunity vehicles that are on the surface today.

ExoMars and its smaller cousin could be targeted at the Methane sources identified by the 2016 orbiter.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8186314.stm

Published: 2009/08/05 17:17:20 GMT

Cannibalism theory over bone find

A human bone found in Devon with tool cuts thought to have been made during a ritual ceremony 9,000 years ago may be evidence of cannibalism.

Torquay Museum staff identified the arm bone as they documented animal remains discovered in Kents Cavern in Torquay.

The bone's marks are thought to have been made by stone tools and could indicate a ritual - or that the victim was devoured by other people.

The caves are the oldest Scheduled Ancient Monument in Britain.

The bone was first unearthed in 1866 by archaeologist William Pengelly, who spent 15 years excavating the cavern.

It was put into storage in the museum and "rediscovered" in December 2008.

It was found as part of a cataloguing programme, which has been examining about 15,000 animal bones excavated from the cavern that had been housed in the museum's store.

The museum's researchers found the butchered bone in June, and, working with the University of Oxford's School of Archaeology and Radiocarbon Accelerator Unit, identified it as a fragment of human arm bone.

It was then radiocarbon dated to 8,185 years BP [Before Present, an archaeological term meaning before 1950].

Tom Higham, from the radiocarbon unit, said: "The bone was particularly well preserved and the result is seen as very reliable."

Dr Rick Schulting, of the University of Oxford's School of Archaeology, said: "Finds like this highlight the complexity of mortuary practices in the Mesolithic (Middle Stone Age), many thousands of years before the appearance of farming, which is more usually associated with complex funerary behaviour."

The museum said only one other site in Britain had yielded similar human remains with cut marks of this age - Gough's Cave at Cheddar Gorge.

"Some archaeologists have interpreted these marks as evidence of cannibalism, but ritual burial practice or dismemberment for transportation has not been ruled out," a museum spokesman said.

Archaeological digs there have unearthed a 37,000-year-old human jawbone and stone tools that were more than 40,000 years old.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/england/devon/8188406.stm

Published: 2009/08/07 08:22:04 GMT

Clever rooks repeat ancient fable
By Rebecca Morelle
Science reporter, BBC News

One of Aesop's fables may have been based on fact, scientists report.

In the tale, written more than 2,000 years ago, a crow uses stones to raise the water level in a pitcher so it can reach the liquid to quench its thirst.

Now a study published in Current Biology reveals that rooks, a relative of crows, do just the same when presented with a similar situation.

The team says the study shows rooks are innovative tool-users, even though they do not use tools in the wild.

Another paper, published in the journal Plos One, shows that New Caledonian crows - which like rooks, are a member of the corvid group, along with ravens, jackdaws, magpies and jays - can use three tools in succession to reach a treat.

Floating feast

The crow and the pitcher fable was used by Aesop to illustrate that necessity is the mother of invention. But until now, the morality tale was not thought to have a grounding in fact.

" **Nowadays, we've had so many startling findings that the rooks just don't surprise me that much any more. You almost expect them to do the cleverest thing** "
Nathan Emery, QMUL

To investigate further, a team from the University of Cambridge and Queen Mary, University of London (QMUL) presented four captive rooks with a set-up analogous to the fable.

The birds were shown a clear tube containing a small amount of water. Floating upon it was an out-of-reach worm. And a pile of stones was positioned nearby.

Dr Nathan Emery, co-author of the paper, from QMUL, said: "The rooks have to put multiple stones in the tube until the worm floats to the top."

And the four birds did just that. Two, called Cook and Fry, raised the water-level enough to grab the floating feast the very first time that they were presented with the test, while Connelly and Monroe were successful on their second attempt.

Footage of the experiments shows the rooks first assessing the water level by peering at the tube from above and from the side, before picking up and dropping the stones into the water.

The birds were extremely accurate, using the exact number of stones needed to raise the worm to a height where they could reach it.

In another experiment, the rooks were presented with a similar scenario. This time they were given a combination of small and large stones.

Overall, Dr Emery told BBC News, the rooks opted for the larger ones, raising the worm to the top of the tube more quickly.

He said: "They are being as efficient as possible."

And when given a choice between a tube filled with water and another filled with sawdust, the birds were more likely to opt for the liquid-filled tube.

The researchers say their findings suggest that Aesop's ancient fable may have been based on fact.

They said: "In folklore, it is rarely possible to know with certainty which corvid is being referred to.

"Hence, Aesop's crow might have easily been Aesop's rook."

'No surprise'

Earlier this year, the same team revealed that rooks were able to use different tools to solve a variety of complex problems.

Dr Emery told BBC News: "I used to say, maybe two or three years ago, that everything they did surprised me.

"But nowadays, we've had so many startling findings that the rooks just don't surprise me that much any more. You almost expect them to do the cleverest thing."

The only other animals reported to have solved an Aesop-like problem are orangutans.

Christopher Bird, co-author on the paper, added: "Corvids are remarkably intelligent, and in many ways rival the great apes in their physical intelligence and ability to solve problems."

A different study published this week has also shed light on corvid intelligence.

A team at the University of Oxford found that New Caledonian crows were able to use three tools in succession to reach a reward.

These birds, which are found on the Pacific island of New Caledonia, use tools in the wild, crafting them from branches to pluck grubs from holes and crevices.

But this study builds on their tool-using repertoire.

Captive crows were presented with several horizontal tubes. One of the tubes contained some out-of-reach food. The others contained long and medium-length hooks - but, again, these were all out of beak's reach. And a shorter hook-like tool was positioned nearby.

The researchers found that the birds picked up the short tool, then used this to grasp the medium-length tool, which they then employed to retrieve the longest tool from the tube. Finally, they were able to use this to drag out the tasty morsel.

Four out of seven of the birds tested were able to use three tools in the right order, the team said.

Professor Alex Kacelnik, an author on the paper from Oxford's Behavioural Ecology Group, said: "The essence of our paper is to try to understand the mental processes used by the animals to actually achieve their goals."

He said that the complexity of the task made it unlikely that the crows were solving the problem using trial and error.

He added: "We are aware that the animals probably do it by putting together, in creative ways, things that they have learned individually."

Researchers believe that an ancient ancestor of the corvids might have evolved the capacity to use tools, and that all members of the corvid family may have this innate ability.

However, only New Caledonian crows draw upon it in the wild, potentially because of ecological pressures.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8181233.stm

Published: 2009/08/06 16:39:16 GMT

Stunning 'AquaIris' Water Purifier by Talia Radford

by Daniel Flahiff

In answer to the ever-intensifying global water crisis, industrial designer Talia Radford has created the AquaIris, an elegant, portable water purifier for developing countries with tropical climates that is simple to use and requires no electricity! How does it work? Contaminated water enters the AquaIris, passes over a removable/re-usable filter, then travels under a layer of 'converter crystals' where germicidal UVC rays purify the water molecules as they pass by.At Inhabitat we believe that great design can change the world for the better and Talia Radford's AquaIris is a brilliant example of inspired design in the service of an important issue - 1 in 6 people do not have access to safe, clean drinking water. The AquaIris is portable and easy to use; the directions are even printed right on the lanyard. The form, which echos the hexagon — 'the geometry that water molecules form travelling in pairs within the body' — is simple, elegant and beautiful enough to be discovered at Cooper-Hewitt.

There is some debate about the science behind the AquaIris. Chatter on Radford's blog has questioned the 'converter crystals' and the proposed effectiveness of UVC purification through/in plastics and/or glass, particularly on cloudy or overcast days. Regardless, we love the AquaIris. Once the kinks are worked-out we hope to find it in production — and saving lives — soon. We are not alone in our admiration. Like the Contortionist folding bike we brought you earlier, the AquaIris has been shortlisted for a James Dyson Award, a well-deserved honor. Good luck!

+ Talia Radford

http://www.inhabitat.com/2009/08/05/stunning-aquairis-water-purifier-by-talia-radford/

August 3, 2009

San Francisco Transforming Toxic Site into UN Global Warming Center
by Ariel Schwartz

The Hunter's Point Shipyard in San Francisco is a former naval shipyard filled with radiation and industrial toxins. It's so dangerous that the U.S. Environmental Agency has designated it as one of the most polluted sites in the nation. But instead of letting the site fester, San Francisco has just announced plans to rid the shipyard of its toxins and build the U.N. Global Compact Center, a world class climate change think tank and green tech incubator. Due for competition in 2012, the new development will comprise over two million square feed of LEED-certified space.

The city hopes to begin construction in 2011 and when complete, the $20 million, 80,000 square foot center will feature UN Global Compact offices, a clean tech incubator, and a conference center. It will, according to Mayor Gavin Newsom, "serve as an anchor for other sustainable businesses at the Shipyard in much the same way that the University of California and the Stem Cell Institute have anchored Mission Bay's burgeoning biotech and life sciences cluster." Translation: the center will hopefully lead to a fresh crop of sustainability-focused businesses in the same area.

There are still some snags to overcome before the center can be built; toxins aren't projected to be completely cleaned out of the area until the middle of 2012, and it will be a stretch for San Francisco to finish construction the same year. Regardless, the U.N. Global Compact Center will serve as an example of how toxic Superfund sites can be transformed into centers of innovation and inspiration.

http://www.inhabitat.com/2009/08/03/un-building-a-global-warming-think-tank-in-san-francisco/

TREETOP OFFICE: Eat Your Heart Out, Cubicle Warrior

by Bridgette Meinhold

One look at this office nestled amid the treetops and you might contemplate how to change your life in order to have a workspace with such an incredible view. Peter Frazier, a customer experience consultant, decided after years of working at an office and gaining over 50 pounds that he needed to make a change in his life - so he built this incredible office in the woods. Set amongst the trees above Chuckanut Bay in Bellingham, Washington, his lofted cube serves as a workspace and guest room, and it has a green roof on top too.

The gorgeous office sits below the main house and is nestled into the trees to blend in to its environs. With glass on three sides of the cube and a cantilevered deck overlooking the Bay, Frazier has plenty of inspiration from his desk. The green roof on top helps insulate the little office as well as camouflage it within the forest - from above the cube would practically disappear.

Frazier knows for certain that his home office helps him lead a healthier lifestyle. He eliminates his commute by working from home, has more time for his family and to spend outdoors, and has devised a better system for working. To avoid back and sciatica problems Frazier works standing up, which probably also gives him a better view of the ocean. His desk consists of a plank of cedar, and there are no extra desk chairs, lamps or extraneous items in this simple and uncluttered office space.

http://www.inhabitat.com/2009/08/05/treetop-office-eat-your-heart-out-cubicle-warrior/

LEAF POWER: Artificial Glass Leaves Produce Energy via Transpiration

by Sarah Parsons

Everyone knows that trees combat climate change by absorbing carbon dioxide out of the air. Now, plant leaves are tackling global warming in another way — by serving as models for a technology that produces clean, renewable power. UC Berkeley researcher Michel Maharbiz, has worked with other scientists to develop an alternative energy system based on transpiration, a natural process where trees pull water from roots to tops, with liquid eventually evaporating off of the leaves. The system relies on artificial glass leaves to generate a steady stream of energy and is yet another example of biomimicry at work.

*early version of a transpiration actuation system developed by the Maharbiz Group was inspired by fern spore-release structures*The synthetic leaves are essentially energy scavengers, deriving power from the evaporation-driven flow of water. Leaves are crafted from glass wafers containing a series of tiny, water-filled channels. Fluid flows through the channels until it reaches the edge of the leaf, where it then evaporates. The actual power production takes place in the leaf's central stem walls, which are lined with metal plates connected to a circuit. The charged metal plates separated by a layer of water essentially create a capacitor. Water flowing through the leaf is periodically interrupted by small air bubbles–because air and water each have different electrical properties, every time an air bubble passes through the plates, an electric current is generated. This electricity can then be harvested and used to power devices, homes or other energy-sucking items.Though the electricity produced is a relatively small amount when compared to power produced by fuel cells and batteries, Maharbiz asserts that the glass leaves are actually quite effective for this type of energy-scavenging system. Researchers are currently working on modifications to optimize the amount of power the leaves can produce.Eventually, leaves could be implemented into whole artificial trees. Maharbiz envisions the trees acting as a complementary tech to solar, where sunlight could power panels and help drive transpiration in trees. With any luck, solar panels and artificial, power-producing trees will soon be as common to the American home as white, picket fences.

http://www.inhabitat.com/2009/08/03/fern-power-artificial-glass-leaves-produce-energy-via-transpiration/

Is That Behavior Ethical? The Powerful Have a Different Perspective

- By: Tom Jacobs

Power tends to bend a person's moral outlook, making one less likely to believe bending the rules is acceptable behavior.

Power tends to bend a person's moral outlook, making one less likely to believe bending the rules is acceptable behavior.

Are rules made to be broken — or obeyed? Newly published research suggests your answer to that question depends largely upon whether you are mulling it over from a position of power.

"In determining whether an act is right or wrong, the powerful focus on whether rules and principles are violated, whereas the powerless focus on the consequences," states the study "How Power Influences Moral Thinking," in the *Journal of Personality and Social Psychology*. "For this reason, the powerful are also more inclined to stick to the rules — irrespective of whether this has positive or negative effects — while the powerless are more inclined to make exceptions."

Joris Lammers and Diederik Stapel of Tilburg University in the Netherlands conducted a series of five experiments to test the idea that being in a position of power changes one's "style of moral thinking." In the first test, they "primed" a group of 69 university students by having them focus on words evoking either control and authority or dependence and powerlessness. All were then asked to appraise a specific ethical dilemma involving whether a high school girl should break a promise made to a friend.

The result: Those who were pre-programmed to think in terms of having power "had a stronger preference for the rule-based moral considerations, compared to participants in the low-power condition, who had a stronger preference for the outcome-based moral considerations."

In another test, 50 students were assigned to play the role of either manager or employee of a fictional company. “Participants were presented with two reward systems, of which one was outcome-based and another rule-based, and were asked to indicate which of the two criteria they thought was the fairest.”

The “managers” were more inclined to vote for the rules-based criterion, while the “employees” were more likely to contend that the ultimate results of a worker’s efforts were more important than whether they strictly followed company guidelines.

The researchers did find one exception to this pattern. In a final test, which was constructed so that rule-based thinking would not work to the advantage of the powerful, participants in the high-power category were less inclined than their low-power counterparts to endorse playing by the rules. Self-interest apparently trumps abstract ethical concepts.

It’s easy to react cynically to these results. If you rose to a position of power by following the rules, it makes sense that you would consider those guidelines inherently good and important. (Alternatively, if you got to the top by breaking the rules, it is in your interest to ensure that others don’t follow in your footsteps.)

Lammers and Stapel put it more delicately, noting that “rule-based thinking is attractive to the powerful because stability is in their interest and, therefore, cognitively appealing.” They also call attention to previous research suggesting powerful people tend to focus on the big picture rather than small details (which some researchers believe is one reason they successfully move up the ladder). This predisposition could presumably lead them to favor a stable, rule-based system over one that makes exceptions.

Whatever the reasons for the phenomenon, the realization that a person’s relative level of power influences moral thinking is a valuable one. As the researchers note, many conflicts are between individuals with different levels of power: employer/employee, teacher/student, traffic cop/driver, etc.

