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Final Act

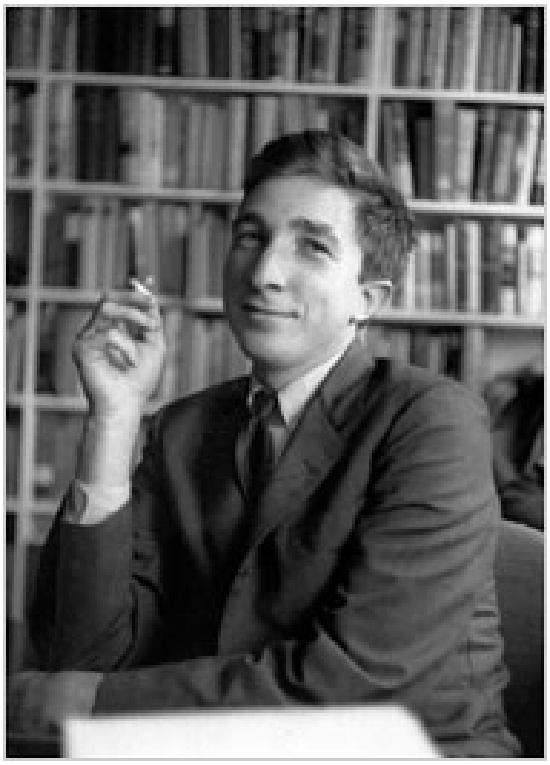
By CLIVE JAMES

ENDPOINT

And Other Poems

By John Updike

97 pp. Alfred A. Knopf. $25



John Updike was always so careful not to make high claims for himself as a poet that he gave his more owlish critics the opportunity to say he wasn't a poet at all. They should have looked harder. Most of the poems he ever published in book form counted as light verse, but his light verse was dauntingly accomplished. Very few recognized poets could handle the formal element that well, and occasionally there was a serious poem with all the linguistic vigor of the prose that had made his novels compulsory reading.

Nevertheless, and despite a fairly large body of work as a poet, it was as a novelist that he was hailed. Clearly he had poetic qualities as a writer: he had the imagery, the observation, the rhythm, the delight in making words click into their ideal working order. But it was into his novels that he put these things, was it not? Nobody, and especially not other poets, wanted to think of him as a poet as well. Helpfully, he appeared to think the same.

But this posthumous volume, "Endpoint: And Other Poems," tells a different story. Consisting entirely of poems he wrote in the last years of his life, it is a serious book indeed. The subject is his approaching death, and it turns out that he started treating it as a special poetic subject several years back. The "Endpoint" poems, written at the rate of roughly one a year since 2002, deal with no other theme, and the "Other" poems are plainly collected and grouped so as to reinforce the same theme from all directions, especially the direction of the past.

The lawn's begun to green. Beyond the Bay —
where I have watched, these twenty years, dim ships
ply the horizon, feeding oil to Boston,
and blinking lights descend, night after night,
to land unseen at Logan — low land implies
a sprawl of other lives, beneath torn clouds.

In these "Endpoint" summaries the Top Gun technician makes it easy for himself from the mechanical angle: the forms are loose and unrhymed, held together only by the beat of the iambic pentameter. But from the thematic angle there is a strict discipline in operation. Every recollection has to be specific. If it passes that test, it can come from as far back as early childhood.

The way these poems search their author's early mind suggests he has belatedly discovered a modus operandi that he might have used all along. He used the novel instead, with results that we all know. The Rabbit and the Bech novels placed him securely among the high achievers of Team America, up there with Roth and Bellow, and made him more substantially accredited, as a novelist, than Mailer, Vidal and Salinger. Yet when it came to the last he chose another form.

In his early verse, Updike could be boastful about his sexual prowess. Here, at the 11th hour, he is more regretful about his overmastering, though obviously masterful, early lust.

I drank up women's tears and spat them out
as 10-point Janson, Roman and ital.

The typeface vocabulary is the tip-off to where those early feelings of virile immortality came from. It was being a published writer that turned him into Errol Flynn. (That priapic actor is tellingly invoked here, along with, for other qualities, Jack Benny, Fred Astaire and Lucian Freud. The book is a gallery of role models.) In the New York publishing world, natural home of the Jewish upmarket wordsmiths, he saw himself as the go-to goy who could write anything. He reveled in the girl-getting fame.

Details of his earlier life are plentiful in the sequence, giving us a touching counterpoint to the details of his life coming to an end. For that second aspect, no detail is too grim to be recorded. Updike was always a clinical observer of his own body. Right to the wire, he took inventory; he had the mind of a regimental quartermaster. We find him planning the guest list for the last hours: "My visitors, my kin." The celebrities in the "Other" poems would clearly be invited, too, had they not already moved on. For the young Updike, Frankie Laine ranked with Flynn, Benny and Astaire as an incarnation of the all-male possibilities. Like a classical poet calling up a shade from the halls of Dis, Updike addresses Laine's ghost through the teenage-hormone-laden haze of the Sweet Shop in 1949:

Your slick voice, nasal yet operatic, sliced
and soared, assuring us of finding our
desire, at our old rendezvous.

The famous faces and voices lay out the terms of the sexual drama that will be the writer's life. Doris Day looms large, especially with regard to her bosom, which Updike in his first days of fact-based social research was pleased to discover was as ample as Marilyn Monroe's, just more discreetly reined in. As a teenage prodigy Updike was mad about Doris Day, and on his deathbed he still is. Philip Roth and Nicholson Baker would acknowledge the tone in which he addresses her shade:

Give me space to get over the idea of you —
the thrilling silver voice,
the gigantic silver screen. Go
easy on me. Cara, let's take our time.

The phrase "gigantic silver screen" is uncharacteristically automatic: in a novel Updike would not have permitted himself to be so ordinary. But poetry was his holiday. A pity, perhaps — though he would have had to live in a smaller house, he might have written the poetry that reported America. He could have given us a lot more about Doris Day. Frank O'Hara became famous largely for a single mention of Lana Turner.

The poetic reporting of America began before Whitman, and in the 20th century even the novelists joined in. Not many recognized poets wrote as effectively about actual events as John Dos Passos did in the montage passages of his "U.S.A." trilogy, the work that, for the future stars of Team America, made their mission clear. But Updike was unusually well qualified to write the kind of poem that gives a news event its historic dimension. Witness his bloodcurdling poem about the death of the golfer Payne Stewart in the private jet

that rode the automatic pilot up and down
like a blind man doing the breast stroke
at forty thousand feet, for hours.

Updike could have reported the nation like this all his life, but he chose another method. Let there be no doubt, though, about the high quality of what he might have done. In a single poem, he did enough to prove that he not only had the whole tradition of English-language poetry in his head, he had the means to add to it. “Bird Caught in My Deer Netting” deliberately and justifiably echoes Frost in its title, and in its body we can hear Gerard Manley Hopkins and John Crowe Ransom and — well, everyone, really, Jack Benny included.

How many starved hours of struggle resumed
in fits of life’s irritation did it take
to seal and sew shut the berry-bright eyes
and untie the tiny wild knot of a heart?
I cannot know, discovering this wad
of junco-fluff, weightless and wordless
in its corner of netting deer cannot chew through
nor gravity-defying bird bones break.

It’s a wonderful poem, but we shouldn’t fool ourselves. He wrote very few like it, and usually, even on the comparatively rare occasions when he tried to give it everything, he was led toward frivolity by his fatal propensity for reveling in skill. But his very last book, a book of poems, proves that he always had what it took.

Clive James’s most recent books are “Cultural Amnesia,” an essay collection, and “Opal Sunset: Selected Poems, 1958-2008.”

http://www.nytimes.com/2009/05/03/books/review/James-t.html?8bu&emc=bua2

Southern Glaciers Grow Out Of Step With North

The moraine at Tasman Glacier shows glacial melting and climate change in the last 150 years. (Credit: Joerg Schaefer)

ScienceDaily (May 1, 2009) — The vast majority of the world's glaciers are retreating as the planet gets warmer. But a few, including ones south of the equator, in South America and New Zealand, are inching forward.

A new study in the journal *Science* puts this enigma in perspective; for the last 7,000 years New Zealand's largest glaciers have often moved out of step with glaciers in the northern hemisphere, pointing to strong regional variations in climate.

Conventional wisdom holds that climate during the era of human civilization has been relatively stable, but the new study is the latest to challenge this view, by showing that New Zealand's glaciers have gone through rapid periods of growth and decline during the current interglacial period known as the Holocene.

"New Zealand's mountain glaciers have fluctuated frequently over the last 7,000 years and glacial advances have become slightly smaller through time," said lead author Joerg Schaefer, a geochemist at Columbia University's Lamont-Doherty Earth Observatory. "This pattern differs in important ways from the northern hemisphere glaciers. The door is open now towards a global map of Holocene glacier fluctuations and how climate variations during this period impacted human civilizations."

Glaciers are extremely sensitive to changes in temperature and snowfall, which makes them well suited for studying past climate. This archive has been largely untapped, however, because of the difficulty in assigning precise ages to glacier fluctuations.

One way to measure glacial fluxes is by studying the moraines, or rock deposits that glaciers often leave behind at their maximum points of advance. However, until now the methods of dating such moraines, including radiocarbon dating of organic matter, could be off by hundreds of years. By refining the analysis of a method called cosmogenic dating, Schaefer and his colleagues were able for the first time to assign precise ages to young Holocene moraines. They did this by measuring minute levels of the chemical isotope beryllium 10 in the rocks, which is produced when cosmic rays strike rock surfaces, and builds up over time. The researchers were thus able to pinpoint exactly when glaciers in New Zealand's Southern Alps began to recede, exposing the rocks to the cosmic rays.

From the results, they constructed a glacial timeline for the past 7,000 years and compared it against historic records from the Swiss Alps and other places north of the equator.

They found that the glaciers around Mount Cook, New Zealand's highest peak, reached their largest extent in the past 7,000 years about 6,500 years ago, when the Swiss Alps and Scandinavia were relatively warm. That's about 6,000 years before northern glaciers hit their Holocene peak during the Little Ice Age, between 1300 and 1860 AD.

That finding was a surprise to some scientists who assumed that the northern cold phase happened globally. The record in New Zealand shows other disparities that point to regional climate variations in both hemispheres, including glacial peaks during classic northern warm intervals such as the Medieval Warm Period and the Roman Age Optimum.

The new chemical and analytical protocols developed in Schaefer's cosmogenic dating lab is expected to allow scientists to accurately date glacier fluctuations throughout the Holocene, rounding out the climate picture on the continents.

"With this measure we can go to almost any mountain range on earth and date the moraines in front of the glaciers and produce a similar chronology," said coauthor George Denton, a glaciologist who is a senior professor at the University of Maine and an adjunct scientist at Lamont-Doherty.

Overall, glaciers around the world have been declining since about 1860, with the exception of a brief advance in Switzerland in the 1980s, New Zealand in the late 1970s through today, and a few other places. Changes in wind and sea surface temperatures are thought to be causing these regional fluctuations. Currently in a wet phase, New Zealand is expected to swing back to a warmer, drier phase in the next few years, causing the glaciers to retreat once again.

"The application of this technique should allow for much more accurate reconstructions of glacial advances worldwide," says Paul Filmer, program director for the National Science Foundation (NSF)'s Division of Earth Sciences, which helped fund the study. "This would provide more constraints to allow us to make our climate models more accurate."

The study also received funding from the Comer Science and Education Foundation and the New Zealand Foundation for Research, Science and Technology.

The other researchers involved in the study were: Michael Kaplan and Roseanne Schwartz, also of Lamont-Doherty; Aaron Putnam, University of Maine; Robert Finkel, University of California, Berkeley; David Barrell, GNS Science, New Zealand; Bjorn Anderson, University of Oslo; Andrew Mackintosh, Victoria University of Wellington, New Zealand; Trevor Chinn, Alpine and Polar Processes Consultancy, New Zealand; Christian Schluchter, University of Bern, Switzerland.

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Adapted from materials provided by The Earth Institute at Columbia University.

http://www.sciencedaily.com/releases/2009/04/090430144535.htm

Finding kitsch's inner beauty

Garden gnomes and Elvis busts be damned!

Robert Fulford, National Post

Peter Battistoni, Canwest News Service

So what's wrong with kitsch, exactly? It's garish, tasteless and sentimental, of course. Garden gnomes and conventions of Elvis impersonators may be its most outlandish examples, but you can find kitsch every day in every corner of the mass media. Manufacturers of movies, TV shows and best-selling novels build empires on the essence of kitsch -- an imitation of human feeling wrapped in a thick layer of cuteness.

Still, if nearly everyone likes it, how bad can it be? "Kitsch is the daily art of our time, as the vase or the hymn was for earlier generations," said Harold Rosenberg, the great art critic. Milan Kundera argued, "No matter how much we scorn it, kitsch is an integral part of the human condition." And they were writing before the appearance of "reality" television, which repackages kitschy old conventions of popular drama as public competition, bringing to "real" people the humiliation and cruelty traditionally endured by imaginary losers in mass-culture fiction.Kitsch has its defenders, often articulate ones. Typically, they find it endearing because full-bore kitsch can be enjoyed in two ways at the same moment, for itself and as a parody of itself. A one-size-fits-all style, it's designed to satisfy audiences at any level of sophistication.

On the back jacket of Roger Scruton's new book, Beauty (Oxford), you can find a tiny drawing of a garden gnome. On the front there's a woman's face by Sandro Botticelli. The two illustrations point us toward the sharp line that runs through the book: Thoughtful Renaissance beauty is good, brainless gnomes with pointed hats bad.A book about beauty naturally must deal with its opposite, kitsch. This is not "just a matter of taste," which much of the world dismisses as ethically neutral. It's a moral issue, as Scruton goes some distance toward proving.

A British philosopher and an outspoken conservative, he holds the now marginalized view that philosophers should do what most of them long ago stopped even considering: They should try to help the rest of us think about issues that matter.

Aside from his work on philosophers such as Immanuel Kant and Baruch Spinoza, he's written two books on the aesthetics of architecture, one on the aesthetics of music, an analysis of sexual desire, a study of animal rights and now a vigorous, combative account of beauty's meaning.

We miss the point if we think that beauty in art or literature or music has finished its job when it provides pleasure. Scruton argues, reasonably, that beauty also makes ethical demands on us. Its existence challenges us to "renounce our narcissism and look with reverence on the world."

Kitsch encourages us to dwell on our own satisfactions and anxieties; it tells us to be pleased with what we have always felt and known. It reaches us at the level where we are easiest to please, a level requiring a minimum of mental effort.

Beauty, on the other hand, demands we consider its meaning. It implies a larger world than the one we deal with every day. Even for those with no religious belief, it suggests the possibility of transcendence. Faith has declined in much of the West, but "art bears enduring witness to the spiritual hunger and immortal longings of our species." As one reviewer has already pointed out, Scruton's "perspective is religious without belief."At the other end of the scale, kitsch ("that peculiar disease that we can instantly recognise but never precisely define, and whose Austro-German name links it to the mass movements and crowd sentiments of the 20th century") degrades beauty through the Disneyfication of art. Kitsch trivializes human conflict and demotes feeling into bathos. It's a mould that forms, as Scruton says, over a living culture.

The moral effect of kitsch may be obscured by sentiment but it's there. Kitsch, Scruton correctly points out, is a heartless world. It directs emotion away from its proper target towards sugary stereotypes, permitting us to pay passing tribute to love and sorrow without truly feeling them. "It is no accident that the arrival of kitsch on the stage of history coincided with the hitherto unimaginable horrors of trench warfare, of the Holocaust and the Gulag -- all of them fulfilling the prophecy that kitsch proclaims, which is the transformation of the human being into a doll, which in one moment we cover with kisses, and in the next tear to shreds." Leni Riefenstahl's Triumph of the Will is kitsch's most exultant moment, its massed Nazis both adored and turned into statues.As for beauty, the opposite of kitsch, recent decades have not treated it kindly. That's particularly true in the visual arts. Perhaps a large public still believes in the idea of beauty, but that same public mostly ignores (and is ignored by) the highly professionalized world of art critics, professors, curators -- and selfconsciously serious artists. "Beautiful" ceased to be an adjective of praise in the art world decades ago. It's become the virtue that dares not speak its name. There are now more people writing about art than ever before; what they are not writing about is beauty.

Daily life, in Scruton's view, has dignity and worth only if embedded in something grand and beautiful. He's particularly good on homey details, from the design of a door to laying a table. Scruton can acknowledge the beauty of wilderness, but seems more enthusiastic about a garden, wilderness disciplined by human hands, "an extension of the human world, mediating between the built environment and the world of nature." Sometimes Scruton tries too hard to reassure us. "Beauty demands to be noticed," he says. "It speaks to us directly like the voice of an intimate friend." (If we are listening, he forgets to add.) In any case, he grows optimistic when writing of the possibility of a "community of taste," which he's trying to revive. Following Kant, his master in this sphere, he sees beauty as something communally valued. In an ideal world, no one would need to argue for beauty. A consensus would support it.

Scruton takes pleasure in his status as an outsider among philosophers. He's a conservative populist, always eager to write coherently for a large public, always hopeful that he can bring the people to his side, even when he makes what many will consider outrageously stern demands on them.

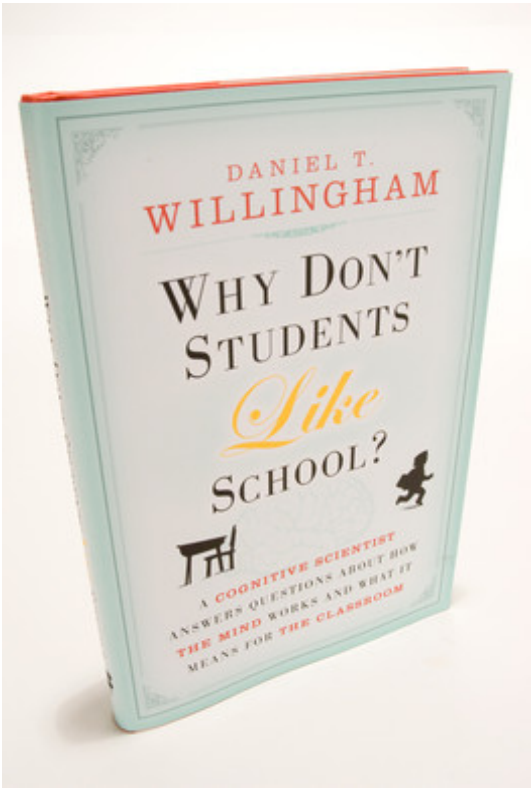
http://www.nationalpost.com/story-printer.html?id=34b2e4cc-6760-49b1-8cb0-a6642d73a6d1

How to Wake Up Slumbering Minds

Will the discoveries of neuroscientists help us to think, learn and remember?

By CHRISTOPHER F. CHABRIS

We are in the midst of an explosion of knowledge about how the human mind and brain work -- how memory comes in many different types, each stored in a different part of the brain; how our minds constantly process information outside our conscious awareness; how differences in brain function help to define differences in our personalities. A lot of this new knowledge raises provocative questions, not least about human nature.



But as disgruntled students have been saying for ages: How are we ever going to use this stuff? Chemistry can boast of miracle drugs, and genetics has done wonders for our food supply and for medical diagnosis. What about psychology and neuroscience? Shouldn't research on learning and memory and thinking help us to learn, remember and think better?

Daniel T. Willingham thinks that it should. In "Why Don't Students Like School?" he poses nine questions that a teacher might want to ask a cognitive scientist -- beginning with the question in the title -- and then answers each, citing empirical studies and suggesting ways for teachers to improve their practice accordingly. But Mr. Willingham's answers apply just as well outside the classroom. Corporate trainers, marketers and, not least, parents -- anyone who cares about how we learn -- should find his book valuable reading.

So why don't students like school? According to Mr. Willingham, one major reason is that what school requires students to do -- think abstractly -- is in fact not something our brains are designed to be good at or to enjoy. When we confront a task that requires us to exert mental effort, it is critical that the task be just difficult enough to hold our interest but not so difficult that we give up in frustration. When this balance is struck, it is actually pleasurable to focus the mind for long periods of time. For an example, just watch a person beavering away at a crossword or playing chess in a noisy public park. But schoolwork and classroom time rarely keep students' minds in this state of "flow" for long. The result is boredom and displeasure. The challenge, for the teacher, is to design lessons and exercises that will maximize interest and attention and thus make students like school at least a bit more.

Why Don't Students Like School?
By Daniel T. Willingham
(Jossey-Bass, 180 pages, $24.95)

Elsewhere Mr. Willingham has his curious teacher ask: "Is drilling worth it?" The answer is yes, because research shows that practice not only makes a skill perfect but also makes it permanent, automatic and transferable to new situations, enabling more complex work that relies on the basics. Another question: "What is the secret to getting students to think like real scientists, mathematicians, and historians?"

According to Mr. Willingham, this goal is too ambitious: Students are ready to understand knowledge but not create it. For most, that is enough. Attempting a great leap forward is likely to fail.

It should be said that Mr. Willingham, a psychology professor at the University of Virginia, is not in favor of merely making learning "fun" or "creative." He advocates teaching old-fashioned content as the best path to improving a student's reading comprehension and critical thinking. Such a view makes Mr. Willingham something of an iconoclast, since 21st-century educational theory is ruled by concepts like "multiple intelligences" and "learning styles."

Mr. Willingham notes that students cannot apply generic "critical thinking skills" (another voguish concept) to new material unless they first understand that material. And they cannot understand it without the requisite background knowledge. The same is true of learning to read: Trying to use "reading strategies" -- like searching for the main idea in a passage -- will be futile if you don't know enough facts to fill in what the author has left unsaid. Here, as always, Mr. Willingham shows how experiments support his claims.

The trendy notion that each person has a unique learning style comes under an especially withering assault. "How should I adjust my teaching for different types of learners?" asks Mr. Willingham's hypothetical teacher. The disillusioning reply: "No one has found consistent evidence supporting a theory describing such a difference. . . . Children are more alike than different in terms of how they think and learn."

It turns out that while education gurus were promoting the uplifting vision of all students being equal in ability but unique in "style," researchers were testing the theory behind it. In one experiment, they presented vocabulary words to students classified as "auditory learners" and "visual learners." Half the words came in sound form, half in print. According to the learning-styles theory, the auditory learners should remember the words presented in sound better than the words presented in print, and vice-versa for the visual learners.

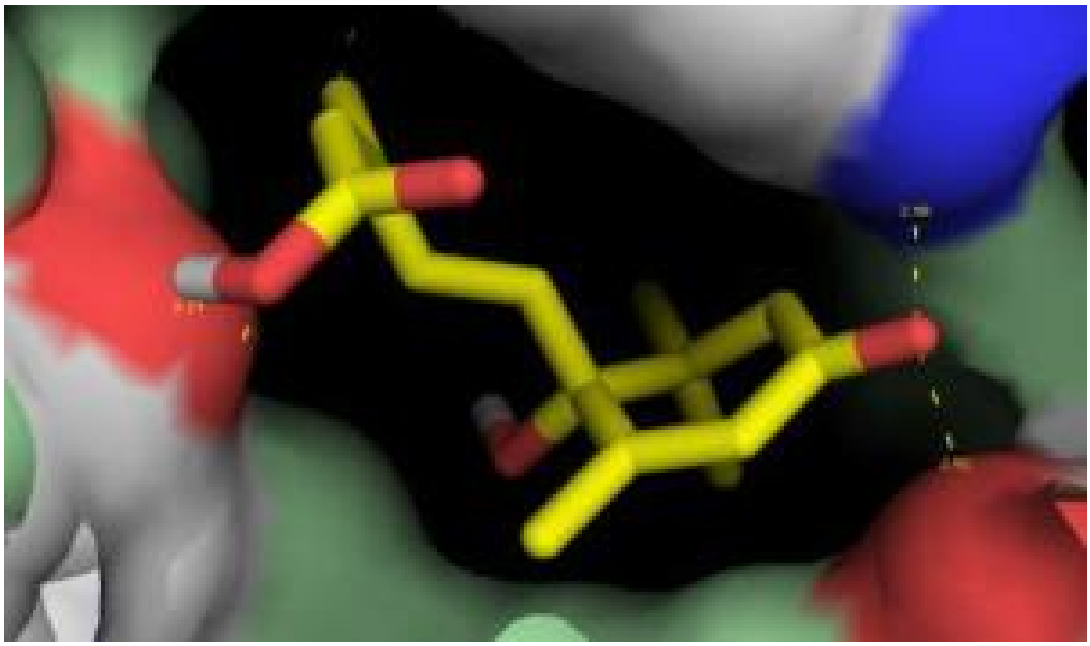
But this is not what happened: Each type of learner did just as well with each type of presentation. Why? Because what is being taught in most of the curriculum -- at all levels of schooling -- is information about *meaning*, and meaning is independent of form. "Specious," for instance, means "seemingly logical, but actually fallacious" whether you hear it, see it or feel it out in Braille. Mr. Willingham makes a convincing case that the distinction between visual, auditory and kinesthetic learners (who supposedly learn best when body movement is involved) is a specious one. At some point, no amount of dancing will help you learn more algebra.

One is tempted to criticize "Why Don't Students Like School?" in only one respect. The text is peppered with the kind of attention-grabbing but ultimately pointless pictures that abound in contemporary textbooks. When Mr. Willingham cleverly describes an episode of the TV medical drama "House" to illustrate how experts think differently from novices -- they don't necessarily have more knowledge but they do focus more rapidly on the most relevant information -- he wastes almost half a page on a photograph of the actor who plays the main character. The space would be better spent on more of Mr. Willingham's brilliant analysis of how we really learn and his keen insight about how we ought to teach.

Mr. Chabris is a psychology professor at Union College in Schenectady, N.Y.

http://online.wsj.com/article/SB124079001063757515.html

Key Gene Allows Plants To Survive Drought



This is a hypothetical model of what abscisic acid (ABA) looks like when bound to the receptor protein, PYR1. The yellow molecule is ABA and it is bound inside a pocket of PYR1. The colored regions in PYR1 (blue red, connected by dashed lines) show parts of PYR1 that are predicted to contact ABA. The distances between contacts points are shown with numbers (units = angstroms). (Credit: Cutler lab, UC Riverside)

ScienceDaily (May 1, 2009) — A team of scientists from Canada, Spain and the United States has identified a key gene that allows plants to defend themselves against environmental stresses like drought, freezing and heat.

"Plants have stress hormones that they produce naturally and that signal adverse conditions and help them adapt," says team member Peter McCourt, a professor of cell and systems biology at the University of Toronto. "If we can control these hormones we should be able to protect crops from adverse environmental conditions which is very important in this day and age of global climate change."

The research team, led by Sean Cutler of the University of California, Riverside, has identified the receptor of the key hormone in stress protection called abscisic acid (ABA). Under stress, plants increase their ABA levels, which help them survive a drought through a process not fully understood. The area of ABA receptors has been a highly controversial topic in the field of plant biology that has involved retractions of scientific papers as well as the publication of papers of questionable significance.

A receptor is a protein molecule in a cell to which mobile signaling molecules may attach. Usually at the top of a signaling pathway, the receptor functions like a boss relaying orders to the team below that then executes particular decisions in the cell. "Scientists have been trying to solve the ABA receptor problem for more than 20 years, and claims for ABA receptors are not easily received by the scientific community," says Cutler.

This team used a new approach called chemical genomics to identifying a synthetic chemical, designated pyrabactin, which specifically activates an ABA receptor in the model laboratory plant Arabidopsis. With pyrabactin in hand it was now possible to directly identify the ABA receptor. "This approach not only found a gene that had been long sought by the plant science research community but also showed that

chemical genomics can identify new chemicals like pyrabactin that may have profound impacts on the way we farm in both the developing and developed world," says McCourt.

The study results will appear April 30 in *Science Express* and in the May 22 issue of *Science* magazine. Lead author Sean Cutler is a former University of Toronto scientist who is now an assistant professor of plant cell biology in the Department of Botany and Plant Sciences at the University of California, Riverside. In addition to the University of Toronto and the University of California, Riverside, team members were from University of California, San Diego, Universidad Politecnica, Spain, the University of Ontario Institute of Technology, University of California, Santa Barbara; and the Medical College of Wisconsin.

Research was funded by the Canada Research Chair program, the Natural Sciences and Engineering Research Council. the National Science Foundation and the National Institutes of Health.

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Adapted from materials provided by University of Toronto.

http://www.sciencedaily.com/releases/2009/04/090430144541.htm

60 Percent Of Americans Live In Areas Where Air Is Dirty Enough To Endanger Lives

Los Angeles. Nearly every major city in the U.S. is still burdened by significant air pollution. (Credit: iStockphoto/Christian Aiello)

ScienceDaily (Apr. 30, 2009) — The 10th annual American Lung Association State of the Air report released April 29 finds that six out of ten Americans--186.1 million people -- live in areas where air pollution levels endanger lives. State of the Air 2009 acknowledges substantial progress against air pollution in many areas of the country, but finds nearly every major city still burdened by air pollution. Despite America's growing "green" movement, the air in many cities became dirtier. The State of the Air report includes a national air quality "report card" that assigns A-F grades to communities across the country. The report also ranks cities and counties most affected by the three most widespread types of pollution (ozone—or smog, annual particle pollution, and 24-hour particle pollution levels) and details trends for 900 counties over the past decade."This should be a wake-up call. We know that air pollution is a major threat to human health," said Stephen J. Nolan, American Lung Association National Board Chair. "When 60 percent of Americans are left breathing air dirty enough to send people to the emergency room, to shape how kids' lungs develop, and to kill, air pollution remains a serious problem."The report finds that air pollution hovers at unhealthy levels in almost every major city, threatening people's ability to breathe and placing lives at risk. Some of the biggest sources of air pollution, including dirty power plants, dirty diesel engines and ocean-going vessels, also worsen global warming.

"The more we learn, the more urgent it becomes for us to take decisive action to make our air healthier," added Nolan.Many cities, like Los Angeles, New York, Atlanta, Charlotte, Philadelphia, Washington, D.C., and Baltimore have made considerable improvements in their air quality over the past decade. People living in some of these cities however, are breathing even dirtier air than what was reported in the Lung Association's 2008 report. Only one city—Fargo, N.D.—ranked among the cleanest in all three air pollution categories covered in State of the Air.

Ozone

Sixteen cities making this year's 25 most ozone-polluted list experienced worsened ozone (smog) problems than last year's report found. Fifty-eight percent of people in the United States live in counties with recorded unhealthy levels of ozone air pollution, measured against the tighter standard in effect since March 2008. The new standard showed that unhealthy ozone levels are more widespread and more severe than previously recognized.The report's review of the past 10 years identified consistent improvements in ozone in some cities, most notably Los Angeles, which has long been recognized for its serious ozone problem. By contrast, two cities, Dallas-Ft. Worth and Las Vegas, have higher ozone levels than 10 years ago. The report reviewed all previous data against the new EPA standard to appropriately trace the trends.

Ozone is the most widespread form of air pollution. When inhaled, ozone irritates the lungs, resulting in something like a bad sunburn. The health effects of breathing ozone pollution can be immediate. Ozone can cause wheezing, coughing and asthma attacks. Breathing ozone pollution can even shorten lives.

"More than 175 million Americans live in areas with unhealthy smog levels—that's 80 million more than we identified in last year's report," explained Charles D. Connor, American Lung Association President and CEO. "We at the American Lung Association believe that the new ozone standard is not yet strong enough to protect human health—an opinion nearly all scientific experts share."

Particle Pollution

State of the Air grades counties for both 24-hour and year-round particle pollution levels. Particle pollution is a toxic mix of microscopic soot, diesel exhaust, chemicals, metals and aerosols. It is the most dangerous and deadly of the outdoor air pollutants that are widespread in America. Breathing in particle pollution can increase the risk of early death, heart attacks, strokes and emergency room visits for asthma and cardiovascular disease.One in six people in the United States lives in an area with unhealthy year-round levels of fine particle pollution (termed annual average levels). Nine cities in the list of the 25 most polluted by year-round particle pollution showed measurable improvement, including five cities that reported their best year-round levels since the Lung Association began tracking this pollutant: Pittsburgh, Cincinnati, Atlanta, York, Pa., and Lancaster, Pa. The annual average level of particle pollution worsened in a dozen cities, including Bakersfield, Calif., Los Angeles and Houston.

Roughly 3 in 10 Americans live in counties with unhealthful spikes of particle pollution which can last from hours to days (termed 24-hour levels). Thirteen cities had more days—or more severe days—of spikes than in last year's report. Eleven cities have improved continually since the 2007 report.Emerging research has redefined the severity and immediate health impacts of particle pollution and ozone, as well as an expanded definition of specific groups at great risk. New data show that women in their 50's may be particularly threatened by air pollution and that diesel truck drivers and dockworkers who are forced to breathe exhaust on the job may face a greater risk of developing lung cancer or chronic obstructive pulmonary disease. California researchers have tripled their estimate of the number of people that particle pollution kills each year in their state."The science is rock-solid. We now know that air pollution can impair the lung function of even the healthiest people," said Norman H. Edelman, MD, American Lung Association Chief Medical Officer. "Air pollution worsens asthma and is a direct cause of heart attacks, which makes people living with lung and heart disease especially vulnerable."

Low income people and some racial and ethnic groups often face greater risk from pollutants. Pollution sources like factories and power plants may be closer to their homes. Many live near areas with heavy highway traffic or have poor access to health care, which makes them even more vulnerable. Some racial and ethnic groups have a higher prevalence of diseases like asthma or diabetes, which compounds the ill effects of air pollution for these groups."We need to renew our commitment to providing healthy air for all our citizens—a commitment the United States made almost 40 years ago when Congress passed the Clean Air Act," Connor said. "After four decades, we still have much work to do. America needs to cut emissions from big polluters like coal-fired power plants and ocean-going vessels. We need to fix old dirty diesel engines to make them cleaner and strengthen the ozone standards to better protect our health. We also need to improve the decaying infrastructure of air monitors. America must now enforce the laws that help us improve our nation's air quality."

As America faces the challenges of air pollution, global warming and energy, the American Lung Association urges Congress, the EPA and individuals to choose solutions that help solve all three challenges together. Some steps that sound like good solutions for one problem can make air pollution worse.Americans can make personal changes to improve air quality immediately and ultimately impact climate change as well: drive less; don't burn wood or trash; use less electricity; and make sure local school systems require clean school buses.

Cleanest Cities In USA

Cleanest U.S. Cities for Short-term Particle Pollution (24 Hour PM2.5)

*Cities below had equal scores.

- Alexandria, La.
- Amarillo, Texas
- Austin-Round Rock, Texas
- Bismarck, N.D.
- Brownsville-Harlingen-Raymondville, Texas
- Cheyenne, Wyo.
- Colorado Springs, Colo.
- Corpus Christi-Kingsville, Texas
- Fargo-Wahpeton, N.D.-Minn.
- Farmington, N.M.
- Fort Collins-Loveland, Colo.
- Grand Junction, Colo.
- Longview-Marshall, Texas
- Midland-Odessa, Texas
- Oklahoma City-Shawnee, Okla.
- Portland-Lewiston-South Portland, Maine
- Pueblo, Colo.
- Redding, Calif.
- Salinas, Calif.
- San Luis Obispo-Paso Robles, Calif.
- Santa Barbara-Santa Maria-Goleta, Calif.
- Santa Fe-Espanola, N.M.
- Sioux Falls, S.D.
- Tucson, Ariz.

10 Cleanest U.S. Cities for Long-term Particle Pollution (Annual PM2.5)

*Cities listed in rank order. Duplicate position numbers indicate ties.

1. Cheyenne, Wyo.

2. Santa Fe-Espanola, N.M.

3. Honolulu, Hawaii

4. Great Falls, Mont.

5. Flagstaff, Ariz.

6. Farmington, N.M.

7. Anchorage, Alaska

8. Tucson, Ariz.

9. Bismarck, N.D.

9. Salinas, Calif.

Cleanest U.S. Cities for Ozone Air Pollution

*Cities below had equal scores.

- Billings, Mont.
- Carson City, Nev.
- Coeur D'Alene, Idaho
- Fargo-Wahpeton, N.D.-Minn.
- Honolulu, Hawaii
- Laredo, Texas
- Lincoln, Neb.
- Port St. Lucie-Sebastian-Vero Beach, Fla.
- Sioux Falls, S.D.

Most Polluted Cities in USA

10 U.S. Cities Most Polluted by Short-term Particle Pollution (24 Hour PM2.5)

*Cities listed in rank order. Duplicate position numbers indicate ties.

1. Pittsburgh-New Castle, Pa.

2. Fresno-Madera, Calif.

3. Bakersfield, Calif.

4. Los Angeles-Long Beach-Riverside, Calif.

5. Birmingham-Hoover-Cullman, Ala.

6. Salt Lake City-Ogden-Clearfield, Utah

7. Sacramento-Arden-Arcade-Yuba City, Calif.-Nev.

8. Logan, Utah

9. Chicago-Naperville-Michigan City, Ill.-Ind.-Wis.

9. Detroit-Warren-Flint, Mich.

U.S. Cities Most Polluted by Year-Round Particle Pollution (Annual PM2.5)

*Cities listed in rank order.

1. Bakersfield, Calif.

2. Pittsburgh-New Castle, Pa.

3. Los Angeles-Long Beach-Riverside, Calif.

4. Visalia-Porterville, Calif.

5. Birmingham-Hoover-Cullman, Ala.

6. Hanford-Corcoran, Calif.

7. Fresno-Madera, Calif.

8. Cincinnati-Middletown-Wilmington, Ohio-Ky.-Ind.

9. Detroit-Warren-Flint, Mich.

10. Cleveland-Akron-Elyria, Ohio

U.S. Cities Most Polluted by Ozone

*Cities listed in rank order.

1. Los Angeles-Long Beach-Riverside, Calif.

2. Bakersfield, Calif.

3. Visalia-Porterville, Calif.

4. Fresno-Madera, Calif.

5. Houston-Baytown-Huntsville, Texas

6. Sacramento-Arden-Arcade-Yuba City, Calif.-Nev.

7. Dallas-Fort Worth, Texas

8. Charlotte-Gastonia-Salisbury, N.C.-S.C.

9. Phoenix-Mesa-Scottsdale, Ariz.

10. El Centro, Calif.

The full State of the Air report can be found at http://www.stateoftheair.org.

Adapted from materials provided by American Lung Association.

http://www.sciencedaily.com/releases/2009/04/090429131158.htm

10 Genes, Furiously Evolving

By CARL ZIMMER

Evolutionary biology may sometimes seem like an arcane academic pursuit, but just try telling that to Gavin Smith, a virologist at Hong Kong University. For the past week, Dr. Smith and six other experts on influenza in Hong Kong, Arizona, California and Britain have been furiously analyzing the new swine flu to figure out how and when it evolved.