In such cases, they write, “high-power parties may appear rigid and unbending to low-power parties. At the same time, low-power parties may appear irresponsible and too much focused on immediate implications in the eyes of the powerful.” The result can be two people talking past one another, while each claims the moral high ground.

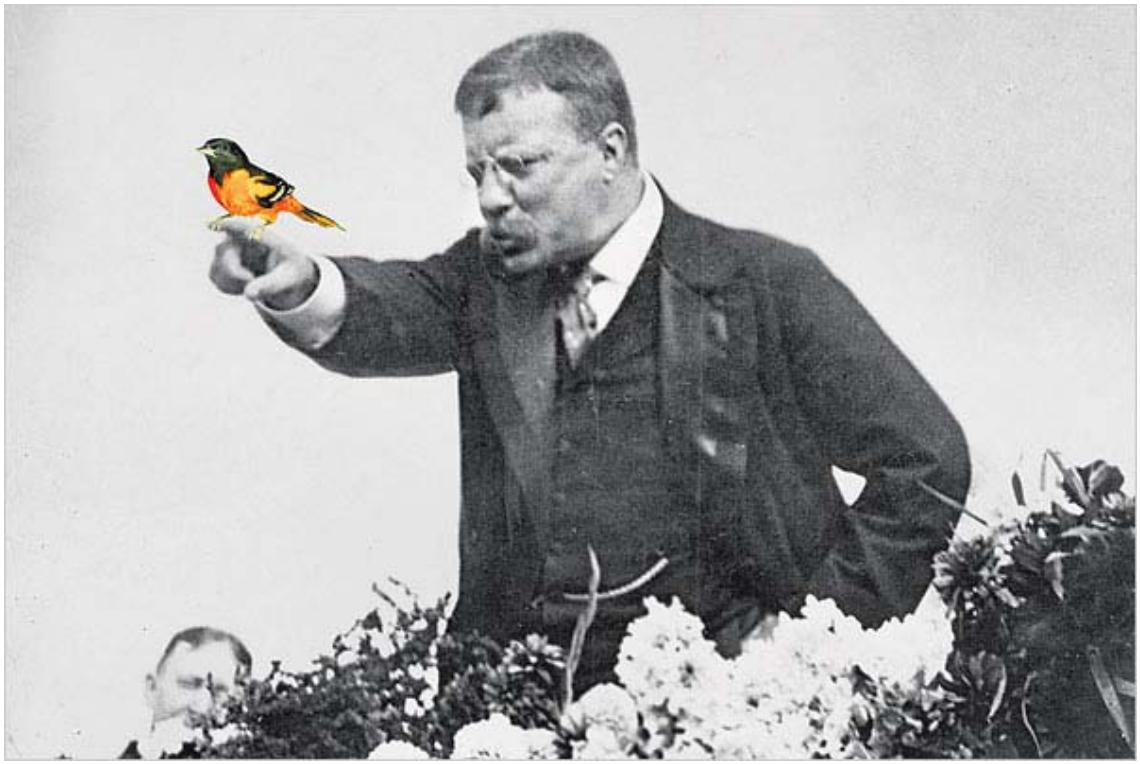
Lammers and Stapel assert that mediators and others charged with settling disputes “can profit from this insight” by taking both moral approaches into account. “A compromise will probably be most acceptable to both parties if it combines both outcome- and rule-based elements,” they write. “That is, it should be framed to both follow general principles, and have a positive outcome for the parties involved.”

http://www.miller-mccune.com/news/powerful-have-a-different-ethical-perspective-1408

Natural Man

By JONATHAN ROSEN
Skip to next paragraph

THE WILDERNESS WARRIOR



Theodore Roosevelt and the Crusade for America

By Douglas Brinkley

Illustrated. 940 pp. Harper/HarperCollins Publishers. $34.99

It is hard to believe today that there was a time when securing Pelican Island, Yosemite and the Grand Canyon were controversial decisions denounced as a federal land grab inimical to states' rights and economic growth. Of course every generation has its own idea of progress, beauty and necessity. What made Theodore Roosevelt a conservationist hero was his conviction that pelicans, 2,000-year-old redwood trees and ancient rock formations belonged to future generations of Americans as well as to the past. Weighed against eternity, what were the arguments of mining magnates, plume hunters, local businesses and assorted congressmen? From the time he became president, in 1901, until he left office 100 years ago, Roosevelt saved over 234 million acres of wild America.

How a city-born child of privilege became one of the greatest forces in American conservation is the subject of Douglas Brinkley's vast, inspiring and enormously entertaining book, "The Wilderness Warrior: Theodore Roosevelt and the Crusade for America." The subtitle is telling — the crusade for America, not "wild America" — because for Roosevelt, living forests and petrified forests, bird preserves and buffalo ranges were essential for the country's survival as a moral and military power.

It all began, like so many conservationist journeys, with birds. When he was 12, the nearsighted boy received a pair of eyeglasses and discovered the beauty and abundance of avifauna. Roosevelt learned taxidermy from a man who had traveled with John James Audubon, and he came to feel a personal link to the great naturalist-artist. Though he grew up in Manhattan on the far side of "On the Origin of Species" and the Civil War, and was only 32 when the director of the 1890 census announced the death of the frontier, Roosevelt felt a deep nostalgia for the age of hunter-explorers for whom science, divine purpose and nation-building were all of a piece.

Roosevelt decided at an early age that he was going to be a naturalist. His father was a founder of the American Museum of Natural History and also a supporter of the animal rights activist Henry Bergh, the eccentric creator of the A.S.P.C.A. Brinkley's book abounds in portraits of important, neglected figures who shaped Roosevelt's conservation ethic, from the once popular children's book author Capt. Mayne Reid, who peppered his outdoor adventures with the Latinate names of plants and animals, to Roosevelt's eccentric, fish-loving uncle, Robert B. Roosevelt, a pioneering ichthyologist, a crusader against overfishing, and a womanizer who presented his conquests with green gloves (which gives a whole new meaning to going green).

All his life Roosevelt sought out and learned from naturalists, and it is wonderful to see John Burroughs and Frank Chapman and George Bird Grinnell get their due. They pointed him to places that needed saving, they hunted and camped with him and they made him feel part of a fraternity of naturalists that organically grew into a fraternity of conservationists.

A turning point in Roosevelt's life, narrated here with great feeling, was his visit to the Dakota Badlands in 1883 to hunt buffalo, already rare. When his young wife died the following year, he retreated to the Badlands to heal himself spiritually and develop himself physically, hurling himself into ranching, hunting and writing. In some sense the Badlands saved him, and Roosevelt's determination in later years to preserve as much of the West as he could — bringing back buffalo to Oklahoma, declaring Devils Tower in Wyoming a national monument — was in part a desire to return the favor.

By the time he took over the presidency after McKinley's assassination in 1901, Roosevelt was primed for environmental action. He created the National Wildlife Refuge System and made the United States Forest Service and the Biological Survey progressive and energetic agents for wildlife and habitat protection. The maps at the end of the book, illustrating the national forests, federal bird reservations and national parks and monuments Roosevelt created or expanded, are eloquent testament to his success, though Brinkley also looks at Roosevelt's environmental failures, often caused by Western "reclamation" projects. He failed to secure the beautiful Hetch Hetchy Valley inside Yosemite National Park, which was eventually flooded to provide water and hydroelectric power for San Francisco. Roosevelt, for all his radicalism, was a pragmatist who believed in preservation and growth, then as now a difficult balance.

Brinkley, a professor of history at Rice University, has absorbed a huge amount of research, but encyclopedic inclusiveness and repetition occasionally mar narrative movement, and a 940-page book does not need sentences like this one describing Cuban crustaceans: "Unlike the stone crabs of Maine, these red crabs, by contrast, weren't particularly good-tasting; from a culinary perspective they were off-putting."

And the book dances with ideas, without always exploring them. Brinkley refers often to Roosevelt's Darwinism. Roosevelt certainly saw himself as a disciple of Darwin, but Brinkley sometimes uses Darwinism as if it were synonymous with environmentalism — as if to acknowledge the interconnectedness of human beings and animals is to conclude that both must be saved together. What is scarcely explored is how peculiarly American Roosevelt's Darwinism was, combining a belief in natural selection with the intuition that God made the world and that human beings — especially Americans — were inevitably stewards of it. Brinkley quotes Roosevelt writing a year before his death: "Thank Heaven I sat at the feet of Darwin and Huxley." Roosevelt was not being ironic; he could thank God for Darwin. Just as he could be a hunter and a conservationist; indeed the two activities encouraged each other.

But this book has Rooseveltian energy. It is largehearted, full of the vitality of its subject and a palpable love for the landscapes it describes. As in Roosevelt's own life, personality trumps all — what remains unforgettable in "The Wilderness Warrior" is the image of Roosevelt, in 1903, camping in the snows of Yosemite with John Muir. Muir set a dead pine tree on fire like a giant torch, and the two men danced before it. (Later, Roosevelt agreed to place Yosemite Valley and the Mariposa Grove under federal control, as Muir wished.)

It was a simpler age for environmentalists. Roosevelt talked about lordly elk and manifest destiny, a far cry from today's scientists with their complex computer models of climate change. Saving redwoods is one thing, properly inflating your tires something else. Roosevelt made conservation a vital, almost violent pursuit. It went with being manly, brave, patriotic. It was as populated with animals as any children's book. It was scientific and yet saturated with religious meaning, patrician but populist, global and yet fueled by jingoistic fervor. It was fun.

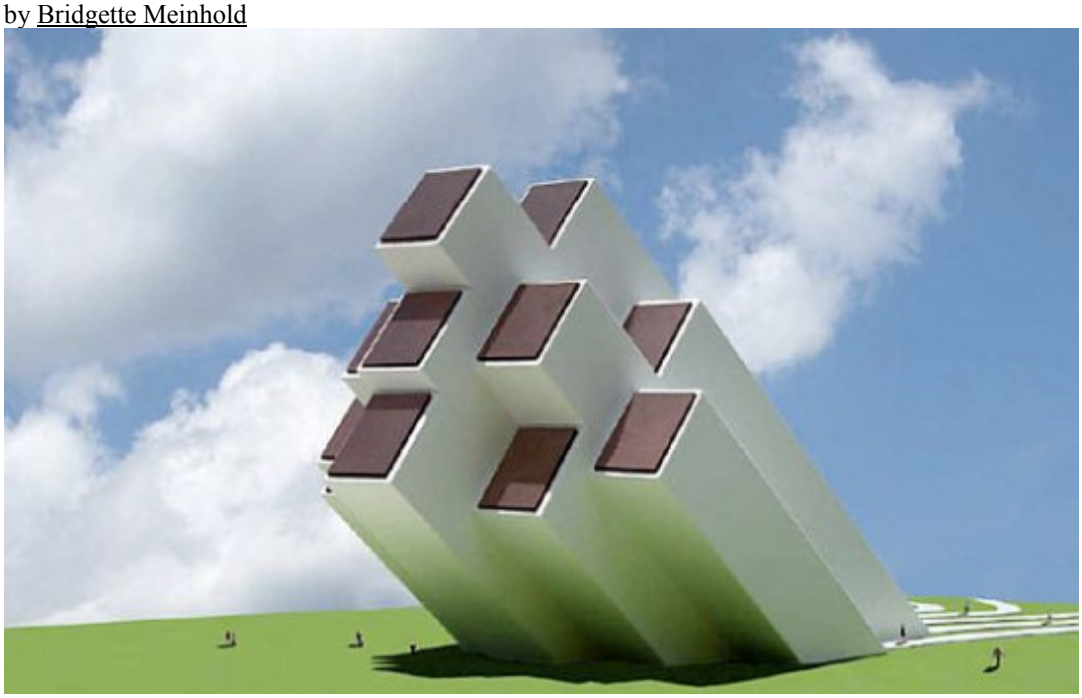
It is hard to know how useful Roosevelt remains as a political model. (His critics often had a point — Mark Twain, who liked Roosevelt personally, felt he was ready to "kick the Constitution into the backyard whenever it gets in the way.") What this book makes abundantly clear is that his inspiration, vision and courage were as rare 100 years ago as they are today and that without them our country would be uglier, and poorer. Most usefully, it is a vital reminder of the key element of conservation, so often neglected: You cannot save what you do not love.

Jonathan Rosen is the editorial director of Nextbook and the author, most recently, of "The Life of the Skies: Birding at the End of Nature."

http://www.nytimes.com/2009/08/09/books/review/Rosen-t.html?8bu&emc=bua1

Michael Jantzen's Sun Rays Pavilion Leans Towards Sustainability

by Bridgette Meinhold



Internationally acclaimed designer Michael Jantzen continues to wow us with his architectural and renewable energy wonders. His newest brainchild, the Sun Rays Pavilion, consists of 12 massive columns that rise out of the earth like giant crystals reaching for the sun. Appropriate, because the acutely slanted building relies on the sun's rays alone for power. Jantzen has many other designs for renewable energy pavilions, like his Wind Shaped Kinetic Pavilion or his Solar Wind Pavilion. This latest design is outfitted with photovoltaic film to generate electricity in order to power the pavilion and sell any excess to the grid.

At the top of the structure, the square ends of the pavilion are covered in photovoltaic film in order to generate electricity. The south facing roofs are angled in such a way to optimize energy generation for the site. Each glazed area is 20 by 26 feet and is also partially transparent, which allows light to filter down into the structure providing some daylight for the people inside. Any excess energy generated not needed by the pavilion will be sent to the grid. On the north side of the structure at the ground level, there are 5 large glass sections with doors that will ventilate the structure.

The pavilion will be approximately 150 feet tall, 250 feet long, and 130 feet wide and constructed from precast concrete rectangular columns. As with all Jantzen creations, symbolism and art play heavy roles in the design of structure and the columns are meant to represent the rays of the sun.

+ Michael Jantzen

http://www.inhabitat.com/2009/08/04/michael-jantzens-sun-rays-pavilion-leans-towards-sustainability/

Dementia link to 'mid-life ills'

Middle-aged people who smoke, have high blood pressure or diabetes massively increase their risk of developing dementia, medical experts warn.

Under-55s who smoke increase their risk five-fold, and diabetes will more than triple it, reports the Journal of Neurology, Neurosurgery and Psychiatry.

The US study of more than 11,000 people is a stark warning to those leading unhealthy lifestyles in midlife.

Meanwhile, other work shows brain exercises can delay dementia onset.

Doing crosswords, playing cards or similar "mind-stretching" activities may delay the start of memory decline in people who develop dementia, according to a study in Neurology.

" **Although this latest research recommends mid-life as a critical time to change our lifestyles, it's never too early, or late, to take steps towards improving heart-health** "
Rebecca Wood Alzheimer's Research Trust

In the UK alone, 700,000 people now live with dementia, and the figure is going up fast.

Experts predict the number for the UK will rise to more than 1 million people by 2025 and 1.7 million by 2051.

But these latest studies suggest there is something that can be done to offset this.

Avoidable risks

Researchers from the universities of Minnesota and North Carolina along with Johns Hopkins hospital and the University of Mississippi Medical Center followed the health of more than 11,000 people aged 46-70.

Over a period of 12 to 14 years, 203 of the people in the study were diagnosed with dementia, and lifestyle factors during middle age appeared to play an important role.

Smoking, high blood pressure and diabetes were all strongly linked with dementia, which the researchers say is not unexpected since these can damage the brain and the small blood vessels that supply it.

Current smokers were 70% more likely than those who had never smoked to develop dementia, people with high blood pressure were 60% more likely than those without high blood pressure, and people with diabetes were more than twice as likely than those without diabetes to develop it.

"Our results emphasise the importance of early lifestyle modification and risk factor treatment to prevent dementia," the researchers said.

Neil Hunt of the Alzheimer's Society said: "Dementia is one of people's biggest fears in later life but very few people realise that there are things they can do to reduce their risk of developing this devastating condition.

"This study adds weight to the growing evidence that a healthy heart means a healthy brain."

Rebecca Wood, chief executive of the Alzheimer's Research Trust, said: "There is a growing body of evidence suggesting that looking after our hearts may be the most effective way to reduce dementia risk.

"Although this latest research recommends mid-life as a critical time to change our lifestyles, it's never too early, or late, to take steps towards improving heart-health.

"We should all consider stopping smoking, taking regular exercise and adopting a healthy, Mediterranean-style diet."

On brain exercise study, she said: "This adds to the 'use it or lose it' hypothesis that we can reap the benefits of stimulating our minds regularly, perhaps by doing crosswords, playing chess or adding up the shopping before getting to the till.

"With more research we may be able to find ways of preventing dementia."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8180947.stm

Published: 2009/08/03 23:14:48 GMT

'Proof' malaria began in chimps

Scientists say they have genetic proof malaria spread by mosquitoes jumped species from chimpanzees to humans.

By looking at blood samples, a US team discovered all world strains of the human malaria parasite falciparum stem from a malaria parasite in chimps.

They tell Proceedings of the National Academy of Sciences how the species shift probably happened 10,000 years ago when humans turned to agriculture.

Man's encroachment upon the natural forest habitat of chimps is blamed.

It brought the two species into close contact and the deforestation created pools of stagnant water and other conditions favourable for mosquito breeding.

"Today, human encroachment into the last forest habitats has further extended, leading to a higher risk of transfer of new pathogens, including new malaria parasites," the researchers warn.

Species jump

Previously, malaria's origin in humans had been unclear.

But this latest work suggests malaria, like HIV, has jumped species from one of our closest relatives.

Although chimps were known to harbour a parasite - Plasmodium reichenowi - that is closely related to the most common of the human malaria parasites, Plasmodium falciparum, many scientists had assumed that the two had co-existed separately.

MALARIA
- Four strains infect humans, falciparum being the most common
- Malaria kills one million people a year, mostly children

 As yet, there is no vaccine

But blood tests on 94 wild and captive chimpanzees in Cameroon and the Ivory Coast suggest falciparum evolved from reichenowi.

Francisco Ayala, of the University of California, Irvine, and colleagues found eight new strains of reichenowi that had striking similarities to falciparum and were genetic precursors to the human disease.

The leap could have happened as early as two to three million years ago, but most likely to our Neolithic ancestors as recently as 10,000 years ago.

The scientists hope their discovery will help others looking for new drugs and vaccines to stop human malaria.

Professor Brian Greenwood, a malaria expert at the London School of Hygiene and Tropical Medicine, said: "This is interesting work.

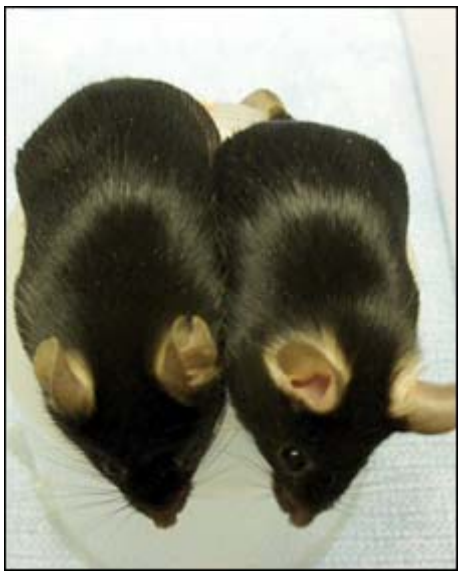
"There has been dispute about how long falciparum has been around for and as genetic techniques get better we can get a more accurate idea."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8181110.stm

Published: 2009/08/03 23:15:26 GMT

Scientists halt epilepsy in mice

Scientists have prevented epilepsy caused by a faulty gene from being passed down the generations in mice.



The key gene, Atp1a3, regulates levels of chemicals such as sodium and potassium in brain cells.

It has long been suspected that an imbalance of these chemicals may cause some cases of epilepsy.

The University of Leeds study, which appears in Proceedings of the National Academy of Sciences, raises hopes of new treatments for the condition.

Lead researcher Dr Steve Clapcote said: "An imbalance of sodium and potassium levels has long been suspected to lead to epileptic seizures, but our study is the first to show beyond any doubt that a defect in this gene is responsible."

" **Our study has identified a new way in which epilepsy can be caused and prevented in mice, and therefore it may provide clues to potential causes, therapies and preventive measures in human epilepsy** "
Dr Steve Clapcote University of Leeds

Much work is needed to determine whether the same mechanism is in play in humans.

But the human ATP1a3 gene is more than 99% the same as the mouse version.

Epilepsy is a common neurological condition that affects almost one in every 200 people.

However, the causes are unknown in the majority of cases.

Current drug treatments are ineffective in around one third of epilepsy patients.

The Leeds team worked on Myshkin mice, which have a tendency to develop seizures.

They showed that those animals who did develop seizures carried a specific defective version of Atp1a3.

These mice responded when treated with the common anti-epileptic medication valproic acid - proving that they did indeed have a form of epilepsy.

To try to counter this, the researchers bred the epileptic mice with animals that carried an extra copy of the normal Atp1a3 gene.

The addition of the normal gene counteracted the faulty gene in the resulting offspring - which were completely free from epilepsy.

Very promising

Dr Clapcote said: "Our study has identified a new way in which epilepsy can be caused and prevented in mice, and therefore it may provide clues to potential causes, therapies and preventive measures in human epilepsy."

"Our results are very promising, but there's a long way to go before this research could yield new antiepileptic therapies."

Dr Clapcote said his team had started to screen DNA samples from epilepsy patients to investigate whether Atp13a gene defects were involved in the human condition.

Delphine van der Pauw, of the charity Epilepsy Research UK, said: "These results are promising.

"If the findings can be repeated in human studies, new avenues for the prevention and treatment of inherited epilepsy will be opened."

Simon Wigglesworth, of Epilepsy Action, stressed the research was at an early stage - but agreed that it was encouraging.

He said: "At the moment there is no treatment to cure epilepsy, other than surgery, which is only effective for small numbers."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8178703.stm

Published: 2009/08/03 23:15:35 GMT

Domestic dog origins challenged
By Judith Burns
Science reporter, BBC News

The suggestion that the domestic dog originated in East Asia has been challenged.

The huge genetic diversity of dogs found in East Asia had led many scientists to conclude that domestication began there.

But new research published in the journal PNAS shows the DNA of dogs in African villages is just as varied.

An international group of researchers analysed blood samples from dogs in Egypt, Uganda and Namibia.

Today's dogs are descended from Eurasian grey wolves, domesticated between 15,000 and 40,000 years ago.

" **I think it means that the conclusion that was drawn before might have been premature** "
Adam Boyko, Cornell University

The authors say the process by which humans domesticated the dog is poorly understood.

Lead scientist, Dr Adam Boyko of the Department of Biological Statistics and Computational Biology at Cornell University, says he decided to look at village dogs because they are so much more genetically diverse than bred dogs that they may hold the key to the origins of dog domestication.

The team analysed DNA from 318 dogs from villages in Egypt, Uganda and Namibia and measured their genetic diversity.

They also analysed the genetic make up of dog breeds thought to be of African origin, for example the Saluki, the Rhodesian Ridgeback, and the Pharaoh Hound and compared all the resulting data with results for non African dogs such as Puerto Rican street dogs and non-pedigree dogs in the US.

The emphasis on African village dogs came about because Adam Boyko's co-authors, his brother and sister-in-law, were travelling in Africa on honeymoon. They collected all the blood samples from the African dogs.

Genetically diverse

The team found genetic diversity among African village dogs is just as diverse as that of East Asian dogs, leading them to question the hypothesis of an East Asian origin for dog domestication.

Dr Boyko told BBC News: "I think it means that the conclusion that was drawn before might have been premature. It's a consequence of having a lot of street dogs from East Asia that were sampled, compared to elsewhere.

"The reason that East Asia looked more diverse than elsewhere was not because East Asia as a continent had more diverse dogs than elsewhere but because non breed street and village dogs are more diverse than breed dogs."

He said he was not ruling out East Asia as a possible location for the origin of the domestic dog - but it could equally have been anywhere else on the Eurasian landmass where there were both grey wolves and humans.

Co-author Paul Jones of The Waltham Centre for Pet Nutrition, UK, said: "It's interesting to know the answer to the question of where dogs were first domesticated and this paper goes some way to giving us an answer."

The team are now in the process of sampling street and village dogs across Europe and Asia from Portugal to Papua New Guinea to pinpoint the areas of greatest genetic diversity.

Dr Boyko said that all the dogs sampled in the study have grey wolf DNA so he is not questioning the hypothesis that dogs descended from Eurasian wolves.

The results led the team to conclude that today's African village dogs are a mosaic of indigenous dogs descended from early migrants to Africa.

They also went some way to proving the origins of some pedigree dogs purported to be of African origin. For example the Saluki breed shares DNA with modern day village dogs from Egypt - as does the Afghan Hound, despite its name.

Likewise, the Basenji breed is genetically very similar to some Namibian and Ugandan village dogs.

However the Pharaoh Hound and Rhodesian Ridgeback have little in common with any African indigenous dogs which suggests that these two breeds have non African origins.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8182371.stm

Published: 2009/08/03 22:01:48 GMT

'Feather-eating bugs' dull birds
Matt Walker
Editor, Earth News

Brightly coloured birds can become infected with bacteria that eat their feathers.

That in turn can affect the health of the birds and dull their plumage.

The discovery comes from a study that found that 99% of all Eastern bluebirds surveyed in Virginia, US were infected with feather-degrading bacteria.

Such bacteria were first discovered a decade ago, but the latest research is the best evidence yet that the bugs affect the colour and health of birds.

"Feather-degrading bacteria are relatively new to ornithologists," says Alex Gunderson of Duke University in Durham, North Carolina, US. "The first report of their occurrence on wild birds was published only ten years ago."

Since then, scientists have found that most species of wild bird probably harbour some feather-degrading bacteria in their plumage, sometimes of more than one species.

Feather-degrading bacteria could be an important force influencing the ecology and evolution of birds
Biologist Alex Gunderson

Feather-degrading bacteria work by hydrolysing the protein beta-keratin, which constitutes over 90% of a feather's mass.

But these bugs are usually found in a minority of birds sampled, and it has not been clear what impact they have on their hosts.

So Gunderson and colleagues Mark Forsyth and John Swaddle of the College of William and Mary in Williamsburg, Virginia, US surveyed a population of Eastern bluebirds (*Sialia sialis*) living in Virginia.

They found that 99% of all the birds surveyed carried feather-eating bugs, they report in the Journal of Avian Biology.

What's more, they found a correlation between the bacteria and the brightness of female birds' feathers, with more bacteria causing duller feathers.

Sex difference

"This is some of the best evidence that bacteria are active on the feathers of live birds," says Gunderson.

"The evidence is correlational, so there is a great deal more work that needs to be done to verify it."

"But it does suggest that feather-degrading bacteria could be an important force influencing the ecology and evolution of birds."

However, the bacteria didn't seem to have a significant impact on the feather colour of male birds, a rare example of a parasite appearing to harm one sex while not the other.

"I was surprised that the relationship with feather-degrading bacteria was different for males and females," explains Gunderson.

"It is possible that, because males and females differ somewhat in where they spend their time, they could acquire different species of bacteria that have different effects. It is also possible that physiological differences between males and females result in different effects of bacteria."

"This is complete speculation and at present we do not know the answer to this question."

Another important result was that the bacterial load also correlated with the birds' body condition, which is directly related to the bird's health, and also their reproductive success.

Overall, the results suggest that feather-degrading bacteria may have a significant impact on the birds' ecology. Birds use feather colours to advertise their health, attract mates and for camouflage, so that means the bacteria could also affect the evolution of bird colour.

"If bacteria detrimentally influence feather colouration, they may place selective pressure on birds to evolve defences against them," says Gunderson.

"There is evidence that certain avian traits are defences against feather-degrading bacteria. For instance, we know that feathers coloured by melanin pigments are resistant to bacterial degradation, and that the preen oil that birds apply to their plumage inhibits the growth of some feather-degrading bacteria."

"In general, an understanding of the influence of feather-degrading bacteria on birds could, to some degree, help explain the evolution of these and other avian traits," he says.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/earth/hi/earth_news/newsid_8178000/8178785.stm

Published: 2009/08/03 09:33:15 GMT

Call for debate on killer robots
By Jason Palmer
Science and technology reporter, BBC News

An international debate is needed on the use of autonomous military robots, a leading academic has said.

Noel Sharkey of the University of Sheffield said that a push toward more robotic technology used in warfare would put civilian life at grave risk.

Technology capable of distinguishing friend from foe reliably was at least 50 years away, he added.

However, he said that for the first time, US forces mentioned resolving such ethical concerns in their plans.

"Robots that can decide where to kill, who to kill and when to kill is high on all the military agendas," Professor Sharkey said at a meeting in London.

"The problem is that this is all based on artificial intelligence, and the military have a strange view of artificial intelligence based on science fiction."

'Odd way'

Professor Sharkey, a professor of artificial intelligence and robotics, has long drawn attention to the psychological distance from the horrors of war that is maintained by operators who pilot unmanned aerial vehicles (UAVs), often from thousands of miles away.

"These guys who are driving them sit there all day...they go home and eat dinner with their families at night," he said.

"It's kind of a very odd way of fighting a war - it's changing the character of war dramatically."

The rise in technology has not helped in terms of limiting collateral damage, Professor Sharkey said, because the military intelligence behind attacks was not keeping pace.

Between January 2006 and April 2009, he estimated, 60 such "drone" attacks were carried out in Pakistan. While 14 al-Qaeda were killed, some 687 civilian deaths also occurred, he said.

That physical distance from the actual theatre of war, he said, led naturally to a far greater concern: the push toward unmanned planes and ground robots that make their decisions without the help of human operators at all.

The problem, he said, was that robots could not fulfil two of the basic tenets of warfare: discriminating friend from foe, and "proportionality", determining a reasonable amount of force to gain a given military advantage.

"Robots do not have the necessary discriminatory ability," he explained.

"They're not bright enough to be called stupid - they can't discriminate between civilians and non-civilians; it's hard enough for soldiers to do that.

"And forget about proportionality, there's no software that can make a robot proportional," he added.

"There's no objective calculus of proportionality - it's just a decision that people make."

Policy in practise

Current rules of engagement to which the UK subscribes prohibit the use of lethal force without human intervention.

Nigel Mills is aerial technology director at defence contractor QinetiQ, who make a number of UAVs and ground robots for the armed forces.

He told BBC News that building in autonomy to the systems required assurances of the importance of human input.

"The more autonomous a system is, the more effort you have to put into the human/machine interface because of the rules of engagement.