The first viruses from the outbreak were isolated late last month, but Dr. Smith and his colleagues report on their Web site that the most recent common ancestor of the new viruses existed 6 to 11 months ago. “It could just have been going under the radar,” Dr. Smith said.

The current outbreak shows how complex and mysterious the evolution of viruses is. That complexity and mystery are all the more remarkable because a virus is life reduced to its essentials. A human influenza virus, for example, is a protein shell measuring about five-millionths of an inch across, with 10 genes inside. (We have about 20,000.)

Some viruses use DNA, like we do, to encode their genes. Others, like the influenza virus, use single-strand RNA. But viruses all have one thing in common, said Roland Wolkowicz, a molecular virologist at San Diego State University: they all reproduce by disintegrating and then reforming.

A human flu virus, for example, latches onto a cell in the lining of the nose or throat. It manipulates a receptor on the cell so that the cell engulfs it, whereupon the virus’s genes are released from its protein shell. The host cell begins making genes and proteins that spontaneously assemble into new viruses. “No other entity out there is able to do that,” Dr. Wolkowicz said. “To me, this is what defines a virus.”

The sheer number of viruses on Earth is beyond our ability to imagine. “In a small drop of water there are a billion viruses,” Dr. Wolkowicz said. Virologists have estimated that there are a million trillion trillion viruses in the world’s oceans.

Viruses are also turning out to be astonishingly diverse. Shannon Williamson of the J. Craig Venter Institute in Rockville, Md., has been analyzing the genes of ocean viruses. A tank of 100 to 200 liters of sea water may hold 100,000 genetically distinct viruses. “We’re just scratching the surface of virus diversity,” Dr. Williamson said. “I think we’re going to be continually surprised.”

Viruses are diverse because they can mutate very fast and can mix genes. They sometimes pick up genes from their hosts, and they can swap genes with other viruses. Some viruses, including flu viruses, carry out a kind of mixing known as reassortment. If two different flu viruses infect the same cell, the new copies of their genes get jumbled up as new viruses are assembled.

Viruses were probably infecting the earliest primordial microbes. “I believe viruses have been around forever,” Dr. Wolkowicz said.

As new hosts have evolved, some viruses have adapted to them. Birds, for example, became the main host for influenza viruses. Many birds infected with flu viruses do not get sick. The viruses replicate in the gut and are shed with the birds’ droppings.

A quarter of birds typically carry two or more strains of flu at the same time, allowing the viruses to mix their genes into a genetic blur. “Birds are constantly mixing up the constellation of these viruses,” said David Spiro of the J. Craig Venter Institute.

From birds, flu viruses have moved to animals, including pigs, horses and humans. Other viruses, like H.I.V. and SARS, have also managed to jump into our species, but many others have failed. “It’s a very rare event when a virus creates a new epidemic in another species,” said Colin Parrish of Cornell University. In Southeast Asia, for example, a strain of bird flu has killed hundreds of people in recent years, but it cannot seem to move easily from human to human.

Only a few strains of influenza have managed to become true human viruses in the past century. To make the transition, the viruses have to adapt to their new host. Their gene-building enzymes have evolved to run at top speed at human body temperature, for example, which is a few degrees cooler than a bird’s.

Influenza viruses also moved from bird guts to human airways. That shift also required flu viruses to spread in a new way: in the droplets we release in our coughs and sneezes.

“If the virus settles down on the floor, then it’s gone,” said Peter Palese, chairman of microbiology at Mount Sinai School of Medicine. Winter is flu season in the United States, probably because dry air enables the virus-laden droplets to float longer.

Up to a fifth of all Americans become infected each flu season, and 36,000 die. During that time, the flu virus continues to evolve. The surface proteins change shape, allowing the viruses to evade the immune systems and resist antiflu drugs.

Dr. Spiro and his colleagues have also discovered that human flu viruses experience a lot of reassortment each season. “Reassortment may be the major player in generating new seasonal viruses,” Dr. Spiro said.

From time to time, a new kind of flu emerges that causes far more suffering than the typical swarm of seasonal flu viruses. In 1918, for example, the so-called Spanish flu caused an estimated 50 million deaths. In later years, some of the descendants of that strain picked up genes from bird flu viruses.

Sometimes reassortments led to new pandemics. It is possible that reassortment enables flu viruses to escape the immune system so well that they can make people sicker and spread faster to new hosts.

Reassortment also played a big role in the emergence of the current swine flu. Its genes come from several ancestors, which mainly infected pigs.

Scientists first isolated flu viruses from pigs in 1930, and their genetic sequence suggests that they descend from the Spanish flu of 1918. Once pigs picked up the flu from humans, that so-called classic strain was the only one found in pigs for decades. But in the 1970s a swine flu strain emerged in Europe that had some genes from a bird flu strain. A different pig-bird mix arose in the United States.

In the late 1990s, American scientists discovered a triple reassortant that mixed genes from classic swine flu with genes from bird viruses and human viruses. All three viruses — the triple reassortant, and the American and European pig-bird blends — contributed genes to the latest strain.

It is possible that the special biology of pigs helped foster all this mixing. Bird flu and human flu viruses can slip into pig cells, each using different receptors to gain access. “We call the pig a mixing vessel because it can replicate both avian and mammalian influenza virus at the same time,” said Juergen Richt of Kansas State University. “The mixing of these genes can happen much easier in the pig than in any other species.”

Fortunately, the new swine virus seems to behave like seasonal flu in terms of severity, not like the 1918 Spanish flu. “Right now it doesn’t have what it takes to be a killer virus,” Dr. Palese said. But could it? Dr. Palese said it was highly unlikely.

If the swine flu peters out in the next few weeks, virus trackers will still pay close attention to it over the next few months. As flu season ends in the Northern Hemisphere, the virus may be able to thrive in the southern winter or perhaps linger in the tropics, only to return to the north next fall. It will no doubt change along the way as its genes mutate, and it may pick up new genes.

The scientists will be watching that evolutionary journey with a mixture of concern and respect. “Viruses are incredibly adaptable,” Dr. Spiro said. “They have managed to exploit our modern culture and spread around the world.”

http://www.nytimes.com/2009/05/05/health/05virus.html?_r=1&nl=8hlth&emc=hltha1

Aging: Prelude to Alzheimer's Memory Trouble

By ERIC NAGOURNEY

Even before they begin to have serious problems with their memory over all, people in the earliest stages of Alzheimer's disease appear to have trouble making good decisions about what to remember, a new study reports.

Writing in Neuropsychology, researchers say these patients seem to have trouble determining which pieces of information are more important than others.

The researchers, led by Alan D. Castel of the University of California, Los Angeles, based their conclusions on a study of 109 people with an average age of 75. Some were in early stages of Alzheimer's, while others were cognitively healthy.

The volunteers were asked to memorize a series of words, each of which had a point value associated with it. The higher the value of the word, they were told, the more important it was to remember it.

Later, the participants were given 30 seconds to recall as many of the highest-scored words as they could. The goal was to earn the most points.

While the Alzheimer's and non-Alzheimer's volunteers alike remembered more higher-point words than lower-point ones, those with the disease were not as good at maximizing their scores.

The researchers said it might be that in early Alzheimer's the brain was already becoming less efficient at learning and memorizing. They added that it might be possible to train patients to improve their memory strategies.

http://www.nytimes.com/2009/05/05/health/05agin.html?nl=8hlth&emc=hltha2

Caught in the net

James Harkin

Published 30 April 2009

Whatever prophets of the net say, information for its own sake is not power. Power is power. The relentless gush of electronic information and invitations to offer feedback which now come our way can often obscure where real power lies

Thursday 26 March 2009, day 66 of Barack Obama's presidency, may be remembered as the moment at which his clean-living administration went to pot. The occasion was the launch of Obama's online town hall, Open for Questions, designed to build on the momentum of his net-fuelled campaign by inviting ordinary Americans to pose questions directly to their new leader. The idea was touted in advance on the White House website, and 92,000 people rolled up online to speak directly to the president.

When the roster of questions bubbled up to the president's monitor at the press conference, however, most were obsessed with the decriminalisation of dope. The imbalance was astonishing. In the middle of a deep recession and with America's armed forces still mired in Iraq and Afghanistan, the top four questions relating to both the economy and the budget were all about marijuana. The issue of dope dominated in the section about "green jobs and energy", too, where the most popular query invited the new president to "decriminalise the recreational/ medical use of marijuana so that the government can regulate it, tax it, put age limits on it, and create millions of new jobs and a multibillion-dollar industry right here in the US". After addressing some questions that came in lower down the list, Obama gamely tried to laugh the whole thing off. "I have to say that there was one question that was voted on that ranked fairly high, and that was whether legalising marijuana would improve the economy and job creation," he said. "And I don't know what this says about the online audience."

I wonder what it says about our politicians. The internet is one of the most dazzling inventions of the past 50 years, indispensable to the way we live today. But the truth is that many of those in authority have stopped seeing the internet as a medium by which people send messages and receive feedback via a loop of electronic information. Instead, they have invested the flow of electronic information with a metaphysical significance about human nature and how things work. That is why politicians can talk about the net as a revolution. It's how they can see a game of sending out information into the electronic ether and batting back feedback as having anything to do with democracy. And it's why some thinkers

have begun to imagine that online gadgetry might level the economic playing field and might even begin to alleviate inequality – that it might, in the memorable phrase of the *New York Times* columnist Tom Friedman, succeed in making the world flat.

How did this come about? Before the early network of computers that gave rise to the internet was cobbled together by researchers in American universities in the early 1970s, it was inspired by an idea called cybernetics. Cybernetics was the invention of an American mathematician named Norbert Wiener who, while working on an anti-aircraft predictor machine to help shoot down German bombers more efficiently during the Second World War, became fascinated by the philosophical implications of his own research. Looked at from the outside, according to Wiener, it was as if gunner, pilot and their respective instruments had all been fused together via an information loop into a new kind of self-regulating system that constantly righted its errors through feedback from its environment. Wiener concluded that, in the new age of electronic machines, all of us were best thought of as existing on a continuous electronic information loop, constantly sending out messages and rapidly responding to feedback in order to correct our mistakes.

Wiener's cybernetics was always an impoverished idea of how human relationships work. In the immediate aftermath of the Second World War, however, as intellectuals and scientists sought out unsullied new models for understanding human behaviour, it proved enormously influential. The US military would go on to use Wiener cybernetics to build sophisticated systems for air defence in the 1960s. Just as important, however, was the influence of cybernetics on the remnants of the American counterculture in the early 1970s. The momentum of the "revolution in the head" in 1968 quickly overvaulted itself, and many veteran hippies had responded by retreating to a nest of close-knit communes around the San Francisco Bay Area to escape the attention of the authorities. Even more so than the young pretenders of the New Left, the hotchpotch of radicals who made up the counterculture was suspicious of leadership of any kind. For some of them, Wiener's idea of laying an information loop between their various communal hideouts seemed to suggest a way around bureaucratic mechanisms for social control.

Many of those veterans of the counterculture would become enormously influential in the development of the computer industry and of the net in the following decades. As the hi-tech economy of the San Francisco Bay area spread outwards in the 1980s and early 1990s, and computers began to appear in more and more homes and offices, the idea of networks was borrowed by economists and business leaders. While the computer industry seemed to be advancing rapidly, it helped, too, that the old model of production – the traditional, Fordist economy of manufacturing goods on strictly regimented factory lines – was stumbling from recession to recession and that businesses were searching for new ways of operating. It occurred to many futurologists that what they were witnessing was the birth pangs of a whole new economy, one thoroughly networked and constantly adjusting itself to the continuous feedback of its suppliers and customers.

This new kind of economy would be powered by computers and electronic networking devices, to be sure, but it was about much more than just technology. What it demanded was nothing less than the flattening or levelling of the old-fashioned, hierarchical firm into a new, leaner kind of organisation that sat alongside its many and shifting employees and suppliers like a node in a network. By the late 1980s, influential think tanks such as the Global Business Network, staffed by former hippies like Stewart Brand, were offering advice to huge multinationals on how to re-engineer their operations according to cybernetic principles. One study of management literature in western countries, by the French sociologists Luc Boltanski and Eve Chiapello, found that between the 1960s and 1990s the number of mentions of networks increased more than twentyfold. After all, the logic went, if something as flat as a network could be so powerful, why not stretch everything flat so it looked just the same?

The politics of the counterculture had long been eclipsed, but its central idea of bringing about direct communication between peers outside of the reach of authority survived intact. In the course of just a few years at the beginning of this century, as broadband connections became widespread and opened up a permanent window on the web, many of us took to zoning out at work or disappearing into the spare

room at home to spend hours watching or communicating with one another online. No longer content with passively absorbing information on the internet, we began to set up our own castles on its turf. As we came together in online social networks such as Facebook and Twitter, and busily ferried messages to and fro between ourselves in a vast online information loop, the idea began to gain ground that this exchange of information between peers in an online network would change everything before it. By laying a vast electronic information loop between all of us, we would put millions of ordinary people back in touch with each other as online peers, thus stretching everything perfectly flat and leaderless – and leaving bureaucracies and hierarchies, without any means of controlling information, to collapse of their own volition.

This picture of ourselves as essentially messaging creatures has now so far inveigled itself into our lives that we barely notice. It began as an idea that we could benefit from being joined together in a continuous loop of instruction and feedback. It is not without its uses. Google's enormous success in the search-engine business owes something to the cybernetic idea. While other online search engines were using human editors to serve us up a range of information, Google's brilliant technicians realised as early as a decade ago that the best way to organise the information out there on the web was to stitch every piece of information together in a series of sophisticated feedback loops.

Every time we choose from the list of hits that Google serves up to us in response to our search, we are helping Google rank the information of our peers, and that information is in turn used to track what the best destinations are on the web. When the company decided to measure the value of a website by looking at how many other people found it worthwhile, it sewed into its operation a feedback loop that helped traffic flow much more easily around its system. As a result, it became one of the richest companies on earth; Google is now capitalised at roughly $100bn. Its machinery makes for an ingenious way of organising our information on the web, but there is no reason to think that it can be of much help in organising the rest of our society.

As computer networks found their way everywhere, however, the idea that we can be treated as information processors on a giant social network was ushered in. One reason that politicians can be reluctant to question all this is that, with the fading of the conventional ideologies of left and right, there seem to be precious few good ideas around for organising the good society. That is why David Cameron was so keen to make the pilgrimage to Google's headquarters, and why Gordon Brown chooses to address Google conferences and be seen under its banner. For the same reason, many mainstream institutions are in thrall to the hokum of a new breed of internet evangelists. At the same time as newspapers in Britain and the US are firing trained journalists and cutting their staff numbers, many of them are also paying huge fees to listen to modish ideas about how net-based collaboration (so-called crowdsourcing) might help to reinvent their operations.

Take a closer look at the fate that befell Obama's online town hall. It turned out that a small Washington-based lobby group, the National Organisation for the Reform of Marijuana Laws, had urged its members to vote for questions supporting the legalisation of cannabis. What happened after that was significant. Lost in the bowels of the White House's website and unsure of how to make their presence felt, most of the nearly four million voters had simply chosen to "buzz up" the questions of the dope-smokers who had arrived just before them. To anyone who has studied how popularity contests work on a closed online information loop, none of this came as any surprise. In an intriguing experiment conducted in the last three months of 2004 and the first three of 2005, three academics at Columbia University in New York used the web to invite as many as 14,000 young people to rate songs by relatively unknown bands and download the ones they liked. The researchers began by dividing their subjects into two groups. They asked the first group to make their decisions independently of each other while they allowed the second to see a rolling chart of how many times, in descending order, each song had been downloaded by others – telling them, in effect, which songs were most popular among their peers.

The results, when they came in, were clear. Those who could see the download charts, the researchers discovered, gave higher ratings to the songs at the top of the chart and were more likely to download those songs. People tended to like songs more if other people liked them. The result was to make the

choices of those in the second group unpredictable, with much depending on who rolled up to make their choices first. Identical songs were judged to be hits or flops depending on whether other people had been seen to download them earlier.

There is nothing new about facing pressure from our peers when it comes to making decisions about whether music is good or not. People have always been affected by the taste of those around them, and that susceptibility to influence helps them make up their own minds. The effect discovered by the Columbia University researchers, however, was much bolder and more specific than that. When an electronic feedback loop is called on to make decisions about quality, their work suggests, there arises an effect that throws everything out of kilter and amplifies the decisions of a few early arrivals into a randomly self-reinforcing spiral of continued popularity. Left to fend for ourselves in a sea of online information, with only our online peers for direction, our decisions about quality and taste, it seems, can become snagged in a self-perpetuating feedback loop of follow-the-leader.

American politicians are not the only ones trying to stitch politics back together with the information feedback loops. Two weeks before the inaugural outing of Barack Obama's online town hall, in a paper titled *Working Together*, Gordon Brown announced an initiative whereby people in England would get more powers to rate the performance of GPs, police, childcare and councils on-line. It was a scandal, said the Prime Minister, that online businesses such as eBay had "higher standards of transparency" than those for public services. The British government had thus far been "much too slow to make use of the enormous democratising power of information". To make amends, he said, National Health Service patients would, from this summer, be able to comment on local services and provide feedback on GPs through a new raft of websites.

Are the workings of an online auction site an appropriate model for a mature democracy? Think about how eBay works. Its operation is stitched together by information feedback loops in which buyers and sellers are encouraged to rank each other's honesty and reliability. It works very well, but only by introducing distortions of its own. In an intriguing public statement in February 2008, for example, eBay announced it was overhauling its feedback system to ban sellers from leaving negative comments about buyers. What was happening, it conceded, was that when buyers gave "bad" feedback to sellers from whom they had bought, those sellers responded by leaving negative feedback of their own. Fear of incurring such retaliation had driven both buyers and sellers to award one another excellent but quite unwarranted feedback. The system was in danger of collapsing into one of mutual self-congratulation. Far from being a model of democratic debate, eBay had begun to resemble a kind of robotic dance routine, in which one dancer's decision to step in one direction leads to everyone else automatically following suit.

Just like any other medium, the net has biases which pull our behaviour in peculiar ways. At its worst, making decisions on the net tends towards a self-reinforcing populism, which binds everyone together in an electronic chain gang. It is not hard to decipher these biases, if you analyse our experience online as a medium rather than celebrate it as a revolutionary new political idea. There is nothing wrong with politicians keeping up with new technology and the internet, but everything depends on what they expect that technology to do for them.

In his inspiring campaign for the presidency, Barack Obama used mobile phones and online social networks as a tool to spur his supporters into action. Since he arrived in the White House, however, his enthusiasm for the net has begun to look like an end in itself. Aside from his online popularity contests, Obama has made plans to digitise information about the workings of government and put it online. Our own Cabinet Office, through its Power of Information review, has been doing much the same.

This is all very well, but without directions to guide us through this ocean of electronic information, the danger is that we might drown in the data. Transparency is all very well, but not all of us are investigative journalists. Politicians are supposed to make sense of the mountain of data that comes their way and to shape it into arguments and ideas – not simply throw it back to us in digital form, to see what we think.

It is true that many of our mainstream cultural and political institutions lack legitimacy and are limping from one crisis to the next. They are out of sync with the populace, and they seem to know it. All of this presents exciting possibilities for those of us who are interested in change. Yet we should be wary of letting the information geeks inherit the earth, wary of replacing the crumbling authority of the media and political classes with a glut of electronic information and phantom ideas about democracy and equality.

Whatever the prophets of the net say, information is not power. Power is power, and the relentless gush of electronic information and invitations to offer feedback which now come our way can often obscure where real power lies. Marshall McLuhan's dictum, that the medium is the message, is in danger of becoming a self-fulfilling prophecy. If our rulers seem entranced by the medium of online information, perhaps that is because they have absolutely nothing else to say.

James Harkin is the author of "Cyburbia: the Dangerous Idea That's Changing How We Live and Who We Are" (Little, Brown, £17.99). www.cyburbia.tv

DROWNING IN DATA: THE INTERNET BY NUMBERS

1.6 billion estimated number of internet users worldwide

8 out of 10 16- to 24-year-olds use popular social networking sites such as Facebook

99% of all blogs have no readers

109.2 million number of blogs worldwide

28% proportion of leisure time spent online by UK internet users

19 minutes average time Facebook users spend each day on the website

6 out of 10 internet users have stopped visiting a website because of intrusive adverts

486,557 followers of Downing Street's official Twitter feed

22% proportion of internet users aged over 55 (so-called "silver surfers")

£150m estimated daily cost of Facebook to UK economy

2 million number of times the Tory MEP Daniel Hannan's attack on Gordon Brown has been viewed on YouTube

4,935 number of times Gordon Brown's YouTube message on MPs' expenses has been viewed

1 hour and 40 minutes time the average UK teenager spends searching for pornography online each week

Research by Dominic Sullivan

http://www.newstatesman.com/world-affairs/2009/05/online-information-feedback

The female advantage

A new reason for businesses to promote women: it's more profitable

By Rebecca Tuhus-Dubrow | May 3, 2009

IN THE CUTTHROAT world of business, companies are always looking for ways to increase their profits. They outsource to Bangalore. They endlessly tweak their "brands." Some even try to shed their least desirable customers.

Now, a growing number of consultants and corporate leaders swear by a new strategy to boost the bottom line, one that departs from the standard bag of tricks: put more women in charge.

Several studies have linked greater gender diversity in senior posts with financial success. European firms with the highest proportion of women in power saw their stock value climb by 64 percent over two years, compared with an average of 47 percent, according to a 2007 study by the consulting firm McKinsey and Company. Measured as a percent of revenues, profits at Fortune 500 firms that most aggressively promoted women were 34 percent higher than industry medians, a 2001 Pepperdine University study showed. And, just recently, a French business professor found that the share prices of companies with more female managers declined less than average on the French stock market in 2008.

This mounting body of evidence represents an important twist in the debate over women in business. For decades, women's advancement has been seen as an issue of fairness and equality. Now some researchers are saying it should also be seen in another way: as a smart way to make money.

"The business case is so strong," says Alison Maitland, senior visiting fellow at Cass Business School in London, and coauthor of the 2008 book "Why Women Mean Business." "We need more women in senior management."

The numbers are certainly striking, but their meaning is not yet fully understood. Correlation does not equal causation: While the link between higher levels of female leadership and profits is fairly well-established, it's less clear that women are directly responsible for the success. Rather, companies of a particular kind - forward-thinking, adaptable - may both turn higher profits and promote more women. And some of the data on women's influence are mixed. One recent study, for example, found that the

presence of senior women just below the CEO led to higher profits - but the effect of female CEOs was neutral or slightly negative.

And if the high-level women do directly cause better performance, it is not entirely clear why. One possibility is that women enjoy an edge in understanding the consumer market: by some estimates they make 80 percent of consumer purchases. Another theory is that gender diversity stimulates more vigorous discussions, resulting in smarter decisions. More controversially, women may on average exhibit a different, and fruitful, leadership style.

Some analysts even suggest that women might have been able to temper the excesses that led to the current financial crisis. The culprits, one can't help but notice, were overwhelmingly male. More women at the table, some speculate, might have served as a prudent counterweight to reckless, testosterone-addled men. In fact, Iceland has dispatched a team composed largely of women to clean up after its collapse.

"There's evidence that women tend to be more risk-averse than men," says Daniel Ferreira, who teaches at the London School of Economics. Based on his own research, he says, "Women on boards would have been more vigilant and more worried about what the executives were doing. I suspect that it would have attenuated the crisis we are living now."

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It can be easy to forget the momentous change in the position of women that has occurred, at least in Western societies, over the course of a few generations. Young women today approach life with ambitions and expectations that their great-grandmothers would have scarcely believed. Girls surpass boys academically in elementary and high school, and the majority of American college graduates are women.

Yet the corridors of corporate power are still dominated by men. Last year, women at Fortune 500 companies held only 15 percent of board director positions, 16 percent of corporate officer positions, and 6 percent of top earner positions, according to a study by Catalyst, a nonprofit dedicated to expanding opportunities for women in business. The figures are even lower in most of Asia and Europe.

Going back at least to Betty Friedan's 1963 book "The Feminine Mystique," feminists have pushed for women to enter the workforce, to find a source of meaning, income, and independence outside the home. The dissatisfied housewives of Friedan's book are much less common now, and women have poured into all sectors of the economy, moving far beyond the secretary's office. Yet they still encounter the infamous "glass ceilings" and "sticky floors." The reasons are multiple and mutually reinforcing: tenacious associations between leadership and masculinity; women's own priorities and obligations as mothers, which depend in turn on their spouses' parental contributions; and a variety of subtle cultural barriers.

As women have slowly penetrated the upper echelons, though, scholars have started to study the impact of their presence. In 2001, the late Roy Adler, a professor at Pepperdine University, found that companies that promoted more women also did better financially. He and his colleagues examined data provided by more than 200 Fortune 500 companies about the gender makeup of their senior management and board members from 1980 to 1998. They discovered that the 25 best firms for women outperformed the industry medians on three measures. Calculated as a percent of revenue, their profits were 34 percent higher; as a percent of assets, they were 18 percent higher; and as a percent of stockholders' equity, they were 69 percent higher. The results were published in the Harvard Business Review.

In 2007, Catalyst published a study looking at the number of female board members at Fortune 500 companies, using data from 2001 to 2004. The researchers divided the companies into four groups - the top quartile had the most women on boards, the bottom quartile the least - and compared their profitability on several metrics. In return on equity, the top quartile yielded 13.9 percent, compared with

9.1 for the bottom; for return on sales, the top quartile achieved 13.7 percent, versus 9.7; for return on invested capital, the top quartile reached 7.7 percent, as opposed to 4.7.

"If you take a company in 2009, and it has no women on its board, you've got a troubled company," says Harvey Wagner, a business professor at the University of North Carolina who helped conduct the study.

A few researchers have begun to tease out the dynamics at work. One recent study determined that women in senior management had an especially positive impact on firms involved in research and development. Based on data from 1,500 American companies, from 1992 to 2006, the study used an econometric analysis to try to answer the chicken-and-egg question of whether better firms promote women or women in power make better firms. The authors - Cristian Dezso, a professor at the University of Maryland, and David Gaddis Ross, a professor at Columbia University - reported some evidence of the former, but stronger indications that women leaders exert a beneficial influence. "It's consistent with this theory that women manage in a participatory way, a democratic way," says Dezso, a style that is thought to foster teamwork and creativity.

Not all of the evidence, however, points to the unalloyed advantages of female leadership. These findings applied to senior positions "just below" the CEO, but the study found no positive effect of having a female CEO. They also identified the benefit only in companies that spend a significant portion of their budgets on research and development.

Daniel Ferreira's recent study, conducted with Renee Adams at the University of Queensland in Australia, examined the influence of gender on corporate boards, and likewise arrived at mixed conclusions. The presence of women appeared to affect the dynamics of boards, specifically by making them more vigilant. If a company was otherwise poorly governed, these boards seemed to enhance profits. But if the company was already governed well, the tougher, more gender-diverse boards actually appeared to have a counterproductive effect, diminishing profits.

"Women tend to be tougher as monitors," says Ferreira. "Their leadership style seems to be different. This is not necessarily a good thing in all circumstances."

Scholars have called for further studies to explore these questions in greater depth and nuance. Where women appear to positively influence performance, is this effect due to greater gender diversity, or to superior female management? In other words, is a 50-50 balance optimal, or is it the more women the better? (This has been essentially impossible to study because so few firms are female-dominated.) Another important question is what distinguishes firms that retain women from those who don't - is it a matter of instituting certain policies, or more nebulous cultural elements? And are female-friendly policies - in particular, those designed to enhance work-life balance - detrimental to profits, or might they instead yield monetary rewards?

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Given the mixed evidence - and the need for much more research - some caution against taking the case for female leadership too far. Companies should not expect that simply putting more women in corner offices or on boards will automatically improve performance, Ferreira believes. He and others are wary of quotas, which have significant support in parts of Europe. Norway even has a law requiring that women constitute 40 percent of board members.

Still, a number of corporate leaders maintain that senior women confer a competitive advantage. CEOs such as Carlos Ghosn of Nissan and Renault, Andrew Gould of Schlumberger, and Michel Landel of Sodexho have spoken of the promotion of women as a key to business growth, and their companies have all introduced policies, including numerical targets, to encourage it. Baxter International Inc., citing research on the financial benefits, recently set and reached a target of 50 percent women in management and executive positions in its Asia Pacific branches. Last October, a group of male executives who

participate in a British mentoring program published a letter to the editor in The Telegraph: "We are convinced it is essential to accelerate the progress of women into senior positions, given the UK's need to deploy the best talent available. This need is greater than ever in the current economic climate."

According to much of the scholarly literature, women struggle with a number of disadvantages, such as discomfort with promoting themselves. They are much more likely to report lacking access to the informal networks that spread crucial information and advice. Disproportionately responsible for child care, they require more flexibility. As a result, many exceptional female employees languish in middle management and eventually leave in frustration.

This is the most basic reason many analysts identify for the correlation between gender diversity and corporate performance. Organizations that are sensitive to these issues, and are therefore closer to being genuine meritocracies, tend to thrive.

"Those organizations produce more women leaders and better results," says Herminia Ibarra, a professor at INSEAD, an international business school. "They're picking the best and the brightest, and letting them bloom."

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http://www.boston.com/bostonglobe/ideas/articles/2009/05/03/the_female_advantage/

Immune fault 'link' to narcolepsy

Scientists have uncovered genetic evidence suggesting the sleep disorder narcolepsy is linked to a fault in the immune system's "foot soldier" cells.

It suggests these T-cells may cause the condition by attacking cells in the sleep centres of the brain.

Narcolepsy, which causes extreme daytime sleepiness and sudden muscle weakness, has previously been linked to a malfunctioning immune system.

The Stanford University research appears in the journal Nature Genetics.

Narcolepsy is a mysterious, uncommon condition that can be very distressing for those who have it.

" **Narcolepsy could be a very interesting model for studying autoimmune diseases that affect the brain** "
Dr Emmanuel Mignot Stanford University

It can trigger "sleep attacks" without any warning during any normal activity.

In addition, some people can experience "cataplexy", where strong emotions such as anger, surprise, or laughter can trigger an instant loss of muscle strength, which, in some cases, can cause collapse.

There is currently no cure for narcolepsy, only ways to minimise symptoms such as taking frequent, brief naps evenly spaced throughout the day.

Brain cells

The condition has previously been linked to depletion of cells deep in the regulatory regions of the brain.

But lead researcher Dr Emmanuel Mignot said while previous research had only suggested a link with a fault in the immune system, the latest study provided firm evidence.

The Stanford team carried out an extensive genetic analysis to identify specific areas of the genome which appeared to be linked to the condition.

They pinpointed three specific genetic variants in the same gene in people with European and Asian ancestry that appeared to be associated with an increased susceptibility for narcolepsy.

The gene in question plays a key role in the functioning of an important receptor used by T-cells to recognise foreign proteins in the body.

The only previous genetic variant linked to narcolepsy was in a gene which also plays a role in T-cell receptors.

Dr Mignot said: "Narcolepsy is probably the result of a series of unfortunate events, starting with genetic predisposition, involvement of an environmental trigger such as an infection, then T-cell activation, then effects on many other arms of the immune system."

He said the latest study raised the possibility of developing a therapy for narcolepsy which worked by blocking activity of the specific T-cell receptors.

Identifying the genetic variants may also provide a diagnostic tool to pick up narcolepsy at an early stage.

Quality of life

Dr Mignot added: "I believe that narcolepsy could be a very interesting model for studying autoimmune diseases that affect the brain.

"Very few such diseases are known, and I believe that we will find many more brain autoimmune diseases in the future that cause neuropsychiatric disorders for example."

UK sleep specialist Dr Renata Riha, from Edinburgh's Royal Infirmary, said the idea that narcolepsy was linked to an immune system attack on brain cells was gaining ground, with evidence that many patients shared the same genetic variants controlling immune system function.

She said: "There is a strong immunological link to the development of narcolepsy."

But she added: "Disease expression is rarely the result of one single factor.

"The condition is disabling and if severe can be most distressing.

"Much research has been done to show that patients' with narcolepsy have lower self-perceived quality of life comparatively speaking and increased incidence of depression."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8025662.stm

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Fathers' depression 'harms young'

Children whose fathers have mental health disorders are likely to have psychiatric or behavioural disorders themselves, researchers warn.

University of Oxford experts reviewed existing evidence and said, in the Lancet, there had been too much focus on mothers' mental health issues.

They said boys in particular could be affected if their father had depression or was an alcoholic.

Mental health campaigners said men often had problems seeking help.

Alcoholism

The Oxford team said it was not surprising much of researchers' emphasis had focused on mothers as, in most societies, it is mothers who provide the majority of childcare - particularly when children are very young.

But they said the role of men had been "underemphasised" and that they had more influence on their children's development than previously thought.

In addition, the peak age for men to be affected by psychiatric disorders is the same as the peak age for becoming a father - between 18 and 35.

" **In years gone by, if fathers were depressed and distant it may not have made much of an impact** "
Emily Wooster, Mind

Paternal depression during the postnatal period, measured at eight weeks after birth, has been associated with increasing the chance of the child subsequently developing behavioural and emotional problems from 10% to 20%.

Teenage offspring of depressed fathers also have an increased risk of various psychological problems, including depression and suicidal behaviour.

Around 2% of men are affected by generalised anxiety disorder, and children whose parents have anxiety disorders have a two-fold increased risk of developing such disorders themselves, researchers say.

Previous studies have also found links between a father's alcoholism and an increased risk of conduct disorders, where children behave aggressively and destructively and abuse substances - particularly in sons.

Paternal alcoholism is also associated with an increased risk of mood disorders, depressive symptoms, poor performance at school, low self-esteem and problems forming relationships.

Adolescents whose parents have bipolar disorder are up to 10 times more likely than adolescents with mentally healthy parents to develop bipolar disorder, and three to four times more likely to develop other psychiatric illness, research suggests.

'Nurturing role'

The Oxford team, led by psychiatrist Professor Paul Ramchandani, said more research was needed on how fathers' psychiatric disorders affect their children's development.

He said: "Fathers are more involved in child-rearing in countries including the UK than they used to be.

"In years gone by, if fathers were depressed and distant it may not have made much of an impact.

"We now need a more general understanding of what effects psychiatric problems in fathers can have on children."

Emily Wooster, policy and campaign manager for the mental health charity Mind, said: "Men's roles in bringing up children have changed significantly over the last century, with many dads now taking on an active 'nurturing role' so it's important that there is more research into the relationship between fathers' mental health problems and how these may affect their children.

"Mind has found that men often have difficulties coming forward and talking about their mental health problems, perhaps because of the way they are socialised into being 'strong, tough men' who can't show their emotions."

She said the charity was due to launch a campaign next week calling for "male-friendly" mental health services and better support for men.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8028452.stm

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How satellites could 'sail' home

By Jonathan Amos
Science reporter, BBC News

Satellites and spent rocket stages could soon deploy "sails" to guide them back to Earth much faster than they would otherwise fall out of the sky.

With space becoming ever more crowded, there is a need to remove redundant objects that could pose a collision threat to operational missions.

Extending a sail on an old spacecraft would increase drag and pull it into the Earth's atmosphere to burn up.

Major European space firm EADS Astrium says the scheme has great potential.

"It is an interesting solution, especially for the satellite that has no propulsion system at the end of its life," Brice Santerre told BBC News.

Santerre and colleague Max Cerf have been working on the Innovative DEorbiting Aerobrake System (IDEAS).

The concept involves extending booms and sheeting from spacecraft to increase the amount of drag they experience from the residual air molecules still present at altitudes up to even 750km (470 miles)

"The principle of aerobraking is to increase the surface over mass ratio of an orbital object, to accelerate the fall-out by increasing the drag on the system," Mr Santerre said.

"To do that, we need to deploy a very light structure. That's why we chose to use 'gossamer structures'. These are composed of booms and very thin membranes."

Astrium has been developing an aerobraking sail concept for the forthcoming French Microscope satellite.

Microscope is a science mission that will investigate the force of gravity and the behaviour of free-falling objects in a test of what has become known as the equivalence principle.

The satellite will take about a year to make its measurements and will then have no further purpose.

Ideally, such a spacecraft would be removed from orbit, especially since it will be circling at an altitude where many important Earth observation satellites also operate.

"Microscope has no propulsion system so it cannot de-orbit by itself. If we were to do nothing, the fall-out duration would be between 50 and 100 years," said Mr Santerre.

By erecting their boom and membrane mechanism, Santerre and Serf believe Microscope could be brought out of the sky in less than 25 years, which meets international orbital junk mitigation guidelines.

Astrium is now investigating how the IDEAS concept could be applied to spent rocket stages.

The company leads the production of Europe's premier launcher, the Ariane 5.

Much of the Ariane's structure - its main core stage and solid boosters - fall rapidly out of the sky at the end of a flight; but the upper-stage is much longer lived in orbit.

Once it has ejected its satellite payload, the stage continues to circle the Earth in a large ellipse, running out to more than 35,000km from the Earth and coming as close as about 250km.

It may take 100 years before an upper-stage falls naturally from the sky.

"Our study shows that if we want to apply the aerobraking concept to an Ariane-class upper-stage then we need a system with booms, or masts, of about 12m and a deployed surface of about 250 sq m.

"This is possible with our current technologies. We need now to check that this is the best solution. We are also thinking whether this type of system can be applied to other launchers as well."

One alternative, of course, is to give the Ariane 5 upper-stage the capability to take a powered dive into the Earth's atmosphere. This was done for the first time last year at the end of the launch of the Jules Verne space station freighter. This was considered essential because of the number of manned missions that routinely follow the station's orbit.

Once Jules Verne was released from the rocket, the upper-stage reignited its engine to make a controlled burn-up over the Pacific.

The advantages of de-orbiting in this way are clear, but the extra fuel requirements and complexity of re-ignitable engines add cost to what is already a very expensive endeavour.

Aerobraking sails, on the other hand, are lightweight and extremely simple. Their operation could even be controlled by a pre-set timer, fixed to deploy a certain number of minutes after the end of a flight.

This means that even an upper-stage that is out of control can still be guaranteed to return to Earth in a timely fashion.

Santerre and Serf presented their latest research at the recent European Conference on Space Debris in Darmstadt, Germany.

The meeting closed with a statement from its organisers saying that effective measures to clean up space debris needed to be devised and implemented.