"Complete autonomy - where you send a UAV off on a mission and you don't interact with it - is not compatible with our current rules of engagement, so we're not working on such systems."

The US air force published its "Unmanned Aircraft Systems Flight Plan 2009-2047" in July, predicting the deployment of fully autonomous attack planes.

The document suggests that humans will play more of a role "monitoring the execution of decisions" than actually making the decisions.

"Advances in AI will enable systems to make combat decisions and act within legal and policy constraints without necessarily requiring human input," says the report. HAVE YOUR SAY Robots do not feel emotions and do not surrender. Send robots to war and the consequences would be devastating ***Glen Thomas***

However, it concedes that "authorising a machine to make lethal combat decisions is contingent upon political and military leaders resolving legal and ethical questions.

"Ethical discussions and policy decisions must take place in the near term in order to guide the development of future UAS capabilities, rather than allowing the development to take its own path apart from this critical guidance," it continues.

While the US's plans are vague, Professor Sharkey said the mere mention of ethical issues was significant.

"I'm glad they've picked up on that, because if you look at any previous plan, they hadn't done so," he told BBC News.

However, he warned that work toward ever more autonomous killing machines is carrying on, noting the deployment of Israel's Harpy - a fully autonomous UAV that dive-bombs radar systems with no human intervention.

He cautioned that an international debate was necessary before further developments in decision-making robots could unfold.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/8182003.stm

Published: 2009/08/03 18:09:27 GMT

Fire risk 'super' ants discovered

Ants believed to have a "kamikaze attraction" to electricity have been discovered in one of England's finest National Trust gardens.

Colonies of *Lasius neglectus* , the so-called Asian super ant, have being found at Hidcote Manor, near Chipping Campden, in Gloucestershire.

It is thought to be the first recorded sighting in the UK, although they have been spotted in mainland Europe.

They are naturally drawn to electrical currents so can pose a fire risk.

The species was first identified in Budapest 20 years ago. The ants look like a common black garden variety.

English Heritage and the National Trust carried out investigations into infestations within the Hidcote estate to identify them as lasius neglectus.

The Asian super ant is highly-dependent on aphid honeydew and is associated with a wide range of tree species.

“ **They look just the same as the common black garden ant, although there will be ten to a hundred times as many of them** ”
Brian Ridout, English Heritage

Their compulsion to follow electricity is stronger than their need for food or drink.

Swarms of ants around electrical cables can cause blackouts.

Brian Ridout, English Heritage entomologist and architectural conservator, said they may have gone unnoticed for some time.

"The behaviour of the ants didn't agree with that of any known UK species," he said.

"Our suspicions were confirmed when samples were sent to the Universitat Autonoma de Barcelona which has been studying major infestations of them in Spain.

"They look just the same as the common black garden ant, although there will be ten to a hundred times as many of them."

The National Trust said 35,000 ant carcasses were found in one electrical junction box at Hidcote.

'More prolific'

Simon Ford, nature conservation advisor for the National Trust in Wessex, said: "The ants themselves pose little direct threat to us as they don't bite people or pets.

"Their habit of creating super-colonies means they pose a threat to native species by out-competing them for food and space, and their attraction to electrical circuitry means they could pose a fire risk.

"Researchers have feared for several years that this species would make it to the UK, and while the Hidcote colony is the first case recorded, it is not clear if it is the first in the UK or indeed that it is the only one.

"It is very likely the ants are more prolific."

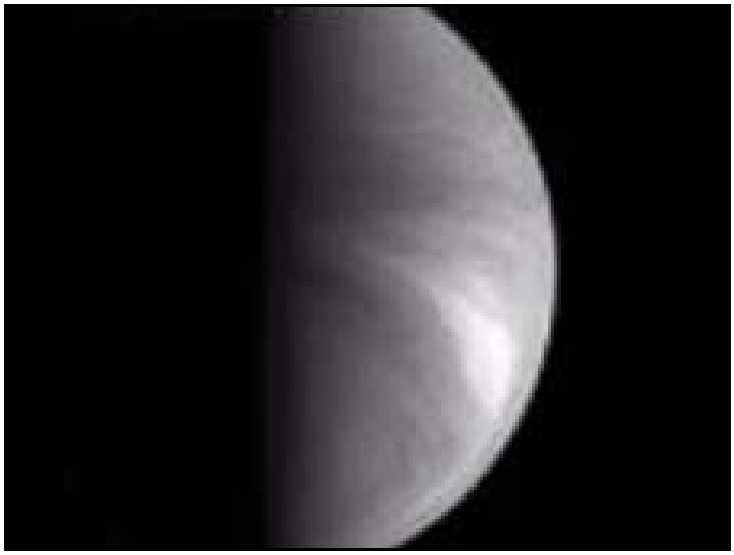
The super ant is resistant to traditional insect poison so the National Trust is now working with pest controllers to investigate other options, including bait systems.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/england/gloucestershire/8179872.stm

Published: 2009/08/01 17:32:23 GMT

Experts puzzled by spot on Venus

Astronomers are puzzled by a strange bright spot which has appeared in the clouds of Venus.



The spot was first identified by an amateur astronomer on 19 July and was later confirmed by the European Space Agency's Venus Express spacecraft.

Data from the European probe suggests the spot appeared at least four days before it was spotted from Earth. The bright spot has since started to expand, being spread by winds in Venus's thick atmosphere.

Scientists are unsure as to what caused the bright spot tens of kilometres up. However, a volcanic eruption is a possibility.

Much of the planet is thought to have been resurfaced by volcanism. Though no firm evidence for present-day volcanism has been discovered, scientists suspect it could still be happening on Venus.

But an eruption would have needed to be extremely powerful to penetrate this far through the planet's dense, mainly carbon dioxide, atmosphere. Another potential source for the bright spot are charged particles from the Sun interacting with Venus's atmosphere.

Alternatively, atmospheric turbulence may have caused bright material to become concentrated in one area. This is not the first time bright areas have been spotted on Venus. But this feature is unusual because it is confined to a relatively small region.

The spot was first identified by US amateur astronomer Frank Melillo, from Holtsville, New York.

Astronomers have recently been studying a "scar" on Jupiter, thought to have been caused by a comet or asteroid impact.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8179067.stm

Published: 2009/08/01 10:07:28 GMT

Protein 'key to premature births'

Premature labour, the major cause of death and disability among babies, may be prevented by blocking a key protein, a study suggests.

Infection is now a recognised trigger of preterm birth, but some women seem to go into labour early even when the infection is trivial.

Researchers at Imperial College London say they can isolate the protein which seems to spark this reaction.

Premature births have been estimated to cost the UK nearly £1bn every year.

Very premature babies often die within the first few days of life, while many others can spend months in intensive care.

Those who do survive are at risk of developing serious disabilities such as cerebral palsy, blindness and deafness, as well as learning difficulties.

Bacteria alert

The protein - Toll-like receptor 4, or TLR4 - is found on the surface of the cells.

When it recognises bacteria, it sparks inflammation, and it is this which appears to induce premature birth.

" **We believe this is a step forward in the development of treatments to prevent premature birth** "
Professor Philip Bennett Imperial College

However while bacteria are found in the womb of most pregnant women, the vast majority do not respond in this way.

And while the reaction is thought to have an evolutionary basis - potentially saving the life of the mother when a serious bug is present - it occurs in women who have no such infection.

The team at Imperial College London said they had found a way of effectively shutting down this reaction.

Professor Philip Bennett, lead researcher from the Clinical Institute of Obstetrics and Gynaecology at Imperial College London, said: "We are excited about the findings of this research as we have now discovered how to block a key pathway which leads to premature birth.

"Although more research needs to be done, we believe this is a step forward in the development of treatments to prevent premature birth."

Dr Yolande Harley, deputy director of research at Action Medical Research, which funded the study, said: "This research will lead to improvements in understanding the mechanisms that cause premature birth and its impact could be significant if treatments that block this pathway are shown to prevent premature labour."

Bliss Chief Executive Andy Cole said: "We welcome this interesting piece of research and anything that helps us better understand the causes of premature birth.

"This is a step in the right direction. However, there is still much more to do to prevent babies being born too soon."

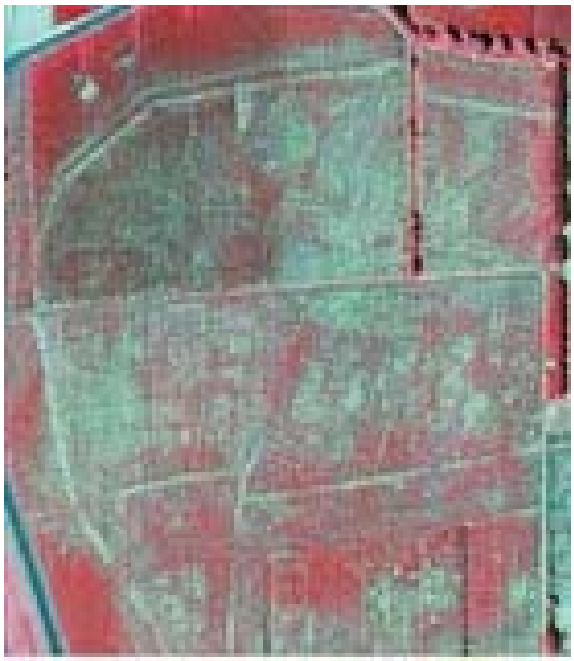
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8179043.stm

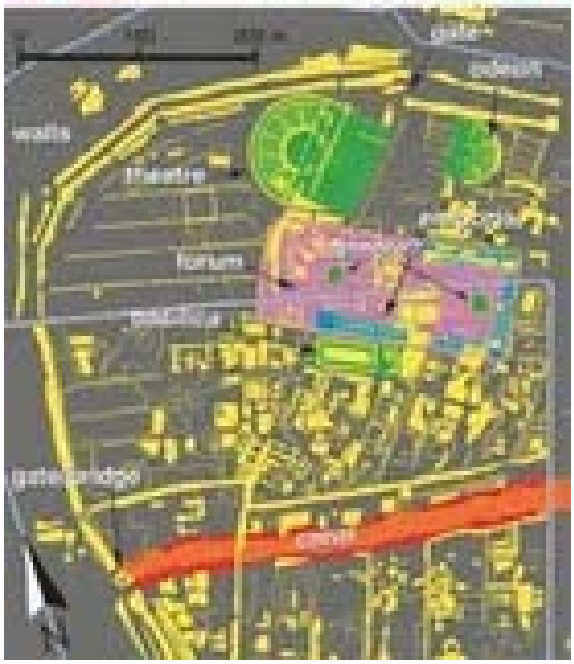
Published: 2009/08/02 22:58:24 GMT

Images reveal 'lost' Roman city

Aerial photographs have revealed the streetplan of a lost Roman city called Altinum, which some scholars regard as a forerunner of Venice.

The images reveal the remains of city walls, the street network, dwellings, theatres and other structures. They also show a complex network of rivers and canals, revealing how the people mastered the marshy environment in what is now the lagoon of Venice.





Details of the research have been published in the journal Science. Andrea Ninfo and colleagues from Padua University, Italy, made the first detailed reconstruction of the city's topography and environmental setting. This was assembled using visible and near-infrared aerial photographs of the farmlands that currently cover the region, along with a computer model of the local terrain. The photos were taken during a severe drought in 2007, which made it possible to pick up the presence of stones, bricks and other solid structures beneath the surface. The authors note that Altinum is the only large Roman city in northern Italy - and one of the few in Europe - that has not been buried by medieval and modern cities.

The results show that the city was surrounded by rivers and canals, including a large canal that cut through the centre of Altinum, connecting it to the lagoon. Two gates or bridges were built into the walls encircling the city, providing further evidence of how the city's residents adapted to their marshy surroundings. The researchers were also able to see harbour structures at the edge of the lagoon.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8177529.stm

Published: 2009/07/31 13:01:18 GMT

Variations in Perception of Bitter Go Way Back

By HENRY FOUNTAIN

They may not have a sweeter disposition, but some people can't perceive bitter tastes very well. Now a study from Spain shows that some Neanderthals were in the same boat.

Bitter taste perception in humans has been studied most thoroughly with a chemical, phenylthiocarbamide, or PTC, that is related to compounds in Brussels sprouts and similar foods. About three-quarters of the world's population perceives PTC as bitter, while the other one-quarter doesn't really taste it at all.
The difference lies in a gene, TAS2R38, that encodes proteins that are part of taste receptors on the tongue. There are several variants of the gene, a dominant "taster" type and a recessive "nontaster" type, which occur with about the same frequency. Only if a person inherits a recessive type from both parents would she not be able to taste PTC.
Carles Lalueza-Fox of the Institute of Evolutionary Biology (CSIC-UPF) in Barcelona and colleagues looked at the TAS2R38 gene in a virtually uncontaminated sample from a 48,000-year-old bone from an adult male Neanderthal collected at El Sidrón, a site in northern Spain. They found similar variations in the gene, and determined that the individual had one dominant form and one recessive form. That means the Neanderthal could perceive bitter taste, though perhaps not as well as an individual with two dominant forms of the gene.
The researchers say their findings, which were reported in Biology Letters, show that the variation in perception of bitter taste started showing up before the human and Neanderthal lineages began to diverge a half-million years ago or more.

http://www.nytimes.com/2009/08/18/science/18obbitter.html?ref=science

Mutation Tied to Need for Less Sleep Is Discovered

By TARA PARKER-POPE

Researchers have found a genetic mutation in two people who need far less sleep than average, a discovery that might open the door to understanding human sleep patterns and lead to treatments for insomnia and other sleep disorders.

The finding, published in the Friday issue of the journal Science, marks the first time scientists have identified a genetic mutation that relates to sleep duration in any animal or human.

Although the mutation has been identified in only two people, the power of the research stems from the fact that the shortened sleep effect was replicated in mouse and fruit-fly studies. As a result, the research now gives scientists a clearer sense of where to look for genetic traits linked to sleep patterns.

"I think it's really a landmark study," said Dr. Charles A. Czeisler, a leading sleep researcher and chief of sleep medicine at Brigham and Women's Hospital in Boston. "It opens up a window to the understanding of the genetic basis of individual differences in sleep duration. Now you have a piece of the puzzle and you can begin to try to trace back as opposed to having little information as to where to start."

The gene mutation was found by scientists at the University of California, San Francisco, who were conducting DNA screening on several hundred blood samples from people who had taken part in sleep studies.

The scientists were searching the samples for variations in several genes thought to be related to the sleep cycle. In what amounts to finding a needle in a haystack, they spotted two DNA samples with abnormal copies of a gene called DEC2, which is known to affect circadian rhythms. They then worked back to find out who provided the samples and found a mother and daughter who were naturally short sleepers. The women routinely function on about 6 hours of sleep a night; the average person needs 8 to 8.5 hours of sleep.

When scientists bred mice with the same mutation, the animals slept less and recovered quicker from periods of sleep deprivation compared with regular mice.

"We know sleep is necessary for life, but we know so little about sleep," says Ying-Hui Fu, study co-author and professor of neurology at the University of California, San Francisco. "As we understand the sleep mechanism more and more and all the pathways, we'll be able to understand more about what causes sleep problems."

What distinguishes the two women in the study and other naturally short sleepers is that they go to bed at a normal time and wake up early without an alarm. The two women, one in her 70s and the other in her 40s, go to bed around 10 or 10:30 at night and wake up alert and energized around 4 or 4:30 in the morning, Dr. Fu said.

"When they wake up in morning, they feel they have slept enough," Dr. Fu said. "They want to get up and do things. They arrange all their major tasks in their morning."

Dr. Fu said that while many people might sleep only six or fewer hours a night, most were not naturally short sleepers. For instance, they use stimulants and alarm clocks to maintain a shortened sleep schedule.

"Many people get only six hours of sleep a night, but we drink coffee and tea to make ourselves stay up," she said. "That's a very different thing. Our body needs 8 to 8.5 hours."

The genetic mutation appears to be rare. Out of 70 families with known sleep problems studied at the university, only one family carried the mutation. Dr. Fu said fewer than 5 percent of people appeared to be naturally short sleepers.

The real benefit of the research will come if and when the mutation is identified in other individuals. That could lead to new discoveries about sleep timing and duration, and possibly new treatments for sleep disorders.

Dr. Fu said her "fantasy" was that the finding might eventually lead to a safe treatment for people who wanted or needed more awake hours and were looking for a way to get by on less sleep without harming their health.

http://www.nytimes.com/pages/science/index.html

The Expense of Eating With Celiac Disease

By LESLEY ALDERMAN

YOU would think that after Kelly Oram broke more than 10 bones and experienced chronic stomach problems for most of his life, someone (a nurse? a doctor?) might have wondered if something fundamental was wrong with his health. But it wasn't until Mr. Oram was in his early 40s that a doctor who was treating him for a neck injury became suspicious and ordered tests, including a bone scan.

It turned out that Mr. Oram, a music teacher who lives in White Plains, had celiac disease, an underdiagnosed immune disorder set off by eating foods containing gluten, a protein found in wheat, rye and barley.

Celiac disease damages the lining of the small intestine, making it difficult for the body to absorb nutrients. Victims may suffer from mild to serious malnutrition and a host of health problems, including anemia, low bone density and infertility. Celiac affects one out of 100 people in the United States, but a majority of those don't know they have the disease, said Dr. Joseph A. Murray, a gastroenterologist at the Mayo Clinic in Minnesota who has been studying the disease for two decades. The disease can be detected by a simple blood test, followed by an endoscopy to check for damage to the small intestine.

Seven years after receiving his diagnosis, Mr. Oram, who is married and has one daughter, is symptom-free, but the cost of staying that way is high. That's because the treatment for celiac does not come in the form of a pill that will be reimbursed or subsidized by an insurer. The treatment is to avoid eating products containing gluten. And gluten-free versions of products like bread, pizza and crackers are nearly three times as expensive as regular products, according to a study conducted by the Celiac Disease Center at Columbia University.

Unfortunately for celiac patients, the extra cost of a special diet is not reimbursed by health care plans. Nor do most policies pay for trips to a dietitian to receive nutritional guidance.

In Britain, by contrast, patients found to have celiac disease are prescribed gluten-free products. In Italy, sufferers are given a stipend to spend on gluten-free food.

Some doctors blame drug makers, in part, for the lack of awareness and the lack of support. "The drug makers have not been interested in celiac because, until very recently, there have been no medications to treat it," said Dr. Peter Green, director of the Celiac Disease Center at Columbia University. "And since drug makers are responsible for so much of the education that doctors receive, the medical community is largely unaware of the disease."

As awareness grows and the market expands, perhaps the prices of gluten-free products will come down. Meanwhile, if you suffer from the disease, here are some ways to keep your costs down.

When people first learn they have celiac disease, they tend to stock up on gluten-free versions of breads, crackers and pizza made from grains other than wheat, like rice, corn and buckwheat. But that can be expensive and might not even be that healthy, since most gluten-free products are not fortified with vitamins.

"The most important thing to do after being diagnosed is to get a dietary consultation," Dr. Murray said. With planning, you can learn to base your diet on fruits, vegetables, rice and potatoes. "I have some patients who rarely use those special gluten-free products," he said.

Get in the habit of reading labels, advises Elaine Monarch, executive director of the Celiac Disease Foundation, a nonprofit organization in Studio City, Calif. Soy sauce, for instance, often has wheat protein as a filler. But Ms. Monarch found a brand of light soy sauce at her local grocery with no wheat that cost much less than one specifically marked as gluten-free. "There are often alternatives to specialty products, but you have to look," she said.

Gluten-free bread is more expensive than traditional bread and often less palatable. And that holds for many gluten-free items. Some people, including Mr. Oram, end up buying a bread machine and making their own loaves. Nicole Hunn, who cooks gluten-free meals for her family of five and just started the Web site glutenfreeonashoestring.com, avoids mixes, which she says are expensive and not that tasty, and instead bakes with an all-purpose gluten-free flour from a company called Bob's Red Mill, which can be used in place of wheat flour in standard recipes.

If you're too busy to cook, look for well-priced gluten-free food at large chains like Whole Foods Market and Trader Joe's. "Trader Joe's now carries fantastic brown rice pasta that is reasonably priced and brown rice flour tortillas that can sub for bread with a variety of things," says Kelly Courson, co-founder of the advice site CeliacChicks.com. Ms. Courson put out a Twitter message to her followers and learned that many were fans of DeBoles gluten-free pastas, which can be bought in bulk on Amazon, and puffed brown rice cereal by Alf's Natural Nutrition, just $1 a bag at Wal-Mart.

Finally, it may be worthwhile to join a celiac support group. You can swap cost-cutting tips, share recipes and learn about new products. Many groups invite vendors to bring gluten-free products to meetings for members to sample — members can buy items they like at a discount and skip the shipping charges. Support groups typically have meetings, as well as newsletters and Web sites where you can post questions. Groups to check out include the Celiac Disease Foundation and the Gluten Intolerance Group of North America.

Finally, if you itemize your tax return and your total medical expenses for the year exceed 7.5 percent of your adjusted gross income, you can write off certain expenses associated with celiac disease. You can deduct the excess cost of a gluten-free product over a comparable gluten-containing product.

Let's say you spend $6.50 on a loaf of gluten-free bread, and a regular loaf costs $4; you can deduct $2.50. In addition, you can deduct the cost of products necessary to maintain a gluten-free diet, like

xanthan gum for baking. If you mail order gluten-free products, the shipping costs may be deductible, too. If you have to travel extra miles to buy gluten-free goods, the mileage is also deductible. You'll need a doctor's letter to confirm your diagnosis and your need for a gluten-free diet, and you should save receipts in case of a tax audit.

Do you have a flexible spending account at work? Ask the plan administrator if you can use those flex spending dollars on the excess cost of gluten-free goods — many plans let you do this. For more on tax deductions, go to the tax section of the Celiac Disease Foundation's Web site.

Yes, managing the disease is a hassle. But untreated celiac disease can wreak havoc with your health. A study published in the July issue of the journal Gastroenterology found that subjects who had undiagnosed celiac were nearly four times as likely to have died over a 45-year period than subjects who were celiac-free.

"Sometimes I resent how time-consuming it is to cook from scratch," Ms. Courson of CeliacChicks.com said. "But I remind myself that my restrictions actually help keep me in line, more than the next person with unhealthy foods readily available."

http://www.nytimes.com/2009/08/15/health/15patient.html?ref=health

Drug 'attacks cancer stem cells'

A compound that appears to target the master cells which help breast cancers grow and spread has been discovered by US scientists.

In tests in mice, salinomycin killed breast cancer stem cells far more effectively than some existing drugs, and slowed tumour growth.

The drug, a farm antibiotic, has yet to be tested in humans, the journal Cell reports.

But UK experts warned a human version could be some years away.

" **This is one of the biggest advances we have seen this year in this area of research** "
Dr John Stingl Cancer Research UK Cambridge Research Institute

The reasons why, even following powerful chemotherapy, some cancers can grow back, are not fully understood.

Many scientists believe a key role lies with stem cells, which can be resistant to conventional chemotherapy, remaining to 'seed' new tumours and drive their growth.

The drug's potential was identified by researchers at the Massachusetts Institute of Technology, who tested 16,000 existing chemical compounds against breast cancer stem cells in the laboratory.

Those which performed the best were then tried in mice, and compared to existing drugs such as paclitaxel.

Salinomycin appeared to be 100 times better at killing the cells in a test tube, and treated cells were much less likely to start new tumours when injected into mice.

When given to mice with tumours, the growth of the cancer slowed.

However, the researchers stressed that it was too early to know if similar successes could be achieved in human cancer patients.

"Many therapies kill the bulk of a tumour only to see it regrow," said Professor Eric Lander, from MIT."This raises the prospect of new kinds of anti-cancer therapies."

'Very early research'

Dr John Stingl, group leader in mammary stem cell biology at Cancer Research UK's Cambridge Research Institute, said: "This is one of the biggest advances we have seen this year in this area of research. These scientists have demonstrated that it's possible to selectively target the rare cancer stem cells that drive tumour growth.

"This research also introduces a completely new way of identifying cancer drugs. The challenge for the future is to bring this class of drugs to the clinic and to identify the patients that are likely to respond to them."

Dr Alexis Willett, head of policy at Breakthrough Breast Cancer, added: "There is evidence that stem cells may enable breast cancers to form and grow.

"This research provides a clue as how to identify these cells and how they might be targeted and destroyed. "It's important to remember that this is very early research and it will be some time before it is clear whether this leads to an effective breast cancer treatment."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8201376.stm

Published: 2009/08/14 11:23:31 GMT

Many women 'not on safest pill'

Many women are not taking the safest brand of the pill, say researchers.

Two separate studies in the British Medical Journal found that some oral contraceptives were linked with a higher risk of blood clot than others.

But experts stressed that blood clots are a rare side-effect of the combined pill and the risk overall is small, whichever brand is used.

Women should not stop taking it but speak to a doctor if they are worried, the Family Planning Association said.

It has been known for a long time that the combined pill, which contains both oestrogen and progestogen, was associated with an increased risk of venous thrombosis - a blood clot that forms in a vein.

" **What this says is we should stick to prescribing the well-trusted favourites but the chance of having a blood clot when on the pill are very low anyway** "
Dr Nick Dunn, GP

In some cases a clot can be serious and occasionally fatal, particularly if it breaks away and travels to the lungs.

The levels of oestrogen in the pill have been reduced over the years to help cut the risks.

However, this risk is far smaller than the risk of a clot during pregnancy.

In the first study done by Dutch researchers - looking at data from 1,524 women who had developed venous thrombosis - they found that overall taking the pill was associated with a five-fold increased risk of a clot.

But closer analysis showed variation.

Women taking pills containing a progestogen called levonorgestrel (for example, Microgynon) had the lowest risk of thrombosis at four times that of women not on the pill.

Whereas those on contraceptives containing desogestrel (for example, Mercilon or Marvelon) had the highest risk, at seven times that of those not taking the pill.

Women taking a pill with norgestimate (for example, Cilest) had an almost six-fold extra risk as did those on drospirenone (for example, Yasmin).

Those taking a drug containing cyproterone acetate (for example, Dianette, which is often prescribed for acne) had an almost seven-fold additional risk.

Impact

"Currently available oral contraceptives still have a major impact on thrombosis occurrence and many women do not use the safest brands with regard to risk of venous thrombosis," the researchers concluded.

The second study, by Danish researchers, also found that contraceptives containing levonorgestrel were associated with a lower risk than those containing desogestrel, gestodene or drospirenone.

Dr Nick Dunn, a GP and senior lecturer at the University of Southampton said it was interesting that Yasmine, the newest type of pill, did not offer any advantage over more traditional ones.

But he added that those recommended by the researchers were probably the most commonly prescribed.

"What this says is we should stick to prescribing the well-trusted favourites but the chance of having a blood clot when on the pill are very low anyway."

He said if a woman wanted a particular brand maybe because of personal experience he would still prescribe it.

Lynn Hearton, from the Family Planning Association (FPA), said: "Although the combined pill does slightly increase the risk of thrombosis, the risk is still really low.

"If any women are worried about the pill they should not stop using it.

"They should continue taking it and seek advice from a health professional."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8199756.stm

Published: 2009/08/13 23:09:53 GMT

Moderate drinking 'boosts bones'

Women who drink moderate amounts of beer may be strengthening their bones, according to Spanish researchers.

Their study of almost 1,700 women, published in the journal Nutrition, found bone density was better in regular drinkers than non-drinkers.

But the team added that plant hormones in the beer rather than the alcohol may be responsible for the effects.

Experts urged caution, warning that drinking more than two units of alcohol a day was known to harm bone health.

Osteoporosis is a common problem for post-menopausal women, increasing the risk of disabling bone fractures later in life.

Further research

Scientists have been hunting for supplements which might help women maintain the strength of bones into old age.

The study authors, from the University of Extremadura in Caceres, said they did not recommend anyone drank beer to boost bone health, but said that ingredients of beer called phytoestrogens deserved further research.

They recruited volunteers with an average age of 48, and used ultrasound to measure the density of bones in their fingers.

The results were cross checked against factors such as their weight, age and alcohol use.

Women defined as "light" or "moderate" beer drinkers, covering consumption of up to 280 grams of alcohol a week - equivalent to up to five units a day, were found to have superior bone density to non-drinkers.

The findings echo those from earlier research projects, including one conducted at St Thomas' Hospital in London, which suggested that drinking an average of eight units a week of alcohol could be beneficial.

However, experts were quick to point out that the line between a "healthy" dose of alcohol and a damaging one might be very fine.

Health concerns

At 35 units a week, the upper limit of the "moderate" alcohol consumption defined by the study is double the recommended maximum for women.

Dr Claire Bowring, of the UK's National Osteoporosis Society, said that while the findings mirrored previous studies, it would not be recommending any woman to increase her alcohol consumption as a result.

"While low quantities of alcohol may appear to have bone density benefits, higher intakes have been shown to decrease bone strength, with an alcohol intake of more than two units per day actually increasing the risk of breaking a bone.

"There are also many other health concerns linked with alcohol which cannot be ignored."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8201899.stm

Published: 2009/08/16 00:14:08 GMT

Facial expressions 'not global'

By Judith Burns
Science reporter, BBC News

A new study suggests that people from different cultures read facial expressions differently.

East Asian participants in the study focused mostly on the eyes, but those from the West scanned the whole face.

In the research carried out by a team from Glasgow University, East Asian observers found it more difficult to distinguish some facial expressions.

The work published in Current Biology journal challenges the idea facial expressions are universally understood.

In the study, East Asians were more likely than Westerners to read the expression for "fear" as "surprise", and "disgust" as "anger".

The researchers say the confusion arises because people from different cultural groups observe different parts of the face when interpreting expression.

East Asians participants tended to focus on the eyes of the other person, while Western subjects took in the whole face, including the eyes and the mouth.

Co-author, Dr Rachael Jack, from the University of Glasgow, said: "Interestingly, although the eye region is ambiguous, subjects tended to bias their judgements towards less socially-threatening emotions - surprise rather than fear, for example.

"This perhaps highlights cultural differences when it comes to the social acceptability of emotions."

The team showed 13 Western Caucasians and 13 East Asians a set of standardised images depicting the seven main facial expressions: happy, sad, neutral, angry, disgusted, fearful and surprised.