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Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8029899.stm

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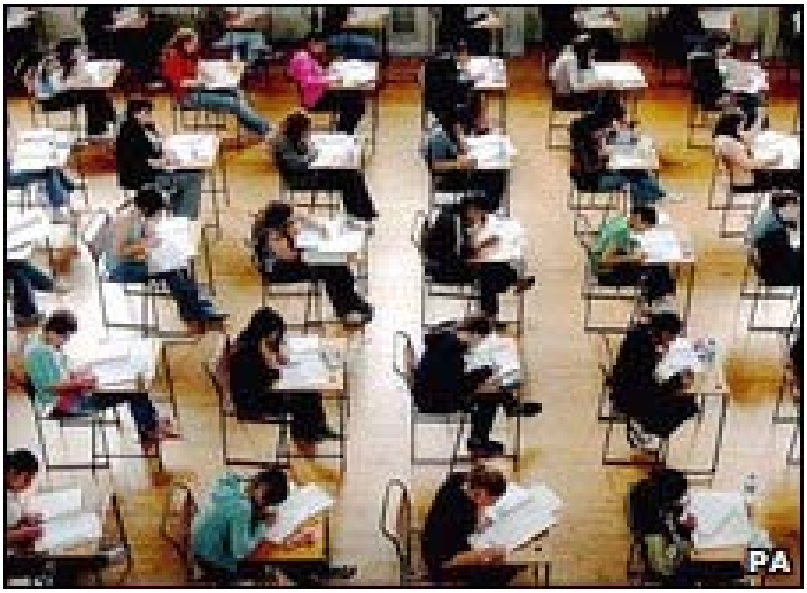
Norway tests laptop exam scheme

About 6,000 students in Norway are doing exams on their laptops in a trial that could soon be rolled out across the country.



Every 16-19 year-old in Nord-Trondelag county in Norway has been trying out the laptop-based system.

The secondary students are given a laptop by the government when they turn 16 to help them with schoolwork.

During exams the specially-tailored software springs into life to block and record any attempt at cheating.

Applications

The laptops issued to the students are used for everyday schoolwork and come with standard software, such as word processors, spreadsheets and calculators installed, as well as subject specific applications for particular courses.

For instance, said Bjorg Helland, project manager for digital literacy at Nord-Trondelag county council, media students would have their machines fitted with Adobe Photoshop.

Although Norway has used computers for exams before now, Ms Helland said the decision to move to laptops was taken to ensure that, in the exam hall, students used equipment with which they were familiar.

"This is used both during their final exams before going to college or university but also during tests when the teacher wants to have a test with the class," she said.

Key to rolling out the laptop exams was a monitoring system, called MAS from UK firm 3ami, that ensured students did not cheat while taking a test or exam, said Ms Helland.

When an exam starts, students go to a website to download the papers for their particular test. However, said Ms Helland, in some schools answers were completed on computer from paper-based questions.

"That's also why we have to monitor the laptops during the exams, because they are not supposed to have internet access and not supposed to communicate with other students," she added.

"The program works as a keylogger and takes screenshots and we can very easily get a graphic of what the students have used or have done."

"Exactly what we are looking for may vary depending on what exam it is," said Terje Ronning, a spokesman for computer firm XO Expect More, which has worked with Nord-Trondelag to get the system working.

Although students could turn to spellcheckers to help proofread their answers, the use of anything more sophisticated was banned, said Mr Ronning.

"One of the students was using a translation program and wrote with it: 'If you can see me, stop me now,'" said Ms Helland. "We did see her and we did stop her."

Just as with paper-based exams, those caught cheating fail the test.

National project

Mr Ronning said that so far there had been little talk about ways to beat the monitoring software on hacker boards. The questions that were posed were about ways to trick the software into thinking it was working but gave students access to notes or the net.

He added that, although the blocking software was on the laptop all the time it was only activated during exams and tests.

"Students do not have access to this tool so they cannot sit down and configure it," he said. "To look at it they would have to actually do it during exam time and waste their time."

"We have made a huge effort to make the students aware that we can actually see what they are doing so the program works as a deterrent," said Ms Helland. "It prevents the students from trying to cheat.

"Students are irritated by the fact that some students cheat on the tests. This way they can make sure it is fair for everybody.

"The software has an upside for the students. It's not just that they can be caught cheating it - can also get them off the hook. They can prove that the work is actually their own."

The success of the trials has led to Norway considering whether to use it across the country from the new school year, which begins in September.

Trine Oskarsen, a spokesperson for the Norwegian directorate for education and training, said schools were currently being asked if they wanted to move to computer-based exams.

Moving to laptops would help speed up the gathering of results as completed papers could be e-mailed rather than posted to markers.

Eventually, she said, Norway hoped to move to a completely computer-based system for its exams. Results from Norwegian schools that are early adopters of the system would be used to guide the national roll-out, she said.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/8027300.stm

Published: 2009/05/01 07:55:09 GMT

Ancient tsunami 'hit New York'

By Molly Bentley
Science reporter

A huge wave crashed into the New York City region 2,300 years ago, dumping sediment and shells across Long Island and New Jersey and casting wood debris far up the Hudson River.

The scenario, proposed by scientists, is undergoing further examination to verify radiocarbon dates and to rule out other causes of the upheaval.

Sedimentary deposits from more than 20 cores in New York and New Jersey indicate that some sort of violent force swept the Northeast coastal region in 300BC.

" **If we're wrong, it was one heck of a storm** "
Steven Goodbred Vanderbilt University

It may have been a large storm, but evidence is increasingly pointing to a rare Atlantic Ocean tsunami.

Steven Goodbred, an Earth scientist at Vanderbilt University, said large gravel, marine fossils and other unusual deposits found in sediment cores across the area date to 2,300 years ago.

The size and distribution of material would require a high velocity wave and strong currents to move it, he said, and it is unlikely that short bursts produced in a storm would suffice.

"If we're wrong, it was one heck of a storm," said Dr Goodbred.

Landslide or asteroid?

The origin of such a tsunami is also under debate. An undersea landslide is the most likely source, but one research group has proposed that an asteroid impact provided the trigger.

In 300BC, barrier beaches and marsh grass embroidered the coast, and Native Americans walked the shore.

Today, a wave of the proposed size would leave Wall Street and the Long Island Expressway awash with salt water.

An Atlantic tsunami was rare but not inconceivable, said Neal Driscoll, a geologist from Scripps Institution of Oceanography, who is not associated with the research. But verifying one that is 2,000 years old is tricky.

Earthquakes, underwater landslides, or a combination of the two were the most frequent Atlantic tsunami triggers, said Professor Driscoll.

The 1929 Grand Banks tsunami, in Newfoundland, which killed more than two-dozen people and snapped many transatlantic cables, was set in motion by a submarine landslide set off by an earthquake.

Dr Goodbred imagines that the New York wave was on the Grand Banks scale - three to four metres high and big enough to leap over the barrier islands; but that it did not reach the magnitude of the 2004 Sumatran tsunami.

The evidence is buried under metres of sediment in New York and New Jersey.

High-speed wave

Dr Goodbred first proposed the link between the layers of unusual debris found in sediment cores and a tsunami while studying shellfish populations in Great South Bay, Long Island.

He extracted many mud cores with incongruous 20cm layers of sand and gravel.

Their age matched that of wood deposits buried in the Hudson riverbed and marine fossils in a New Jersey debris flow in cores gathered by other researchers.

The fist-sized gravel he found in Long Island would require a high velocity of water - well over a metre per second - to land where it did, said Dr Goodbred.

Among the fossils and shells sandwiched in the organic black mud of Sandy Hook Bay, New Jersey, Marine Geologist Cecilia McHugh of Queens College, City University of New York, discovered mud balls made from red clay that matched iron-rich sediments found onshore.

The balls form their spherical shape only through vigorous reworking, said Dr McHugh, and they do not form in small storms.

"I didn't think much about it until we dated the deposit and came up with the same date that Steve did on Long Island," she said.

It prompted her to check cores extracted from the upper continental slope 200km offshore.

She discovered a 2,200-year-old layer of sand and mud, on top of sedimentary layers 8,000 to 14,000 years old.

Dr McHugh says such relatively young debris is not found that far out on the slope, and the date is close to that of the New York and New Jersey samples.

Age of a storm

The age and nature of the material make tsunami verification a challenge.

The radiocarbon dates of the debris are accurate to within a century, said Dr Goodbred. But the only evidence that a dramatic event took place thousands of years ago is common coastal debris - wood, sand, shells and rock.

Researchers must discern whether it was strewn by a tsunami or a hurricane, or another large storm, such as a "nor'easter", said Professor Driscoll.

"Understanding the origins of these deposits can be difficult," he added.

While tsunamis can occur in any ocean, they are most common in the Pacific and Indian Oceans where continental plates collide.

There, large undersea earthquakes are relatively common. In the Atlantic, where the plates spread, tsunamis are rare, which means Atlantic tsunamis are not well studied, said Bruce Jaffe, of the United States Geological Survey.

There is little research on tsunami debris in the variety of northeast coastal environments - riverbeds, marine bays - where the New York debris layers were found. There are few modern analogues to compare them with for identification, he said. "Grand Banks is the only unequivocal tsunami in the Atlantic on the Northeast coast because there were eye-witness accounts and the deposits matched that of other modern tsunamis," said Dr Jaffe.

To rule out the possibility of a severe storm, said Professor Driscoll, tsunami groups should collect more core samples to see whether the distribution of the debris is consistent. Dr Goodbred said teams were planning to do just that. And this would confirm that the deposits are not quirks of local geology.

'Circumstantial evidence'

The researchers would also repeat carbon dating on cores to verify ages, said Dr Goodbred, but he has a hunch the tsunami theory will win out. "We're building a case of circumstantial evidence that is getting harder and harder to ignore," he said.

While many geologists say a submarine landslide is the likely trigger of a tsunami, a group led by geologist Dallas Abbot thinks a space impactor may have set off the massive wave. Her team discovered material in the New Jersey and Hudson River cores dated to 2,300 ago, and believe it to be meteoritic in nature. This includes carbon spherules, shocked minerals, and nanodiamonds, which are produced under extreme pressures and temperatures.

"We didn't find the typical shocked quartz, but that is usual for a water impact," said Dr Abbott, from the Lamont Doherty Earth Observatory of Columbia University. She theorised that an asteroid landed in the water off the coast of New York and New Jersey, either creating the wave directly or triggering a submarine landslide. No crater has yet been found.

Many geologists and other scientists remain sceptical of the asteroid evidence so far; but proof of an asteroid impact is not necessary to build the case for a massive wave. As Dr Goodbred pointed out: "The tsunami story stands on its own without the impact."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8028949.stm

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A Writer's Violent End, and His Activist Legacy

By PATRICIA COHEN

"I had a surprising call this week," the author Richard North Patterson told the audience that had gathered last weekend as part of the PEN World Voices Festival of International Literature. It was former President Bill Clinton. Mr. Patterson's new novel, "Eclipse," is based on the case of the Nigerian writer and activist Ken Saro-Wiwa, and Mr. Clinton spoke of a phone call he had made 14 years ago to Gen. Sani Abacha of Nigeria, asking him to spare Mr. Saro-Wiwa from the hangman.

Mr. Clinton said General Abacha "was very polite," but "he was cold," Mr. Patterson related. "Clinton took away from that, among other things, that oil and the need for oil on behalf of the West and other places made Abacha, in his mind, impervious."

The event's moderator, the Nigerian novelist Okey Ndibe, added an unexpected epilogue. A friend in the Abacha cabinet said the general later boasted: "All these pro-democracy activists run to America and expect America to save them. But the U.S. president himself is calling me 'sir.' He is scared of me."

Mr. Saro-Wiwa, a popular author who helped create a peaceful mass movement on behalf of the Ogoni people, was executed in November 1995 along with eight other environmental and human rights activists on what many contended were trumped-up murder charges. His body was burned with acid and thrown in an unmarked grave.

PEN, an international association of writers dedicated to defending free expression, along with Guernica, the online literary magazine, sponsored the panel with Mr. Patterson, Mr. Ndibe and Ken Wiwa, Mr. Saro-Wiwa's son, to discuss Mr. Saro-Wiwa's literary and political legacy.

Fourteen years have passed. General Abacha has died, and Mr. Saro-Wiwa has had a proper burial, but the circumstances surrounding the nine executions, along with related incidents of brutal attacks and torture, are getting another hearing. This month the Wiwa family's lawsuit against Royal Dutch Shell over its role in those events goes to trial in federal court in Manhattan.

"We feel that Shell's fingerprints are all over," Ken Wiwa told the audience. "Clearly Shell financed and provided logistical support."

Among the accusations are that Shell employees were present when two witnesses were offered bribes to testify against Mr. Saro-Wiwa, said Jennie Green, a senior lawyer at the nonprofit Center for Constitutional Rights, which is representing the family. She said Mr. Saro-Wiwa's brother Owens has

also stated that Shell's managing director, Brian Anderson (now retired), told him, "If you call off the campaign, maybe we can do something for your brother."
Under American law you don't have to be the one who "tightened the noose" to be found guilty, Ms. Green said.
In a statement Shell said: "Shell in no way encouraged or advocated any act of violence against them or their fellow Ogonis. We believe that the evidence will show clearly that Shell was not responsible for these tragic events." The company added, "Shell attempted to persuade that government to grant clemency."
Mr. Wiwa, 40, said his father was an ebullient, ambitious man with a wicked sense of humor. "All other things being equal, he probably would have been a comedian or an actor, but he was compelled to write," he said.
At the start of the panel two performers read a short excerpt from Mr. Saro-Wiwa's play "The Transistor Radio," one of many he wrote for Nigerian radio and television that satirized the country's numbing poverty and rampant corruption. "Why were you fired?" one man asks another. He responds, "For getting the job."
Mr. Wiwa, who published a memoir in 2001, "In the Shadow of a Saint: A Son's Journey to Understand His Father's Legacy" (Steerforth), said: "My father was a great man. I grew up with this man, the myth and the memory always in front of me."
He added, "The struggle to define yourself against your father gives you a sense initially of something to write about," as did the political situation he found himself thrust into.
Mr. Wiwa is now writing a novel, but he has also felt compelled to carry on his father's environmental and human rights work. He serves as a special assistant in the government but warns that the ecological and human devastation in the Niger delta, one of the world's largest wetlands, is worse than ever. Thousands of miles of oil pipelines run through coastland occupied by the Ogoni people, one of 250 ethnic tribes in Nigeria. Noxious fumes, spills and development have turned much of the area into a wasteland, causing severe deforestation as well as desperate poverty.
Going off on his own and writing, untroubled by politics, has "been a dream for 30 years," said Mr. Wiwa, who is Ogoni, like his father. But he added, "A lot of my most profound thoughts originate from being involved in this struggle. It compels you to consider the idea of what happens if you just go away and write. Because you may not have anything to say."
Mr. Ndibe asked about sacrifices his family made because of his father's commitment, but Mr. Wiwa demurred.
"All of us have a choice, to make our children safe in the world or to make the world safe for our children, and there are implications to that," Mr. Wiwa said, referring to others he has met who share his situation, like Nelson Mandela's daughter Zindzi and Nkosinathi Biko, the son of the South African activist Steve Biko. "Our fathers chose a different path."
Mr. Patterson was on the board of PEN 15 years ago when the organization lobbied on Mr. Saro-Wiwa's behalf. Before the panel began, he explained how he came to write "Eclipse." Since 9/11 the United States has become even more dependent on Nigerian oil, Mr. Patterson said. "I thought it was time to put Saro-Wiwa in the context of today's politics of oil: how we are all implicated in the lives of people we don't even know."
During his imprisonment Mr. Saro-Wiwa said that he often envied Western writers "who can peacefully practice their craft." Yet he also recognized that wasn't his path. As he wrote in 1993, "The writer cannot be a mere storyteller, he cannot be a mere teacher; he cannot merely X-ray society's weaknesses, its ills, its perils, he or she must be actively involved shaping its present and its future."

http://www.nytimes.com/2009/05/05/books/05wiwa.html?th&emc=th

The Met Offers a New Look at Americana

By CAROL VOGEL

In the early 1970s, when the Metropolitan Museum of Art unveiled a plan to create its own Crystal Palace in Central Park — a glass-enclosed, glass-roofed space to house its expanded American Wing — Community Planning Board 8 voted 24 to 1 against the proposal, and one board member called it a rape of the park.

But the Met persevered, and in May 1980 the American Wing opened to rave reviews, going on to draw thousands of visitors every year to its 136,000-square-foot space — larger than many small museums — and its collection of American furniture, decorative arts and paintings.

But nearly 30 years is a long time in museum life: collections grow, visitors seek out the new, and curators have fresh ideas about how to do things. Now, after two years of construction and renovation, the Charles Engelhard Court — that light-filled pavilion punctuated by the Greek Revival limestone facade of Martin E. Thompson's Branch Bank of the United States — will reopen on May 19, along with its period rooms.

The renovation completes the second phase of a larger $100 million project to reconfigure, renovate and upgrade the entire wing by 2011. (The first phase, in which the first-floor galleries received a makeover, was finished in 2007.)

On a recent rainy morning, as workers put the finishing touches on Engelhard Court, the chairman of the American Wing, Morrison H. Heckscher, could be found standing in the center of the space, surveying the proceedings. "There was never much art in here," he said. "Since it was a garden court, the focus was on tranquillity. The only sculptures were in the planting beds, where nobody could get close to them."

Now the space, with 30 percent more room for displaying work, is filled with some 60 monumental marbles, bronzes, mosaics, stained-glass windows and architectural elements, many placed so that visitors will be able to examine them at close range. Before, the sculptures were decorative; now they're the focus in an effort to illustrate their importance in American art.

"Diana," a bronze by Augustus Saint-Gaudens, is still the centerpiece, pointing toward the wing's entrance, as she always has, although now she sits on a higher pedestal. "I call it the greatest weather vane in American sculpture," Mr. Heckscher said.

Nearby, flanking the Tiffany loggia, are two white marble memorial reliefs by Daniel Chester French. "Previously they were on the second-floor balcony where nobody could see them," Mr. Heckscher said. "They're pretty big things to hide — they about weigh eight tons each."

Also newly prominent is a carved limestone pulpit from All Angels' Church, which the museum acquired when that West End Avenue building was demolished in the 1970s. Created by the Viennese-born

sculptor Karl Bitter, perhaps best known to New Yorkers for the fountain in front of the Plaza Hotel, it is not the first example that Met visitors can see of his work. He also created four 10-foot-tall figures and six medallion reliefs that adorn the museum's facade.

Next to the pulpit that day was a cardboard mock-up of a circular oak sounding board topped with a trumpeting angel. The real thing was waiting to be mounted above the pulpit.

There are other references to the museum's facade here too. A pair of monumental French-style lamps are new to the court. Designed by Richard Morris Hunt, an architect who contributed to the museum's 1902 facade and the Great Hall, they stood on either side of the entrance to the grand staircase until 1970, then were put in storage for decades. They have now been restored, and the lanterns surrounding the bulbs were replicated based on original drawings and vintage photographs.

Some of the space's greatest hits, like the Tiffany stained-glass windows, have been seamlessly recessed into the architecture. And a new acquisition, an 1867 window by Henry Sharp called "Faith and Hope," from St. Ann's Church in Brooklyn, has been added too.

Whether sitting or wandering around the courtyard, a visitor cannot help taking in a new glass mezzanine and the original balcony above that is now glass-fronted. Here some 1,000 works of decorative objects will be displayed in cases that line three sides of the courtyard. They include the department's latest acquisition: 250 examples of American art pottery made between 1876 and 1956 that were recently promised to the museum by Robert A. Ellison Jr., a New York collector.

In rethinking the collection, which has grown considerably since the court first opened (3,400 works have been added in the last 30 years), the curators decided to change the way decorative objects were displayed. Rather than grouping works by medium — say, cases of all silver — they will now be shown chronologically.

"Silver will no longer be isolated but shown with brilliant-colored ceramics," Mr. Heckscher said. "It's visually more exciting for our public."

In addition to decorative objects, there will be two new cases devoted entirely to American jewelry, ranging from early-18th-century mourning rings to examples of Arts & Crafts pieces.

In keeping with the sun-filled, floating feel of the architecture, a new glass elevator leads visitors to the period rooms. Formerly a hodgepodge, they have been rearranged so that visitors, without even intending to, take an architectural journey, beginning with 17th-century Puritan Massachusetts and ending with an early-20th-century living room from a house in Wayzata, Minn., designed by Frank Lloyd Wright.

"There was never a rational way to get to the start of the story," Mr. Heckscher said.

Technological advances have been made throughout. The lighting in the period rooms, for instance, is all fiber-optic now, which allows more precise illumination of individual works as well as a more historically accurate atmosphere in each room.

In researching the proper colors for the period rooms, Mr. Heckscher said, 30 years has made a giant difference.

"We've revived the craft of using hand-ground natural pigments within an oil base that over time will develop the right sense of patina," he said. Before, modern latex paints were used, and they did not age well.

Most of the period rooms will have touch screens so that visitors can learn more about a piece of furniture or an object. Rather than getting a full image of what is selected, however, only a silhouette will appear. The feature is intentional. Curators don't want visitors concentrating on the screen, a hazard with such museum technology. Instead, Mr. Heckscher said, the goal is to get "people to actually look at what is in the room."

http://www.nytimes.com/2009/05/05/arts/design/05met.html?th&emc=th

In Los Angeles, Art That's Worth the Detour

By JORI FINKEL

LOS ANGELES

AT night, it's bright enough to stop traffic. One minute cars are buzzing along Wilshire Boulevard between Fairfax and La Brea. The next they slow to a crawl, even though the stoplight is green. The attraction? An art installation consisting of some 200 salvaged cast-iron lampposts from the 1920s and '30s arranged in formation at the new entrance of the Los Angeles County Museum of Art. Come dusk, the lamps turn on and create a sort of flying carpet of light.

Chris Burden, the artist who created the installation, "Urban Light," has compared his work to an open-air building, about the size of his studio. The museum's director, Michael Govan, has compared it to the Parthenon. It is, in any event, art on the scale of architecture. And since its introduction last year, it has become a leading example of a type of public art growing more prominent in Los Angeles: art you don't have to leave the comfort of your convertible to experience.

Although downtown Los Angeles still boasts the city's densest concentration of traditional public art — the sort of sculpture that dresses up corporate lobbies and courtyards — less likely spots in the greater metropolitan area have become home to what one could call drive-by art. A casual tour shows that this art takes many forms, going well beyond the celebrated mural tradition long associated with the city.
Two years ago, the Japanese artist Yayoi Kusama planted a bed of overgrown, colorful fiberglass and ceramic tulips in a Beverly Hills park, visible from Santa Monica Boulevard and Rodeo Drive. Last year, the American artists Cindy Sherman and Barbara Kruger infiltrated the Sunset Strip among other locations with billboards (in Ms. Kruger's case, a video billboard), temporarily inserting their works into a thicket of movie ads, marquees, placards and other signage. This winter, the New York artist Jacob Hashimoto unveiled an aluminum-tile, tapestrylike sculpture made for the facade of the Andaz Hotel in

West Hollywood, while the ubiquitous street artist Shepard Fairey created a huge mural of Lance Armstrong on the side of the Montalbán Theater in Los Angeles to kick off the cyclist's coming Nike-sponsored benefit project with various A-list artists.

And this month, the Italian-born, California-based artist Piero Golia is placing an aluminum sphere atop the Standard Hotel, also in West Hollywood. The sphere will light up whenever Mr. Golia is in town and go dark when he is not — providing, he said, "a secret communication code" for friends curious about his whereabouts and something of a cipher for passers-by. "Maybe a commuter who drives past it every day will decide that it lights up on sunny days, or on rainy days — it's a form open to urban legend," Mr. Golia added.

The globe should, he said, be visible from several blocks away. "I think in a way more or less everybody will see it, but I don't know who will notice it."

The globe is not the only artwork here designed to make drivers do a double-take in their rear-view mirror. While some public artworks announce themselves prominently, in the spirit of the Hollywood sign perched high above the city or Simon Rodia's soaring monuments of Watts Towers, others, like Mr. Golia's, are in a sense camouflaged by their surroundings. They are artistic gestures that can blend into or complicate their environments, more along the lines of Tony DeLap's powerful but often unnoticed steel beam from 1990 that arches over Wilshire Boulevard where Santa Monica borders Brentwood. Such artworks can be mistaken for architectural elements, city infrastructure, signage or advertising. (Or, as with Mr. Fairey's new mural, which sports a small Nike logo, the projects can visibly bridge art and commerce from the start.)

This sort of ambiguity creates a challenge for anyone working on public art projects in the urban sprawl that is Los Angeles. "How do you insert contemporary art into a landscape already saturated with so many commercial signs?" asked Emi Fontana, a former Milan gallerist who commissioned the projects by Ms. Sherman and Ms. Kruger last year under the auspices of her nonprofit public art firm, West of Rome. She compares today's driver in Los Angeles to the flâneur in Baudelaire's Paris — the poetic soul who strolls through a city in order to take it all in. "The difference with cars," she said, "is that the speed changes the aesthetic experience of the city. Instead of Baudelaire's city of modernity, L.A. is really a city of supermodernity."

In the case of Ms. Sherman billboards, which featured Hollywood-inspired images from the artist's celebrated "Untitled Film Stills" series and were placed near actual movie billboards, the line between art and entertainment was deliberately blurred. With Ms. Kruger's video, which ended with a visual message to "please stop texting" (before the state passed a law to this effect), the artist co-opted a bold direct-address technique associated with advertising to make motorists sit up.

Lauri Firstenberg, the curator who facilitated Mr. Golia's project through her nonprofit gallery LAX Art, has also worked with artists drawn to billboards "as a mode of public address; they're interested in playing with the language of advertising," she said. She has produced temporary billboards by Mark Bradford, Daniel Joseph Martinez, Ruben Ochoa and other artists who seek to reach beyond the typical gallery audience.

More recently, she produced a billboard by Raymond Pettibon, still up on Sunset Boulevard, featuring his 1989 drawing of a man walking, hunched over, away from the viewer. Above him the text reads, "I thought California would be different."

Ms. Firstenberg said that Los Angeles was only now finding its footing in terms of public art. "There is still so much that can be done here," she said. "I think aside from the muralist tradition, the history of public art here is just not as rich or ripe as New York, Chicago, Paris or London."

New York, for example, had a wealth of public art (mainly monuments commemorating civic leaders and Civil War heroes) before it had a wealth of museums. And the city now has two major nonprofit groups in

this sphere, Public Art Fund and Creative Time. Founded in the 1970s, both have raised money for artists' projects, lobbied politicians and worked within municipal building codes for decades.

Los Angeles does not have equivalent organizations. But the city has a "one percent for art" program, overseen by the Department of Cultural Affairs, that requires developers of large projects to spend a fraction of their buildings' value on art. And it has a new crop of contemporary art curators like Ms. Firstenberg and Ms. Fontana who are willing to work within the system, however bureaucratic. It has, for instance, taken Mr. Golia's team of engineers and architects two years and several plan revisions to meet local building codes, turning Ms. Firstenberg, in her own estimation, from "an idealist into a realist." Another major player is Merry Norris, an art consultant who says that her commissions can run over five years "with many starts and stops." She oversaw the Hashimoto sculpture for the Andaz hotel as well as a 2007 April Greiman mural (of a super-sized bowl of rice) on the facade of a building in Koreatown, typically working with developers under the "one percent" program. She credits this municipal fee with "raising the level of activity" and "opening up numerous possibilities" for public art in the city.

Meanwhile, For Your Art, an event producer and public relations firm, is busy plotting out public art offerings for a new online map (foryourart.com). Bettina Korek, the founder of For Your Art, said she favored an online, easy-to-update format because the public art landscape evolves so quickly. She also spoke of organizing an event in June at the Kusama tulip sculpture to coincide with the Gagosian Gallery's bicoastal show of the artist. "We should all think of these sites," she said, "as places to hold events, to gather, to meet."

Of course, for some working in this realm, getting Angelenos to leave their cars is the ultimate sign of success. By that measure, Mr. Burden's "Urban Light" installation could already be considered a blockbuster. Cyclists use it as a meeting point; tourists use it as a place to pose. The museum found so many images of it cropping up on Flickr that it organized its own amateur photography contest this winter.

But Mr. Burden shares credit for the work's appeal, surmising that viewers are drawn to the ornate lamppost designs from Los Angeles in the 1920s and '30s out of nostalgia for a more optimistic period in California history.

"There was just no need to put this much work into a fixture when a telephone pole and a wooden arm would have done the trick," he said. "To me the lamps are a form of public art in themselves, making the infrastructure of the city so rich with design and ornamentation."

http://www.nytimes.com/2009/05/03/arts/design/03fink.html

In Berlin, Teaching Germany's Jewish History

By EDWARD ROTHSTEIN

BERLIN — There may be worse Jewish museums in the world than the Jüdisches Museum Berlin, which opened in 2001. But it is difficult to imagine that any could be as uninspiring and banal, particularly given its pedigree and promise. Has any other Jewish museum been more celebrated or its new building (designed by Daniel Libeskind) so widely hailed? Is any other Jewish museum of more symbolic importance?

This is the largest such institution in Europe, a national museum devoted to exploring the history of a people this country was once intent on eradicating. Is there any museum of any kind more laden with the baggage of guilt and suffering, of restitution and tribute?

So many museums now deal with recollections of trauma that Berlin's fraught examples are illuminating. Ruin and relics are part of renovation here. When the destroyed Neue Synagoge was being restored, it was clear that the original 19th-century structure, with its ornate echoes of Alhambra, could never be reconstituted. So its extraordinary facade, rededicated in 1995, frames not a house of worship but a modest exhibition about a particular Jewish community and its once-thriving synagogue, while fragments of the original building's altar are pieced together like an unfinished puzzle.

The Jüdisches Museum inverts the formula. Here it is the new — the building created by Mr. Libeskind — that invokes scars and wreckage. The old is suggested by its contents, consisting largely of text, images, reproductions and interactive displays that are meant to conjure a past worthy of celebration.

This museum may even be considered a German example of a genre dominant in the United States: the "identity" museum. Typically, the identity museum recounts how a particular ethnic group has survived, chronicling its travails and triumphs, culminating in the institution's own prideful displays. Here, of course, the Holocaust interrupts the uplift. But the overarching idea was to reveal something about the people Hitler set out to obliterate by surveying the rich, complicated history of Jews in Germany.

So while the narrative begins with evocations of the Holocaust, it is meant to end, if not in redemption for Germans or Jews, at least in a kind of mutual respect. In the museum's catalog foreword, the German commissioner for cultural affairs, Julian Nida-Rümelin, points out that the institution may be providing "the only contact many non-Jewish Germans have with Jews and Judaism" outside their history classes.

The museum's director, W. Michael Blumenthal, explains, too, that the exhibition's story "far transcends" the history of German Jewry, demonstrating "a widely shared determination" to apply its lessons "to societal problems of today and tomorrow," and promoting "tolerance toward minorities in a globalized world."

The resulting strain is almost bipolar, with the building aggressively screaming about apocalypse as its exhibition affirms harmonious universalism, with neither making its case.

The building, for example, proposes that the shattered, fractured world of the Holocaust is best suggested by shattered, fractured space. You enter the exhibition by descending a lobby staircase that leads into a world of skewed geometry. The floors are raked and tilted. Displays are off-kilter. And rather than feeling something profound, you almost expect moving platforms and leaping ghosts, as in an amusement park's house of horrors.

Add to this a sheen of pretense. One corridor is called the Axis of Exile, because along it are the personal effects of Jews who fled Germany during the 1930s. Another is named the Axis of the Holocaust, which shows letters and photographs of murdered Jews. And lest it all look too bleak, an Axis of Continuity leads upstairs, where you learn about where all of this fits into 2,000 years of German Jewish history.

Meanwhile, the items on display are so cursorily identified and their owners so obliquely described that they might as well have been anonymous points on an Axis of Victimhood. The space trivializes history rather than revealing it.

To see what else is possible, go in Berlin to the outdoor Memorial to the Murdered Jews of Europe: it, too, uses abstract space to symbolize tragedy, but doesn't prod or preen. Its thousands of pillars seem to emerge gradually from the city's street. But their array creates passages that lead you from daylight into dense alleys of looming stone, as if you are gradually submerged into a maze, obliterating the human. The pillars can resemble the tilted gravestones of Prague's ancient Jewish Cemetery, only here they are anonymous and ominous.

But as strong as this 2005 memorial, designed by Peter Eisenman, is, an exhibition in its below-ground information center is even more powerful. The Holocaust is historically outlined and then made personally vivid. Embedded in the floor of a darkened room are illuminated panels inscribed with letters from the period, around which you walk as if navigating the memorial's pillars, until you enter, in dazed shock, another gallery that traces the way specific Jewish families from all over Europe headed toward destruction.

Far smaller than Yad Vashem in Jerusalem, and far more focused than the United States Holocaust Museum, it is the most extraordinarily informative and affecting display about its subject I have seen.

So such commemorations are possible. But the Jüdisches Museum amplifies its errors. If you emerge from the Axes into the top galleries where the chronological show begins, you see two dominant objects: a fake pomegranate tree and an enormous plastic garlic.

O.K., these have some significance — the pomegranate tree is a Jewish symbol of renewal, though hardly as fundamental as the museum suggests, and the garlic is a playful allusion to a Hebrew acrostic naming the three Germanic towns on the Rhine (Speyer, Worms and Mainz) where Jews settled in the Middle Ages. But you will remember garlic and pomegranates more readily than anything else.

There are few original objects here, and only scattered explanations of Judaism. You have to watch brief films to get any historical background and by the time you reach the 16th-century galleries, you have only the vaguest idea about what Jews believed or why they survived.

We read, for example, that learning and the Scriptures were highly valued; we see an electronic page from the Talmud and a prayer book, but get no real sense of their content or how they shaped Jewish life. Judaism here seems like a religion whose main importance is sociological.

One of the most extensive displays is based on a journal by a remarkable Jewish woman, Glikl bas Juda Leib (1646-1724), who left rare accounts of 17th-century Jewish private life. We learn more about her, though, than about the imposing rabbinical scholars of these lands, or how their debates shaped Judaism in Europe.

There is palpable relief when the premodern is left behind, for now we see Jews fully enter into secular history. After the Enlightenment, the museum finally feels on firm ground, recounting the ways in which Jews became central figures in German banking, commerce, journalism and the arts.

But over all, it is as if intellectual and religious substance had been drained from Judaism, leaving behind cursory accounts of rituals, tales of victimization and an accumulation of Jewish achievements that might inspire contemporary interest (like Leib's writings or the emigration of Levi Strauss, the jeans pioneer).

And while pointing out conflicts, the museum tends to become sanguine about the knotty relationship between Jews and Germans. You learn, for example, about the involvement of Friedrich the Great with the ideals of the Enlightenment, but you won't find out here that because he had trouble selling artifacts from his Royal Porcelain Factory, he forced Jews to buy second-rate porcelain if they wanted to bear children without paying exorbitant taxes.

Facts like those can disclose an entire world. But it would also make the museum more troubling. Instead, by making the German past seem more enlightened, and the Jewish past less particular, it has created an assimilated blandness in which antipodes unite in ersatz tolerance.

Imagine what the museum might have been had it decided to eliminate exaggerated effects and dull homogeneity. It might have been subtle, touching, unsettling. It might have taken history seriously.

Perhaps it would have had the potency of the underground "Bibliotek" memorial built in the mid-1990s on the Bebelplatz, where the Nazis held a book burning in 1933, consigning thousands of volumes to the flames.

The memorial's creator, Micha Ullman, knew he couldn't reproduce the magnitude of the event or its destructiveness. So instead, he put a transparent window in the ground of the plaza, under which you can see an illuminated array of empty white bookshelves.

"Where books are burned," a bronze plaque simply reads, quoting the poet Heinrich Heine from 1820, "in the end people will burn."

This article has been revised to reflect the following correction:

Correction: May 5, 2009

A museums column on Saturday about the Jüdisches Museum Berlin and the Memorial to the Murdered Jews of Europe, also in Berlin, misstated the title of W. Michael Blumenthal, a Jüdisches Museum official. He is the director, not a curator.

http://www.nytimes.com/2009/05/02/arts/design/02conn.html

'FASHIONING FELT'
Humble Fabric Takes Center Stage

By ROBERTA SMITH

Felt is the feel-good fabric of all time. Sturdy, cosseting, beautiful, shape-shifting, dye-friendly, it serves many purposes and offers countless pleasures. Some but certainly not all of its latest uses are outlined in "Fashioning Felt," an illuminating exhibition of around 70 items — mostly furnishings and garments — at the Cooper-Hewitt National Design Museum. Felt's purely artistic possibilities are also being explored in scattered shows at New York galleries.

Though you may never have thought much about felt, there's a lot more to it than you'd expect. One of the first manmade textiles, it requires almost no special tools, certainly not a loom. It began to be made 8,000 years ago, a millennium before the earliest forms of weaving. Its fairly unadulterated natural ingredients were and remain animal wool, soap and water mashed into a kind of pulp (initially by bare feet), then dried under pressure and made into everything from caps to rugs and capes to yurts.

On the scale of material culture, felt's elemental longevity places it somewhere between wine-making (the stomping) and ceramics (the malleable natural material rendered useful by drying or baking). Like the smooth surfaces and glazes of ceramics, felt's wet-dry process and variety of colors encouraged the human yen for decoration. Among the Cooper-Hewitt show's half dozen 19th- and early 20th-century precursors to contemporary felt is a Mongolian tea ceremony rug whose salmon-pink field is dotted with pinwheels of circles in red, green and white pinwheel (tie-dyed), and an Iranian carpet whose familiar Persian patterns, freed from the loom, have a wonderful drizzled, drifting effect. In contrast, an Uzbek carpet from the same time magnifies such motifs into big, flat silhouettes.We probably all have felt-related memories, and maybe even some felt phobia. Mine include poodle skirts, varsity letters, blackboard erasers, pool tables and the undersides of lamps and heavy ashtrays that I was told to handle carefully. That felt's edges were all, in essence, selvage — no hems required! — attracted people like me who don't sew. Though I think that the closest I came to actually wearing felt was a yurtlike bathrobe with large red, cut-out and flocked tomatoes on its enormous pockets — a Christmas gift from my mother at the onset of my adolescence.

During my first years as a New York pedestrian, I gained a new appreciation of felt's wondrous warmth and density through a simple pair of innersoles that winterized and then outlasted some reliable rain boots. Several of my favorite garments have been made of boiled wool, felt's second cousin, including sweaters that I downsized (not always on purpose) in the washer or dryer. Then there's my sizable collection of yard-sale afghans. Its pride is a blue-checked survivor of a previous owner's washer-dryer experimentation. At first I thought it was a rug. I snapped it up for $10 and hope to be buried with it. And did I mention the felt-covered couch in my living room? It is seasonal, used only during the cooler months.

The Cooper-Hewitt show dwells largely in the gap between art and functional objects. Aside from room dividers by Scofidio & Diller and Janice Arnold, a neat hanging cradle by Soren Ulrick Petersen and a beautiful large rug in bands of Rothko red by Stephanie Odegard, there is remarkably little here that I can imagine living with or looking at for extended periods of time. It would have been nice to have had some slightly more down-to-earth applications that weren't at least 100 years old, rather than the parade of exotic garments, weirdly shaped furniture and wall hangings.

There are extremes in size, from a felt necklace by Birgit Daamen embedded with coral beads to a giant red-brown installation by Claudy Jongstra that demonstrates degrees of feltness, raw to cooked, through different textures and wools, straight to curly. It reaches a height of about eight feet, resembles the maw of a whale and invites but doesn't accommodate physical contact. Add seats and it could be a pair of booths in a fancy restaurant — say, the Siberian Tearoom. Just a thought.

There are also extremes in frivolity and function, some from the same source, as with Kathryn Walter, a designer whose family has been in the textile business for four generations. Ms. Walter's gray felt molding bulkily mimics the fluted and floral relief designs of traditional ceiling molding, which seems hard enough to keep dusted as it is. But her "Striations" wall, made of leftover felt scraps built up in horizontal chips like shale, is a sound-proofing solution, and it recycles.

Among the show's most interesting themes is hybridization: the increasing practice of combining felt with other materials, whether fabric, plastic or even light-emitting diode lights (a rug designed by Yvonne Laurysen and Erik Mantel). Jorie Johnson and Clifton Montieth collaborate; she makes felt vessels; he lines them with lacquer. Their works have a striking contrast of matte and shiny and hard and soft, although their practical applications are hard to gauge. Janice Arnold has draped the museum's conservatory with "Palace Yurt," an imposing installation of white-on-white wall hangings, each combining felt with silk, linen, mohair or Tercel in different patterns and motifs. The same principle is found on a smaller scale in the fashion designs of Christine Birkle and Françoise Hoffmann.

And the felt-covered stones of Stephanie Forsythe and Todd MacAllen are an unusually compact combination. They come in gray, green and white and seem the perfect thing to lie down on if one's back is tight. They must be better than tennis balls. These are not to be confused with Pernelle Fagerlund's "Textile Stones" cushions, which are made entirely of felt.

Felt has a history in postwar art, starting with Josephs Beuys's use of it in his performances, abstract sculptures and his dour felt suit pieces. And few things say Process Art like Robert Morris's elephantine, industrial-strength felt wall pieces and Barry LeVa's scattered floor pieces of felt scraps, with or without shattered glass. The less dour aesthetic possibilities of felt hit me several years ago via an unforgettable cluster of little felt reliefs hanging in a hallway of an art building at Virginia Commonwealth University in Richmond, Va. Nothing special, just an assignment from a textiles class, but the variety of color, textures and forms seemed like a remarkably fresh way to merge painting and sculpture. Wow. Major in that.

At the moment, the New York galleries showcasing felt include David Zwirner, at 525 West 19th Street, where Adel Abdessemed has used expanses of beautiful white felt to stretch three small airplanes into extended snakelike bodies. I also recommend two new sculptures by R. M. Fischer on view in "Old Dogs, New Tricks," at K.S. Art at 72 Leonard Street in TriBeCa, along with impressive sculptures by John

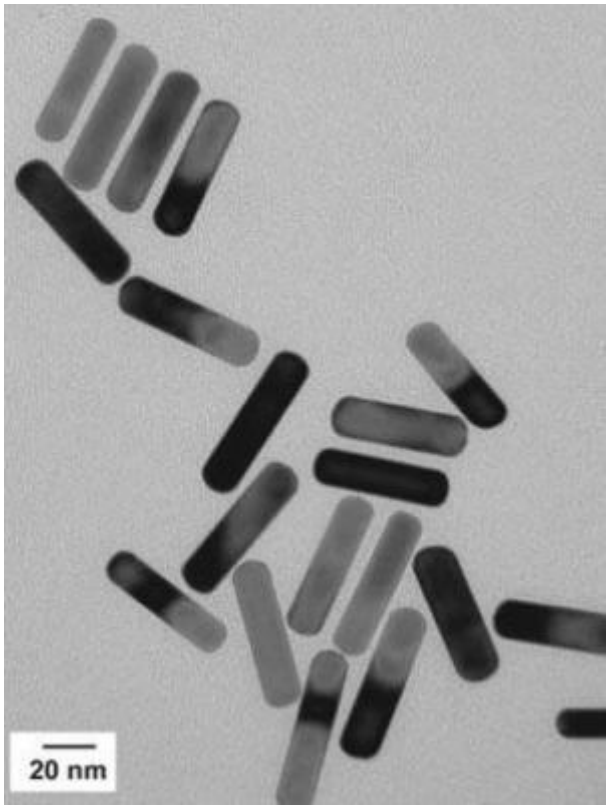
Newman and paintings by Hermine Ford. Mr. Fisher, who is best known for making aggressively utilitarian fountains and lamps from found, mostly metal objects, seems to have been shaken to his roots by some kind of SpongeBob SquarePants epiphany. His new sculptures are soft stuffed forms sewn from felt and other hardy fabrics like vinyl imitation leather; they achieve an unlikely stasis between the sexual and the toylike, not to mention abstraction and representation.

Then there is "Bold as Love," a show of the work of the young artist Adam Parker Smith that can be seen around the clock at Broadway Windows, a display-only curatorial space in the windows of a New York University building at Broadway and East 10th Street in Greenwich Village. Inspired by Goya (and the Chapman brothers), Mr. Smith is showing three dozen life-size severed heads, mounted on spikes, and more comedic than gory because they are made entirely of felt. The heads echo too closely the work of Tom Friedman and Ryan Johnson, but they are vivacious and various and make good use of felt's colors, mutability and hem-free edges. In a way, their main subject is the wonder of the material itself.

"Fashioning Felt" continues through Sept. 7 at the Cooper-Hewitt National Design Museum, 2 East 91st Street; (212) 849-8400, cooperhewitt.org.

http://www.nytimes.com/2009/05/01/arts/design/01felt.html

Targeting Tumors Using Tiny Gold Particles



MIT researchers developed these gold nanorods that absorb energy from near-infrared light and emit it as heat, destroying cancer cells. (Credit: Photo / Sangeeta Bhatia Laboratory; MIT)

ScienceDaily (May 5, 2009) — It has long been known that heat is an effective weapon against tumor cells. However, it's difficult to heat patients' tumors without damaging nearby tissues.

Now, MIT researchers have developed tiny gold particles that can home in on tumors, and then, by absorbing energy from near-infrared light and emitting it as heat, destroy tumors with minimal side effects.

Such particles, known as gold nanorods, could diagnose as well as treat tumors, says MIT graduate student Geoffrey von Maltzahn, who developed the tumor-homing particles with Sangeeta Bhatia, professor in the Harvard-MIT Division of Health Sciences and Technology (HST) and in the Department of Electrical Engineering and Computer Science, a member of the David H. Koch Institute for Integrative Cancer Research at MIT and a Howard Hughes Medical Institute Investigator.

Von Maltzahn and Bhatia describe their gold nanorods in two papers recently published in *Cancer Research* and *Advanced Materials*. In March, von Maltzahn won the Lemelson-MIT Student Prize, in part for his work with the nanorods.

Cancer affects about seven million people worldwide, and that number is projected to grow to 15 million by 2020. Most of those patients are treated with chemotherapy and/or radiation, which are often effective but can have debilitating side effects because it's difficult to target tumor tissue.

With chemotherapy treatment, 99 percent of drugs administered typically don't reach the tumor, said von Maltzahn. In contrast, the gold nanorods can specifically focus heat on tumors.

"This class of particles provides the most efficient method of specifically depositing energy in tumors," he said.

Wiping out tumors

Gold nanoparticles can absorb different frequencies of light, depending on their shape. Rod-shaped particles, such as those used by von Maltzahn and Bhatia, absorb light at near-infrared frequency; this light heats the rods but passes harmlessly through human tissue.

In a study reported in the team's Cancer Research paper, tumors in mice that received an intravenous injection of nanorods plus near-infrared laser treatment disappeared within 15 days. Those mice survived for three months with no evidence of reoccurrence, until the end of the study, while mice that received no treatment or only the nanorods or laser, did not.

Once the nanorods are injected, they disperse uniformly throughout the bloodstream. Bhatia's team developed a polymer coating for the particles that allows them to survive in the bloodstream longer than any other gold nanoparticles (the half-life is greater than 17 hours).

In designing the particles, the researchers took advantage of the fact that blood vessels located near tumors have tiny pores just large enough for the nanorods to enter. Nanorods accumulate in the tumors, and within three days, the liver and spleen clear any that don't reach the tumor.

During a single exposure to a near-infrared laser, the nanorods heat up to 70 degree Celsius, hot enough to kill tumor cells. Additionally, heating them to a lower temperature weakens tumor cells enough to enhance the effectiveness of existing chemotherapy treatments, raising the possibility of using the nanorods as a supplement to those treatments.

The nanorods could also be used to kill tumor cells left behind after surgery. The nanorods can be more than 1,000 times more precise than a surgeon's scalpel, says von Maltzahn, so they could potentially remove residual cells the surgeon can't get.

Finding tumors

The nanorods' homing abilities also make them a promising tool for diagnosing tumors. After the particles are injected, they can be imaged using a technique known as Raman scattering. Any tissue that lights up, other than the liver or spleen, could harbor an invasive tumor.

In the Advanced Materials paper, the researchers showed they could enhance the nanorods' imaging abilities by adding molecules that absorb near-infrared light to their surface. Because of this surface-enhanced Raman scattering, very low concentrations of nanorods - to only a few parts per trillion in water [gf1]- can be detected.

Another advantage of the nanorods is that by coating them with different types of light-scattering molecules, they can be designed to simultaneously gather multiple types of information - not only whether there is a tumor, but whether it is at risk of invading other tissues, whether it's a primary or secondary tumor, or where it originated.

Bhatia and von Maltzahn are looking into commercializing the technology. Before the gold nanorods can be used in humans, they must undergo clinical trials and be approved by the FDA, which von Maltzahn says will be a multi-year process.

Other authors of the Advanced Materials paper are Andrea Centrone, postdoctoral associate in chemical engineering; Renuka Ramanathan, undergraduate in biological engineering; Alan Hatton, the Ralph

Landau Professor of Chemical Engineering; and Michael Sailor and Ji-Ho Park of the University of California at San Diego.

Park and Sailor are also authors of the Cancer Research paper, along with Amit Agrawal, former postdoctoral associate in HST; and Nanda Kishor Bandaru and Sarit Das of the Indian Institute of Technology Madras.

The research was funded by the National Institutes of Health, the Whitaker Foundation and the National Science Foundation. Nanopartz Inc. supplied gold nanoparticles, gold nanowires and the precursor gold nanorods used in this work.

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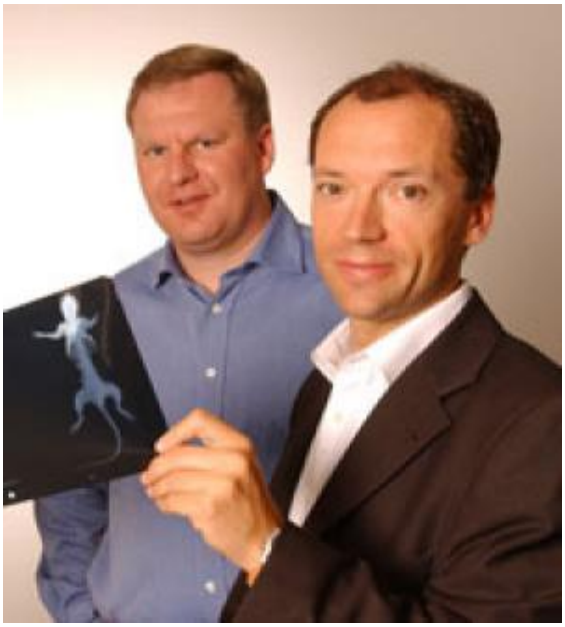
1. Geoffrey von Maltzahn, Ji-Ho Park, Amit Agrawal, Nanda Kishor Bandaru, Sarit K. Das, Michael J. Sailor, and Sangeeta N. Bhatia. **Computationally Guided Photothermal Tumor Therapy Using Long-Circulating Gold Nanorod Antennas**. *Cancer Research*, 2009; 69 (9): 3892 DOI: 10.1158/0008-5472.CAN-08-4242
2. Geoffrey von Maltzahn, Andrea Centrone, Ji-Ho Park, Renuka Ramanathan, Michael J. Sailor, T. Alan Hatton, Sangeeta N. Bhatia. **SERS-Coded Gold Nanorods as a Multifunctional Platform for Densely Multiplexed Near-Infrared Imaging and Photothermal Heating**. *Advanced Materials*, 2009; NA DOI: 10.1002/adma.200803464

Adapted from materials provided by Massachusetts Institute of Technology.

http://www.sciencedaily.com/releases/2009/05/090504151454.htm

New Mouse Model For Understanding Cause Of Progressive Hearing Loss



From left: Helmut Fuchs, Martin Hrabé de Angelis. (Credit: Bernd Müller)

ScienceDaily (May 5, 2009) — Scientists of Helmholtz Zentrum München, led by Professor Martin Hrabé de Angelis, director of the Institute of Experimental Genetics, have developed a new mouse model with a genetic mutant in which a single base of a specific microRNA seed region has been altered. Mice carrying this miR-96 mutation suffer progressive hearing loss as they get older. Moreover, if they carry two of these mutants, their sensory hair cells are impaired from birth on.

A number of genes associated with hearing loss were already known. "However, we were very surprised when with our new mouse model we discovered this new class of genes –microRNA – as genetic cause for this clinical picture," explained Dr. Helmut Fuchs, who conceived the idea of this mouse model and who is scientific -technical head of the German Mouse Clinic at Helmholtz Zentrum München.The new mouse model is called diminuendo, named after the term in music theory meaning "becoming gradually softer". The mice were bred using the ENU method in which the male mice are administered N-ethyl-N-nitrosurea (ENU), thus influencing the DNA of their sperm. Successor generations develop dominant or recessive mutations. Using methods like these, Martin Hrabé de Angelis and his colleagues in the German Mouse Clinic can thus identify mutants that develop diseases similar to human diseases. They made the diminuendo mouse model available to colleagues of the Wellcome Trust Sanger Institute in Cambridge, UK, who – based on specific characterizations – ultimately found the association with the miR-96 mutation.

In Germany alone, around 13 million people have impaired hearing, according to estimates of the German Deaf Association (Deutscher Schwerhörigenbund). There are diverse causes for this, including deafness simply due to old age, hearing loss caused by infections and damage due to chronic noise. However, progressive hearing loss can also have genetic causes."We assume that our mouse model will be of far-reaching significance for the development of treatment strategies against genetically caused progressive hearing loss in humans," Dr. Fuchs explained. Colleagues from Spain confirm his assumption. They have already performed first examinations on patients diagnosed with progressive hearing loss. In them the microRNA cluster Mirn96 was mutated in the same seed region as in the mouse model. Now, with the aid of this mouse model, the international research consortium hopes to identify factors which are necessary for long-term survival of hair cells and thus to find new approaches for treatment of progressive hearing loss.

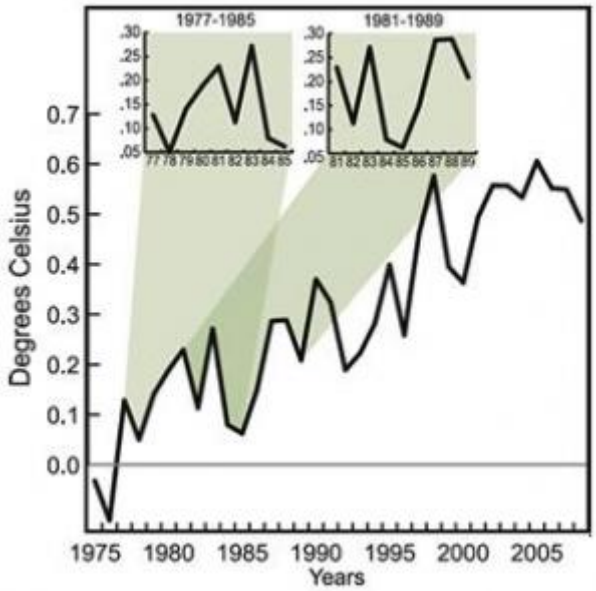
Journal reference:

1. Lewis et al. **An ENU-induced mutation of miR-96 associated with progressive hearing loss in mice**. *Nature Genetics*, 2009; DOI: 10.1038/ng.369

Adapted from materials provided by Helmholtz Zentrum Muenchen - German Research Centre for Environmental Health.

http://www.sciencedaily.com/releases/2009/04/090427075420.htm

Climate Experts Warn That Short-Term Snapshots Of Temperature Data Can Be Misleading: Focus Instead On The Bigger Picture



Measured changes in global temperature show ups and downs, with some periods of a decade or more defying the long-term trend. (Credit: Graphs provided by the authors, published by the AGU)

ScienceDaily (May 5, 2009) — In the hotly debated arena of global climate change, using short-term trends that show little temperature change or even slight cooling to refute global warming is misleading, write two climate experts in a paper recently published by the American Geophysical Union — especially as the long-term pattern clearly shows human activities are causing the earth's climate to heat up.

In their paper "Is the climate warming or cooling?" David R. Easterling of the National Oceanographic and Atmospheric Administration's National Climatic Data Center and Michael Wehner of the Computational Research Division at the Department of Energy's (DOE) Lawrence Berkeley National Laboratory note that a number of publications, websites and blogs often cite decade-long climate trends, such as that from 1998-2008, in which the earth's average temperature actually dropped slightly, as evidence that the global climate is actually cooling.

However, Easterling and Wehner write, the reality of the climate system is that, due to natural climate variability, it is entirely possible, even likely, to have a period as long as a decade or two of "cooling" superimposed on the longer-term warming trend. The problem with citing such short-term cooling trends is that it can mislead decision-makers into thinking that climate change does not warrant immediate action. The article was published April 25 in *Geophysical Research Letters*.

"We wrote this paper, which was carefully reviewed by other researchers and is scientifically defensible, to clearly show that even though our climate is getting warmer, we can't expect it to do so in a monotonic way – or that each year will be warmer than the preceding year," said Wehner. "Even with the climate changes caused by human activity, we will continue to see natural variability including periods of cooler temperatures despite the fact that globally averaged temperatures show long-term global warming."

"It is easy to 'cherry pick' a period to reinforce a point of view, but this notion begs the question, what would happen to the current concerns about climate change if we do have a sustained period where the climate appears to be cooling even when, in the end, the longer term trend is warming?" write Easterling and Wehner.

The research was funded by the DOE Office of Science's Office of Biological and Environmental Research through its Climate Change Prediction Program.

Citing an accepted climate modeling scenario in which no efforts are made to reduce the amount of greenhouse gases released into the atmosphere, the earth's climate is expected to warm by 4 degrees Celsius (7.2 degrees Fahrenheit) by the end of the 21st century. The authors point out that this is consistent with other simulations contained in the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC 2007), which was recognized with the 2007 Nobel Peace Prize.

"Climate scientists pay little attention to these short-term fluctuations as the short term 'cooling trends'…are statistically insignificant and fitting trends to such short periods is not very meaningful in the context of long-term climate change," the authors write. "On the other hand, segments of the general public do pay attention to these fluctuations and some critics cite the most recent period as evidence against anthropogenic-forced (human-induced) climate change."

The authors used both observed climate data from 1901-2008 and a series of climate model simulations performed on supercomputers to study the occurrence of decade-long trends in globally averaged surface air temperature. They found that it is possible, and indeed likely, to see periods as long as a decade in the recent past which do not show a warming trend. The authors even found that running computer simulations for the 21st century with significant increases in greenhouse gas emissions showed some decades with lower or static average temperatures.

One such example can be found by looking at data from 1998 to 2008, which shows no real trend, even though global temperatures remain well above the long-term average. According to the authors, the unusually strong 1997-98 El Niño contributed to unusual warmth in the global temperature for 1998, so that without similar dramatic changes, the following decade does not appear to be warming. A similar interpretation can be made by looking at the short-term data from 1977-85 or 1981-89, "even though these periods are embedded in the 1975-2008 period showing a substantial overall warming," Easterling and Wehner write. In the first example, dropping data from 1998 and looking at 1999-2008, the researchers found a strong warming trend.

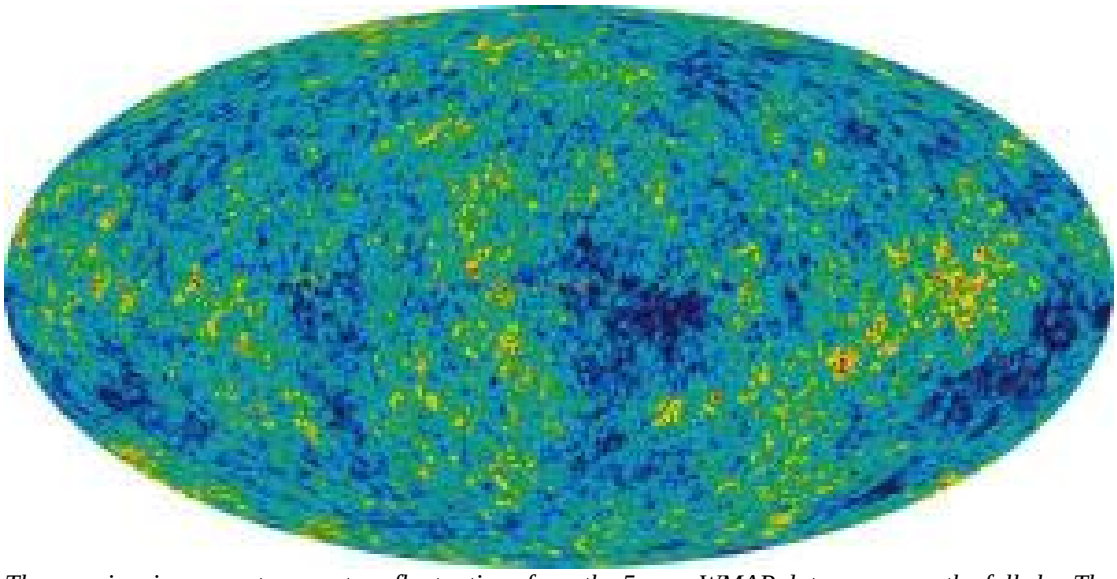
Journal reference:

1. David R. Easterling, Michael F. Wehner. **Is the climate warming or cooling?** *Geophys. Res. Lett.*, 2009; 36: L08706 DOI: 10.1029/2009GL037810

Adapted from materials provided by Lawrence Berkeley National Laboratory.

http://www.sciencedaily.com/releases/2009/05/090504141047.htm

Super-sensors To Discover What Happened In First Trillionth Of A Second After Big Bang



The cosmic microwave temperature fluctuations from the 5-year WMAP data seen over the full sky. The average temperature is 2.725 Kelvin (degrees above absolute zero; equivalent to -270 C or -455 F), and the colors represent the tiny temperature fluctuations, as in a weather map. Red regions are warmer and blue regions are colder by about 0.0002 degrees. (Credit: NASA / WMAP Science Team)

ScienceDaily (May 4, 2009) — What happened in the first trillionth of a trillionth of a trillionth of a second after the Big Bang?

Super-sensitive microwave detectors, built at the National Institute of Standards and Technology (NIST), may soon help scientists find out.

The new sensors, described May 2 at the American Physical Society (APS) meeting in Denver, were made for a potentially ground-breaking experiment* by a collaboration involving NIST, Princeton University, the University of Colorado at Boulder, and the University of Chicago.

Although NIST is best known for earthbound measurements, a long-standing project at NIST's Boulder campus plays a critical role in the study of the cosmic microwave background (CMB)—the faint afterglow of the Big Bang that still fills the universe. This project previously built superconducting amplifiers and cameras for CMB experiments at the South Pole, in balloon-borne observatories, and on the Atacama Plateau in Chile.

The new experiment will begin approximately a year from now on the Chilean desert and will consist of placing a large array of powerful NIST sensors on a telescope mounted in a converted shipping container.

The detectors will look for subtle fingerprints in the CMB from primordial gravitational waves—ripples in the fabric of space-time from the violent birth of the universe more than 13 billion years ago. Such waves are believed to have left a faint but unique imprint on the direction of the CMB's electric field, called the "B-mode polarization." These waves—never before confirmed through measurements—are potentially detectable today, if sensitive enough equipment is used.

"This is one of the great measurement challenges facing the scientific community over the next 20 years, and one of the most exciting ones as well," said Kent Irwin, the NIST physicist leading the project.

If found, these waves would be the clearest evidence yet in support of the "inflation theory," which suggests that all of the currently observable universe expanded rapidly from a subatomic volume, leaving in its wake the telltale cosmic background of gravitational waves.

"The B-mode polarization is the most significant piece of evidence related to inflation that has yet to be observed," said Ki Won Yoon, a NIST postdoctoral scholar who will describe the project at the APS meeting. "A detection of primordial gravitational waves through CMB polarization would go a long way toward putting the inflation theory on firm ground."

The data also could provide scientists with insights into different string theory models of the universe and other "unified" theories of physics.

These types of experiments can only be done by studying the universe as a whole, because the particles and electromagnetic fields at the beginning of the inflationary epoch were roughly 10 billion times hotter than the energies attainable by the most powerful particle colliders on Earth today. At this energy scale, fundamental forces now identified as separate are predicted to merge.

"The universe is a physics lab," Irwin said. "If you look far away, you are actually looking back in time, potentially observing interactions that occurred at energy levels forever out of reach of terrestrial experiments."

Recent studies of the CMB have focused on measuring slight spatial variations in temperature or power that existed about 380,000 years after the Big Bang. These patterns of radiation allow scientists to characterize the early distributions of matter and energy that evolved into the stars and galaxies of today.

By comparing the measurements to predictions made by various theories, scientists have added to the authoritative history of the universe, narrowing down, for instance, its age (13.7 billion years).

By contrast, the new NIST detectors are designed to measure not only temperature but also the polarization. The B-mode polarization signals may be more than a million times fainter than the temperature signals.

To detect such subtle patterns, the NIST detectors will collect significant amounts of radiation efficiently, and will be free of moving parts and traditional sources of systematic error, such as vibration and magnetic interference, Irwin said. In addition, advanced signal processing and error control will be needed.

The new sensors are prototypes for NIST polarimeter arrays that will greatly increase the sensitivity of future experiments by building thousands of detectors into monolithic units that can be deployed in cryogenic telescope cameras. The new NIST detectors may also have applications closer to home, such as in reducing glare in advanced terahertz imaging systems for detecting weapons and contraband.

*Atacama B-mode Search (ABS): Scientific Motivations and Design Overview, Sheraton Denver Hotel, Plaza Court 2, Saturday, May 2, 2009.

Adapted from materials provided by National Institute of Standards and Technology.

http://www.sciencedaily.com/releases/2009/05/090502183233.htm

Matrix Protein Key To Fighting Viruses

Understanding detailed surface features of the protein will help scientists unravel how the protein works during the infection cycle. (Credit: Copyright Durham University)

ScienceDaily (May 4, 2009) — Researchers from Durham University's Centre for Bioactive Chemistry are developing methods that show how proteins interact with cell membranes when a virus strikes. Using their approach, the team hopes to find new ways to disrupt and disarm 'enveloped viruses' before they spread in our bodies.

Team members, Dr John Sanderson and Dr Paul Yeo from Durham University have helped produce the first ever, high-resolution, full-length structure of a protein from an enveloped virus called the 'matrix protein'.

Viruses work in many different ways but in this case, respiratory syncytial virus (RSV) virions form by a 'budding' process at the plasma membrane of a cell. The matrix protein appears to drive the final assembly process and the formation of viral filaments. It is also clear that the matrix protein is an important determinant of where the virus buds.

Using x-ray crystallography, the team's been able to see the intimate details of the matrix protein that controls how the RSV virus assembles inside a cell. The technique allows them to see how the virus protein functions and this could help the team to develop biochemical tools to treat respiratory ailments and the common cold.

Dr Yeo said: "We can now see what the protein virus structure looks like and we plan to pull the protein apart to see how and where it might be intercepted. These images provide amazing insights into the micro-chemical world of our cells. We have an opportunity to use bioactive chemistry to develop the medical tools of the future."

The team, funded by Durham University, the Wolfson Institute and One North East, looked at the matrix protein of respiratory syncytial virus (RSV), a virus which is the most dangerous respiratory virus affecting infants and for which there is no vaccine. About one in three people suffering a cold are affected by this particular enveloped virus. They are looking at the way in which the matrix protein pulls the virus together and assembles at the membrane of a cell. This interaction is crucial to the development of cellular disease.

Dr John Sanderson said; "Enveloped viruses can be extremely dangerous. They enter the cell and hijack its machinery. They assemble their own cell parts of proteins and nucleic acids, before pinching off a bit

of the membrane lining of a cell, in this case the lung, and going on to infect new cells. Our new hi-resolution structure can help us to see how to disrupt that process."

Durham's researchers have looked closely at the different stages of virus assembly and replication and they are particularly interested at the stage where the virus assembles. It's at this stage that they intend to disrupt the protein.

Dr Paul Yeo said: "If you can intercept the virus at the right time, just before it exits the cell, then your immune system can deal with it. Almost all envelope viruses have to assemble and we want to see how the mechanism works, how the virus latches on to cells and how it buds inside them."

The researchers grew crystals of the protein, crystallised them, and then used x-ray diffraction to determine the position in space of every atom of the protein. The information was then used to create images of the protein's structure. These images enable the team see what different parts of the matrix protein do.

If scientists can understand how the protein binds to cell membranes, then chemists and biological scientists may be able to develop tools to stop the protein mechanism working; this could be a stepping stone to the development of drugs to fight viruses like RSV. The Durham team also hope to work on other viruses such as Hepatitis C and measles.

Dr Sanderson said: "The high-resolution and degree of crystallographic order that we've observed in the structure allows us to throw light on the way in which the membrane binds, and on the mechanism by which this protein performs its varied and critical roles. It's an exciting development that could help in the quest for the biochemical tools of the future."

The 5 stages of virus assembly and replication:

1. Entry into the cell
2. Replication of genome
3. Production of the components of the virus
4. Coordinated assembly
5. Exit from the cell and release (and multiplication)

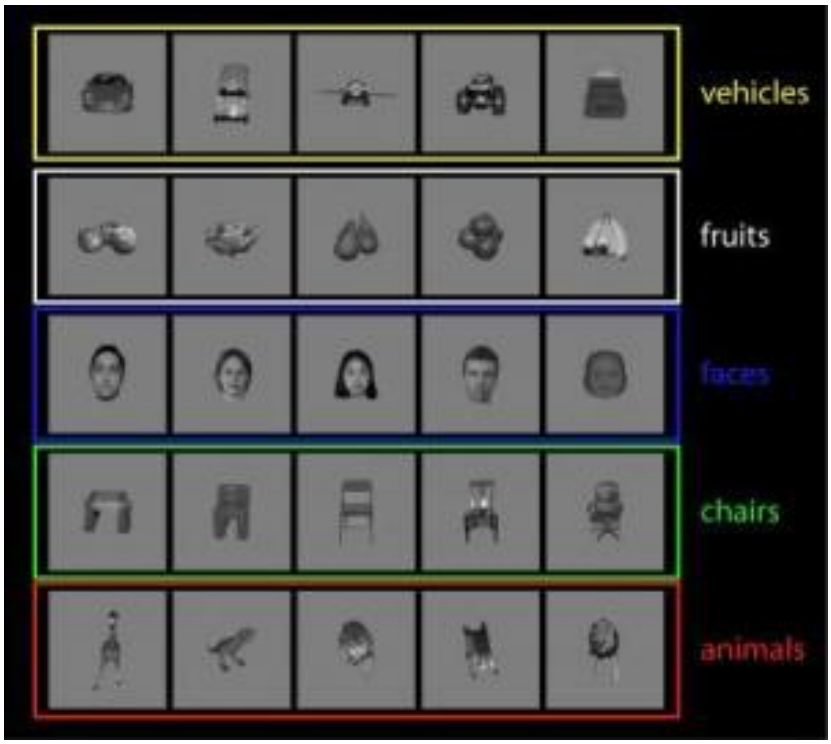
Journal reference:

1. Money et al. **Surface features of a Mononegavirales matrix protein indicate sites of membrane interaction**. *Proceedings of the National Academy of Sciences*, 2009; 106 (11): 4441 DOI: 10.1073/pnas.0805740106

Adapted from materials provided by Durham University.

http://www.sciencedaily.com/releases/2009/04/090429091336.htm

Human Brain Can Recognize Objects Much Faster Than Some Have Thought



While brain activity was recorded, subjects were shown five categories of objects, with five examples within each category. Each object was presented in different sizes and orientations. (Credit: Courtesy Gabriel Kreiman, PhD, Children's Hospital Boston)

ScienceDaily (May 4, 2009) — Human beings far outpace computers in their ability to recognize faces and other objects, handling with ease variations in size, color, orientation, lighting conditions and other factors. But how our brains handle this visual processing isn't known in much detail.

Researchers at Children's Hospital Boston, taking advantage of brain mapping in patients about to undergo surgery for epilepsy, demonstrate for the first time that the brain, at a very early processing stage, can recognize objects under a variety of conditions very rapidly. The findings were published in the journal Neuron on April 30th.

Visual information flows from the retina of the eye up through a hierarchy of visual areas in the brain, finally reaching the temporal lobe. The temporal lobe, which is ultimately responsible for our visual recognition capacity and our visual perceptions, also signals back to earlier processing areas. This cross-talk solidifies visual perception.

"What hasn't been entirely clear is the relative contribution of these "feed-forward" and "feed-back" signals," says Gabriel Kreiman, PhD, of the Department of Ophthalmology at Children's Hospital Boston and the study's senior investigator. "Some people think that if you don't have feedback, you don't have vision. But we've shown that there is an initial wave of activity that gives a quick initial impression that's already very powerful."

Although feedback from higher brain areas may occur later and is often important, very fast visual processing would have an evolutionary advantage in critical situations, such as encountering a predator, Kreiman adds.

Previous human studies have relied on noninvasive brain monitoring, either with electrodes placed on the surface of the head or with imaging techniques, and have captured brain activity at intervals of seconds – lagging considerably behind the brain's actual processing speeds. Moreover, these techniques gather data from fairly general brain locations. By placing electrodes directly on the brain, the Children's researchers were able to obtain data at extremely high temporal resolution – picking up signals as fast as 100 milliseconds (thousandths of seconds) after presentation of a visual stimulus -- and monitor activity in very discrete, specific locations.

Kreiman collaborated with Children's neurosurgeon Joseph Madsen, MD, who was already doing brain mapping in patients with epilepsy, a procedure that ensures that surgery to remove damaged brain tissue will not harm essential brain functions. The team implanted electrodes in the brains of each of 11 adolescents and young adults with epilepsy (anywhere from 48 to 126 electrodes per patient) in the areas where their seizures were believed to originate. While the electrodes recorded brain activity, the patients were presented with a series of images from five different categories -- animals, chairs, human faces, fruits and vehicles – of different sizes and degrees of rotation.

The recordings demonstrated that certain areas of the brain's visual cortex selectively recognize certain categories of objects, responding so strongly and consistently that the researchers could use mathematical algorithms to determine what patients were viewing, just by examining their pattern of neural responses. Moreover, these responses occurred regardless of the object's scale or degree of rotation. And recognition was evident within as little as 100 milliseconds, too fast for information to be relayed from the visual cortex to the temporal lobe and back again.

Kreiman and Madsen are now extending these studies by showing patients movies – more closely resembling the way we see images in real life. Since each patient is allowed to choose his or her own movie, Kreiman's team must analyze its visual content frame by frame and then link that data to the patient's brain activity.

Why is it important to tease apart visual processing in this way? Kreiman envisions using the vision algorithms discovered in humans to teaching computers how to see as well as people, so that they could help in real-life applications such as spotting terrorists in airports, helping drivers avoid collisions with hard-to-see pedestrians, or analyzing hundreds of tumor samples looking for malignancy. A more futuristic application would be the design of brain-computer interfaces that would allow people with visual impairment to have at least partial visual perception.

Over the last decade, Kreiman and Itzhak Fried, MD, PhD, of UCLA have studied the hippocampus, which is involved in memory, and found individual brain cells that responded consistently when people were shown specific images such as pictures of Jennifer Aniston and Bill Clinton. Kreiman is interested in further exploring the relation between visual processing and memory and incorporating the physiological knowledge into computational algorithms.

The current study was funded by the Epilepsy Foundation, the Whitehall Foundation, the Klingenstein Fund and the Children's Hospital Boston Ophthalmology Foundation.