They used eye movement trackers to monitor where the participants were looking when interpreting the expressions.

A computer program given the same information from the eyes as the East Asian observers was similarly unable to distinguish between the emotions of disgust and anger, and fear and surprise.

The paper states that the Eastern participants used a culturally specific decoding strategy that was inadequate to reliably distinguish the universal facial expressions of fear and disgust.

It concluded that information from the eyes is often ambiguous and confusing in these expressions, with consequences for cross-cultural communication and globalisation.

The researchers also point out that this difference in perception is reflected in the differences between Eastern and Western emoticons - the typographical characters used to convey emotions in e-mails.

The Eastern emoticons are not only the right way up but focus on the eyes, whilst in the West the mouth is important.

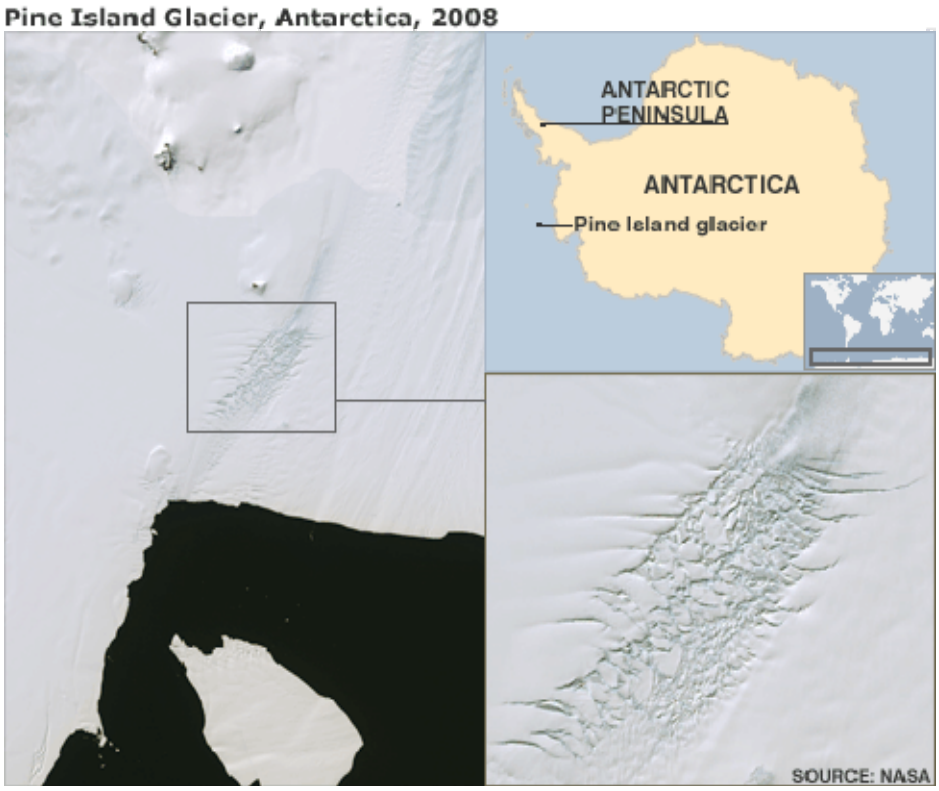
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8199951.stm

Published: 2009/08/14 11:18:47 GMT

Antarctic glacier 'thinning fast'

By David Shukman
Science and environment correspondent, BBC News

One of the largest glaciers in Antarctica is thinning four times faster than it was 10 years ago, according to research seen by the BBC.



A study of satellite measurements of Pine Island glacier in west Antarctica reveals the surface of the ice is now dropping at a rate of up to 16m a year.

Since 1994, the glacier has lowered by as much as 90m, which has serious implications for sea-level rise.

The work by British scientists appears in Geophysical Research Letters.

The team was led by Professor Duncan Wingham of University College London (UCL).

" **We've known that it's been out of balance for some time, but nothing in the natural world is lost at an accelerating exponential rate like this glacier** "
Andrew Shepherd, Leeds University

Calculations based on the rate of melting 15 years ago had suggested the glacier would last for 600 years. But the new data points to a lifespan for the vast ice stream of only another 100 years.

The rate of loss is fastest in the centre of the glacier and the concern is that if the process continues, the glacier may break up and start to affect the ice sheet further inland.

One of the authors, Professor Andrew Shepherd of Leeds University, said that the melting from the centre of the glacier would add about 3cm to global sea level.

"But the ice trapped behind it is about 20-30cm of sea level rise and as soon as we destabilise or remove the middle of the glacier we don't know really know what's going to happen to the ice behind it," he told BBC News.

"This is unprecedented in this area of Antarctica. We've known that it's been out of balance for some time, but nothing in the natural world is lost at an accelerating exponential rate like this glacier."

Pine Island glacier has been the subject of an intense research effort in recent years amid fears that its collapse could lead to a rapid disintegration of the West Antarctic ice sheet.

Five years ago, I joined a flight by the Chilean Navy and Nasa to survey Pine Island glacier with radar and laser equipment.

The 11-hour round-trip from Punta Arenas included a series of low-level passes over the massive ice stream which is 20 miles wide and in places more than one mile thick.

Back then, the researchers on board were concerned at the speed of change they were detecting. This latest study of the satellite data will add to the alarm among polar specialists.

This comes as scientists in the Arctic are finding evidence of dramatic change. Researchers on board a Greenpeace vessel have been studying the northwestern part of Greenland.

One of those taking part, Professor Jason Box of Ohio State University, has been surprised by how little sea ice they encountered in the Nares Strait between Greenland and Canada.

He has also set up time lapse cameras to monitor the massive Petermann glacier. Huge new cracks have been observed and it's expected that a major part of it could break off imminently.

Professor Box told BBC News: "The science community has been surprised by how sensitive these large glaciers are to climate warming. First it was the glaciers in south Greenland and now as we move further north in Greenland we find retreat at major glaciers. It's like removing a cork from a bottle."

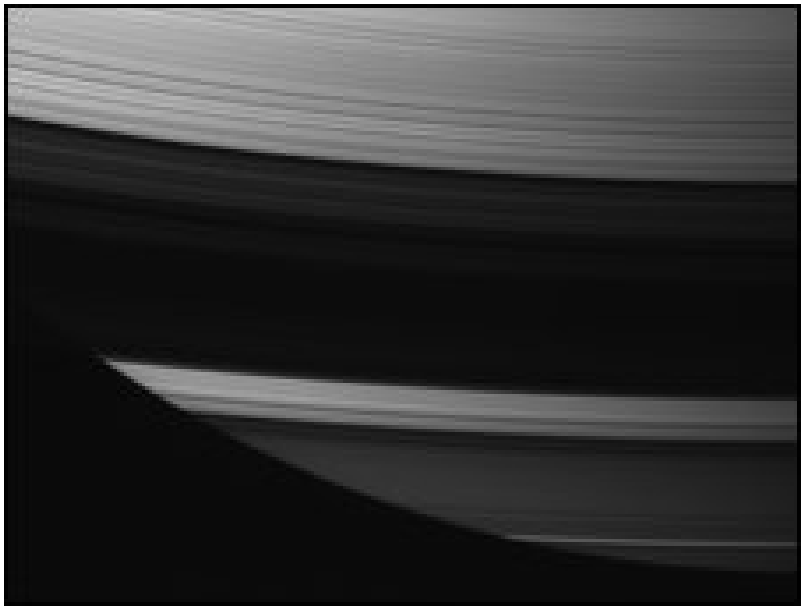
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8200680.stm

Published: 2009/08/13 21:19:52 GMT

US probe captures Saturn equinox

By Judith Burns
Science reporter, BBC News

Raw images of the moment Saturn reached its equinox have been beamed to Earth by the US Cassini spacecraft.



Scientists are studying the unprocessed pictures to uncover new discoveries in the gas giant's ring system.

Equinox is the moment when the Sun crosses a planet's equator, making day and night the same length.

During this time, the Sun's angle over Saturn is lowered, showing new objects and irregular structures as shadows on the otherwise flat plane of the rings. Saturn's orbit is so vast that Equinox happens only once every 15 Earth years.

At the moment of equinox, the rings turn edge-on to the Sun and reflect almost no sunlight.

This is the first equinox since 1994 and the first time there has been an observer, in the shape of the joint US and European spacecraft, Cassini. In an email, Dr Carolyn Porco, leader of Cassini's imaging team, said the long-awaited images did not disappoint: "Even a cursory examination of them reveals strange new phenomena we hadn't fully anticipated.

"Over the next week or two, the [Cassini] imaging team will be poring over these precious gems to see what other surprises await us, and, as usual, we will announce what we have found as soon as we can."

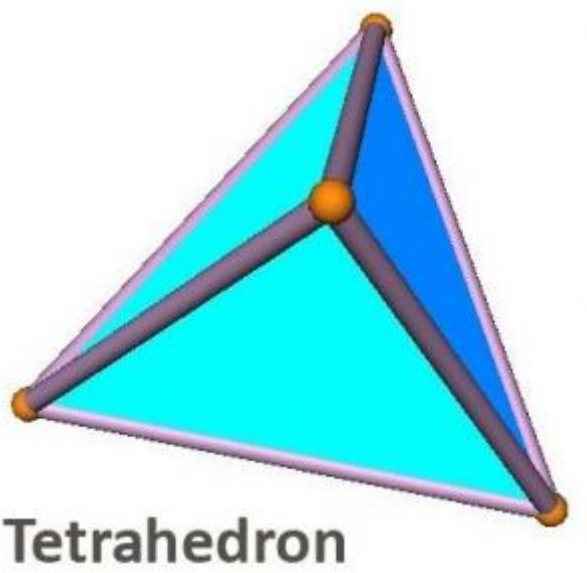
Cassini was launched in October 1997 from Florida's Cape Canaveral Air Force Station. It arrived at Saturn in July 2004 to embark on a four-year mission of exploration around the planet and its moons.

The spacecraft is still operating well and has been re-programmed to carry out new tasks. Its current mission is to answer some of the questions raised by its earlier observations.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8201595.stm

Published: 2009/08/14 14:10:41 GMT

World Record In Packing Puzzle Set In Tetrahedra Jam: Better Understanding Of Matter Itself?



Princeton researchers have beaten the present world record for packing the most tetrahedra into a volume. Research into these so-called packing problems have produced deep mathematical ideas and led to practical applications as well. (Credit: Princeton University/Torquato Lab)

ScienceDaily (Aug. 15, 2009) — Finding the best way to pack the greatest quantity of a specifically shaped object into a confined space may sound simple, yet it consistently has led to deep mathematical concepts and practical applications, such as improved computer security codes.

When mathematicians solved a famed sphere-packing problem in 2005, one that first had been posed by renowned mathematician and astronomer Johannes Kepler in 1611, it made worldwide headlines.

Now, two Princeton University researchers have made a major advance in addressing a twist in the packing problem, jamming more tetrahedra -- solid figures with four triangular faces -- and other polyhedral solid objects than ever before into a space. The work could result in better ways to store data on compact discs as well as a better understanding of matter itself.

In the cover story of the Aug. 13 issue of *Nature*, Salvatore Torquato, a professor in the Department of Chemistry and the Princeton Institute for the Science and Technology of Materials, and Yang Jiao, a graduate student in the Department of Mechanical and Aerospace Engineering, report that they have bested the world record, set last year by Elizabeth Chen, a graduate student at the University of Michigan.

Using computer simulations, Torquato and Jiao were able to fill a volume to 78.2 percent of capacity with tetrahedra. Chen, before them, had filled 77.8 percent of the space. The previous world record was set in 2006 by Torquato and John Conway, a Princeton professor of mathematics. They succeeded in filling the space to 72 percent of capacity.

Beyond making a new world record, Torquato and Jiao have devised an approach that involves placing pairs of tetrahedra face-to-face, forming a "kissing" pattern that, viewed from the outside of the container, looks strangely jumbled and irregular.

"We wanted to know this: What's the densest way to pack space?" said Torquato, who is also a senior faculty fellow at the Princeton Center for Theoretical Science. "It's a notoriously difficult problem to solve, and it involves complex objects that, at the time, we simply did not know how to handle."

Henry Cohn, a mathematician with Microsoft Research New England in Cambridge, Mass., said, "What's exciting about Torquato and Jiao's paper is that they give compelling evidence for what happens in more complicated cases than just spheres." The Princeton researchers, he said, employ solid figures as a "wonderful test case for understanding the effects of corners and edges on the packing problem."

Studying shapes and how they fit together is not just an academic exercise. The world is filled with such solids, whether they are spherical oranges or polyhedral grains of sand, and it often matters how they are organized. Real-life specks of matter resembling these solids arise at ultra-low temperatures when materials, especially complex molecular compounds, pass through various chemical phases. How atoms clump can determine their most fundamental properties.

"From a scientific perspective, to know about the packing problem is to know something about the low-temperature phases of matter itself," said Torquato, whose interests are interdisciplinary, spanning physics, applied and computational mathematics, chemistry, chemical engineering, materials science, and mechanical and aerospace engineering.

And the whole topic of the efficient packing of solids is a key part of the mathematics that lies behind the error-detecting and error-correcting codes that are widely used to store information on compact discs and to compress information for efficient transmission around the world.

Beyond solving the practical aspects of the packing problem, the work contributes insight to a field that has fascinated mathematicians and thinkers for thousands of years. The Greek philosopher Plato theorized that the classical elements -- earth, wind, fire and water -- were constructed from polyhedra. Models of them have been found among carved stone balls created by the late Neolithic people of Scotland.

The tetrahedron, which is part of the family of geometric objects known as the Platonic solids, must be packed in the face-to-face fashion for maximum effect. But, for significant mathematical reasons, all other members of the Platonic solids, the researchers found, must be packed as lattices to cram in the largest quantity, much the way a grocer stacks oranges in staggered rows, with successive layers nestled in the dimples formed by lower levels. Lattices have great regularity because they are composed of single units that repeat themselves in exactly the same way.

Mathematicians define the five shapes composing the Platonic solids as being convex polyhedra that are regular. For non-mathematicians, this simply means that these solids have many flat faces, which are plane figures, such as triangles, squares or pentagons. Being regular figures, all angles and faces' sides are equal. The group includes the tetrahedron (with four faces), the cube (six faces), the octahedron (eight faces), the dodecahedron (12 faces) and the icosahedron (20 faces).

There's a good reason why tetrahedra must be packed differently from other Platonic solids, according to the authors. Tetrahedra lack a quality known as central symmetry. To possess this quality, an object must have a center that will bisect any line drawn to connect any two points on separate planes on its surface. The researchers also found this trait absent in 12 out of 13 of an even more complex family of shapes known as the Archimedean solids.

The conclusions of the Princeton scientists are not at all obvious, and it took the development of a complex computer program and theoretical analysis to achieve their groundbreaking results. Previous computer simulations had taken virtual piles of polyhedra and stuffed them in a virtual box and allowed them to "grow."

The algorithm designed by Torquato and Jiao, called "an adaptive shrinking cell optimization technique," did it the other way. It placed virtual polyhedra of a fixed size in a "box" and caused the box to shrink and change shape.

There are tremendous advantages to controlling the size of the box instead of blowing up polyhedra, Torquato said. "When you 'grow' the particles, it's easy for them to get stuck, so you have to wiggle them around to improve the density," he said. "Such programs get bogged down easily; there are all kinds of subtleties. It's much easier and productive, we found, thinking about it in the opposite way."