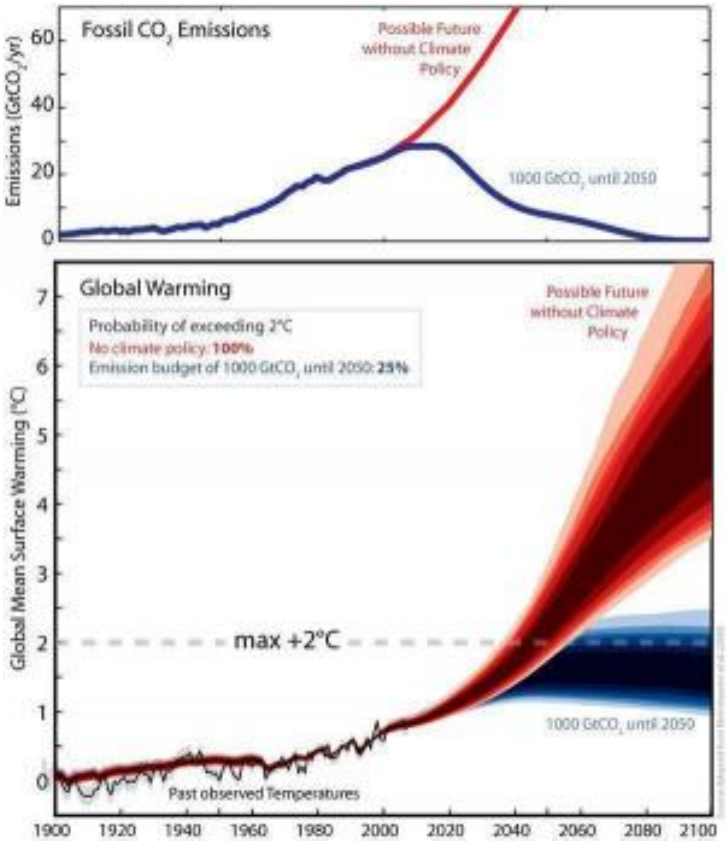
Journal reference:

1. Liu H; et al. **Timing, timing, timing: Fast decoding of object information from intracranial field potentials in human visual cortex**. *Neuron*, (2009) DOI: 10.1016/j.neuron.2009.02.025

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

http://www.sciencedaily.com/releases/2009/04/090429132231.htm

Climate Change: Halving Carbon Dioxide Emissions By 2050 Could Stabilize Global Warming



Global CO_2 emissions and warming compared to pre-industrial times for a scenario without climate policy (red) and a scenario in which the emissions are restricted to 1000 billion tonnes of CO_2 (blue) from 2000 to 2050. The intervention can limit the probability of exceeding the 2°C threshold to 25%. (Credit: Image courtesy of ETH Zurich)

ScienceDaily (May 4, 2009) — If CO_2 emissions are halved by 2050 compared to 1990, global warming can be stabilised below two degrees. This is shown by two studies by a co-operation of German, Swiss and British researchers in the journal *Nature.*To contain global warming, and its risks and consequences, warming compared to pre-industrial times (pre 1900) should not exceed two degrees Celsius. Although, according to the reports of the Intergovernmental Panel on Climate Change (IPCC), there is no specific temperature threshold for dangerous climate changes, and the negative effects are gradually increasing, over one hundred countries have adopted this "2°C target". Scientists have used a new probability model to calculate how much CO_2 our atmosphere tolerates under these target specifications. This1 and another study[2], recently published in *Nature*, produced similar results: From 2000 to 2050, a maximum of 1000 billion tonnes of CO_2 may be emitted into the atmosphere. Roughly speaking, today, around one third of this wad has already been shot.

Like a bath tub

"The behaviour of CO_2 in the atmosphere is best described as a full bathtub," says Reo Knutti, professor at the Institute for Atmosphere and Climate at ETH Zurich, and co-author of one of the two studies. The inflow of the bathtub is large, but the drainage is small. The CO_2 emissions are increasing every year, but the CO_2 is only removed from the atmosphere very slowly. To not let the bathtub overflow, the inflow must thus be stopped early enough. "It is wrong to believe that the temperature will remain constant with constant emissions," says Knutti.The innovative aspect of the study is the fact that the probabilistic model does not perform just one individual simulation, but simulates thousands of combinations of scenarios

and assumptions. Knutti adds that, in doing so, all known uncertainties are taken into account. For example, the physical uncertainties in feedback effects from clouds, uncertainties in the carbon cycle – e.g. how much CO_2 is absorbed by the oceans -, as well as uncertainties in the scenarios. These scenarios describe the time when the maximum "allowed" emission has been reached. The model also includes the overall effects of all greenhouse gases, such as CO_2, methane and nitrous oxide, as well as ozone and the aerosol effect.

Everything in one step

So far, these sorts of studies have been conducted in two stages, Knutti explains: "First, the 2°C temperature threshold is converted into a CO_2 target, and then the carbon model is used to calculate how high the emissions can be." The new study now does this in one step. To do this, scientists have redeveloped and adjusted existing models. They calibrated the calculations on the observed data from the last hundred and fifty years.

Budget quickly exhausted

The models show that there is a 75 percent probability that global warming will not exceed two degrees if a maximum of 1000 billion tonnes of CO_2 are emitted into the atmosphere from 2000 to 2050. This number seems high, but 234 billion tonnes had already been flung into the atmosphere between 2000 and 2006. If the emission remain at this high level, or even increase, the budget would be exhausted before 2030. The results show that time to act is short. Knutti is pleased that greenhouse gas emissions in Switzerland in 2007 were 2.7 percent lower than in 1990 but the values continue to be too high: at least a 50 percent reduction is needed worldwide by 2050; the global long-term goal would be less than one tonne per person per year. Currently, some 6 tonnes of CO_2 per person are emitted in Western Europe each year, 19 tonnes in North America and 3 tonnes in China – without taking into account grey energy.

The researchers believe that the next forty years until 2050, in which, according to the study, CO_2 emissions must be halved, will be a good indicator of how global warming will develop. "If, in 2050, we find that our measures have been successful and are working, and if we continue to implement them, we can assume that we are on the right track," says Knutti.The study also shows that, if all conservatively estimated available fossil fuels were to be burnt, two to three times more CO_2 than allowed for the 2°C target would be emitted. This only takes into account the fuels which are already known and which are economically viable to extract. The fossil fuels will therefore not run out before the maximum CO_2 emission calculated by scientists is reached. If we continue to use them, this must take place in combination with effective technologies which capture the CO_2 and extract it from the atmosphere. Whether such technologies can be implemented on such a large scale and at sensible prices is, however, questionable.

"Every tonne of CO_2 is one tonne"

Together with the aforementioned study, *Nature* also included a second publication on a similar issue, which, however, takes into account a longer period of five hundred years, until the year 2500. This study also concludes that the total amount of CO_2 emissions is crucial in terms of how much the earth warms up. The authors summarise a political interpretation in comments in *Nature Reports Climate Change*[3]. According to Knutti, "Every tonne of CO_2 is one tonne, whether it is emitted today or in fifty years. This is often lost in the tangle of emission targets, certificates and negotiations. The total quantity is what matters, and must be limited, but short-term goals are necessary to see whether we are on the right track."Knutti has also recently shown that, in a complex climate model and in co-operation with other scientists, with a 70 percent CO_2 reduction by the end of this century, the melting of the Arctic Sea ice can be limited to a quarter[4]. The researchers conclude that this could, for example, help to protect the fauna – such as the polar bears – and prevent the permafrost areas from decreasing by 70 percent. Instead, "only" 45 percent of the permafrost are expected to melt. The frozen permafrost soils are natural reservoirs of greenhouse gas. They store large quantities of CO_2 and methane, which can be emitted into the atmosphere if the soil melts.

The series of studies show that the total quantity of CO_2 emission is limited if people want to limit climate change. “With every year of delay, we are using up our quota, losing flexibility, and increasing the probability of dangerous consequences,” says Knutti.

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1. Meinshausen et al. **Greenhouse-gas emission targets for limiting global warming to 2 °C**. *Nature*, 2009; 458 (7242): 1158-1162 DOI: 10.1038/nature08017
2. Allen et al. **Warming caused by cumulative carbon emission: the trillionth tone**. *Nature*, 2009; 458 (7242): 1163-1166 DOI: 10.1038/nature08019
3. Allen et al. Nature Reports Climate Change. **The exit strategy: Emission targets must be placed in the context of a cumulative carbon budget if we are to avoid dangerous climate change**. *Nature Reports Climate Change*, 2009 DOI: 10.1038/climate.2009.38
4. Washington et al. **How much climate change can be avoided by mitigation?** *Geophysical Research Letters*, 2009; 36 (8): L08703 DOI: 10.1029/2008GL037074

Adapted from materials provided by ETH Zurich.

http://www.sciencedaily.com/releases/2009/05/090502092019.htm

Running on empty

Mark Fisher

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The lack of innovation in pop music suggests that we are experiencing an energy crisis in culture at large

In 2006, James Kirby, the man behind the V/Vm record label and The Caretaker, began a download project called *The Death of Rave*. The tracks have a thin, almost translucent quality, as if they are figments or phantoms of the original, exhilarating sound of rave. When I interviewed Kirby recently, he explained that the project had been initiated to commemorate a certain energy that he believes has disappeared from dance music. (*Energy Flash* was, of course, the title the critic Simon Reynolds gave to his compendious study of rave music and its progeny.) The question is: were rave and its offshoots jungle and garage just that – a sudden flash of energy that has since dissipated? More worryingly, is the death of rave only one symptom of an overall energy crisis in culture? Are cultural resources running out in the same way as natural resources are?

Those of us who grew up in the decades between the 1960s and the 1990s became accustomed to rapid changes in popular culture. Theorists of future shock such as Alvin Toffler and Marshall McLuhan plausibly claimed that our nervous systems were themselves sped up by these developments, which were driven by the development and proliferation of technologies. Popular artefacts were marked with a technological signature that dated them quite precisely: new technology was clearly audible and visible, so that it would be practically impossible, say, to confuse a film or a record from the early 1960s with one from even half a decade later.

The current decade, however, has been characterised by an abrupt sense of deceleration. A thought experiment makes the point. Imagine going back 15 years in time to play records from the latest dance genres – dubstep, or funky, for example – to a fan of jungle. One can only conclude that they would have been stunned – not by how much things had changed, but by how little things have moved on. Something like jungle was scarcely imaginable in 1989, but dubstep or funky, while by no means pastiches, sound like extrapolations from the matrix of sounds established a decade and a half ago.

Needless to say, it is not that technology has ceased developing. What has happened, however, is that technology has been decalibrated from cultural form. The present moment might in fact be best

haracterised by a discrepancy between the onward march of technology and the stalling, stagnation and retardation of culture. We can't hear technology any more. There has been a gradual disappearance of the sound of technological rupture – such as the irruption of Brian Eno's analogue synth in the middle of Roxy Music's "Virginia Plain", or the cut-and-paste angular alienness of early rave – that pop music once taught us to expect. We still see technology, perhaps, in cinema CGI, but CGI's role is somewhat paradoxical: its aim is precisely to make itself invisible, and it has been used to finesse an already established model of reality. High-definition television is another example of the same syndrome: we see the same old things, but brighter and glossier.

The principal way in which technology now makes itself felt in culture is of course in the areas of distribution and consumption. Downloading and Web 2.0 have famously led to new ways of accessing culture. But these have tended to be parasitic on old media. The law of Web 2.0 is that everything comes back, whether it be adverts, public information films or long-forgotten TV serials: history happens first as tragedy, then as YouTube. The pop artists who supposedly became successful because of web clamour (Sandi Thom, Arctic Monkeys) turned out to be quaintly archaic in form; in any case, they were pushed through the familiar promotional machinery of big record companies and PR firms. There is peer-to-peer distribution of culture, but little sign of peer-to-peer production.

The best blogs are one exception; they have bypassed the mainstream media, which, for the reasons described by Nick Davies in last year's *Flat Earth News*, has become increasingly conservative, dominated by press releases and PR. In general, however, Web 2.0 encourages us to behave like spectators. This is not only because of the endless temptations to look back offered by burgeoning online archives, it is also because, thanks to the ubiquity of recording devices, we find ourselves becoming archivists of our own lives: we never experience live events, because we are too busy recording them.

Yet instantaneous exposure deprives cultures of the time and space in which they can grow. There is as yet no Web 2.0 equivalent of the circuit that sustained UK dance music in the 1990s: the assemblage of dubplates, pirate radio and the dance floor which acted as a laboratory for the development of new sounds. This circuit was still punctuated by particular moments (the club night, the radio broadcast), but, because anything in Web 2.0 can be replayed at any time, its temporality is more diffuse. The tendency seems to be for a kind of networked solipsism, a global system of individuals consuming an increasingly homogeneous culture alone in front of the computer screen or plugged in to iPod headphones.

All of this makes Fredric Jameson's theories about postmodern culture's inability to image the present more compelling than ever. As the gap between cultural breaks becomes ever longer and the breaks themselves become ever more modest and slight, it is beginning to look as if the situation might be terminal. Alex Williams, who runs the Splintering Bone Ashes blog, goes so far as to claim that "what we have experienced is merely a blip, perhaps never to be again repeated – 150 or so years of extreme resource bingeing, the equivalent of an epic amphetamine session. What we are already experiencing is little more than the undoubtedly grim 'comedown' of the great deceleration." This might be too bleak. What is certainly clear, however, is that technology will not deliver new forms of culture all on its own

http://www.newstatesman.com/music/2009/05/culture-technology-energy-rave

Atomic Physics Study Sets New Limits On Hypothetical New Particles

Andrei Derevianko conducted the most accurate to-date, low-energy determination of the coupling between atomic electrons and quarks of nuclei. (Credit: Image courtesy of University of Nevada, Reno)

ScienceDaily (May 4, 2009) — In a forthcoming *Physical Review Letters* article, a group of physicists at the University of Nevada, Reno are reporting a refined analysis of experiments on violation of mirror symmetry in atoms that sets new constraints on a hypothesized particle, the extra Z-boson.

Andrei Derevianko, an associate professor in the College of Science's Department of Physics, who has conducted groundbreaking research to improve the time-telling capabilities of the world's most accurate atomic clocks, is one of the principals behind what is believed to be the most accurate to-date low-energy determination of the strength of the electroweak coupling between atomic electrons and quarks of the nucleus.

"It is remarkable that the low-cost atomic precision experiments and theory are capable of constraining new physics at the level competitive to colliders," Derevianko said. He has been able to define new limits without needing something like a $6 billion Large Hadron Collider, an enormous particle accelerator in Europe that is not yet fully operational.

"This is like David and Goliath, we are just a small group of people able to better interpret the data on violation of mirror symmetry in atoms. Our work indicates less of a possibility for extra Z-bosons, potential carriers of the fifth force of nature...it is possible the LHC will be able either to move the mass limit higher or discover these particles," he said.

Derevianko and his colleagues have determined the coupling strength by combining previous measurements made by Dr. Carl Wieman, a Nobel laureate in physics, with high-precision calculations in a cesium atom.

The original work by Wieman on violation of mirror symmetry in atoms used a table-top apparatus at the University of Colorado in Boulder, Colo. The Boulder team monitored a "twinge" of weak force in atoms, which are otherwise governed by the electromagnetic force. The Standard Model of elementary particles, developed in the early 1970s, holds that heavy particles, called Z-bosons, carry this weak force. In contrast to the electromagnetic force, the weak force violates mirror symmetry: an atom and its mirror image behave differently. This is known to physicists as "parity violation."

The Boulder group's experiment opened the door to new inquiry, according to Derevianko. "It pointed out a discrepancy, and hinted at a possibility for new physics, in particular, extra Z-bosons," he said.

Interpretation of the Boulder experiment requires theoretical input. The analysis requires detailed understanding of the correlated motion of 55 electrons of cesium atom. This is not an easy task as the number of memory units required for storing full quantum-mechanical wavefunctions exceeds the estimated number of atoms in the Universe. Special computational tools and approximations were developed. Compared to previous analyses, reaching the next level of accuracy required a factor of 1,000 increase in computational complexity.

The paper represents a dramatic improvement as researchers have struggled to develop a more precise test of the Standard Model. Derevianko's group, which included Dr. S. Porsev and a number of students, has worked on the analysis of the Boulder experiment for the past eight years.

"Finally, the computer technology caught up with the number-crunching demands of the problem and we were able to attack the problem," says Derevianko. "I have greatly benefited from collaborations in this complex problem. A fellow co-author, Kyle Beloy, for example, has recently been recognized as an Outstanding Graduate Researcher by the University."

In contrast to previous, less accurate interpretations of the Boulder experiment, Derevianko's group has found a perfect agreement with the prediction of the Standard Model. This agreement holds important implications for particle physics.

"Atomic parity violation places powerful constraints on new physics beyond the Standard Model of elementary particles," Derevianko said. "With this new-found precision, we are doing a better job of 'listening' to the atoms."

By refining and improving the computations, Derevianko said there is potential for a better understanding of hypothetical particles (extra Z-bosons) which could be carriers of a so-far elusive fifth force of nature. For years, physics researchers have grappled with experiments to prove or disprove the possibility of a fifth force of Nature.

There are four known fundamental forces of Nature. In addition to gravity, electromagnetism creates light, radio waves and other forms of radiation. Two other forces operate only on an atomic level: These are the strong force, which binds particles in the nucleus, and the weak force, which reveals itself when atoms break down in radioactive decay, or as in the Boulder experiment, through the parity violation.

The possibility of a fifth force could dispute the long-held belief that the force of gravity is the same for all substances.

"New physics beyond the Standard Model is the next frontier," Derevianko said, "and it's the theoretical motivation for much of this research."

Journal reference:

1. S. G. Porsev, K. Beloy, A. Derevianko. **Precision determination of electroweak coupling from atomic parity violation and implications for particle physics**. *Physical Review Letters*, (in press) [link]

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

http://www.sciencedaily.com/releases/2009/04/090428092828.htm

Dolphins Maintain Round-the-clock Visual Vigilance

Dolphins have a clever trick for overcoming sleep deprivation. They are able to send half of their brains to sleep while the other half remains conscious. (Credit: iStockphoto/Peter Barker)

ScienceDaily (May 3, 2009) — Dolphins have a clever trick for overcoming sleep deprivation. Sam Ridgway from the US Navy Marine Mammal Program explains that they are able to send half of their brains to sleep while the other half remains conscious. What is more, the mammals seem to be able to remain continually vigilant for sounds for days on end. All of this made Ridgway and his colleagues from San Diego and Tel Aviv wonder whether the dolphins' unrelenting auditory vigilance tired them and took a toll on the animals' other senses?

Ridgway and his team set about testing two dolphins' acoustic and visual vigilance over a 5 day period to find out how well they functioned after days without a break.

First Ridgway and his colleagues, Mandy Keogh, Mark Todd and Tricia Kamolnick, trained two dolphins to respond to a 1.5 s beep sounded randomly against a background of 0.5 s beeps every 30 s. Ridgway explains that the sounds were low enough for the dolphins to barely notice them as they swam through their enclosure, but the animals sprung into action every time they heard the 1.5 s tone, even after listening to the sounds for 5 days without a break. Their auditory vigilance remained as sharp as it had been 5 days earlier.

Next Allen Goldblatt and Don Carder designed a visual stimulus to test the dolphins' vigilance while they continued listening to the repetitive beeps. Knowing that the dolphins' binocular vision is limited because their eyes are situated on opposite sides of their heads, Kamolnick trained one of the dolphins, SAY, to recognise two shapes (either three horizontal red bars or one vertical green bar) with her right eye before training her to recognise the same shapes with the left eye, reasoning that if half of her brain was asleep during testing, the dolphin would only see the shapes through the eye connected to the conscious half of the brain.

But the team were in for a surprise when they began training SAY's left eye. She already recognised the shapes, even though her left eye had not seen them previously. Ridgway explains that the information must be transferred between the two brain hemispheres and suspects that the dolphin's inter-hemispheric commissures, which connects the two halves, may transfer the visual information.

Having trained both dolphins to recognise the shapes, the hard part began: monitoring and rewarding the dolphins continually over a 5 day period while the team tested the animals' responses to both the sound and visual stimuli. Amazingly, even after 5 days of listening out for 1.5 s beeps amongst the 0.5 s beep background, the dolphins were still responding as accurately as they had done at the beginning of the experiment.

The team also enticed the dolphins into a bay at night where they could be shown the horizontal and vertical bar shapes, and found that the dolphins were as sharp at the end of the 120 hour experiment as they had been at the beginning. And when the team checked the dolphins' blood for physical signs of sleep deprivation, they couldn't find any. After 5 days of unbroken vigilance the dolphins were in much better shape than the scientists.

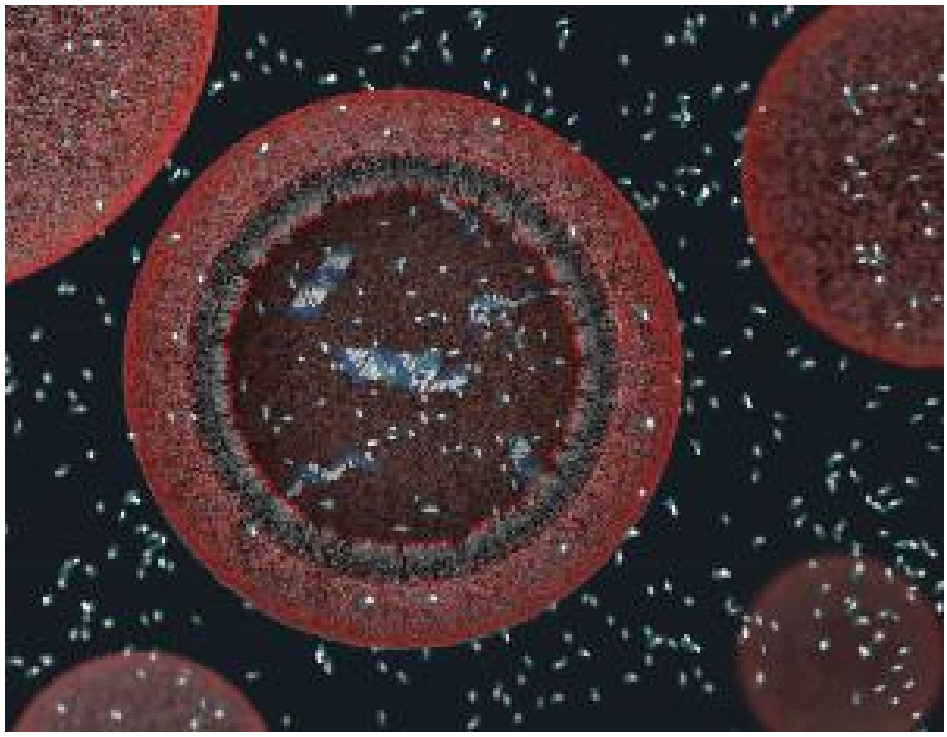
Journal reference:

1. Ridgway, S., Keogh, M., Carder, D., Finneran, J., Kamolnick, T., Todd, M. and Goldblatt, A. **Dolphins maintain cognitive performance during 72 to 120 hours of continuous auditory vigilance**. *Journal of Experimental Biology*, 2009; 212 (10): 1519 DOI: 10.1242/jeb.027896

Adapted from materials provided by Journal of Experimental Biology, via EurekAlert!, a service of AAAS. Original article written by Kathryn Knight.

http://www.sciencedaily.com/releases/2009/05/090501090908.htm

Shift In Computer Simulation Superiority



Three-dimensional view of a model protocell approximately 100 nanometers in diameter. The protocell's fatty acid membrane allows nutrients and DNA building blocks to enter the cell and participate in non-enzymatic copying of the cell's DNA. The newly formed strands of DNA remain in the protocell. (Credit: Janet Iwasa, Szostak Laboratory, Harvard Medical School and Massachusetts General Hospital)

ScienceDaily (May 3, 2009) — Science and engineering are advancing rapidly in part due to ever more powerful computer simulations, yet the most advanced supercomputers require programming skills that all too few U.S. researchers possess. At the same time, affordable computers and committed national programs outside the U.S. are eroding American competitiveness in number of simulation-driven fields.

"The startling news was how quickly our assumptions have to change," said Phillip Westmoreland, program director for combustion, fire and plasma systems at the National Science Foundation (NSF) and one of the sponsors of the report. "Because computer chip speeds aren't increasing, hundreds and thousands of chips are being ganged together, each one with many processors. New ways of programming are necessary."

These are some of the key findings in the International Assessment of Research and Development in Simulation-Based Engineering and Science, released on Apr. 22, 2009, by the World Technology Evaluation Center (WTEC).

Like other WTEC studies, this study was led by a team of leading researchers from a range of simulation science and engineering disciplines and involved site visits to research facilities around the world.

The nearly 400-page, multi-agency report highlights several areas in which the U.S. still maintains a competitive edge, including the development of novel algorithms, but also highlights endeavors that are increasingly driven by efforts in Europe or Asia, such as the creation and simulation of new materials from first principles.

"Some of the new high-powered computers are as common as gaming computers, so key breakthroughs and leadership could come from anywhere in the world," added Westmoreland. "Last week's research-directions workshop brought together engineers and scientists from around the country, developing ideas that would keep the U.S. at the vanguard as we face these changes."

Sharon Glotzer of the University of Michigan chaired the panel of experts that executed the studies of the Asian, European and U.S. simulation research activities. Peter Cummings of both Vanderbilt University and Oak Ridge National Laboratory co-authored the report with Glotzer and seven other panelists, and the two co-chaired the Apr. 22-23, 2009, workshop with Glotzer that provided agencies initial guidance on strategic directions.

"Progress in simulation-based engineering and science holds great promise for the pervasive advancement of knowledge and understanding through discovery," said Clark Cooper, program director for materials and surface engineering at NSF and also a sponsor of the report. "We expect future developments to continue to enhance prediction and decision making in the presence of uncertainty."

The WTEC study was funded by the National Science Foundation, Department of Defense, National Aeronautics and Space Administration, National Institutes of Health, National Institute of Standards and Technology and the Department of Energy

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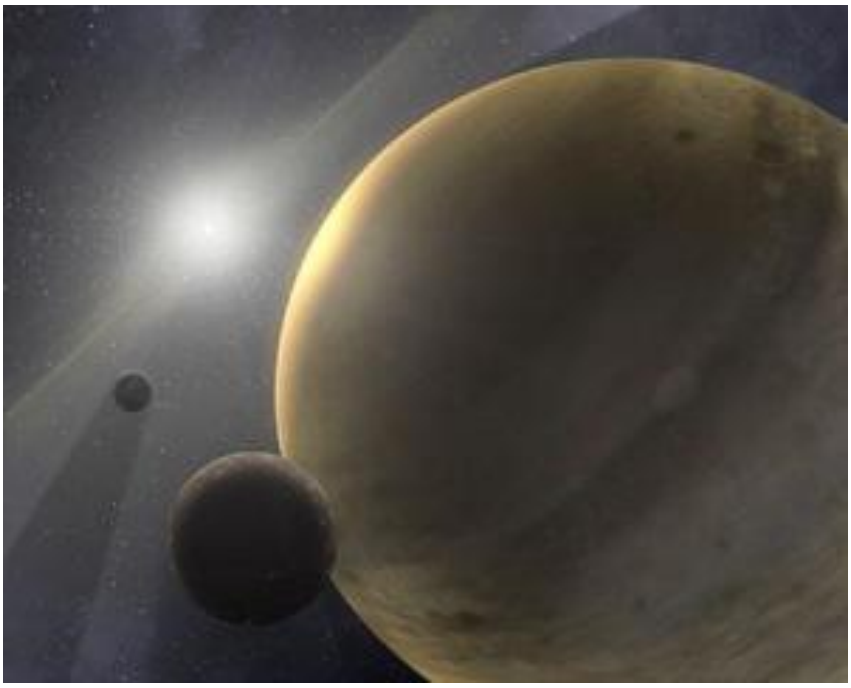
Adapted from materials provided by National Science Foundation.

http://www.sciencedaily.com/releases/2009/05/090501154149.htm

Missing Planets Attest To Destructive Power Of Stars' Tides



This is an artist's concept of a hypothetical 10-million-year-old star system. The bright blur at the center is a star much like our sun. The other orb in the image is a gas-giant planet like Jupiter. Wisps of white throughout the image represent traces of gas. (Credit: NASA/JPL-Caltech/T. Pyle, SSC)

ScienceDaily (May 3, 2009) — During the last two decades, astronomers have found hundreds of planets orbiting stars outside our solar system. New research indicates they might have found even more except for one thing – some planets have fallen into their stars and simply no longer exist.

The idea that gravitational forces might pull a planet into its parent star has been predicted by computer models only in the last year or so, and this is the first evidence that such planet destruction has already occurred, said University of Washington astronomer Rory Barnes.

"When we look at the observed properties of extrasolar planets, we can see that this has already happened – some extrasolar planets have already fallen into their stars," he said.

Computer models can show where planets should line up in a particular star system, but direct observations show that some systems are missing planets close to the stars where models say they should be.

Barnes, a postdoctoral astronomy researcher with the Virtual Planet Laboratory at the UW, is a co-author of a paper describing the findings that was accepted for publication in *Astrophysical Journal.* Lead author Brian Jackson and co-author Richard Greenberg are with the Lunar and Planetary Laboratory at the University of Arizona.

The research involves planets that are close to their parent stars. Such planets can be detected relatively easily by changes in brightness as their orbits pass in front of the stars.

But because they are so close to each other, the planet and star begin pulling on each other with increasingly strong gravitational force, misshaping the star's surface with rising tides from its gaseous surface.

"Tides distort the shape of a star. The bigger the tidal distortion, the more quickly the tide will pull the planet in," Jackson said.

Most of the planets discovered outside of our solar system are gas giants like Jupiter except that they are much more massive. However, earlier this year astronomers detected an extrasolar planet called CoRoT-7 B that, while significantly larger than our planet, is more like Earth than any other extrasolar planet found so far.

However, that planet orbits only about 1.5 million miles from its star, much closer than Mercury is to our sun, a distance that puts it in the category of a planet that will fall into its star. Its surface temperature is around 2,500 degrees Fahrenheit "so it's not a pleasant environment," Barnes said, and in a short time cosmically – a billion years or so – CoRoT-7 B will be consumed.

The destruction is slow but inevitable, Jackson said.

"The orbits of these tidally evolving planets change very slowly, over timescales of tens of millions of years," Jackson said. "Eventually the planet's orbit brings it close enough to the star that the star's gravity begins tearing the planet apart.

"So either the planet will be torn apart before it ever reaches the surface of the star, or in the process of being torn apart its orbit eventually will intersect the star's atmosphere and the heat from the star will obliterate the planet."

The researchers hope the work leads to better understanding of how stars destroy planets and how that process might affect a planet's orbit, Jackson said.

The scientists also say their research will have to be updated as more extrasolar planets are discovered. NASA, which funded the research, recently launched the Kepler telescope, which is designed specifically to look for extrasolar planets that are closer in size to Earth.

Jackson hopes new observations will provide new lines of evidence to investigate how a star's tides can destroy planets.

"For example, the rotation rates of stars tend to drop, so older stars tend to spin more slowly than younger stars," he said. "However, if a star has recently consumed a planet, the addition of the planet's orbital angular momentum will cause the star to rapidly increase its spin rate. So we would like to look for stars that are spinning too fast for their age."

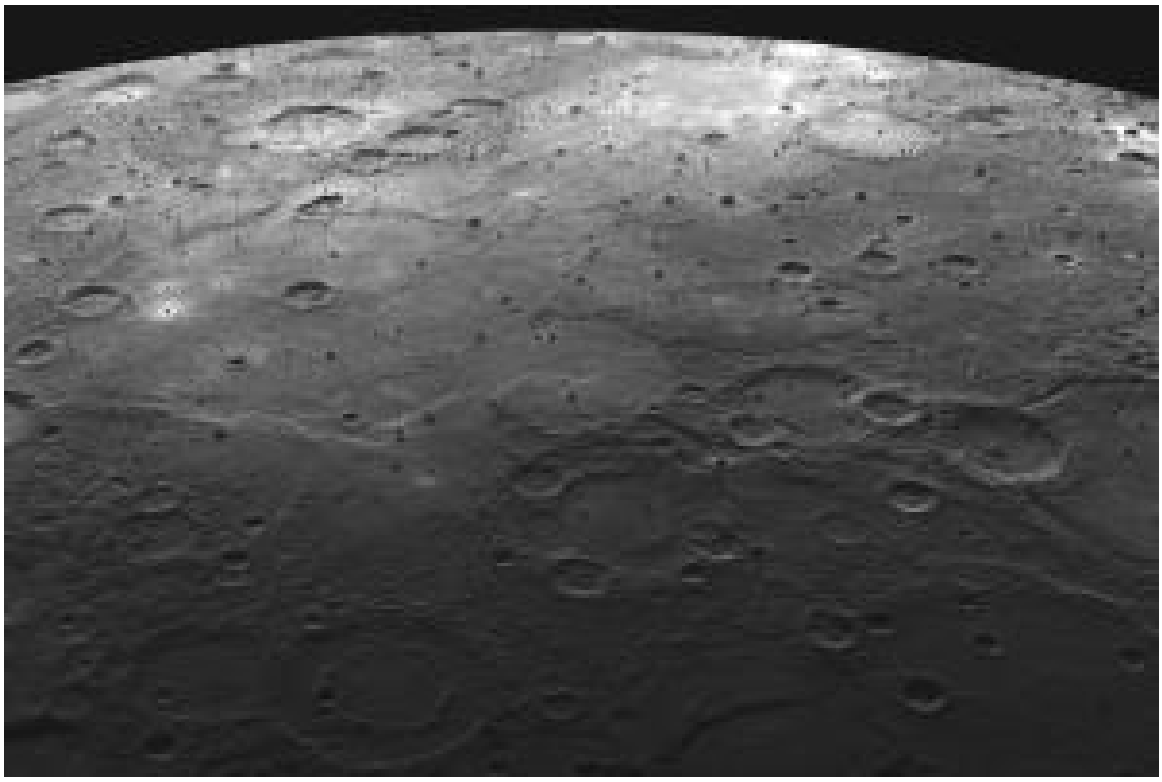
Journal reference:

1. Brian Jackson, Rory Barnes, Richard Greenberg. **Observational Evidence for Tidal Destruction of Exoplanets**. *Astrophysical Journal*, (in press) [link]

Adapted from materials provided by University of Washington.

http://www.sciencedaily.com/releases/2009/04/090427193242.htm

Magnesium Detected In MESSENGER Flyby Of Mercury



NASA's MESSENGER spacecraft served up another curveball to a University of Colorado at Boulder team after a second flyby of the hot inner planet Oct. 6 detected magnesium -- an element created inside exploding stars and which is found in many medicine cabinets on Earth -- clumped in the tenuous atmosphere of the planet. (Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Brown University/Carnegie Institution of Washington.)

ScienceDaily (May 3, 2009) — NASA's MESSENGER spacecraft served up another curveball to a University of Colorado at Boulder team after a second flyby of the hot inner planet Oct. 6 detected magnesium -- an element created inside exploding stars and which is found in many medicine cabinets on Earth -- clumped in the tenuous atmosphere of the planet.

Scientists had suspected magnesium would be present, but were surprised at its distribution and abundance, said Senior Research Associate William McClintock of CU-Boulder's Laboratory for Atmospheric and Space Physics. The discovery in the planet's wispy atmosphere, known as its exosphere, is one more clue to the mystery of the creation of the rocky, bizarre planet that resides closest to the sun.

"Detecting magnesium was not too surprising, but seeing it in the amounts and distribution we recorded was unexpected," said McClintock, a MESSENGER co- investigator who led the development of CU-Boulder's Mercury Atmospheric and Surface Composition Spectrometer, or MASCS. "This is an example of the kind of individual discoveries that the MESSENGER team will piece together to give us a new picture of how the planet formed and evolved."

A paper on the subject by McClintock is being published in the May 1 issue of *Science*. Co-authors on the paper are Ronald Vervack and Noam Izenberg of Johns Hopkins University, E. Todd Bradley of the University of Central Florida, Rosemary Killen, Nelly Mouand and Mathew Burger of the University of Maryland, Ann Sprague of the University of Arizona and Sean Solomon of the Carnegie Institution of Washington, D.C. Solomon is the MESSENGER principal investigator.

The CU-Boulder instrument also measured other elements in the exosphere during the Oct. 6 flyby, including calcium and sodium. "Since calcium and magnesium are chemically similar, we might expect them to have a similar distribution in Mercury's exosphere," McClintock said. "But they don't, and we don't yet understand why."

McClintock said materials escaping from Mercury's surface are accelerated by solar radiation pressure to form a gigantic tail of atoms flowing away from the sun. Their abundances change, however, depending on the season as well as changes in magnetic field orientation and solar wind intensity.

The LASP team suspects that other metallic elements from the surface -- including aluminum, iron and silicon -- also are present in the exosphere. The metals permeated the solar nebula when it was coalescing some 4.5 billion years ago, shaping the planets, said McClintock.

Traveling at 4.2 miles per second, the spacecraft dipped within 124 miles of Mercury Oct. 6 and imaged about 30 percent of the surface never before seen by spacecraft. Launched in August 2004, MESSENGER will make the last of three Mercury passes in September 2009 before finally settling into orbit in 2011. The circuitous, 4.9 billion-mile-journey to Mercury requires more than six years and 15 loops around the sun to guide it closer to Mercury's orbit.

The desk-sized MESSENGER spacecraft is carrying seven instruments -- a camera, a magnetometer, an altimeter and four spectrometers. McClintock led the development of MASCS, which was miniaturized to weigh less than seven pounds for the arduous journey. Data from MASCS obtained during the first flyby in January 2008 provided LASP researchers with evidence that about 10 percent of the sodium atoms ejected from Mercury's hot surface during the daytime were accelerated into a 25,000-mile-long sodium tail trailing the planet, according to McClintock.

MESSENGER took data and images from Mercury for about 90 minutes on Oct. 6, when LASP turned on a detector in MASCS for its first look at Mercury's surface in the far ultraviolet portion of the light spectrum, said McClintock.

LASP Director Daniel Baker, also a co-investigator on the MESSENGER mission, is using data from the mission to study Mercury's magnetic field and its interaction with the solar wind. Mark Lankton is the LASP program manager for the MASCS instrument. Dozens of undergraduates and graduate students will be involved in analyzing data over the next several years as information and images pour back to Earth from MESSENGER.

Adapted from materials provided by University of Colorado at Boulder.

http://www.sciencedaily.com/releases/2009/04/090430144539.htm

Cementless Hip Implants Are Durable For At Least 20 Years

ScienceDaily (May 3, 2009) — Despite the common perception that total hip replacements last about 10 years, researchers at Rush University Medical Center have found that the devices are extremely durable, even 20 years after surgery.

Clinical and radiological evidence showed that 96 percent of the 124 cementless metal components assessed remained securely fixed in place 20 years post surgery, according to a study published in the May issue of the *Journal of Bone and Joint Surgery*. These components, which fit into the cup-shaped hip socket, or acetabulum, were among the first implants designed with a porous structure to allow bone to grow into the surface in the hopes of achieving long-term fixation.

"Our results confirm earlier work done at Rush and at other institutions: that cementless acetabular components work very well and that long-term biological fixation can be obtained," said Dr. Craig Della Valle, an orthopedic surgeon and principal author of the study.

Over the last two decades, the researchers have been studying the results for 204 total hip replacements performed at Rush in the mid-1980s in a group of 184 patients ranging in age from 20 to 84 years. Findings were previously reported at 10 and 15 years.The implants studied were the Harris-Galante I acetabular component, whose design was based on pioneering research work done by Dr. Jorge Galante, former chairman of orthopedics at Rush and a co-author of this study. Earlier-generation implants, which relied on special cement to secure the device to the patient's bones, had been shown to have higher rates of failure, particularly beyond 10 years.

"The hope was to provide more durable fixation, especially for younger patients with a longer life span," Galante said.

In the present study, the researchers analyzed results for 124 hip replacements in the 111 patients who were still alive 20 years or more after surgery. Since the previous report at 15 years, two metal cup implants, in addition to the three noted earlier, were found to be loose, or 4 percent of the 124 implants. Of the original 204 hip replacements, five cases, or 2.5 percent of the total, had failed. Two of these five implants were revised, but three were left intact because the patients did not suffer significant symptoms.

However, in nearly 20 percent of the patients still living 20 years post surgery, the plastic lining of the metal shell had worn enough that repeat, but less involved, surgery was required or recommended. Younger age strongly correlated with a higher risk of wear-related problems, the study showed.

"The average age of the patients in this study was 52 years, much younger than most patients who underwent hip replacements at the time. So the high rate of wear-related complications was not completely unexpected," Galante said.Also, with time, the number of surgical revisions has increased due to osteolysis, or bone resorption as a result of the body's reaction to debris created by wear and corrosion of the metal implants.

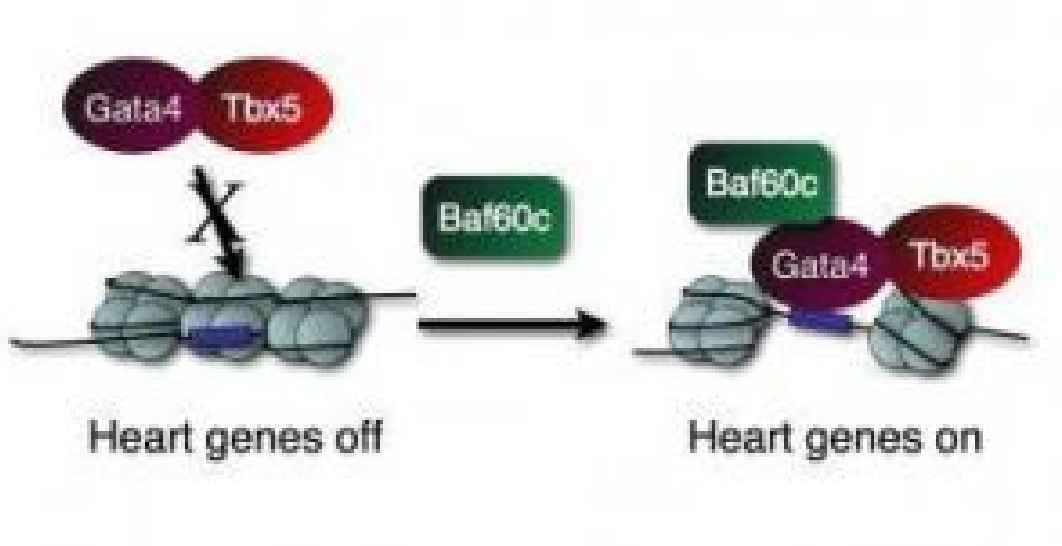
"With time, the number of repeat surgeries due to wear and osteolysis has increased, as have the numbers of cases of osteolysis we identified radiologically. But with the newer, more wear-resistant bearing surfaces we are now using, we believe that fewer patients today will need revision surgery for these reasons," Della Valle said.

"This longitudinal study gives us a wealth of data to use as we continue to improve on techniques and materials for total hip replacements," Galante said.

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

http://www.sciencedaily.com/releases/2009/05/090501154133.htm

Stem Cells For The Damaged Heart: Key Factors In Heart Cell Creation Identified



This represents how the cardiogenic factors turn on heart genes. The transcription factors, Tbx5 and Gata4, can't access the DNA unless Baf60c is present. When all three are introduced, Baf60c helps open up the closed chromatin, and lets Tbx5 and Gata4 work together to turn on the heart genes. (Credit: Benoit Bruneau, The Gladstone Institute of Cardiovascular Disease)

ScienceDaily (May 2, 2009) — Scientists at the Gladstone Institute of Cardiovascular Disease have identified for the first time key genetic factors that drive the process of generating new heart cells. The discovery, reported in the current issue of the journal *Nature*, provides important new directions on how stem cells may be used to repair damaged hearts.

For decades, scientists were unable to identify a single factor that could turn nonmuscle cells into beating heart cells. Using a clever approach, the research team led by Benoit Bruneau, Ph.D., found that a combination of three genes could do the trick. This is the first time any combination of factors has been found to activate cardiac differentiation in mammalian cells or tissues.

"The heart has very little regenerative capacity after it has been damaged," said Dr. Bruneau. "With heart disease the leading cause of death in the Western world, this is a significant first step in understanding how we might create new cells to repair a damaged heart."

Two of the three genes encode proteins called transcription factors, which are master regulators that bind to DNA and determine which genes get activated or shut off. The two transcription factors, GATA4 and TBX5, cause human heart disease when mutated and also cooperate with each other to control other genes. When Dr. Bruneau and postdoctoral fellow Jun K. Takeuchi added different combinations of transcription factors to mouse cells, these two seemed important for pushing cells into heart cells—but they were not enough.

"When we finally identified the key factor that could work with GATA4 and TBX5 to turn cells into beating heart cells, it was somewhat of a surprise to us," said Dr. Bruneau.

The surprising factor was a cardiac-specific protein called BAF60c, which helps determine whether transcription factors like GATA4 and TBX5 can even gain access to the DNA regions they were supposed to turn on or off. "Our previous studies had shown that chromatin remodeling complexes were important," said Dr. Bruneau. "Mice with lower levels of these complexes have severe heart defects and

defective cardiac differentiation. These observations prompted us to look at Baf60c in heart differentiation."

The effect was dramatic. Addition of the three factors directed differentiation of mouse mesoderm, which normally has the potential to make bone, blood, muscle, heart, and other tissues, specifically into cardiac muscle cells (cardiomyocytes) that beat rhythmically, just like normal heart cells. In fact, even cells that normally contribute to the placenta could be induced to transform into beating cardiomyocytes.

"Together, these factors give us a potent mechanism to control cellular differentiation," said Dr. Bruneau. "This knowledge may help us to understand how to reprogram new cardiomyocytes for therapeutic purposes."

The research was supported by the Human Frontiers Science Program, MEXT, Mitsubishi Foundation, the National Institutes of Health, and William H. Younger, Jr.

Adapted from materials provided by Gladstone Institutes, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/04/090426175646.htm

Date Palm Genome Drafted

Date palm trees. (Credit: Wikimedia Commons/Public Domain Image)

ScienceDaily (May 2, 2009) — Researchers at Weill Cornell Medical College in Qatar (WCMC-Q) have mapped a draft version of the date palm genome, unlocking many of its genetic secrets.

"We have generated a draft DNA sequence and initial assembly of the date palm using the most advanced technology," says Joel Malek, director of the Genomics Laboratory at Weill Cornell Medical College in Qatar. Genetic information about the date palm is extremely valuable to researchers who are working to improve fruit yield and quality and to better understand susceptibility and resistance to disease.

"This is an important step for our biomedical research program," says Khaled Machaca, Ph.D., professor of physiology and biophysics and associate dean for basic science research at Weill Cornell Medical College in Qatar. "It clearly demonstrates the feasibility and success of the most advanced genomics technologies in Qatar and represents a milestone toward establishing Qatar and Weill Cornell as a regional research center of excellence. In addition, this achievement by the WCMC-Q research team holds great promise for the application of the genomics technology to a better understanding of biomedical problems."

The date palm sequencing work was a proof-of-concept study, according to Mr. Malek, who established the genomics laboratory last year. The goal was to establish and validate the capabilities of the core lab for large-scale genomics projects. The lab is an integral part of a large biomedical research program launched last year by WCMC-Q with support from the Qatar Foundation that aims to make Qatar a hub for research in the Middle East.

To produce the draft map, the WCMC-Q researchers used a next-generation sequencing approach, which Mr. Malek says offers data quality between that of the expressed sequence tag (EST) method and the traditional whole-genome mapping method. "We were able to develop a relatively unbiased view of the gene space of the entire date palm plant at a fraction of the cost and in a much shorter period of time.

Using this approach, which takes advantage of the lower repetitive DNA in the date palm gene regions, we have increased the publicly available knowledge of the date palm gene by about 1,000 fold."

Mr. Malek and his research assistants obtained the DNA from leaves of the date palm provided by the Qatar Plant Tissue Culture Lab in the Department of Agriculture and Water Research (Qatar Ministry of Municipal Affairs and Agriculture).

Date palm trees play a significant role in agriculture throughout the Middle East, Northern Africa and Pakistan. The fruit is a major source of nutrition in those areas, and the tree itself plays an important role in the development of sustainable agriculture in many drought and saline-affected regions of the world. References in the Qur'an have kept alive the use of dates for medicinal purposes over the centuries.

Mr. Malek says he and his colleagues will continue to improve the draft sequence and publish their data. Meanwhile, they are making the information available to scientists and researchers around the world. It is available at http://www.qatar-weill.cornell.edu/research/datepalmGenome/download.html.

Adapted from materials provided by New York- Presbyterian Hospital/Weill Cornell Medical Center/Weill Cornell Medical College.

http://www.sciencedaily.com/releases/2009/05/090501162809.htm

Fertilisers 'reducing diversity'

By Mark Kinver
Science and environment reporter, BBC News

Scientists have identified why excessive fertilisation of soils is resulting in a loss of plant diversity.

Extra nutrients allow fast growing plants to dominate a habitat, blocking smaller species' access to vital sunlight, researchers have found.

As a result, many species are disappearing from affected areas.

A team from the University of Zurich, writing in Science, warned that tighter controls were needed in order to prevent widespread biodiversity loss.

Estimates suggest that the global level of nitrogen and phosphorous available to plants has doubled in the past 50 years.

Looking at grasslands, the researchers said it was widely recognised that an increase of chemical nutrients in an ecosystem led to a loss of diversity, but the mechanism of how it was occurring had been difficult to determine.

"You would think that more [nutrients] would lead to more biodiversity," said co-author Andrew Hector, a researcher at the University of Zurich's Institute of Environmental Sciences.

"Yet it is considered to be one of the main threats to biodiversity this century."

'Winner takes all'

Professor Hector explained that there were two main hypotheses: "One is that the presence of more resources led to a general increase in the strength of competition among plants.

"The other is a little bit more mechanistic," he told BBC News.

"When you get an increase in fertilisation, you get an increase in productivity, leading to increased plant biomass and increased shading.

"This shifts the idea to light being the critical resource, with shorter species being shaded out by taller species, resulting in a loss in diversity."

Professor Hector's team, led by PhD student Yann Hautier, fitted lights to the understory of grass in boxes containing fertilised soil.

"Additional understory light compensated for the increased shading caused by the greater above-ground biomass production," they explained.

The supplementary light "prevented the loss of species and maintained… levels of diversity".

The findings led the team to conclude that it was the lack of access to light that affects diversity, not an increase in the strength of competition.

"We have done the critical experiment that has been asking to be done for the past 35 years," said Professor Hector.

"If it all depends on light levels, then if you put the light back then you should prevent a loss of biodiversity."

However, he added that their findings did not offer a "magic bullet" for conservationists.

"What our research shows is that competition for light is very asymmetric.

"So if a plant can get between the sun and its competitors, not only can it get all the light it needs but it can also block its competitors' access to light.

"Because this competition for light is such a 'winner takes all', it emphasises how important it is that we control nutrient enrichment."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8026552.stm

Published: 2009/05/01 10:45:14 GMT

Lithium in water 'curbs suicide'

Drinking water which contains the element lithium may reduce the risk of suicide, a Japanese study suggests.

Researchers examined levels of lithium in drinking water and suicide rates in the prefecture of Oita, which has a population of more than one million.

The suicide rate was significantly lower in those areas with the highest levels of the element, they wrote in the British Journal of Psychiatry.

High doses of lithium are already used to treat serious mood disorders.

But the team from the universities of Oita and Hiroshima found that even relatively low levels appeared to have a positive impact of suicide rates.

Levels ranged from 0.7 to 59 micrograms per litre. The researchers speculated that while these levels were low, there may be a cumulative protective effect on the brain from years of drinking this tap water.

Added element

At least one previous study has suggested an association between lithium in tap water and suicide. That research on data collected from the 1980s also found a significantly lower rate of suicide in areas with relatively high lithium levels.

" **Any suggestion that it should be added, even in tiny amounts, to drinking water should be treated with caution and researched very thoroughly** "
Sophie Corlett Mind

The Japanese researchers called for further research in other countries but they stopped short of any suggestion that lithium be added to drinking water.

The discussion around adding fluoride to water to protect dental health has proved controversial - criticised by some as mass involuntary medication.

In an accompanying editorial, Professor Allan Young of Vancouver's Institute for Mental Health said "this intriguing data should provoke further research.

"Large-scale trials involving the addition of lithium to drinking water supplies may then be feasible, although this would undoubtedly be subject to considerable debate. Following up on these findings will not be straightforward or inexpensive, but the eventual benefits for community mental health may be considerable."

Sophie Corlett, external relations director at mental health charity Mind said the research "certainly merits more investigation.

"We already know that lithium can act as a powerful mood stabiliser for people with bipolar disorder, and treating people with lithium is also associated with lower suicide rates.

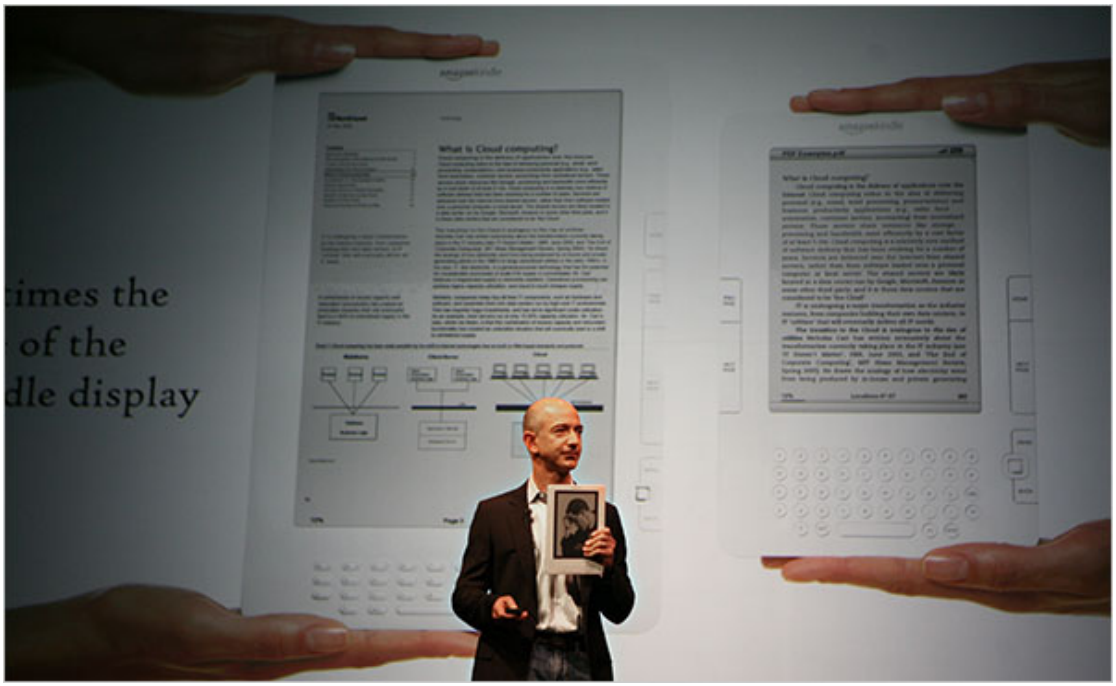
"However, lithium also has significant and an unpleasant side effects in higher doses, and can be toxic. Any suggestion that it should be added, even in tiny amounts, to drinking water should be treated with caution and researched very thoroughly."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8025454.stm

Published: 2009/05/01 09:22:48 GMT

Amazon Introduces Big-Screen Kindle

By BRAD STONE and MOTOKO RICH



Most electronic devices are getting smaller. The Kindle electronic book reader from Amazon.com is bucking the trend.

On Wednesday, Amazon introduced a larger version of the Kindle, pitching it as a new way for people to read textbooks, newspapers and documents. It also offered limited information about new partnerships that are intended to put Kindles in the hands of more university students and newspaper readers.

The device, called the Kindle DX (for deluxe), has a screen two and a half times the size of those on the two older versions of the Kindle, which were aimed primarily at displaying book pages. The price tag is larger, too: the DX costs $489, or $130 more than the previous model, the Kindle 2. It will go on sale this summer.

Speaking to a crowd of journalists, Amazon employees and business partners at Pace University in Manhattan, Jeffrey P. Bezos, Amazon's chief executive, said the new Kindle was a step in the direction of a long-dreamed-of "paperless society."

Amazon said it had reached agreements with three major textbook publishers to make their books available in the Kindle store: Pearson Education, Cengage Learning and Wiley Higher Education. It said six colleges and universities — Pace, Arizona State, Case Western Reserve, Princeton, Reed College and the University of Virginia — would begin testing the device with students later this year.

Three newspapers, The New York Times, The Boston Globe and The Washington Post, will offer a reduced price on the Kindle in exchange for a long-term subscription, but only for people who live in areas where their paper editions are not available. Amazon and the newspapers described it as a pilot program.

Amazon already offers Kindle subscriptions to 37 newspapers at about $10 a month.

Amazon does not release financial details about its relationships with newspapers, but newspaper executives say Amazon keeps 70 percent of the revenue — an arrangement the papers have been unhappy with. Those deals are set to be renegotiated this year, these executives said, which could play a role in determining how actively the media companies get behind the Kindle DX. The articles displayed on the Kindle do not have ads.

The textbook publishers and colleges offered few details on their agreements with Amazon.

"We have not had any conversations on pricing at this point with Amazon," said Wendy Spiegel, a spokeswoman for Pearson.
Ms. Spiegel said Pearson had already made 1,400 professional and technological titles available on the Kindle and would add more textbooks. Like many other textbook publishers, Pearson offers virtually all of its books in digital form already, and Ms. Spiegel said about 25 percent of its sales are digital. Most of those digital versions are read on laptops; more than 80 percent of college students have laptops, according to the Educause Center for Applied Research.
McGraw-Hill, a major textbook publisher absent from Wednesday's announcement, has been negotiating with Amazon to offer its books on the Kindle. Rik Kranenburg, group president of higher education, professional and international publishing at McGraw-Hill, said the two companies had not yet come to terms.
"It's obvious a lot of the details are still to be worked out," Mr. Kranenburg said. "Currently on college campuses, the vast majority of students have computers, most of them laptops, and that's the main vehicle for digitally accessing our content now. But we are eager to experiment with devices like the Kindle, iPhone and the Sony e-reader."
Geoffrey Brackett, the provost of Pace, said the university would distribute the new Kindles to about 50 students and compare them with 50 studying the same material using traditional textbooks, to see differences in how the two groups learn.
Mr. Brackett said he expected the university to split the cost of the Kindles with Amazon but said whether the students would get the devices on loan or as a gift had not been determined.
"It is very early in the discussion," he said.
Amazon may have had good reason to unveil its new device before working out all the details. Other companies are expected to begin selling portable reading devices in the next year, including Plastic Logic, a well-financed start-up; FirstPaper, backed by the publisher Hearst; and perhaps most significantly, Apple.
The new Kindle will be able to display documents in Adobe's popular PDF format, which will make it useful for reading business memos and other documents. And as with Apple's iPhone, the text on the screen automatically rotates when the device is turned sideways.

http://www.nytimes.com/2009/05/07/technology/companies/07kindle.html?_r=1&th&emc=th

Creative minds: the links between mental illness and creativity

All too often, creativity goes hand in hand with mental illness. Now we're starting to understand why. Roger Dobson reports

At first glance, Einstein, Salvador Dali, Tony Hancock, and Beach Boy Brian Wilson would seem to have little in common. Their areas of physics, modern art, comedy, and rock music, are light years apart. So what, if anything, could possibly link minds that gave the world the theory of relativity, great surreal art, iconic comedy, and songs about surfing?

According to new research, psychosis could be the answer. Creative minds in all kinds of areas, from science to poetry, and mathematics to humour, may have traits associated with psychosis. Such traits may allow the unusual and sometimes bizarre thought processes associated with mental illness to fuel creativity. The theory is based on the idea that there is no clear dividing line between the healthy and the mentally ill. Rather, there is a continuum, with some people having psychotic traits without having the debilitating symptoms.

Mental illnesses have been around for thousands of years. Evolutionary theory suggests that in order for them to be still here, there must be some kind of survival advantage to them. If they were wholly bad, it's argued, natural selection would have seen them off long ago. In some cases the advantage is clear. Anxiety, for example, can be a mental illness with severe symptoms and consequences, but it is also a trait that at a non-clinical level has survival advantages. In healthy proportions, it keeps us alert and on our toes when threats are sensed.

It's now increasingly being argued that there are survival advantages to others forms of illness, too, because of the links between the traits associated with them and creativity. "It can be difficult for people to reconcile mental illness with the idea that traits may not be disabling. While people accept that there are health benefits to anxiety, they are more wary of schizophrenia and manic depression," says Professor

Gordon Claridge, emeritus professor of abnormal psychology at Oxford University, who has edited a special edition of the journal Personality and Individual Differences, looking at the links between mental illness and creativity. "There is now a feeling that these traits have survived because they have some adaptive value. To be mildly manic depressive or mildly schizophrenic brings a flexibility of thought, an openness, and risk-taking behaviour, which does have some adaptive value in creativity. The price paid for having those traits is that some will have mental illness."

Research is providing support for the idea that creative people are more likely to have traits associated with mental illness. One study found that the incidence of mood disorders, suicide and institutionalisation to be 20 times higher among major British and Irish poets in the 200 years up to 1800. Other studies have shown that psychiatric patients perform better in tests of abstract thinking. Another study, based on 291 eminent and creative men in different fields, found that 69 per cent had a mental disorder of some kind. Scientists were the least affected, while artists and writers had increased diagnoses of psychosis.

"Most theorists agree that it is not the full-blown illness itself, but the milder forms of psychosis that are at the root of the association between creativity and madness," says Emilie Glazer, experimental psychologist and author of one of the Oxford journal papers. "The underlying traits linked with mild psychopathology enhance creative ability. In severe form, they are debilitating."

Research is also showing that traits associated with different mental illnesses have different effects on creativity. The creativity needed to develop the theory of relativity, is, for example, very different from that required for producing surreal paintings, or poetry.

Research is now homing in on whether the psychosis that is linked to different types of creativity comes through schizophrenia and schizotypy traits, through manic-depressive or cyclothymic traits, or traits associated with the autism and Asperger's disorders. A study at the University of Newcastle found significant differences between artistically creative people and mathematicians. While the artists showed schizotypy traits, mathematicians did not, and that fits in with the idea that mathematics and engineering, which require attention to detail, are closer to the autistic traits than to psychosis.

"Affective disorder perpetuates creativity limited to the normal," says Glazer, "while the schizoid person is predisposed to a sense of detachment from the world, free from social boundaries and able to consider alternative frameworks, producing creativity within the revolutionary sphere. Newton and Einstein's schizotypal orientation, for instance, enabled their revolutionary stamp in the sciences."

The stereotypical images of mad scientists working alone and preferring foaming beakers to friends, abound in literature, and reflect a popular perception of the aloof, detached and obsessive genius. But the idea goes back even further. 2000 years ago in Rome, the philosopher Seneca was obviously already on the case when he wrote: "There is no great genius without a tincture of madness."

It's no joke: Comedians and depression

Heard the one about the man who went to the doctor to get help for his depression? He's told to go and see a show with a well known comedian who would make him laugh and lift his spirits. "But that's me," says the patient. "I'm the comedian."

The joke, related by Rod Martin, author of 'The Psychology of Humor – An Integrative Approach', is apparently something of a favourite among comedians, who are known to be prone to depression, from the late Tony Hancock and Spike Milligan, to Stephen Fry and Paul Merton.

One theory is that humour is developed in response to depression, and that it works as a coping mechanism. One study, reported by Martin, looked at 55 male and 14 female comedians, all famous and successful. It found that comedians tended to be superior in intelligence, angry, suspicious, and depressed.

In addition, their early lives were characterised by suffering, isolation, and feelings of deprivation, and, he says, they used humour as a defence against anxiety, converting their feel ings of suppressed rage from physical to verbal aggression. "The comedic skills required for a successful career may well be developed as a means of compensating for earlier psychological losses and difficulties," says Martin. A second study did not find higher levels, although comedians had significantly greater preoccupation with themes of good and evil, unworthiness, self-deprecation, and duty and responsibility.

"A significant proportion of comedians do seem to suffer more with depression," says Professor Gordon Claridge, emeritus professor of abnormal psychology at Oxford University. "Comedy seems to act as a way of dealing with depression. I think there is an emotionality and cognitive style that goes along with these depressive disorders which seems to feed creativity."

Salvador Dali was not just a great artist. He also met the criteria for several psychosis diagnoses, a mixture of schizophrenic and depressive. He may also have been paranoid, as well having antisocial, histrionic, and narcissistic disorders. "Dalí and his contribution to the history of art highlights that abnormality is not necessarily disagreeable – or to be so readily dismissed as a sign of neurological disease. For without his instability, Dalí may not have created the great art that he did," says Caroline Murphy of Oxford.

http://www.independent.co.uk/life-style/health-and-wellbeing/features/creative-minds-the-links-between-mental-illness-and-creativity-1678929.html

Way To Control Chaos? Rigid Structure Discovered In Center Of Air Turbulence

Engineers have found a rigid structure that exists within the center of turbulence, suggesting that its chaotic movement could be controlled in the future. (Credit: iStockphoto/Marlene DeGrood)

ScienceDaily (May 7, 2009) — Pioneering mathematical engineers have discovered for the first time a rigid structure which exists within the centre of turbulence, leading to hope that its chaotic movement could be controlled in the future.

Dr Sotos Generalis from Aston University in Birmingham, UK and Dr Tomoaki Itano from Kansai University in Osaka, Japan, believe their discovery of the Hairpin Vortex Solution could revolutionise our understanding of turbulence and our ability to control it.

This rigid, set structure, named after its hairpin like shape was found within Plane Couette flow. This is a prototype of turbulent shear flow, where turbulence is created in fluid flow between the space of two opposite moving planar fluid boundaries, when high- and low-speed fluids collide.

Everyone from Formula One drivers experiencing drag, through to aeroplane passengers suffering a bumpy flight, will have experienced clear-air turbulence, the mixing of high- and low-speed air in the atmosphere.

This newly found turbulent state is constituted by a number of elements found in a coherent flow structure and has been described by the research team as a "tapestry of knotted vortices."

While structures, known as wall structures have been found on the ‘edge’ of turbulence, an elusive middle or wake structure has never been discovered, until now.

Dr Generalis believes that finding a regimented structure within the very heart of Couette flow could prove invaluable to controlling turbulence and the effects of turbulence between two moving boundaries, in the future. This could include working machinery parts, medical treatment involving blood flow, and turbulence in air, sea and road travel.

"Ten years ago scientists believed turbulence was in a 'world' of its own, until we began to find 'wall structures' on its side. We believed a middle or wake structure might exist, and now we can prove there is regimented structure at the very centre of turbulence. This new discovery paves the way for the 'marriage' between wake and wall structures in shear flow turbulence and provides a unique picture of the Couette flow turbulent eddies only observed but never understood before.

The team's findings of this missing central link have been published in Physical Review Letters and come after nearly five years of research, created by thousands of computer generated shear flow models. The result was obtained by replicating the exposure of two opposite plates to hot and cold conditions, moving from a static to dynamic position. The research team are now aiming to find if similar structures exist within other cases of turbulent fluid flow.

"The hairpins expose an all new 'view' of the transition to turbulence and it is our aim to 'unify' this idea discovered in Couette flow, into other areas of shear flow in general," added Dr Generalis.

Journal reference:

1. Tomoaki Itano and Sotos C. Generalis. **Hairpin Vortex Solution in Planar Couette Flow: A Tapestry of Knotted Vortices**. *Physical Review Letters*, 2009; 102 (11): 114501 DOI: 10.1103/PhysRevLett.102.114501

Adapted from materials provided by Aston University.

http://www.sciencedaily.com/releases/2009/05/090505061947.htm

Unique Roman Glass Dish Discovered At London Grave

Archeologists have discovered an exquisite Roman polychrome millefiori dish in East London, U.K. It has been painstakingly reassembled by Museum of London Archaeology conservator Liz Goodman. (Credit: Image courtesy of Museum Of London)

ScienceDaily (May 7, 2009) — Archeologists have discovered an exquisite Roman polychrome millefiori dish in East London, U.K. The dish is made up of hundreds of indented glass petals (the term millefiori means simply "a thousand flowers") in an intricate repeated pattern and was found during excavations in Prescot Street, Aldgate, by L – P : Archaeology. It was highly fragmented but miraculously held together by nothing more than the earth around it.

It has been painstakingly reassembled by Museum of London Archaeology conservator Liz Goodman.

The dish is extremely rare and an unprecedented find, not only from London but from across the Western Roman empire. Originally the blue translucent petals, bordered with white, would have been embedded in a bright red opaque glass matrix. The hue was still present when the dish was uncovered, with the vermillion appearance diminishing as the water-saturated glass dried out. The red colouring can be seen around the rim. The complexity of its manufacture indicates that the dish was a highly-prized and valuable item. Beautifully crafted vessels like this were particularly in vogue in the 1st and early 2nd centuries. Dating is underway to establish the precise period of the find.

The dish formed part of the grave goods of a Roman Londoner whose cremated remains were uncovered, probably buried in a wooden container, in a cemetery in Londinium's Eastern quarter. A number of other ceramic and glass vessels were also ranged along the sides of the casket, suggesting a rich and unusual burial.

The excavations at Prescot Street have continued the process of the recording of the extensive eastern cemetery of Roman London which, by law, lay outside the city wall. This and previous excavations have found both cremations and inhumations (burial of the body) that spanned over 400 years of Roman occupation from the late 1st to early 5th century. This burial came from an area of intense burials at the

eastern end of the site where there was also a stone mausoleum, a possible funerary structure and a series of burial groups which perhaps indicate the on-going use of cemetery plots. Indeed, this particular burial had, at a later date, had another cremation burial interred on the same spot which may point to a family connection.

Liz Goodman, Museum of London Archaeology conservator said ""Piecing together and conserving such a complete artefact offered a rare and thrilling challenge. We occasionally get tiny fragments of millefiori, but the opportunity to work on a whole artefact of this nature is extraordinary. The dish is extremely fragile but the glasswork is intact and illuminates beautifully nearly two millennia after being crafted."

Guy Hunt, Director, L – P : Archaeology said "The dig at Prescot Street produced an amazing range of Roman cemetery archaeology; it is fantastic for us that one of the many finds is such an exciting and beautiful object. It is great to be able to put an object such as this into context and to get a first hand impression of a rather wealthy east Londoner."

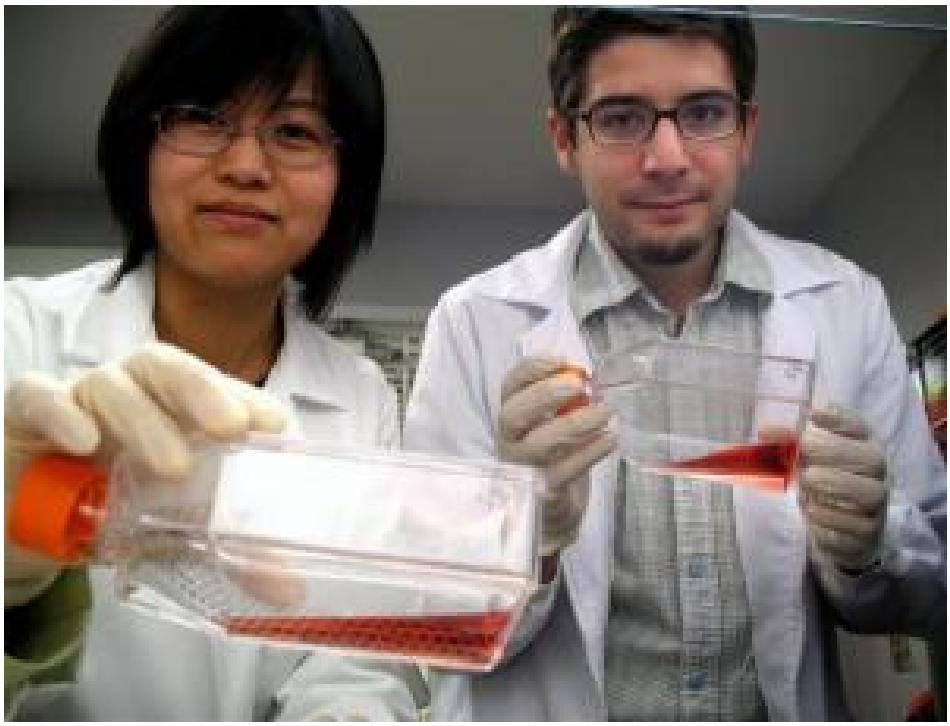
About Milleflore Glass

Millefiore is a glass-working technique created from glass rods with multi coloured patterns that are only visible at the cut ends – like a stick of rock with the writing only visible once cut. These rods are created by heating and melding lengths of different coloured glass to create an individual pattern. Here, a solid red cane is set at the core with blue and white canes set around it to produce the petal effect. The small cross sections of glass rod are then used to create bigger pieces. It is a very labour intensive – and hence very exclusive – craft.

Adapted from materials provided by Museum Of London.

http://www.sciencedaily.com/releases/2009/04/090430092235.htm

Scientists Shed Light On Inner Workings Of Human Embryonic Stem Cells



Na Xu (left) and Thales Papagiannakopoulos. (Credit: George Foulsham/ Department of Public Affairs, UCSB)

ScienceDaily (May 7, 2009) — Scientists at UC Santa Barbara have made a significant discovery in understanding the way human embryonic stem cells function.

They explain nature's way of controlling whether these cells will renew, or will transform to become part of an ear, a liver, or any other part of the human body. The study is reported in the May 1 issue of the journal *Cell.*

The scientists say the finding bodes well for cancer research, since tumor stem cells are the engines responsible for the growth of tumors. The discovery is also expected to help with other diseases and injuries. The study describes nature's negative feedback loop in cell biology.

"We have found an element in the cell that controls 'pluripotency,' that is the ability of the human embryonic stem cell to differentiate or become almost any cell in the body," said senior author Kenneth S. Kosik, professor in the Department of Molecular, Cellular & Developmental Biology. Kosik is also co-director and Harriman Chair in Neuroscience Research of UCSB's Neuroscience Research Institute.

"The beauty and elegance of stem cells is that they have these dual properties," said Kosik. "On the one hand, they can proliferate — they can divide and renew. On the other hand, they can also transform themselves into any tissue in the body, any type of cell in the body."

The research team includes James Thomson, who provided an important proof to the research effort. Thomson, an adjunct professor at UCSB, is considered the "father of stem cell biology." Thomson pioneered work in the isolation and culture of non-human primate and human embryonic stem cells. These cells provide researchers with unprecedented access to the cellular components of the human body, with applications in basic research, drug discovery, and transplantation medicine.

With regard to human embryonic stem cells, Kosik explained that for some time he and his team have been studying a set of control genes called microRNAs. "To really understand microRNAs, the first step is to remember the central dogma of biology —DNA is the template for RNA and RNA is translated to protein. But microRNAs stop at the RNA step and never go on to make a protein.

"The heart of the matter is that before this paper, we knew that if you want to maintain a pluripotent state and allow self-renewal of embryonic stem cells, you have to sustain levels of transcription factors," said Kosik. "We also knew that stem cells transition to a differentiated state when you decrease those factors. Now we know how that happens a little better."The new research shows that a microRNA — a single-stranded RNA whose function is to decrease gene expression — lowers the activity of three key ingredients in the recipe for embryonic stem cells. This microRNA is known as miR-145. The discovery may have implications for improving the efficiency of methods designed to reprogram differentiated cells into embryonic stem cell-like cells.

As few as three or four genes can make cells pluripotent. "We know what these genes are," Kosik said. That information was used recently for one of the most astounding breakthroughs of biology of the last couple of years — the discovery of induced pluripotent skin cells."You can take a cell, a skin cell, or possibly any cell of the body, and revert it back to a stem cell," Kosik said. "The way it's done, is that you take the transcription factors that are required for the pluripotent state, and you get them to express themselves in the skin cells; that's how you can restore the embryonic stem cell state. You clone a gene, you put it into what's called a vector, which means you put it into a little bit of housing that allows those genes to get into a cell, then you shoot them into a stem cell. Next, when those genes — those very critical pluripotent cell genes — get turned on, the skin cell starts to change, it goes back to the embryonic pluripotent stem cell state."

The researchers explained that a rise in miR-145 prevents human embryonic stem cells' self-renewal and lowers the activity of genes that lend stem cells the capacity to produce other cell types. It also sends the cells on a path toward differentiation. In contrast, when miR-145 is lost, the embryonic stem cells are prevented from differentiating as the concentrations of transcription factors rise.They also show that the control between miR-145 and the "reprogramming factors" goes both ways. The promoter for miR-145 is bound and repressed by a transcription factor known as OCT4, they found.

"It's a beautiful double negative feedback loop," Kosik said. "They control each other. That is the essence of this work."Because there is typically less "wiggle room" in the levels of microRNA compared to mRNA, further studies are needed to quantify more precisely the copy numbers of miR-145 and its targets, to figure out exactly how this layer of control really works, Kosik said.Kosik credits the lion's share of this discovery to first author Na Xu, a postdoctoral fellow who is also supported by the California Institute for Regenerative Medicine (CIRM). "Na Xu deserves enormous credit for this work," said Kosik. "She performed nearly every experiment in the paper and was the major contributor to the ideas in the paper." Meanwhile, Thales Papagiannakopoulos, a graduate student working in the Kosik lab, was very generous in helping Na Xu with one of the experiments. He helped with one of several proofs that showed that the targets of miR-145 are the three transcription factors that are being reported, explained Kosik.

Thomson provided one of several proofs for the control point of miR-145 expression, said Kosik.

Journal reference:

1. Na Xu, Thales Papagiannakopoulos, Guangjin Pan, James A. Thomson, and Kenneth S. Kosik. **MicroRNA-145 Regulates OCT4, SOX2, and KLF4 and Represses Pluripotency in Human Embryonic Stem Cells**. *Cell*, 2009; DOI: 10.1016/j.cell.2009.02.038

Adapted from materials provided by University of California - Santa Barbara.

http://www.sciencedaily.com/releases/2009/04/090430132528.htm

Organic Dairy Manure May Offer High Quality Fertilizer Option

Manure from dairy cows fed organic diets contained different concentrations of plant nutrients, including phosphorus, metals and minerals compared to manure from cows fed conventional diets. (Credit: Photo by Scott Bauer.)