Cohn, of Microsoft, called the results remarkable. It took four centuries, he noted, for mathematician Tom Hales to prove Kepler's conjecture that the best way to pack spheres is to stack them like cannonballs in a war memorial. Now, the Princeton researchers, he said, have thrown out a new challenge to the math world. "Their results could be considered a 21st Century analogue of Kepler's conjecture about spheres," Cohn said. "And, as with that conjecture, I'm sure their work will inspire many future advances."

Many researchers have pointed to various assemblies of densely packed objects and described them as optimal. The difference with this work, Torquato said, is that the algorithm and analysis developed by the Princeton team most probably shows, in the case of the centrally symmetric Platonic and Archimedean solids, "the best packings, period."

Their simulation results are also supported by theoretical arguments that the densest packings of these objects are likely to be their best lattice arrangements. "This is now a strong conjecture that people can try to prove," Torquato said.

Journal reference:

1. S. Torquato & Y. Jiao. **Dense packings of the Platonic and Archimedean solids**. *Nature*, 2009; 460 (7257): 876 DOI: 10.1038/nature08239

Adapted from materials provided by Princeton University.

http://www.sciencedaily.com/releases/2009/08/090812143943.htm

How Pathogens Have Shaped Genes Involved In Our Immune System

ScienceDaily (Aug. 15, 2009) — A recent study on human genetics on various populations across the world conducted by researchers from the Institut Pasteur and the CNRS has shown how pathogens can shape the patterns of genetic diversity of our immune system over time. Results show that bacteria, fungi and parasites, unlike viruses, appear to have allowed the introduction of mutations in the genes of some proteins of the innate immunity system, thus enabling greater genetic variability. In some cases, these mutations may even constitute an advantage, giving the human host improved resistance to infectious diseases such as leprosy or tuberculosis.

Institut Pasteur and CNRS researchers from the Human Evolutionary Genetics Unit (1) have recently published the results of their research illustrating the influence of the relationship between humans and pathogenic agents in the journal *PLoS Genetics.* The scientists studied the genetic variability of ten proteins of the innate immune system, the first line of host defense against these agents that attack the human organism. These proteins are receptors belonging to a family known as TLR (Toll-like receptors) and are responsible for recognizing pathogenic agents so as to trigger an immune response and eliminate them.

The researchers' work demonstrated an extreme degree of similarity between the genes of virus-recognizing TLRs among the various populations across the world; mutations here are very rare and the sequence of these genes is highly conserved. Viruses have therefore exerted very high selective pressure on these proteins over time by precluding them to evolving genetically. On the other hand, the genes of the TLRs which recognize bacteria, fungi or parasites exhibit a much higher degree of variability. It is possible for mutations to accumulate within these genes without it proving critical for the organism. This suggests that the role of these proteins is not essential and more redundant.This research supports previous observations demonstrating that the small number of known mutations affecting the genes of virus-recognizing TLR receptors are at the origin of rare, serious diseases. This is the case for a mutation affecting the TLR3 gene which has previously been identified as being responsible for encephalitis. Mutations affecting the genes of the other TLR types appear to cause or favor less severe, more common infectious diseases. One mutation that affects the TLR6 gene, for example, is known to be involved in susceptibility to asthma in children.

This research also enabled scientists to demonstrate that a mutation affecting TLR1, a receptor responsible for recognizing bacteria, may actually constitute an advantage! This mutation, found in two out of five people in Europe, prevents the expression of this receptor at the cell surface, and consequently reduces the inflammatory response by 40 to 60%. In previous studies, this mutation was even associated with greater resistance to leprosy and tuberculosis. The evolutionary approach of this research sheds new light on the question of the relationship between humans and pathogens. Based on the direct analysis of genetic sequences, it opens up new possibilities, to be explored from a clinical, immunological and epidemiological point of view, for a better understanding of susceptibility to certain diseases.

Notes:

(1) Institut Pasteur/CNRS URA 3012

Journal reference:

1. Barreiro et al. **Evolutionary Dynamics of Human Toll-Like Receptors and Their Different Contributions to Host Defense**. *PLoS Genetics*, 2009; 5 (7): e1000562 DOI: 10.1371/journal.pgen.1000562

http://www.sciencedaily.com/releases/2009/07/090730233519.htm

Manganese Damages Immune Response In Marine Animals, Research Finds

The photo shows how blood is drawn from a Norway lobster. (Credit: Image courtesy of University of Gothenburg)

ScienceDaily (Aug. 15, 2009) — Hypoxia, or lack of oxygen, in bottom waters is a well known environmental problem. New research at the University of Gothenburg, Sweden adds to the list of ill effects: hypoxia leads to increased levels of manganese, which damages the immune response in marine animals.

Water eutrophication and the resulting hypoxia is an ever-current issue, not least in connection with summer algal blooms. A more recently acknowledged problem is that hypoxia, which occurs when algae is broken down, increases the release of toxic metals from bottom sediments. Researchers at the University of Gothenburg have found that one of these metals, manganese, may damage the immune response in marine animals.

Essential -- and toxic

While low doses of manganese are essential to life in both humans and animals, it has been known for a long time that higher doses can be detrimental to health. Manganese is abundant in soft ocean bottoms, but since it is normally bound to the sediments it usually does not cause any ill effects. However, hypoxia releases the manganese from the sediments, making it a threat to the health of marine species.

Researcher Carolina Oweson, Department of Marine Ecology at the University of Gothenburg, has studied how manganese in Swedish coastal waters affects the Norway lobster, the blue mussel and the common sea star. Her conclusion is that while manganese does not seem to have a permanent effect, it does threaten the survival of several species during periods of hypoxia.

'While the effects of manganese on the immune response in the studied animals vary, they are all affected in some way. The Norway lobster and mussels are affected the most, for example through an increased susceptibility to infections', says Oweson.

Similar to humans

Marine animals are of great interest to researchers since their immune systems are similar to those of humans in many ways. The species in Oweson's study also make up an important part of our marine ecosystem. In addition, new findings indicating that hypoxia is becoming increasingly common in coastal areas around the world make Oweson's study even more relevant.

Adapted from materials provided by University of Gothenburg.

http://www.sciencedaily.com/releases/2009/08/090811143956.htm

Mars Orbiter Shows Angled View Of Martian Crater

This image of Victoria Crater in the Meridiani Planum region of Mars was taken by the High Resolution Imaging Science Experiment (HiRISE) camera on NASA's Mars Reconnaissance Orbiter at more of a sideways angle than earlier orbital images of this crater. (Credit: NASA/JPL-Caltech/University of Arizona)

ScienceDaily (Aug. 15, 2009) — The high-resolution camera on NASA's Mars Reconnaissance Orbiter has returned a dramatic oblique view of the Martian crater that a rover explored for two years.

The new view of Victoria Crater shows layers on steep crater walls, difficult to see from straight overhead, plus wheel tracks left by NASA's Mars Exploration Rover Opportunity between September 2006 and August 2008. The orbiter's High Resolution Imaging Science Experiment camera shot it at an angle comparable to looking at landscape from an airplane window. Some of the camera's earlier, less angled images of Victoria Crater aided the rover team in choosing safe routes for Opportunity and contributed to joint scientific studies.

The new Victoria Crater image is available online at: http://www.nasa.gov/mission_pages/MRO/multimedia/mro20091012a.html and as a sub-image of the full-frame image at: http://hirise.lpl.arizona.edu/ESP_013954_1780 .

Another new image from the same camera catches an active dust devil leaving a trail and casting a shadow. These whirlwinds have been a subject of investigation by Opportunity's twin rover, Spirit.

The new dust devil image is available online at: http://www.nasa.gov/mission_pages/MRO/multimedia/mro20091012b.html and as a sub-image of the full-frame image at: http://hirise.lpl.arizona.edu/ESP_013545_1110 .

The Mars Reconnaissance Orbiter has been studying Mars with an advanced set of instruments since 2006. It has returned more data about the planet than all other past and current missions to Mars combined. For more information about the mission, visit: http://www.nasa.gov/mro .

The Mars Reconnaissance Orbiter is managed by the Jet Propulsion Laboratory, Pasadena, Calif., for NASA's Science Mission Directorate, Washington. JPL is a division of the California Institute of Technology, also in Pasadena. Lockheed Martin Space Systems, Denver, is the prime contractor for the project and built the spacecraft. The High Resolution Imaging Science Experiment is operated by the University of Arizona, Tucson, and the instrument was built by Ball Aerospace and Technologies Corp., Boulder, Colo.

Adapted from materials provided by NASA/Jet Propulsion Laboratory.

http://www.sciencedaily.com/releases/2009/08/090814202826.htm

Parents Can Help Stop The Obesity Epidemic, Says Psychologist; Healthy Body Image Is First Step

ScienceDaily (Aug. 15, 2009) — Childhood obesity has quadrupled in the last 40 years, which may mean today's children become the first generation to have a shorter lifespan than their parents, a leading obesity expert told the American Psychological Association.

However, parents can help stave off this impending crisis if they help their children to eat better and exercise, according to Edward Abramson, PhD. Abramson, professor emeritus at California State University-Chico, teaches psychology and is author of the books "Body Intelligence" and "Emotional Eating." In the last decade, "we've seen a [tenfold] increase in Type-2 diabetes and psychological and social consequences, such as prejudice, rejection, discrimination and low self-esteem in children," Abramson said at APA's 117th Annual Convention. "More than 60 percent of overweight children have one risk factor for cardiovascular disease and 20 percent have two or more risk factors."

Bad eating habits can start with "emotional eating," or eating when one is not hungry, or from following a strict diet, Abramson said. "This can lead to a weight problem or an eating disorder," he added. "Parents' attitudes and behaviors also have an influence on children's eating, and mothers more than fathers affect children's eating habits and body image." Many factors contribute to mothers' concern about their children's risk for obesity, Abramson said. "For example, there is evidence that minority parents (e.g., African-American, Hispanic) are less concerned about their children's weight," he said. "Often, when a mother is struggling with her own weight, she becomes more involved in regulating her daughter's eating. In general, mothers are more concerned than fathers about their child's weight, especially their daughter's, and are more likely to restrict foods."

While everyone, including children, is entitled to have food preferences, infants are born with genetic predispositions toward sweet and salty tastes and against sour and bitter tastes and unfamiliar foods, Abramson said. "For these children, it may take several repetitions (10 or more) to have a child try a new food, but parents should retreat gracefully and try again another day rather than get into a battle of wills when the child refuses a food," he said. Parents can increase the odds of getting a child to try a new food by having the child see them enjoying the food and having the child help prepare the unfamiliar food, said Abramson. "If the child is in the kitchen cooking with Mom or Dad, it's unlikely that he/she will refuse the food that they've helped prepare."

Physical activity can also help prevent obesity even when there is a tendency to gain weight due to genetics, Abramson said. Research has shown that 4- to 7-year-old children of active parents were six times as likely to be active. Exercise in school lowers the risk for obesity, whereas time spent watching TV or on the computer playing video games increases the risk. Research has shown that most babies and toddlers start out liking their bodies, said Abramson. But this doesn't last for girls. By the time girls reach pre-adolescence, many start to suffer from warped body images. "Thirty percent of 9-year-old, 55 percent of 10-year-old and 65 percent of 11-year-old girls think they're fat," he said. "Entering puberty isn't as bad for boys. They're more satisfied with their bodies than before they entered puberty."

Parents can help their children have a healthy body image, he said. They need to understand how they feel about their child's physique and see how that is influencing their behavior. With young children, they should let them choose the clothes they want to wear. With pre-adolescents, parents should talk about the body changes that happen during puberty. And finally, they should encourage their children to have friendships with other children who are less concerned with appearance.

Adapted from materials provided by American Psychological Association, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/08/090810025239.htm

London's Earliest Timber Structure Found During Belmarsh Prison Dig

The structure consisted of a timber platform or trackway found at a depth of 4.7m (about the height of a double-decker bus) beneath two meters of peat adjacent to an ancient river channel. (Credit: UCL)

ScienceDaily (Aug. 14, 2009) — London's oldest timber structure has been unearthed by archaeologists from Archaeology South-East (part of the Institute of Archaeology at University College London). It was found during the excavation of a prehistoric peat bog adjacent to Belmarsh Prison in Plumstead, Greenwich, in advance of the construction of a new prison building. Radiocarbon dating has shown the structure to be nearly 6,000 years old and it predates Stonehenge by more than 500 years.

Jacobs Engineering UK Ltd acted as the managing consultants, on behalf of the Ministry of Justice, and the work was facilitated by Interserve Project Services Ltd.

The structure consisted of a timber platform or trackway found at a depth of 4.7m (about the height of a double decker bus) beneath two metres of peat adjacent to an ancient river channel (image available). Previously, the oldest timber structure in Greater London was the timber trackway in Silvertown, which has been dated to 3340-2910 BC, c. 700 years younger.

Wetlands adjacent to rivers such as the Thames were an important source of food for prehistoric people, and timber trackways and platforms made it easier to cross the boggy terrain. The structure discovered at Plumstead is an early example of people adapting the natural landscape to meet human needs. The peat bogs which developed at Plumstead provided ideal conditions to preserve organic materials, which in other environments would have rotted away. The peat not only preserved wood, but also other plant matter - down to microscopic pollen grains - which can inform us about the contemporary landscape.

English Heritage, the government's advisor on the historic environment, provides planning advice in respect of archaeology within Greater London and was involved in the discovery at the Plumstead site.

Mark Stevenson, Archaeological Advisor at English Heritage said: "The discovery of the earliest timber structure in London is incredibly important. The timber structure is slightly earlier in date than the earliest trackways excavated in the Somerset Levels, including the famous 'Sweet Track' to Glastonbury, which provide some of the earliest physical evidence for woodworking in England.

"This large area of development has been the subject of extensive building recording of the old Royal Arsenal (East) site as well as detailed work to map the buried ancient landscape."

Archaeology South-East Senior Archaeologist Diccon Hart, who directed the excavation, commented: "The discovery of the earliest timber structure yet found in the London Basin is an incredibly exciting find. It is testament to the hard work and determination of those who toiled under very difficult conditions to unearth a rare and fascinating structure almost 6,000 years after it was constructed."

Other notable finds from the archaeological excavation include an Early Bronze Age alder log with unusually well-preserved tool marks made by a metal axe. This item has been laser scanned at UCL's Department of Civil, Environmental and Geometric Engineering and is currently undergoing conservation treatment prior to its display in Greenwich Heritage Centre, Woolwich (image available).

The study of the samples will continue for the next couple of years as the archaeological team learns more about this intriguing structure and the environment in which it was built.

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

http://www.sciencedaily.com/releases/2009/08/090812104141.htm

Baltic Sea: Rapid Changes In Winter Climate

ScienceDaily (Aug. 14, 2009) — The Baltic Sea winter climate has changed more in the last 500 years than previously thought. Research at the University of Gothenburg shows that our part of the world has experienced periods of both milder and colder winters, and the transitions between these climate types seem to have been abrupt.

Some of the world's longest climate data series with information on air temperatures and ice coverage in the Baltic Sea area over the last 500 years can be found at the University of Gothenburg's Department of Earth Sciences. Using new statistical methods to study the data series, researcher Christin Eriksson at the Department of Earth Sciences investigated the climatic variations in northern Europe since the 1500s, focusing especially on the winter climate.