ScienceDaily (May 7, 2009) — Dairy cows that produce USDA-certified organic milk also produce manure that may gradually replenish soil nutrients and potentially reduce the flow of agricultural pollutants to nearby water sources, according to findings by Agricultural Research Service (ARS) scientists and colleagues.

Cows on organic dairy farms generally consume forage feeds cultivated on soils that are fertilized with manure and compost rather than manufactured fertilizers. This organic management, in turn, may significantly affect how easily nutrients are converted in soil into forms readily taken up by crops.Working with colleagues at the ARS New England Plant, Soil, and Water Laboratory in Orono, Maine, and elsewhere, chemist Zhongqi He showed that conventional and organic dairy manures from commercial dairy farms differed in concentrations of plant nutrients, including phosphorus, metals and minerals.

The team used two different types of nuclear magnetic resonance (NMR) to pinpoint these differences. Solution NMR spectroscopy is already widely used to analyze phosphorus content in manure. For this study, the scientists also analyzed manure content using solid-state NMR spectroscopy, which is especially effective at finding unique “signatures” of the different kinds of metals and minerals.The researchers found that the two types of manure had at least 17 different chemical forms of phosphorus that varied in concentrations. The organic dairy manure had higher levels of phosphorus, calcium, potassium, manganese, zinc and magnesium.

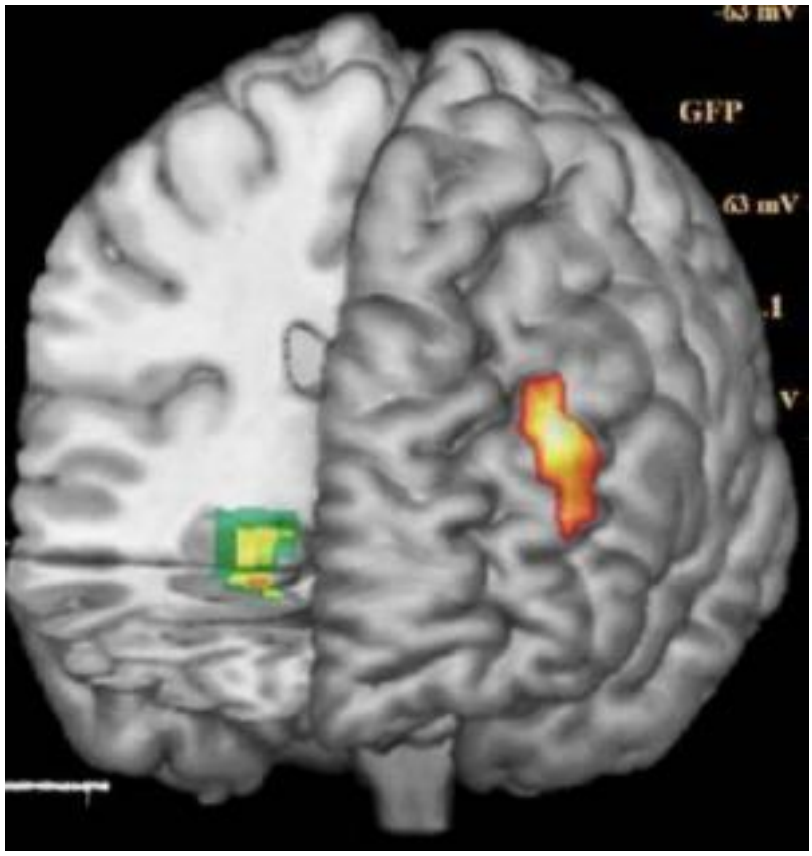
Organic dairy manure also contained more types of phosphorus found in association with calcium and magnesium. Such forms are comparatively slow to dissolve and would thus gradually release the nutrients. Slow-release fertilizers generally increase the likelihood that they eventually will be taken up by crops, rather than being washed out of fields into nearby surface or groundwater sources.

Because of this, slow-release fertilizers often can be applied at comparatively low rates. Manure produced by cows in organic production systems may show similar characteristics compared to manure from conventional systems.

Adapted from materials provided by USDA/Agricultural Research Service.

http://www.sciencedaily.com/releases/2009/05/090502084607.htm

Schizophrenia: Blocking Errant Protein Could Stem Runaway Brain Activity In Psychosis



This shows areas in the prefrontal cortex (right) and hippocampus (left) where activity differed in healthy control subjects during thinking tasks, depending on whether they had the risk version of the KCNH2 potassium channel gene. The image is made from functional magnetic resonance imaging data superimposed on 3-D MRI reconstruction of the brain. (Credit: NIMH Genes Cognition and Psychosis Program)

ScienceDaily (May 6, 2009) — A study on schizophrenia has implicated machinery that maintains the flow of potassium in cells and revealed a potential molecular target for new treatments. Expression of a previously unknown form of a key such potassium channel was found to be 2.5 fold higher than normal in the brain memory hub of people with the chronic mental illness and linked to a hotspot of genetic variation.

An extensive series of experiments suggest that selectively inhibiting this suspect form could help correct disorganized brain activity in schizophrenia – without risk of cardiac side effects associated with some existing antipsychotic medications. Scientists at the National Institutes of Health and European colleagues report on threads of converging evidence in the May, 2009 issue of the journal Nature Medicine.

"The end game in linking genes with complex disorders like schizophrenia requires that we not only demonstrate statistical association, but also show how a gene version acts biologically to confer risk," explained Daniel Weinberger, M.D., director of National Institute of Mental Health's (NIMH) Genes Cognition and Psychosis Program, who led the research. "We found schizophrenia-like effects in brain circuitry and mental processing in perfectly healthy people who carry the risk-associated version of this potassium channel gene, even though they don't show any psychotic behavior."

Evidence suggests that schizophrenia stems from complex interactions between multiple genes and environmental factors. Several candidate genes have recently been statistically linked to the illness in large genome-wide association studies.

"Our study goes further, spanning discovery of a new gene variant, confirmation of its association with the illness, and multi-level probes into how it works – in human post mortem brain tissue, the living human brain, and neurons," added Weinberger.

By regulating the flow of potassium ions into the cell, potassium channels control when neurons fire – electrically discharge and release a chemical messenger that signals neighboring neurons in a circuit. This flow is regulated, in part, by activity of the chemical messenger dopamine, the main target of antipsychotic medications used to treat schizophrenia.

One type of potassium channel, called KCNH2, attracted the researchers' interest for its potential role in sustaining the type of neuronal firing that supports the higher mental functions disturbed in schizophrenia. Spurred by hints from postmortem studies of genetic variation linked to schizophrenia in the genomic neighborhood of KCNH2, the researchers analyzed the gene's association with the illness in 5 independent samples comprising hundreds of families. This pinpointed 4 variations associated with schizophrenia within a small region of the KCNH2 gene.

"Yet this statistical association didn't imply a mechanism," said Weinberger. "It didn't explain how KCNH2 might increase risk for schizophrenia. So we went back to the post-mortem brain tissue in search of an answer."

It was only then that the researchers discovered a previously unknown version of KCNH2, called Isoform 3.1, that soared to levels 2.5 times higher-than-normal in the hippocampus (memory hub) of people who had schizophrenia – especially those with the risk-associated variations. Isoform 3.1 was also higher-than-normal in healthy individuals who carried the risk-associated variations. This signaled the existence of a risk-associated version of the KCNH2 gene.

Healthy controls carrying the risk gene version also:

- Performed significantly worse-than-normal on measures of IQ and mental processing speed. Previous studies have linked similar performance with genetic risk for schizophrenia.
- Inefficiently processed memory in the hippocampus and working memory in the prefrontal cortex, as revealed by functional MRI (magnetic resonance imaging) scans. Although they performed similarly to controls on these tasks, their brains had to work harder to compensate for disordered tuning of circuitry – a phenomenon previously implicated in schizophrenia.
- Showed significantly decreased volume in the hippocampus – a heritable trait – in anatomical MRI scans.

In addition, Isoform 3.1:

- Showed levels 1,000 times lower in the heart than the other main form of KCNH2 and does not exist in lower animals, suggesting that it has evolved a unique role in the primate brain. Mutant forms of KCNH2 in the heart can lead to arrhythmias and even sudden death – a rare risk of taking antipsychotic medications, many of which interact with KCNH2. So targeting this brain-specific form potentially opens the way to development of new treatments free of such cardiac side-effects.
- Dramatically changed activity in rodent brains toward a neuronal firing pattern that may be important for thinking and memory tasks unique to primates.
- Is expressed much more prior to birth, compared to the other main form of KCNH2, suggesting that it plays a prominent role in the early stages of brain development.

- Is associated with a hotspot of variation in an area that controls gene expression, hinting that the suspect variations may contribute to schizophrenia risk by over-expressing Isoform 3.1.

Even though it is normally important for our higher order executive functioning, such over expression of Isoform 3.1 in schizophrenia could result in "abnormally increased neuronal excitability, runaway circuit activity and inefficient information processing," suggested Stephen Huffaker, Ph.D., the article's lead author, now a medical student at Harvard. The researchers propose that a treatment designed to inhibit just Isoform 3.1, might spare any heart-related side effects while improving the disorganized neural firing characteristic of the brain in schizophrenia.

In addition to the NIMH, researchers from the NIH's National Institute on Child Health and Human Development (NICHD) also participated in the research.

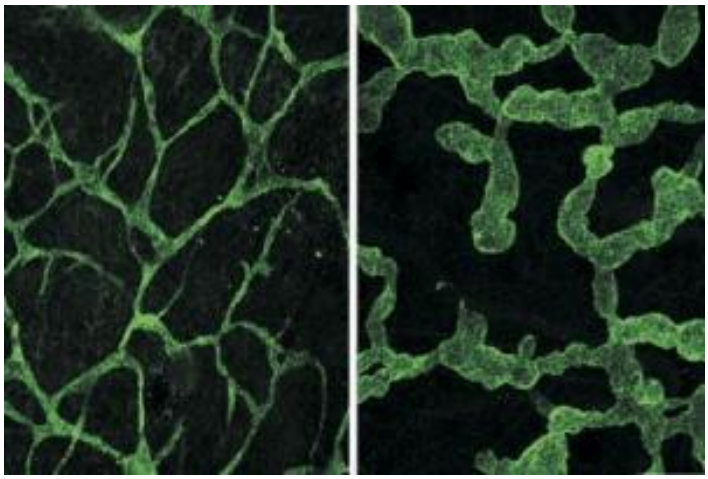
Journal reference:

1. Huffaker et al. **A primate-specific, brain isoform of KCNH2 affects cortical physiology, cognition, neuronal repolarization and risk of schizophrenia**. *Nature Medicine*, May 3, 2009; DOI: 10.1038/nm.1962

Adapted from materials provided by NIH/National Institute of Mental Health.

http://www.sciencedaily.com/releases/2009/05/090506094218.htm

Building The Lymphatic Drainage System



Normal valve-containing lymph vessels (left) fail to form in mice that lack Foxc2 and NFATc1 (right). The study by Norrmén et al. suggests that these two transcription factors direct the building of mature lymph-collecting vessels by coming together to regulate target gene loci. (Credit: Norrmén, C., et al. 2009. J. Cell Biol. doi:10.1083/jcb.200901104)

ScienceDaily (May 6, 2009) — Our bodies' tissues need continuous irrigation and drainage. Blood vessels feeding the tissues bring in the fluids, and drainage occurs via the lymphatic system. While much is known about how blood vessels are built, the same was not true for lymph vessels. Now though, Norrmén et al. have identified two of the lead engineers that direct drainage construction in the mouse embryo.The engineers are the transcription factors, Foxc2 and NFATc1. Foxc2 had been implicated in lymph vessel development already, but Norrmén and colleagues have now found that the factor specifically regulates a late stage of lymph development when large, valve-containing vessels arise from more primitive capillaries.

Foxc2 built the lymph vessel valves with the help of NFATc1, which was a known heart valve engineer. Norrmén and colleagues also showed that Foxc2 and NFATc1 physically interact and that many DNA binding sites for the two transcription factors are closely linked. This latter finding generated a long list of target genes that might be controlled by the two factors.

The team now plans to investigate these targets as well as to work out the upstream molecular pathways controlling Foxc2 and NFATc1. Whatever the mechanisms, if the team can show that Foxc2 and NFATc1 also prompt lymph vessel regeneration in adults, boosting these factors could help patients with lymph drainage problems – including those that have suffered extensive tissue injuries, or have had lymph nodes removed as part of cancer treatment.

The study will be published online April 27 and will appear in the May 4 print issue of the Journal of Cell Biology.

Journal reference:

1. Norrmen et al. **FOXC2 controls formation and maturation of lymphatic collecting vessels through cooperation with NFATc1**. *The Journal of Cell Biology*, 2009; 185 (3): 439 DOI: 10.1083/jcb.200901104

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

http://www.sciencedaily.com/releases/2009/04/090427010808.htm

Star Crust 10 Billion Times Stronger Than Steel, Physicist Finds

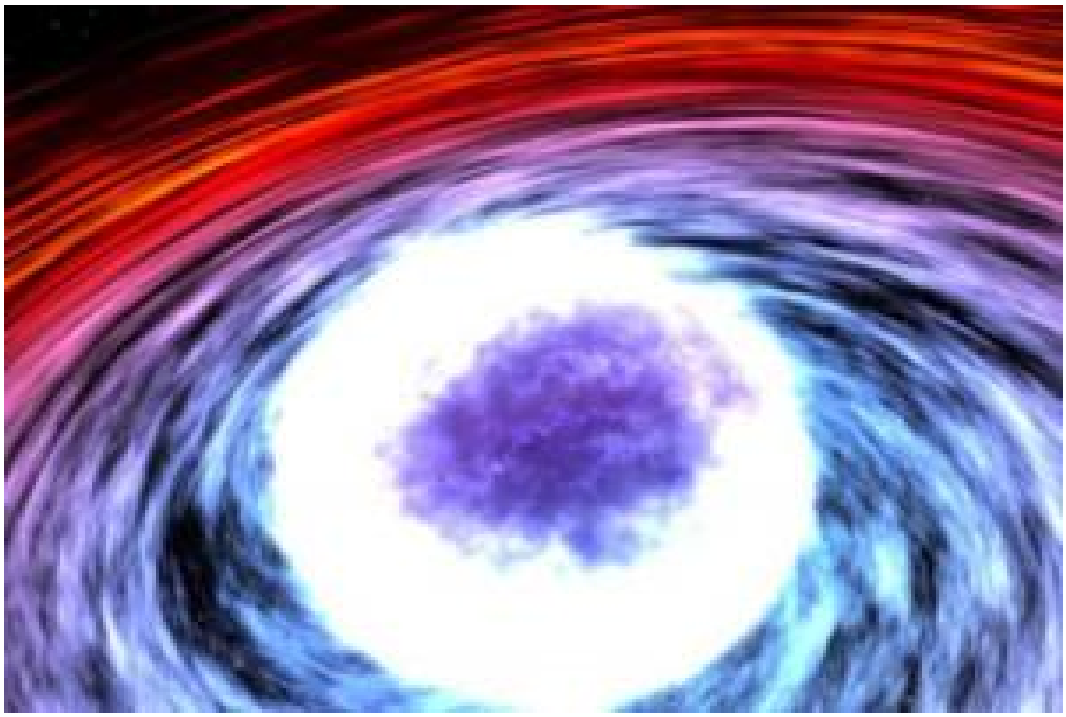


Illustration of a neutron star -- the core remains of a star once bigger than the Sun yet now small enough to fit within the Washington Beltway -- containing densely packed matter. (Credit: Image courtesy of NASA)

ScienceDaily (May 6, 2009) — Research by a theoretical physicist at Indiana University shows that the crusts of neutron stars are 10 billion times stronger than steel or any other of the earth's strongest metal alloys.

Charles Horowitz, a professor in the IU College of Arts and Sciences' Department of Physics, came to the conclusion after large-scale molecular dynamics computer simulations were conducted at Indiana University and Los Alamos National Laboratory in New Mexico.

Exhibiting extreme gravity while rotating as fast as 700 times per second, neutron stars are massive stars that collapsed once their cores ceased nuclear fusion and energy production. The only things more dense are black holes, as a teaspoonful of neutron star matter would weigh about 100 million tons.

Scientists want to understand the structure of neutron stars, in part, because surface irregularities, or mountains, in the crust could radiate gravitational waves and in turn may create ripples in space-time. Understanding how high a mountain might become before collapsing from the neutron star's gravity, or estimating the crust's breaking strain, also has implications for better understanding star quakes or magnetar giant flares.

"We modeled a small region of the neutron star crust by following the individual motions of up to 12 million particles," Horowitz said of the work conducted through IU's Nuclear Theory Center in the Office of the Vice Provost for Research. "We then calculated how the crust deforms and eventually breaks under the extreme weight of a neutron star mountain."

Performed on a large computer cluster at Los Alamos National Laboratory and built upon smaller versions created on special-purpose molecular dynamics computer hardware at IU, the simulations identified a neutron star crust that far exceeded the strength of any material known on earth.

The crust could be so strong as to be able to elicit gravitational waves that could not only limit the spin periods of some stars, but that could also be detected by high-resolution telescopes called interferometers, the modeling found.

"The maximum possible size of these mountains depends on the breaking strain of the neutron star crust," Horowitz said. "The large breaking strain that we find should support mountains on rapidly rotating neutron stars large enough to efficiently radiate gravitational waves."

Because of the intense pressure found on neutron stars, structural flaws and impurities that weaken things like rocks and steel are less likely to strain the crystals that form during the nucleosynthesis that occurs to form neutron star crust. Squeezed together by gravitational force, the crust can withstand a breaking strain 10 billion times the pressure it would take to snap steel.

Horowitz's most recent work on neutron stars was supported by a grant from the U.S. Department of Energy and through Shared University Research Grants from IBM to IU. Working with Horowitz were Don Berry, a principal systems analyst with the High Performance Applications Group in University Information Technology Services at Indiana University, and Kai Kadau at Los Alamos National Laboratory.

Journal reference:

1. C. J. Horowitz, Kai Kadau. **The breaking strain of neutron star crust and gravitational waves**. *Physical Review Letters*, Online May 8, 2009 [link]

Adapted from materials provided by Indiana University.

http://www.sciencedaily.com/releases/2009/05/090506110202.htm

For Your Health, Pick A Mate Who Is Conscientious And, Perhaps, Also Neurotic

University of Illinois psychology professor Brent Roberts led a study that found that having a conscientious spouse can improve one's health. (Credit: Thompson-McClellan)

ScienceDaily (May 6, 2009) — Conscientiousness is a good thing in a mate, researchers report, not just because it's easier to live with someone who washes the dishes without being asked, but also because having a conscientious partner may actually be good for one's health. Their study, of adults over age 50, also found that women, but not men, get an added health benefit when paired with someone who is conscientious and neurotic.

This is the first large-scale analysis of what the authors call the "compensatory conscientiousness effect," the boost in health reported by those with conscientious spouses or romantic partners. The study appears this month in *Psychological Science*.

"Highly conscientious people are more organized and responsible and tend to follow through with their obligations, to be more impulse controlled and to follow rules," said University of Illinois psychology professor Brent Roberts, who led the study. Highly neurotic people tend to be more moody and anxious, and to worry, he said.

Researchers have known since the early 1990s that people who are more conscientious tend to live longer than those who are less so. They are more likely to exercise, eat nutritious foods and adhere to vitamin or drug regimens, and are less likely to smoke, abuse drugs or take unwarranted risks, all of which may explain their better health. They also tend to have more stable relationships than people with low conscientiousness.

Most studies have found a very different outcome for people who are highly neurotic. They tend to report poorer health and less satisfying relationships.

Many studies focus on how specific personality traits may affect one's own health, Roberts said, but few have considered how one's personality can influence the health of another.

"There's been kind of an individualistic bias in personality research," he said. "But human beings are not islands. We are an incredibly interdependent species."

Roberts and his colleagues at the University of Illinois and the University of Michigan looked at the association of personality and self-reported health among more than 2,000 couples taking part in the Health and Retirement Study, a representative study of the U.S. population over age 50. The study asked participants to rate their own levels of neuroticism and conscientiousness and to answer questions about the quality of their health. Participants also filled out a questionnaire that asked them whether or not a health problem limited their ability to engage in a range of activities such as jogging one block, climbing a flight of stairs, shopping, dressing or bathing.

As other studies have found, the researchers found that those who described themselves as highly conscientious also reported better health and said they were more able to engage in a variety of physical activities than those who reported low conscientiousness.

For the first time, however, the researchers also found a significant, self-reported health benefit that accompanied marriage to a conscientious person, even among those who described themselves as highly conscientious.

"It appears that even if you are really highly conscientious, you can still benefit from a spouse's conscientiousness," Roberts said. "It makes sense that regardless of what your attributes are, if you have people in your social network that have resources, such as conscientiousness, that can always help."

A more unusual finding involved an added health benefit reported by women who were paired with highly conscientious men who were also highly neurotic, Roberts said. The same benefit was not seen in men with highly conscientious and neurotic female partners. While both men and women benefit from being paired with a conscientious mate, Roberts said, only the women saw a modest boost in their health from being with a man who was also neurotic.

"The effect here is not much larger than the effect of aspirin on cardiovascular health, which is a well-known small effect," he said.

Asked whether women looking for long-term mates should choose a man who is conscientious and neurotic over one who is simply conscientious, Roberts said, "I wouldn't recommend it."

Adapted from materials provided by University of Illinois at Urbana-Champaign, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/04/090428111532.htm

Underwater Robot With A Sense Of Touch

Underwater robot with a sense of touch. (Credit: Image courtesy of Fraunhofer-Gesellschaft)

ScienceDaily (May 6, 2009) — The robot dives into the sea, swims to the submerged cable and carries out the necessary repairs, but the person controlling the robot does not have an easy task. It is pitch dark and the robot's lamp does not help much. What's more, the current keeps pulling the robot away from where it needs to carry out the work.

In future, the robot could find its own way. A sensor will endow it with a sense of touch and help it to detect its undersea environment autonomously.

"One component in this tactile capability is a strain gauge," says Marcus Maiwald, project manager at the Fraunhofer Institute for Manufacturing Technology and Applied Materials Research IFAM in Bremen. Together with his Fraunhofer colleagues and staff at the German Research Center for Artificial Intelligence DFKI, Bremen Laboratory, he has developed the model of an underwater robot with a sense of touch."If the robot encounters an obstacle," he explains, "the strain gauge is distorted and the electrical resistance changes. The special feature of our strain gauge is that it is not glued but printed on – which means we can apply the sensor to curved surfaces of the robot."

The single printed strip is just a few ten micrometers wide, i.e. about half the width of a human hair. As a result, the strain gauges can be applied close to each other and the robot can identify precisely where it is touching an obstacle. The sensor is protected from the salt water by encapsulation.To produce the strain gauges, the research scientists atomize a solution with nanoparticles to create an aerosol. A software system guides the aerosol stream to the right position. Focusing gas shrouds the beam and ensures that it does not fan out.

At the Sensor and Test trade show from May 26 to 28 in Nuremberg, the research scientists are presenting an octopus-shaped underwater robot which is fitted with a printed sensor.

Adapted from materials provided by Fraunhofer-Gesellschaft, via AlphaGalileo.

http://www.sciencedaily.com/releases/2009/05/090505061836.htm

Trial drugs 'reverse' Alzheimer's

US scientists say they have successfully reversed the effects of Alzheimer's with experimental drugs.

The drugs target and boost the function of a newly pinpointed gene involved in the brain's memory formation.

In mice, the treatment helped restore long-term memory and improve learning for new tasks, Nature reports.

The same drugs - HDAC inhibitors - are currently being tested to treat Huntington's disease and are on the market to treat some cancers.

They reshape the DNA scaffolding that supports and controls the expression of genes in the brain.

" **We need to do more research to investigate whether developing treatments that control this gene could benefit people with Alzheimer's** "
Rebecca Wood of the Alzheimer's Research Trust

The Alzheimer's gene the drugs act upon, histone deacetylase 2 (HDAC2), regulates the expression of a plethora of genes implicated in plasticity - the brain's ability to change in response to experience - and memory formation.

This findings build on the team's 2007 breakthrough in which mice with symptoms of Alzheimer's disease regained long-term memories and the ability to learn.

Lead researcher Professor Li-Huei Tsai explained: "It brings about long-lasting changes in how other genes are expressed, which is probably necessary to increase numbers of synapses and restructure neural circuits, thereby enhancing memory.

"To our knowledge, HDAC inhibitors have not been used to treat Alzheimer's disease or dementia.

"But now that we know that inhibiting HDAC2 has the potential to boost synaptic plasticity, synapse formation and memory formation.

"In the next step, we will develop new HDAC2-selective inhibitors and test their function for human diseases associated with memory impairment to treat neurodegenerative diseases."

Future hope

HDAC inhibitor treatment for humans with Alzheimer's disease is still a decade or more away, she said.

The chief executive of the Alzheimer's Research Trust, Rebecca Wood, said: "This is promising research which improves our understanding of memory loss in Alzheimer's.

"We need to do more research to investigate whether developing treatments that control this gene could benefit people with Alzheimer's.

"We desperately need to fund more research to head off a forecast doubling the UK population living with dementia."

Julie Williams, an expert in the genetics of Alzheimer's for the trust, said scientists were on the brink of finding a number of candidate genes that increase the risk of developing Alzheimer's.

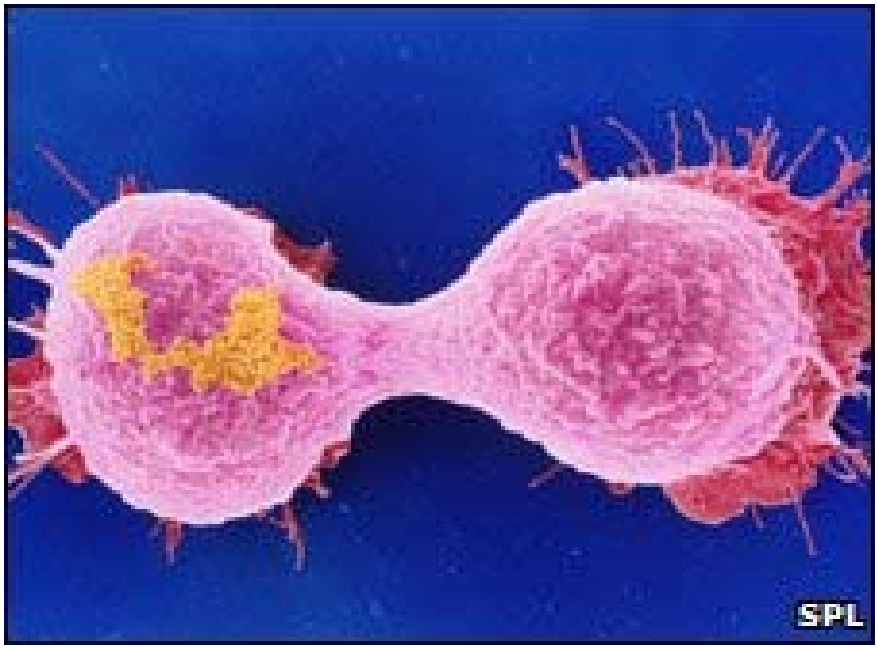
"If we can find the triggers and causes then we can hopefully prevent them. That is the great ambition."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8033422.stm

Published: 2009/05/06 23:53:28 GMT

Gene allows cancer to enter brain

A gene that allows cancer to spread into the brain has been identified by US scientists.



The brain is well protected by a network of defences, and it can be very difficult for foreign substances such as viruses and drugs to gain access.

But scientists have discovered a gene which appears to give spreading breast cancer cells a "free pass".

The study, published in the journal Nature, raises hopes of new drug therapy to stop cancer spread.

" **The genes they've identified could become good targets for new drugs** "
Professor Sir David Lane Cancer Research UK

The brain is protected by a densely-packed network of tiny blood vessels known as the blood-brain barrier.

This barrier prevents cells and molecules circulating in the general bloodstream from entering the brain tissue.

Breast cancer can spread to the brain, but usually only does so years after the primary tumour has been removed - suggesting that the remaining cancer cells must acquire specialised properties to breach the brain's defences.

Three genes

The researchers, from the Memorial Sloan-Kettering Cancer Center, examined tissue samples, and used sophisticated genetic analysis to try to determine how this takes place.

They identified three genes in mice which are involved in the spread of breast cancer to the brain.

Two of the genes - COX2 and HBEGF - have already been shown to help breast cancer invade the lungs, suggesting they play a general role in the spread of secondary tumours.

But the third gene, ST6GALNAC5, appeared only to be involved in helping the cancer penetrate the brain.

This gene seems to work by helping breast cancer cells "stick" to blood vessels in the brain, which allows them to slip through into the brain tissue.

Without ST6GALNAC5, the cells fail to breach the blood-brain barrier.

Important implications

Liz Baker, senior science information officer at Cancer Research UK, said: "While this work is at an early stage, and was only carried out in mice, it could have important implications for breast cancer treatment in the future.

"Around 10% of breast cancers that spread will travel to the brain, and the outlook for these patients can be quite poor.

"Cancer spread is one of the most challenging aspects of the disease so we welcome this discovery."

Professor Sir David Lane, Cancer Research UK's chief scientist, described the study as "very exciting".

He said: "The genes they've identified could become good targets for new drugs as well as some existing medicines, so they offer hope of being able to block this particular form of metastasis.

"One of the reasons why cancer is so hard to treat unless we catch it early is because it spreads."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8033630.stm

Published: 2009/05/06 23:55:38 GMT

Zombie computers 'on the rise'

By Maggie Shiels
Technology Reporter, BBC News, Silicon Valley

Twelve million computers have been hijacked by cyber-criminals and detected by security vendor McAfee since January, the firm has said.

It reports there has been a 50% increase in the number of detected so-called "zombie" computers since 2008.

The true number of newly hijacked PCs is likely to be higher than those detected by McAfee alone.

The figures come as a report from Deloitte said a global approach to cyber-security was needed.

"Doing nothing is not an option," said Deloitte's Greg Pellegrino.

Everything that depended on cyberspace face unprecedented risks, said Deloitte Touche Tohmatsu (DTT).

"This issue is moving so quickly, and with so much at stake economically and in terms of safety and security for people, we don't have 100 years to figure this out," explained Mr Pellegrino, who is a global public sector industry leader at DTT.

McAfee also revealed that the United States now hosted the world's largest percentage of infected computers at 18% with China a not too distant second with just over 13%.

"The massive expansion of these botnets provides cyber-criminals with the infrastructure they need to flood the web with malware," said Jeff Green, senior vice-president of McAfee.

"Essentially, this is cyber-crime enablement."

"Daily living"

The DTT findings revealed a growing awareness of the role the internet plays in so many different aspects of our lives from security to commerce and from transportation to communication.

"We are seeing this change from protecting the internet to a conversation about how we succeed and prosper in cyberspace," Mr Pellegrino told the BBC.

"Security spending is growing at a rate never seen before while the threat environment is growing at a pace of 40% a year.

"In terms of volume and severity of incidents, the math doesn't work and we have to come up with a different approach that requires public and private sectors working together," Mr Pellegrino said.

"We are talking about daily living," said fellow author Gary McAlum, who is a retired US Air Force colonel and senior manager of security and privacy services at Deloitte.

"There is a lot of discussion about the economy and the military and the public and private sector, but we have now reached a sense of urgency about the interconnectedness of all these areas."

That view was echoed by a member of the US military top brass who just gave evidence to a branch of the House Armed Services Committee.

"Our economy, the nation's critical infrastructure, and many of our military operations depend on unfettered access to cyberspace," said Lt Gen Keith Alexander, the director of the National Security Agency (NSA) who also heads the Pentagon's new Cyber Command.

"Maintaining freedom of action in cyberspace in the 21st Century is as inherent to US interests as freedom of the seas was in the 19th Century, and access to air and space in the 20th Century."

He has called for the creation of a digital warfare force for the future and has stated that the US needs to reorganise its offensive and defensive cyber-operations.

Prominence

The Deloitte study included interviews conducted with government officials and industry experts from around the world.

While it revealed a patchwork approach to the problem it also showed it was one that was gaining prominence.

"We were very pleased that there was a similar tone and awareness and leadership effort coming from different countries across the world," Mr Pellegrino said.

"Clearly this particular issue has a different context depending on where you are in the world. We cannot afford to go backwards."

In America, President Obama has made the issue of cyber-security a priority. Shortly after taking office he ordered a 60-day review that has now been delivered to his desk.

It is understood the release of the review has been delayed by the ongoing H1N1 swine flu crisis. When the report is made public, it is expected that the president will also announce his choice for cyber-security tsar to lead the charge.

While the Deloitte research said security in Asia-Pacific needed to "catch up" it noted that the United Kingdom was in the process of writing a national cyber strategy with an emphasis on public-private partnership.

On the continent, the European Commission has urged member states to co-ordinate on cyber-security measures, while in Latin America the report authors conclude that there is a "diversity of approaches".

Canada has completed its own cyber-security review and this year will be implementing the National Cyber-Security Strategy as well as creating a new Directorate of Cyber-Security with a mandate to engage closely with the private sector.

Despite all these efforts, the Deloitte authors point out that time is of the essence.

"Not only do we have to take action, we don't have enough time," warned Mr Pellegrino.

Mr McAlum agreed and said mapping a clear strategy was crucial.

"We need to get our house in order first so that we can interact with the rest of the world with one voice, with clear roles and responsibilities aligned."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/8032886.stm

Published: 2009/05/06 09:03:24 GMT

'Self-monitoring device' for HIV

People living with HIV could soon monitor their own condition at home using a hand-held device, similar to ones used by diabetics .

Scientists at three of London's largest research centres have been granted £2m to develop a hi-tech, finger prick blood-testing gadget.

The device's tiny mechanical sensors - microcantilever arrays - measure HIV levels to warn of impending flare ups.

A display then alerts the user if there is any need for them to visit a doctor.

" **It would be very useful if HIV patients could check their own viral measures** "
Lisa Power of the Terrence Higgins Trust

Investigator Dr Anna-Maria Goretti, an NHS consultant and co-investigator based at the Royal Free Hospital, said: "If patients neglect to take their treatments or need prompting to see their GP the device will provide a simple way of letting them know.

"It will really empower HIV patients to keep a close eye on their health and their treatments."

Instead of routinely seeing a specialist every three or so months "just in case", they would only need to see their doctor when things were going wrong.

As well as reducing visits to the doctor, it could also be of real benefit in developing countries where rapid and affordable ways to monitor HIV patients are urgently needed, say the researchers.

Nanotechnology

The microcantilever arrays are each coated with substances that stick to the HIV and other proteins, which are markers associated with disease progression.

Accommodating these markers causes the highly-sensitive sensors to bend like a diving board and this bend indicates the level of virus in the body, explained lead investigator Dr Rachel McKendry of University College London and the London Centre for Nanotechnology.

"We have used microcantilever arrays to investigate drug resistance in superbugs such as MRSA, and are excited by the opportunity to extend this approach to detecting HIV markers," she said.

Dr McKendry is working with Imperial College London, Cambridge Medical Innovations, Sphere Medical Ltd and BionanoConsulting on the three-year project to develop the prototype hand-held device for clinical trials.

Lisa Power of the Terrence Higgins Trust said: "This is certainly a very good idea. If you have diabetes you can check your blood sugar levels.

"Similarly, it would be very useful if HIV patients could check their own viral measures, say, once a month."

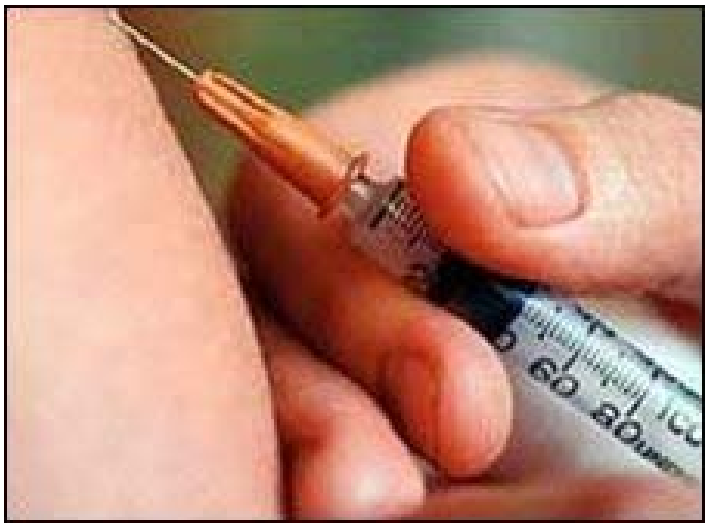
"It would not replace specialist advice, but it would be a way to reduce a patient's dependence on doctors."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8034336.stm

Published: 2009/05/05 23:22:01 GMT

Male 'contraceptive jab' closer

A male contraceptive jab could be as effective at preventing pregnancies as the female pill or condoms, work shows.



The monthly testosterone injection works by temporarily blocking sperm production and could revolutionise birth control, experts believe.

In trials in China only one man in 100 fathered a child while on the injections, the Journal of Clinical Endocrinology & Metabolism reports.

Six months after stopping the jabs the men's sperm counts returned to normal.

Family planning campaigners welcomed the news and said they hoped an injection would give couples more choice and enable men to take a greater share of the responsibility for contraception.

" **At the moment the onus is on the woman and men do not have that much choice** "
Fertility expert Mr Laurence Shaw

But experts said more trials were needed to check the safety of the jab.

Previous attempts to develop an effective and convenient male contraceptive have encountered problems over reliability and side effects, such as mood swings and a lowered sex drive.

Despite the injection having no serious side effects, almost a third of the 1,045 men in the two-and-a-half year trial did not complete it and no reason was given for this.

More choice

Lead researcher Dr Yi-Qun Gu, from the National Research Institute for Family Planning in Beijing, China, said: "For couples who cannot, or prefer not to use only female-orientated contraception, options have been limited to vasectomy, condom and withdrawal.

"Our study shows a male hormonal contraceptive regimen may be a potential, novel and workable alternative."

He said if further tests proved successful the treatment could become widely available in five years from now.

Mr Laurence Shaw, of the London Bridge Fertility Centre and the British Fertility Society, said: "If a male contraceptive like this became available it would be great and would give people another choice.

"It would empower men to make a decision which involves more than just a condom. At the moment the onus is on the woman and men do not have that much choice.

"But we have been here before with testosterone as a method of contraception. We need more rigorous safety testing."

He said in trials, the female Pill was still more effective as a contraceptive than the new jab, but that in real life they might be comparable because it is easier to forget to take a pill.