Long cold periods

Her study shows that the winter climate in the Baltic Sea region is characterised by long periods of either mild or cold winters, and that the transitions between these different climate types have been rather rapid. The fact that several independent Baltic Sea data series point in the same direction reinforces the researchers' conclusion that the area's winter climate tends to change surprisingly fast.

The data series enabled Eriksson to identify 15 periods during the last 500 years that deviated from average. Eight of these were warmer than average and seven were colder. The study indicates that we are currently in a warm period that started in the late 1800s. It also shows that there has been more variation among the winters in the cold periods than in the warm.

"To be able to understand the effects of global climate change, we must understand how the climate changes regionally," says Eriksson.

Decreased ice coverage

The study also looked at maximal ice coverage and river runoff, and found that the average maximum ice coverage has been lower in the last 100 years than earlier, while the river runoff has been stable. The results suggest that a future temperature increase may lead to a decreasing freshwater supply in the South but an increasing supply in the North, which may significantly affect the salt balance in the Baltic Sea and therefore its sensitive ecosystem.

Adapted from materials provided by University of Gothenburg.

http://www.sciencedaily.com/releases/2009/08/090812092817.htm

Seeking

How the brain hard-wires us to love Google, Twitter, and texting. And why that's dangerous.

By Emily Yoffe
Posted Wednesday, Aug. 12, 2009, at 5:40 PM ET

Seeking. You can't stop doing it. Sometimes it feels as if the basic drives for food, sex, and sleep have been overridden by a new need for endless nuggets of electronic information. We are so insatiably curious that we gather data even if it gets us in trouble. Google searches are becoming a cause of mistrials as jurors, after hearing testimony, ignore judges' instructions and go look up facts for themselves. We search for information we don't even care about. Nina Shen Rastogi confessed in ***Double X***, "My boyfriend has threatened to break up with me if I keep whipping out my iPhone to look up random facts about celebrities when we're out to dinner." We reach the point that we wonder about our sanity. Virginia Heffernan in the *New York Times* said she became so obsessed with Twitter posts about the Henry Louis Gates Jr. arrest that she spent days "refreshing my search like a drugged monkey."

We actually resemble nothing so much as those legendary lab rats that endlessly pressed a lever to give themselves a little electrical jolt to the brain. While we tap, tap away at our search engines, it appears we are stimulating the same system in our brains that scientists accidentally discovered more than 50 years ago when probing rat skulls.

In 1954, psychologist James Olds and his team were working in a laboratory at McGill University, studying how rats learned. They would stick an electrode in a rat's brain and, whenever the rat went to a particular corner of its cage, would give it a small shock and note the reaction. One day they unknowingly inserted the probe in the wrong place, and when Olds tested the rat, it kept returning over and over to the corner where it received the shock. He eventually discovered that if the probe was put in the brain's lateral hypothalamus and the rats were allowed to press a lever and stimulate their own electrodes, they would press until they collapsed.

Olds, and everyone else, assumed he'd found the brain's pleasure center (some scientists still think so). Later experiments done on humans confirmed that people will neglect almost everything—their personal hygiene, their family commitments—in order to keep getting that buzz.

But to Washington State University neuroscientist Jaak Panksepp, this supposed pleasure center didn't look very much like it was producing pleasure. Those self-stimulating rats, and later those humans, did not exhibit the euphoric satisfaction of creatures eating Double Stuf Oreos or repeatedly having orgasms. The animals, he writes in *Affective Neuroscience: The Foundations of Human and Animal Emotions*, were "excessively excited, even crazed." The rats were in a constant state of sniffing and foraging. Some of the human subjects described feeling sexually aroused but didn't experience climax. Mammals stimulating the lateral hypothalamus seem to be caught in a loop, Panksepp writes, "where each stimulation evoked a reinvigorated search strategy" (and Panksepp wasn't referring to Bing).

It is an emotional state Panksepp tried many names for: *curiosity, interest, foraging, anticipation, craving, expectancy*. He finally settled on *seeking*. Panksepp has spent decades mapping the emotional systems of the brain he believes are shared by all mammals, and he says, "Seeking is the granddaddy of the systems." It is the mammalian motivational engine that each day gets us out of the bed, or den, or hole to venture forth into the world. It's why, as animal scientist Temple Grandin writes in *Animals Make Us Human*, experiments show that animals in captivity would prefer to have to search for their food than to have it delivered to them.

For humans, this desire to search is not just about fulfilling our *physical* needs. Panksepp says that humans can get just as excited about abstract rewards as tangible ones. He says that when we get thrilled about the world of ideas, about making intellectual connections, about divining meaning, it is the seeking circuits that are firing.

The juice that fuels the seeking system is the neurotransmitter dopamine. The dopamine circuits "promote states of eagerness and directed purpose," Panksepp writes. It's a state humans love to be in. So good does it feel that we seek out activities, or substances, that keep this system aroused—cocaine and amphetamines, drugs of stimulation, are particularly effective at stirring it.

Ever find yourself sitting down at the computer just for a second to find out what other movie you saw that actress in, only to look up and realize the search has led to an hour of Googling? Thank dopamine. Our internal sense of time is believed to be controlled by the dopamine system. People with hyperactivity disorder have a shortage of dopamine in their brains, which a recent study suggests may be at the root of the problem. For them even small stretches of time seem to drag. An article by Nicholas Carr in the *Atlantic* last year, "Is Google Making Us Stupid?" speculates that our constant Internet scrolling is remodeling our brains to make it nearly impossible for us to give sustained attention to a long piece of writing. Like the lab rats, we keep hitting "enter" to get our next fix.

University of Michigan professor of psychology Kent Berridge has spent more than two decades figuring out how the brain experiences pleasure. Like Panksepp, he, too, has come to the conclusion that what James Olds' rats were stimulating was not their reward center. In a series of experiments, he and other researchers have been able to tease apart that the mammalian brain has separate systems for what Berridge calls *wanting* and *liking*.

Wanting is Berridge's equivalent for Panksepp's seeking system. It is the *liking* system that Berridge believes is the brain's reward center. When we experience pleasure, it is our own opioid system, rather than our dopamine system, that is being stimulated. This is why the opiate drugs induce a kind of blissful stupor so different from the animating effect of cocaine and amphetamines. Wanting and liking are complementary. The former catalyzes us to action; the latter brings us to a satisfied pause. Seeking needs to be turned off, if even for a little while, so that the system does not run in an endless loop. When we get the object of our desire (be it a Twinkie or a sexual partner), we engage in consummatory acts that Panksepp says reduce arousal in the brain and temporarily, at least, inhibit our urge to seek.

But our brains are designed to more easily be stimulated than satisfied. "The brain seems to be more stingy with mechanisms for pleasure than for desire," Berridge has said. This makes evolutionary sense. Creatures that lack motivation, that find it easy to slip into oblivious rapture, are likely to lead short (if happy) lives. So nature imbued us with an unquenchable drive to discover, to explore. Stanford

University neuroscientist Brian Knutson has been putting people in MRI scanners and looking inside their brains as they play an investing game. He has consistently found that the pictures inside our skulls show that the possibility of a payoff is much more stimulating than actually getting one.

Just how powerful (and separate) wanting is from liking is illustrated in animal experiments. Berridge writes that studies have shown that rats whose dopamine neurons have been destroyed retain the ability to walk, chew, and swallow but will starve to death even if food is right under their noses because they have lost the will to go get it. Conversely, Berridge discovered that rats with a mutation that floods their brains with dopamine learned more quickly than normal rats how to negotiate a runway to reach the food. But once they got it, they didn't find the food more pleasurable than the nonenhanced rats. (No, the rats didn't provide a Zagat rating; scientists measure rats' facial reactions to food.)

That study has implications for drug addiction and other compulsive behaviors. Berridge has proposed that in some addictions the brain becomes sensitized to the wanting cycle of a particular reward. So addicts become obsessively driven to seek the reward, even as the reward itself becomes progressively less rewarding once obtained. "The dopamine system does not have satiety built into it," Berridge explains. "And under certain conditions it can lead us to irrational wants, excessive wants we'd be better off without." So we find ourselves letting one Google search lead to another, while often feeling the information is not vital and knowing we should stop. "As long as you sit there, the consumption renews the appetite," he explains.

Actually all our electronic communication devices—e-mail, Facebook feeds, texts, Twitter—are feeding the same drive as our searches. Since we're restless, easily bored creatures, our gadgets give us in abundance qualities the seeking/wanting system finds particularly exciting. Novelty is one. Panksepp says the dopamine system is activated by finding something unexpected or by the anticipation of something new. If the rewards come unpredictably—as e-mail, texts, updates do—we get even more carried away. No wonder we call it a "CrackBerry."

The system is also activated by particular types of cues that a reward is coming. In order to have the maximum effect, the cues should be small, discrete, specific—like the bell Pavlov rang for his dogs. Panksepp says a way to drive animals into a frenzy is to give them only tiny bits of food: This simultaneously stimulating and unsatisfying tease sends the seeking system into hyperactivity. Berridge says the "ding" announcing a new e-mail or the vibration that signals the arrival of a text message serves as a reward cue for us. And when we respond, we get a little piece of news (Twitter, anyone?), making us want more. These information nuggets may be as uniquely potent for humans as a Froot Loop to a rat. When you give a rat a minuscule dose of sugar, it engenders "a panting appetite," Berridge says—a powerful and not necessarily pleasant state.

If humans are seeking machines, we've now created the perfect machines to allow us to seek endlessly. This perhaps should make us cautious. In *Animals in Translation*, Temple Grandin writes of driving two indoor cats crazy by flicking a laser pointer around the room. They wouldn't stop stalking and pouncing on this ungraspable dot of light—their dopamine system pumping. She writes that no wild cat would indulge in such useless behavior: "A cat wants to *catch* the mouse, not chase it in circles forever." She says "mindless chasing" makes an animal less likely to meet its real needs "because it short-circuits intelligent stalking behavior." As we chase after flickering bits of information, it's a salutary warning.

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Article URL: http://www.slate.com/id/2224932/

What Puzo Godfathered 40 Years Ago

By ALLEN BARRA

In 1969, an obscure middle-aged novelist and pulp magazine journalist named Mario Gianluigi Puzo hit the literary jackpot. He wrote "The Godfather," he later told Larry King, "to make money." By his own admission, it wasn't well written. "If I'd known so many people were going to read it," he famously said, "I'd have written it better."

How many people have read it? It can be said with some certainty that having sold between 20 million and 30 million copies, "The Godfather" is one of the best-selling books of all time. By most yardsticks, it is one of the top 10 best-selling works of American fiction. Four decades later, it's still selling, in a paperback edition from the New American Library.

The reasons for its enduring popularity aren't easy to pin down. Of course, Francis Ford Coppola's masterpieces, "The Godfather" and "The Godfather, Part II," brought a swarm of new readers, but the book had already sold millions of copies before the first film was released in 1972.

Those who read the novel today in search of a greater appreciation of the movies are bound to be disappointed; it quickly becomes apparent the book's success isn't based on literary merit. The late 1960s were the peak period of "novelizations"—easy-reading books aimed at fans of popular movies. Puzo, along with Michael Crichton, Peter Benchley and John Grisham, helped usher in an era when the novelization would *precede*, not follow, the film. Puzo had previously written critically praised but virtually unread novels about the Italian-American experience, most notably "The Fortunate Pilgrim"; with "The Godfather," he went from being a novelist to a novelizationist.

Wilfrid Sheed correctly described the prose of "The Godfather" as "speed writing clichés." One searches the novel in vain for the verbal poetry in the films, lines such as "Luca Brasi sleeps with the fishes" and "Leave the gun, take the cannolis." And yet, as the New Yorker's Pauline Kael noted in her review of the film, "There was a Promethean spark in Puzo's trash." What exactly was that spark?

Gay Talese, whose "Honor Thy Father" is perhaps the classic nonfiction book about the Italian mob, thinks it can be summed up in four syllables: "La famiglia." A friend of Puzo until his death in 1999, Mr. Talese says: "Mario didn't know much about organized crime, but he certainly knew how to depict an Italian family. Take away the gambling and the murder, and it's pretty much a straightforward story about how Italian-American families were assimilated into American culture." George De Stefano's "An Offer We Can't Refuse: The Mafia in the Mind of America" examines, among other things, the impact of "The Godfather" and how it reflects Italian-Americans. He says that "we saw our families in that book, and, for the first time, a great many Americans saw us. It wasn't a pretty image, or a tranquil one, but it was never dull, and it was new to most people."

Italian-American gangsters were a part of our popular culture long before Puzo's novel. "But it was Puzo's genius to turn them into family men," says Maria Laurino, author of "Old World Daughter, New World Mother: An Education in Love and Freedom." "All those elaborate passages in 'The Godfather' which describe the family patriarch presiding over weddings and baptisms and then ordering murders gave a new dimension to the image of the Italian father," Ms. Laurino notes. "Movies had always shown the murders but never told us that these men had daughters and godchildren."

The popularity of Puzo's novel caught America by surprise because it seemed to go against the grain of everything that was dominating the news of the time: the assassinations of Martin Luther King Jr. and Bobby Kennedy, Woodstock, Altamont, the moon landing, the Vietnam War. "In times of such social upheaval, who cared about the fortunes of a family of Italian-American immigrants?" asks Mr. Talese. As it turned out, just about everybody did. "I think there was a lot of unrest about the dissolution of the American family, and many Americans of other backgrounds were fascinated by the idea that they would

kill to uphold their family values and traditions—appalled, but fascinated. Mario touched a nerve that most Americans didn't realize was even there."

Italian-Americans have always been ambivalent about "The Godfather." While the book and the films made it hip to have a name that ended in a vowel, there were many who wanted to consign Puzo to the lowest circle of Dante's Inferno for forever labeling organized crime as Italian. Historians of the early mob point out such names as Arnold Rothstein, Owney Madden, Meyer Lansky, Dion O'Bannon, Dutch Schultz (aka Arthur Flegenheimer) and Jack "Legs" Diamond, but in Puzo's novel, crime is treated as "La Cosa Nostra"—our thing.

If he isn't burning for that, Puzo is surely doing time in the Purgatorio for suggesting that Frank Sinatra owed his success to the Mafia. One horse's head in a movie producer's bed, and Puzo's Sinatra stand-in, Johnny Fontane, "went on to become the greatest singing sensation in the country." As if the greatest singer of popular standards in American music needed a godfather to put a gun to the collective heads of record buyers.

Perhaps, though, Puzo deserves a suspended sentence for his contribution to film rather than literature. The enormous success of the book poses an interesting question: Why didn't the descendants of Dante produce more first-rate writers in this country? The likely answer is that the grandparents of the great Italian-American film directors—Mr. Coppola, Martin Scorsese, Brian DePalma, Michael Cimino, Quentin Tarantino and others—came here unable to speak a new language and illiterate even in their native tongue. The younger generation found a new medium to turn the pulp of Mafia legend into art.

If Puzo wasn't a genius, he at least found a way to inspire genius. One might call him the Godfather of Italian-American film.

—Mr. Barra writes about arts and sports for the Journal.

http://online.wsj.com/article/SB10001424052970204886304574308603266273652.html