A spokeswoman from Marie Stopes International said: "This is a very positive step forward. The more range of contraceptives there are, the better.

"But if this does become available men should still remember that it will not protect them against sexually transmitted infections and they should still use a condom."

Rebecca Findlay of the Family Planning Association said: "In the past fpa has asked men if they would use hormonal contraception, and a third gave a definite yes they would.

"More research is needed to make sure that any new method is safe and effective, but men will welcome the continued search to give them more control over their fertility and sexual health."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8033218.stm

Published: 2009/05/05 09:02:35 GMT

Iron-arsenic Superconductors In Class Of Their Own

A unique tunnel diode resonator was used to measure London penetration depths of iron-arsenide crystals. A tunnel diode resonator precisely measures magnetic responses at very low temperatures, and Ames Laboratory is one of the few research facilities in the world with TDR instrumentation. (Credit: Image courtesy of DOE/Ames Laboratory)

ScienceDaily (May 6, 2009) — Physicists at the U.S. Department of Energy's Ames Laboratory have experimentally demonstrated that the superconductivity mechanism in the recently-discovered iron-arsenide superconductors is unique compared to all other known classes of superconductors. These findings – combined with iron-arsenide's potential good ability to carry current due to their low anisotropy – may open a door to exciting possible applications in zero-resistance power transmission.

The research, led by Ames Laboratory physicist Ruslan Prozorov, has shown that electron pairing in iron-arsenides is likely to be very different when compared to other types of known superconductors. In superconducting materials, electrons form pairs, called Cooper pairs, below a critical temperature and these electron pairs behave identically. The collective flow of Cooper pairs results in the most famous feature of a superconductor and the feature that draws the most interest in terms of energy efficiency: the flow of electrical current without any measurable loss of energy, or true zero resistance.

However, superconductors also have another inherent characteristic that distinguishes them from a perfect metal. Unlike perfect metals, superconductors expel a weak magnetic field from their interiors no matter whether they are cooled in a magnetic field or whether the magnetic field is applied after cooling. In either case, a weak magnetic field penetrates only a narrow region at a superconductor's surface. The depth of this region is known as the London penetration depth.

"The change of the London penetration depth with temperature is directly related to the structure of the so-called superconducting gap, which in turn depends on the microscopic mechanism of how electron pairs are formed," said Prozorov. "London penetration depth is one of the primary experimentally measurable quantities in superconductor studies."The variation of the London penetration depth with temperature depends on the superconducting gap structure and is already generally agreed upon in most

other known classes of superconductors. In conventional superconductors – the class made up of periodic table elements, including lead and niobium – this dependence is exponential at low temperatures. In the high-temperature cuprate superconductors, the relationship is linear, and in magnesium-diboride superconductors the dependence is exponential, but requires two distinct superconducting gaps to explain the data in a full temperature range.

In contrast, the Ames Laboratory research group, which includes physicists Ruslan Prozorov and Makariy Tanatar, postdoctoral researcher Catalin Martin, and graduate students, Ryan Gordon, Matt Vannette and Hyunsoo Kim, found that iron-arsenide superconductors exhibit a power-law – almost quadratic – temperature variation of penetration depth. The team's results were published in recent issues of Physical Review Letters and Physical Review B: Rapid Communications.The iron-arsenide superconductors' unique power-law variation of London penetration depth was observed across several FeAs-based systems. The Ames Lab group studied large single crystals of barium-iron-arsenic in which cobalt was substituted for part of the iron, grown and characterized at Ames Lab by senior physicist Paul Canfield's research group. They also studied neodymium-iron-arsenic-oxide and lanthanum-iron-arsenic-oxide samples grown and characterized by Canfield's group.

"We are very lucky to be able to collaborate with Paul Canfield, Sergey Bud'ko and their students. When studying novel materials, one needs to examine dozens of different samples and compositions to arrive at some general conclusions. Canfield and Bud'ko are among the best in their field, and our very fruitful collaboration is based on mutual interests, intellectual, and geographical proximity— even our lab spaces neighbor each other's, and we are very happy about it." said Prozorov.

A unique tunnel diode resonator technique was used to measure the London penetration depths of the iron-arsenic crystals. A tunnel diode resonator precisely measures magnetic responses at very low temperatures, and Ames Laboratory is one of the few research facilities in the world with TDR instrumentation."This type of research requires measurements of many, nominally the same, samples in three different orientations with respect to an applied magnetic field," said Prozorov. "All along, we expected to see an exponential London penetration depth – but we didn't. So, we examined samples with different concentrations of cobalt. But we got the same results, and with data from other iron-arsenide systems, we observed a universal, nearly quadratic behavior of the penetration depth."

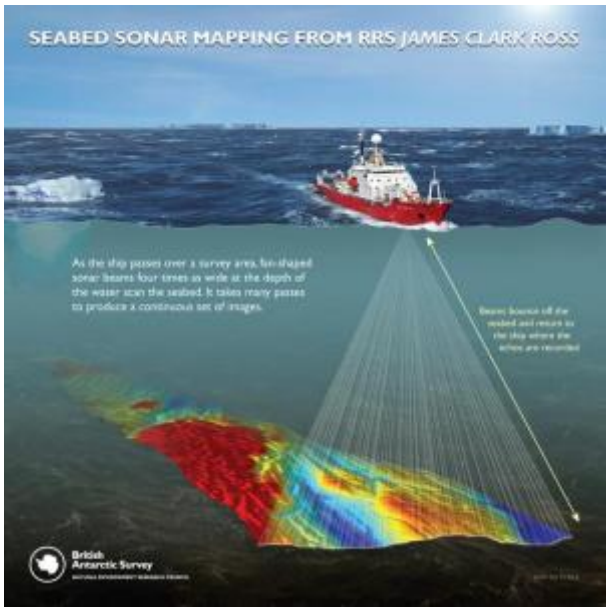
Since London penetration depth is tied to electron-pairing behavior, the Ames Lab group's findings suggest that the iron-arsenides also exhibit electron pairing different from any other known superconductor.In addition, the group found unambiguous evidence that the iron-arsenide superconductors' full data set can only be explained with two distinct superconducting gaps. Thus, the iron-arsenic superconductors appear to exhibit properties of both high-temperatures cuprates and magnesium diboride.

"The iron-arsenides are probably among most complex superconductors we – the superconductor research community – have encountered so far," said Prozorov. "Altogether, analysis of the data collected on many samples shows that the iron-arsenides do not adhere to the previous superconductivity theories and that something else is happening. Of course, some theoretical models do exist, and we collaborate with leading theorists, including Ames Laboratory's Jörg Schmalian, who has provided important insight into our observations. The unique qualities of the iron-arsenides cause me to believe that materials where transition temperature is closer to room temperature are possible. "The Ames Laboratory research on iron-arsenide superconductors' London penetration depth was conducted by the Complex States, Emergent Phenomena, and Superconductivity in Intermetallic and Metal-like Compounds Field Work Proposal group, led by physicist Paul Canfield. The research is funded by the U.S. Department of Energy's Office of Science.

Adapted from materials provided by DOE/Ames Laboratory.

http://www.sciencedaily.com/releases/2009/04/090429162242.htm

New Antarctic Seabed Sonar Images Reveal Clues To Sea-level Rise



British Antarctic Survey ship RRS James Clark Ross is equipped with sonar technology to map the seabed. (Credit: British Antarctic Survey)

ScienceDaily (May 6, 2009) — Motorway-sized troughs and channels carved into Antarctica's continental shelves by glaciers thousands of years ago could help scientists to predict future sea-level rise, according to a report in the May issue of the journal *Geology.*

Using sonar technology from onboard ships, scientists from British Antarctic Survey (BAS) and the German Alfred Wegener Institute (AWI) captured the most extensive, continuous set of images of the seafloor around the Amundsen Sea embayment ever taken. This region is a major drain point of the West Antarctic Ice Sheet (WAIS) and considered by some scientists to be the most likely site for the initiation of major ice sheet collapse.

The sonar images reveal an 'imprint' of the Antarctic ice sheet as it was at the end of the last ice age around 10 thousand years ago. The extent of ice covering the continent was much larger than it is today. The seabed troughs and channels that are now exposed provide new clues about the speed and flow of the ice sheet. They indicate that the controlling mechanisms that move ice towards the coast and into the sea are more complex than previously thought.

Lead author Rob Larter from British Antarctic Survey said, "One of the greatest uncertainties for predicting future sea-level rise is Antarctica's likely contribution. It is very important for scientists and our society to understand fully how polar ice flows into the sea. Indeed, this issue was highlighted in 2007 by the Intergovernmental Panel on Climate Change (IPCC). Our research tells us more about how the ice sheet responded to warming at the end of the last ice age, and how processes at the ice sheet bed controlled its flow. This is a big step toward understanding of how the ice sheets are likely to respond to future warming.'

Background

The area of the Amundsen Sea embayment surveyed was 9950 km^2. In the western Amundsen Sea embayment three 17-39 km wide troughs extend seaward from the modern ice shelf front. This is roughly with width of the English Channel. Individual streamlined features carved into the seabed are about as wide as a motorway.

Ice sheet

The Antarctic ice sheet retreated to near its present limit around 10 thousand years ago. It is the layer of ice up to 5000 m thick covering the Antarctic continent. It is formed from snow falling in the interior of the Antarctic which compacts into ice. The ice sheet slowly moves towards the coast, eventually breaking away as icebergs which gradually melt into the sea.

The ice sheet covering East Antarctica is very stable, because it lies on rock that is above sea level and is thought unlikely to collapse. The West Antarctic is less stable, because it sits on rock below sea level.

Ice shelf

An ice shelf is a thick (100-1000 m), floating platform of ice that forms where a glacier or ice sheet flows down to a coastline and onto the ocean surface. Ice shelves are found in Antarctica, Greenland and Canada only.

Glacier

Just as rivers collect water and allow it to flow downhill a glacier is actually a "river" of ice. A glacier flows much more slowly than river. Rivers of ice within ice sheets account for most of the drainage into the oceans.

Continental shelf

The relatively shallow (generally up to 200 meters) seabed surrounding a continent where the depth gradually increases before it plunges into the deep ocean. Around Antarctica the continental shelf is up to 1600 m deep as a result of millions of years of glacial erosion. The deepest parts of the Antarctic continental shelf are near the present ice margin and depths generally decrease offshore.

Journal reference:

1. Larter et al. **Subglacial bedforms reveal complex basal regime in a zone of paleo-ice stream convergence, Amundsen Sea embayment, West Antarctica**. *Geology*, 2009; 37 (5): 411 DOI: 10.1130/G25505A.1

Adapted from materials provided by British Antarctic Survey.

http://www.sciencedaily.com/releases/2009/05/090505072502.htm

Erupting Undersea Volcano Near Island Of Guam Supports Unique Ecosystem

Lava erupts onto the seafloor at NW Rota-1, creating a cloudy, extremely acidic plume. (Credit: WHOI)

ScienceDaily (May 5, 2009) — Scientists who have just returned from an expedition to an erupting undersea volcano near the Island of Guam report that the volcano appears to be continuously active, has grown considerably in size during the past three years, and its activity supports a unique biological community thriving despite the eruptions.

An international science team on the expedition captured dramatic new information about the eruptive activity of NW Rota-1.

"This research allows us, for the first time, to study undersea volcanoes in detail and close up," said Barbara Ransom, program director in NSF's Division of Ocean Sciences, which funded the research. "NW Rota-1 remains the only place on Earth where a deep submarine volcano has ever been directly observed while erupting."

Scientists first observed eruptions at NW Rota-1 in 2004 and again in 2006, said Bill Chadwick, an Oregon State University (OSU) volcanologist and chief investigator on the expedition. This time, however, they discovered that the volcano had built a new cone 40 meters high and 300 meters wide.

"That's as tall as a 12-story building and as wide as a full city block," Chadwick said. "As the cone has grown, we've seen a significant increase in the population of animals that lives atop the volcano. We're trying to determine if there is a direct connection between the increase in the volcanic activity and that population increase."

Animals in this unusual ecosystem include shrimp, crab, limpets and barnacles, some of which are new species.

"They're specially adapted to their environment," said Chadwick, "and are thriving in harsh chemical conditions that would be toxic to normal marine life.

"Life here is actually nourished by the erupting volcano."

Verena Tunnicliffe, a biologist from the University of Victoria, said that most of the animals are dependent on diffuse hydrothermal venting that provides basic food in the form of bacterial filaments coating the rocks.

"It appears that since 2006 the diffuse venting has spread and, with it, the vent animals," Tunnicliffe said. "There is now a very large biomass of shrimp on the volcano, and two species are able to cope with the volcanic conditions."

The shrimp reveal intriguing adaptations to volcano living.

"The 'Loihi' shrimp has adapted to grazing the bacterial filaments with tiny claws like garden shears," said Tunnicliffe. "The second shrimp is a new species--they also graze as juveniles, but as they grow to adult stage, their front claws enlarge and they become predators."

The Loihi shrimp was previously known only from a small active volcano near Hawaii--a long distance away. It survives on the fast-growing bacteria and tries to avoid the hazards of the volcanic eruptions. Clouds of these shrimp were seen fleeing volcanic bursts.

The other species attacks the Loihi shrimp and preys on marine life that wanders too close to the volcanic plumes and dies. "We saw dying fish, squid, etc., raining down onto the seamount, where they were jumped on by the volcano shrimp--a lovely adaptation to exploiting the noxious effects of the volcano," Tunnicliffe said.

The new studies are important because NW Rota-1 provides a one-of-a-kind natural laboratory for the investigation of undersea volcanic activity and its relation to chemical-based ecosystems at hydrothermal vents, where life on Earth may have originated.

"It is unusual for a volcano to be continuously active, even on land," Chadwick pointed out.

"This presents us with a fantastic opportunity to learn about processes we've never been able to directly observe before," he said. "When volcanoes erupt in shallow water they can be extremely hazardous, creating huge explosions and even tsunamis. But here, we can safely observe an eruption in the deep ocean and learn valuable lessons about how lot lava and seawater interact."

Chadwick said that volcanic plumes behave completely differently underwater than on land, where the eruption cloud is filled with steam and ash, and other gases are invisible.

"In the ocean, any steam immediately condenses and disappears and what is visible are clear bubbles of carbon dioxide and a dense cloud made of tiny droplets of molten sulfur, formed when sulfur dioxide mixes with seawater," Chadwick said. "These volcanic gases make the eruption cloud extremely acidic--worse than stomach acid--which is another challenge for biological communities living nearby."

Ocean acidification is a serious concern because of human-induced carbon dioxide accumulating in the atmosphere. "Submarine volcanoes are places where we can study how animals have adapted to very acidic conditions," Chadwick said.

During the April 2009 expedition, aboard the University of Washington's R/V Thompson, the scientists made dives with Jason, a remotely operated vehicle (ROV) operated by the Woods Hole Oceanographic Institution.

Chadwick said that "it was amazing how close Jason can get to the eruptive vent because the pressure at a depth of 520 meters [about 1,700 feet] in the ocean keeps the energy released from the volcano from becoming too explosive." Some of the most intriguing observations came when the volcano slowly pushed lava up and out of the erupting vent.

"As this was happening, the ground in front of us shuddered and quaked, and huge blocks were bulldozed out of the way to make room for new lava emerging from the vent," Chadwick said.

Part of the evidence that the volcano is in a constant state of eruption comes from an underwater microphone--or hydrophone--that was deployed a year ago at NW Rota-1 by OSU geologist Bob Dziak.

The hydrophone "listened" for the sounds of volcanic activity. The data it recorded clearly show that the volcano was active the entire year before the latest expedition. Another hydrophone and other instruments will monitor the volcano in the coming year.

The international team included scientists from OSU, the University of Washington, University of Victoria, University of Oregon, NOAA's Pacific Marine Environmental Laboratory, New Zealand and Japan.

This research was funded by the National Science Foundation (NSF).

Adapted from materials provided by National Science Foundation.

http://www.sciencedaily.com/releases/2009/05/090505111702.htm

Children Bullied At School At High Risk Of Developing Psychotic Symptoms

New research shows that being victimized can have serious effects on altering perception of the world, such as hallucinations, delusions or bizarre thoughts. (Credit: iStockphoto/Garry Studer)

ScienceDaily (May 5, 2009) — Children who are bullied at school over several years are up to four times more likely to develop psychotic-like symptoms by the time they reach early adolescence.

Researchers at the University of Warwick found children who suffered physical or emotional bullying were twice as likely to develop psychotic symptoms by early adolescence, compared to children who are not bullied. However, if they experienced sustained bullying over a number of years that risk increases up to four times.

The research team, led by Professor Dieter Wolke, Professor of Developmental Psychology, followed 6,437 children from birth to 13 years.

The children took part in annual face-to-face interviews, psychological and physical tests. Parents were also asked to complete questionnaires about their child's development. When they reached 13 years of age they were interviewed about experiences of psychotic symptoms in the previous six months.

Psychotic symptoms include hallucinations, delusions such as being spied on or bizarre thoughts such as one's thoughts are being broadcast.

Professor Wolke said: "Our research shows that being victimised can have serious effects on altering perception of the world, such as hallucinations, delusions or bizarre thoughts where the person's insight into why this is happening is reduced."

"This indicates that adverse social relationships with peers is a potent risk factor for developing psychotic symptoms in adolescence and may increase the risk of developing psychosis in adulthood."

The researchers used data from the Avon Longtitudinal Study of Parents And Children (ALSPAC). Parents have completed regular postal questionnaires about all aspects of their child's health and development since birth (Apr 1991- Dec 1992).

Since the children were 7 and a half they have attended annual assessment clinics where they took part in a range of face-to-face interviews, psychological and physical tests.

Chronic peer victimisation, where bullying had continued over a number of years, was found in 13.7% of children when interviewed at ages 8 and 10. Severe victimisation, where children are both physically and emotionally bullied, was reported by 5.2% of children at age 10.

Professor Wolke added: "All children have conflicts occasionally and teasing and play fighting occurs. Children learn from these conflicts of how to deal with this. When we talk about bullying victimisation it is repeated, systematic and an abuse of power with the intent to hurt. Children who become targets have less coping skills, show a clear reaction and have few friends who can help them."

Journal reference:

1. Schreier et al. **Prospective Study of Peer Victimization in Childhood and Psychotic Symptoms in a Nonclinical Population at Age 12 Years**. *Archives of General Psychiatry*, 2009; 66 (5): 527 DOI: 10.1001/archgenpsychiatry.2009.23

Adapted from materials provided by University of Warwick.

http://www.sciencedaily.com/releases/2009/05/090503213612.htm

About 200 New Species Of Amphibians In Madagascar Discovered

Boophis aff elenae. (Credit: Miguel Vences)

ScienceDaily (May 5, 2009) — Between 129 and 221 new species of frogs have been identified in Madagascar, practically doubling the currently known amphibian fauna. The finding suggests that the number of amphibian species in Madagascar, one of the world's biodiversity hotspots, has been significantly underestimated. According to the researchers, if these results are extrapolated at a global scale, the number of amphibian species worldwide could double.

Their study, conducted with participation of the Spanish Scientific Research Council (CSIC), is published in the journal *Proceedings of the National Academy of Science.*

As Professor David R. Vieites, CSIC researcher at the Spanish National Natural Sciences Museum in Madrid, states: "the diversity of species in Madagascar is far from being known and there is still a lot of scientific research to be done. Our data suggest that the number of new species of amphibians not only has been underestimated but it is spatially widespread, even in well studied areas. For example, two of the most visited and studied National parks, Ranomafana and Mantadía/Analamazaotra, harbour 31 and 10 new species respectively."

Dr. Frank Glaw, curator of herpetology at the Zoologische Staatssammlung from Munich explains: "During the past 15 years, we discovered and described over 100 new frog species from Madagascar, which led us to believe that our species inventory is almost complete. But as our new surveys show, there are many more species than we suspected."

The paper suggests that the total biodiversity on the island could be much higher also in other groups, so the actual destruction of natural habitats may be affecting more species than previously thought. This is important for conservation planning, as the rate of destruction of rainforests in Madagascar has been one of the highest in the planet, with more than 80% of the historic surface of rainforest already lost.

"Although a lot of reserves and national parks have been created in Madagascar during the last decade, the actual situation of politic instability is allowing the cut of the forest within national parks, generating a lot of uncertainty about the future of the planned network of protected areas," explains Vieites. Almost a quarter of the new species discovered have not been found yet in protected areas.

Biodiversity

The study proposes different criteria -- morphological, genetic and bioacoustic -- to assign the candidate species (the ones which have been identified as potential new species but not yet formerly described) to different categories. In Madagascar, the number of candidate species is higher than the number of described species in some genera.

“Using these criteria and the integration of different techniques under the principle of congruence could help to boost the inventory and the process of species description worldwide,” explains Vieites. Dr. Miguel Vences, professor at the Technical University of Braunschweig adds: "People think that we know which plant and animal species live on this planet. But the century of discoveries has only just begun – the majority of life forms on Earth is still awaiting scientific recognition."

Also participating in the study were researchers from the Technical University of Braunschweig, Museo regionale di Scienze Naturali from Torino, and the Hessisches Landesmuseum from Darmstadt.

Madagascar is the fourth largest island in the world and one of the most biodiverse areas globally, with a high degree of endemic species. “To get an idea of its biodiversity, while in the Iberian Peninsula are about 30 species of amphibians and in Germany about 20, in a single locality in Madagascar we can find ca. 100 species of frogs,” explains Vieites.

Journal reference:

1. Vieites et al. **Vast underestimation of Madagascar's biodiversity evidenced by an integrative amphibian inventory**. *Proceedings of the National Academy of Sciences*, 2009; DOI: 10.1073/pnas.0810821106

Adapted from materials provided by CSIC- Consejo Superior de Investigaciones Cientificas.

http://www.sciencedaily.com/releases/2009/05/090505061942.htm

New Energy Source? Structure Of Highly Efficient Light-harvesting Molecules In Green Bacteria Determined

The image shows a hot spring in Yellowstone National Park, Montana, a site where bacteria containing chlorosomes can be found in the brightly colored mats. At the upper left is a thin-section electron micrograph of the green sulfur bacterium Chlorobaculum tepidum, showing chlorosomes along the periphery of the cells as light-colored ovals. The next image is an electron micrograph of an isolated chlorosome from the bchQRU mutant, and the next image is a cryo-electron micrograph of the same. Finally, the last panel at the right shows a molecular model of the chlorophylls in the chlorosome. Individual chlorophyll molecules are illustrated in green and show their hydrophobic tails pointing outward. (Credit: Image by Donald Bryant, Penn State University, courtesy of Proceedings of the National Academy of Sciences)

ScienceDaily (May 5, 2009) — An international team of scientists has determined the structure of the chlorophyll molecules in green bacteria that are responsible for harvesting light energy. The team's results one day could be used to build artificial photosynthetic systems, such as those that convert solar energy to electrical energy.

A research paper about the discovery will be published on 4 May 2009 in the *Proceedings of the National Academy of Sciences.*

The scientists found that the chlorophylls are highly efficient at harvesting light energy. "We found that the orientation of the chlorophyll molecules make green bacteria extremely efficient at harvesting light," said Donald Bryant, Ernest C. Pollard Professor of Biotechnology at Penn State and one of the team's leaders. According to Bryant, green bacteria are a group of organisms that generally live in extremely low-light environments, such as in light-deprived regions of hot springs and at depths of 100 meters in the Black Sea. The bacteria contain structures called chlorosomes, which contain up to 250,000 chlorophylls. "The ability to capture light energy and rapidly deliver it to where it needs to go is essential to these bacteria, some of which see only a few photons of light per chlorophyll per day."

Because they have been so difficult to study, the chlorosomes in green bacteria are the last class of light-harvesting complexes to be characterized structurally by scientists. Scientists typically characterize molecular structures using X-ray crystallography, a technique that determines the arrangement of atoms in a molecule and ultimately gives information that can be used to create a picture of the molecule; however, X-ray crystallography could not be used to characterize the chlorosomes in green bacteria because the technique only works for molecules that are uniform in size, shape, and structure. "Each chlorosome in a green bacterium has a unique organization," said Bryant. "They are like little andouille sausages. When you take cross-sections of andouille sausages, you see different patterns of meat and fat; no two sausages are alike in size or content, although there is some structure inside, nevertheless. Chlorosomes in green bacteria are like andouille sausages, and the variability in their compositions had prevented scientists from using X-ray crystallography to characterize the internal structure."

To get around this problem, the team used a combination of techniques to study the chlorosome. They used genetic techniques to create a mutant bacterium with a more regular internal structure, cryo-electron microscopy to identify the larger distance constraints for the chlorosome, solid-state nuclear magnetic resonance (NMR) spectroscopy to determine the structure of the chlorosome's component chlorophyll molecules, and modeling to bring together all of the pieces and create a final picture of the chlorosome.

First, the team created a mutant bacterium in order to determine why the chlorophyll molecules in green bacteria became increasingly complex over evolutionary time. To create the mutant, they inactivated three genes that green bacteria acquired late in their evolution. The team suspected that the genes were responsible for improving the bacteria's light-harvesting capabilities. "Essentially, we went backward in evolutionary time to an intermediate state in order to understand, in part, why green bacteria acquired these genes," Bryant said. The team found that the more evolved, wild-type bacteria grow faster at all light intensities than the mutant form. "Indeed, the reason that chlorophylls became more complex was to increase light-harvesting efficiency," said Bryant.

Next, the team isolated chlorosomes from the mutant and the wild-type forms of the bacteria and used cryo-electron microscopy -- a type of electron microscopy that is performed at super-cold cryogenic temperatures -- to take pictures of the chlorosomes. The pictures revealed that chlorophyll molecules inside chlorosomes have a nanotube shape. "They are like Russian dolls, with one concentric tube fitting inside the next," said Bryant. "The mutant bacterium's chlorosomes contain only one set of tubes, whereas the wild-type chlorosomes contain many tubes, each arranged in a unique pattern, like those andouille sausages."

The team then went a step further and used solid-state NMR spectroscopy -- a technique in which samples are spun very rapidly and exposed to a magnetic field -- to look deep inside the chlorosome. This technique enables researchers to understand the relationships between atomic nuclei in a sample and, ultimately, to acquire structural information about the molecules of interest.

"The NMR data revealed to us that the individual chlorophyll molecules in green bacteria are arranged in dimers -- molecules consisting of two identical simpler molecules -- with their long hydrophobic, or water-repellent, tails sticking out of either side," said Bryant. "We also learned precisely how the chlorophyll molecules attach to one another, and we were able to measure the distance between chlorophyll molecules. The cryo-electron microscopy pictures showed gross structural details and distances, and the NMR results allowed us to quantify these distances as well, and confirmed to us that what were were seeing was, in fact, stacks of the chlorophyll molecules all lined up," he said. The NMR results also enabled the scientists to determine that the chlorophyll molecules in green bacteria are arranged in helical spirals. In the mutant bacteria, the chlorophyll molecules are positioned at a nearly 90-degree angle in relation to the long axis of the nanotubes, whereas the angle is less steep in the wild-type organism. "It's the orientation of the chlorophyll molecules that is the most important thing here," said Bryant. The last steps for the team were to pull together all of their data and to create a detailed computer model of the structure.

"At first it seems counterintuitive that green bacteria have managed to evolve a better light-harvesting system by increasing disorder in the chlorosome structure," said Bryant. "Most people would think that if you make something that is more highly ordered, you'll end up with something that works better. But this is clearly a case where that isn't true. If all of the chlorophylls are identically arranged in a chlorosome, then the energy from the photon, once it is absorbed, is going to wander around over all of those chlorophylls, which could take a long time. In the wild-type form, you have these different domains where chlorophyll molecules are located and, therefore, the ability of photon energy to migrate becomes restricted. In other words, the energy in an individual photon visits a smaller number of chlorophylls, and that's an advantage to the organism because the energy can get to where it needs to go faster. Speed is the name of the game that green bacteria play with light. The organisms have only a couple of nanoseconds for the energy to get someplace useful or else the energy is going to be lost. The speed required can be a problem for bacteria that receive only a few photons of light per chlorophyll per day."

Bryant said that the team's results may one day be used to build artificial photosynthetic systems that convert solar energy to electricity. "The interactions that lead to the assembly of the chlorophylls in chlorosomes are rather simple, so they are good models for artificial systems," he said. "You can make structures out of these chlorophylls in solution just by having the right solution conditions. In fact, people have done this for many years; however, they haven't really understood the biological rules for building larger structures. I won't say that we completely understand the rules yet, but at least we know what two of the structures are now and how they relate to the biological system as a whole, which is a huge advance."

The team also includes researchers from the Leiden Institute of Chemistry and the Groningen Biomolecular Sciences and Biotechnology Institute in the Netherlands, and the Max Planck Institute in Germany. This research was supported by the United States Department of Energy.

Adapted from materials provided by Penn State.

http://www.sciencedaily.com/releases/2009/05/090504171947.htm

Why People Are Better At Lying Online Than Telling A Lie Face-to-face

Michael Woodworth is developing new ideas about why people are better at lying online than telling a lie face-to-face. (Credit: Photo by Tim Swanky)

ScienceDaily (May 5, 2009) — In the digital world, it's easier to tell a lie and get away with it. That's good news for liars, but not so good for anyone being deceived.

Michael Woodworth, a forensic psychologist at UBC Okanagan studying deception in computer-mediated environments, says offering up a fib in person might make you provide certain signals that you're trying to deceive, but lying online avoids the physical cues that can give you away.

"When people are interacting face to face, there is something called the 'motivational impairment effect,' where your body will give off some cues as you become more nervous and there's more at stake with your lie," says Woodworth. "In a computer-mediated environment, the exact opposite occurs."

The motivational enhancement effect – a term coined by Woodworth and colleague Jeff Hancock from Cornell University – describes how people motivated to lie in a computer-mediated environment are not only less likely to be detected, they are also actually better at being deceptive than people who are less motivated.

When telling a lie face-to-face, the higher the stakes of your deception, the more cues you may give out that you're lying. So, what isn't in a text message may have advantages for a would-be deceiver: text doesn't transmit non-verbal cues such as vocal properties, physical gestures, and facial expressions.

Woodworth's research is very timely as technology and deceptive practices converge.

"Deception is one of the most significant and pervasive social phenomena of our age," says Woodworth. "On average, people tell one to two lies a day, and these lies range from the trivial to the more serious. Deception lies in communication between friends, family, colleagues and in power and politics."

Woodworth began his exploration by looking at how to detect deception in face-to-face environments. But he soon recognized the invasion of information and communication technologies into nearly all aspects of our lives was an opportunity to study how technology affects "digital deception" – defined as any type of technologically mediated message transmitted to create a false belief in the receiver of the message.

"Given the prevalence of both deception and communication technology in our personal and professional lives, an important set of concerns have emerged about how technology affects digital deception," says Woodworth. He points out a growing number of individuals are falling prey to deceptive practices and information received through computer mediated contexts such as the Internet

"By learning more about how various factors affect detecting deceit in online communication, our research will certainly have important implications in organizational contexts, both legal and illegal, in the political domain, and in family life as more and more children go online."

Common threads detected in psychopath texts

Michael Woodworth's research at UBC Okanagan goes beyond deception. He also studies the personality disorder of psychopathy, looking at what secrets can be gleaned from the language used by psychopaths who have killed.

After interviewing dozens of psychopaths and non-psychopaths convicted of murder, Woodworth and colleagues used electronic linguistics analysis to automatically process the interview transcripts, paying attention to the appearance of certain words, parts of speech (verbs, adjectives, nouns), and semantics – for example, looking at how often certain topics came up.

The results were revealing.

"In the transcripts of psychopathic offenders, we found twice as many terms related to eating, and 58 per cent more references to money," says Woodworth. "And the psychopaths were significantly more likely to discuss both clothing and drinking while discussing their homicide, compared to non-psychopathic offenders."

Woodworth has now teamed with noted forensic psychologist and deception researcher Stephen Porter, who joined UBC Okanagan from Dalhousie University last summer, and fellow forensic psychologist Jan Cioe to build a multi-disciplinary forensic science graduate program and research centre at UBC Okanagan.

Bringing together prominent forensic psychologists will benefit both the academic and wider communities, says Woodworth.

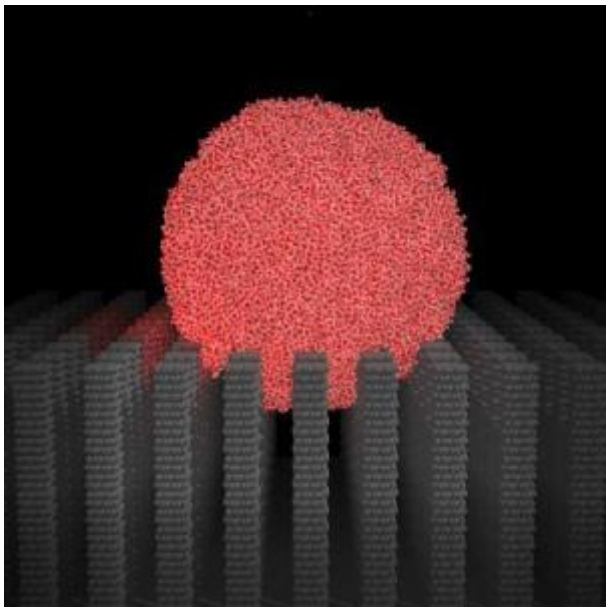
"In the back of my mind I'm always thinking 'how is this going to potentially have some applied value?' whether it be the community in general, or specifically for law enforcement, or by furthering our knowledge within a certain area," he says. "All of these applications ultimately assist with both assessment and treatment."

This research is supported by a grant of $87,055 from the Social Sciences and Humanities Research Council in Canada.

Adapted from materials provided by University of British Columbia. Original article written by Raina Ducklow and Bud Mortenson.

http://www.sciencedaily.com/releases/2009/05/090503203738.htm

Self-cleaning Objects And Water-striding Robots May Be Possible With Super Hydrophobic Materials



A virtual water droplet on "pillars." (Credit: Xiao Cheng Zeng)

ScienceDaily (May 5, 2009) — Self-cleaning walls, counter tops, fabrics, even micro-robots that can walk on water -- all those things and more could be closer to reality because of research recently completed by scientists at the University of Nebraska-Lincoln and at Japan's RIKEN institute.

Humans have marveled for millennia at how water beads up and rolls off flowers, caterpillars and some insects, and how insects like water striders are able to walk effortlessly on water. It's a property called super hydrophobia and it's been examined seriously by scientists since at least the 1930s.

"A lot of people study this and engineers especially like the water strider because it can walk on water," said Xiao Cheng Zeng, Ameritas university professor of chemistry at UNL. "Their legs are super hydrophobic and each leg can hold about 15 times their weight. 'Hydrophobic' means water really doesn't like their legs and that's what keeps them on top. A lot of scientists and engineers want to develop surfaces that mimic this from nature."

In a paper to be published in the May 4-8 online edition of the *Proceedings of the National Academy of Sciences*, Zeng and his Japanese colleagues, Takahiro Koishi of the University of Fukui and RIKEN, Kenji Yasuoka of Keio University, and Shigenori Fujikawa and Toshikazu Ebisuzaki of RIKEN, give engineers and materials scientists important clues in how to develop the long-sought super hydrophobic materials.

In nature, organisms like caterpillars, water striders and the lotus achieve super hydrophobia through a two-level structure -- a hydrophobic waxy surface made super hydrophobic by the addition of microscopic hair-like structures that may be covered by even smaller hairs, greatly increasing the surface area of the organism and making it impossible for water droplets to stick.

Using the superfast supercomputer at RIKEN (the fastest in the world when the research started in 2005), the team designed a computer simulation to perform tens of thousands of experiments that studied how surfaces behaved under many different conditions. Zeng and his colleagues used the RIKEN computer to "rain" virtual water droplets of different sizes and at different speeds on surfaces that had pillars of various heights and widths, and with different amounts of space between the pillars.

They learned there is a critical pillar height, depending on the particular structure of the pillars and their chemical properties, beyond which water droplets cannot penetrate. If the droplet can penetrate the pillar structure and reach the waxy surface, it is in the merely hydrophobic Wenzel state (named for Robert Wenzel, who found the phenomenon in nature in 1936). If it the droplet cannot penetrate the pillars to touch the surface, the structure is in the super hydrophobic Cassie state (named for A.B.D. Cassie, who discovered it in 1942), and the droplet rolls away.

"This kind of simulation -- we call it 'computer-aided surface design' -- can really help engineers in designing a better nanostructured surface," Zeng said. "In the Cassie state, the water droplet stays on top and it can carry dirt away. In the Wenzel state, it's sort of stuck on the surface and lacks self-cleaning functionality. When you build a nanomachine -- a nanorobot -- in the future, you will want to build it so it can self-clean."

Zeng said there were three main advantages to performing the experiments on a computer rather that in a laboratory. First, they were able to conduct thousands more repetitions than would have been possible in a lab. Second, they didn't have to worry about variables such as dirt, temperature and air flow. Third, they could control the size of droplets down to the exact number of molecules, whereas in a laboratory experiment the droplets would unavoidably vary by tens of thousands of molecules.

The idea for the experiment came about in 2005 when Zeng visited RIKEN during his year as a fellow of the John Simon Guggenheim Foundation, which paid for the start-up for the project. Koishi spent the spring of 2005 with Zeng at UNL as they designed the project in detail. Yasuoka and his family spent the 2006-07 academic year in Lincoln during his a one-year sabbatical with Zeng, in part because of this project.

"We wanted to design a grand-challenge project so we could take advantage of the RIKEN super computer," Zeng said. "We thought this was an interesting project and we need a very, very fast computer to deal with it. I also have to acknowledge the Nebraska Research Initiative, the Department of Energy and the National Science Foundation. The NRI is great because it allows me to do highly risky research, to develop this kind of challenging project."

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

http://www.sciencedaily.com/releases/2009/05/090504171953.htm

Mercury Levels In Arctic Seals May Be Linked To Global Warming

Researchers are reporting that high mercury levels in Arctic seals appear to be linked to vanishing sea ice caused by global warming. (Credit: NOAA)

ScienceDaily (May 5, 2009) — Researchers in Canada are reporting for the first time that high mercury levels in certain Arctic seals appear to be linked to vanishing sea ice caused by global warming. Their study provides new insight into the impact of climate change on Arctic marine life.

Gary Stern and colleagues note in the new study that Canadian Arctic ringed seals, like many Arctic marine animals, have relatively high levels of mercury. However, researchers have never determined how these levels are linked to sea ice extent and the resulting composition of arctic cod and other prey containing mercury available to ringed seals.

The scientists analyzed the mercury content in muscle samples collected from ringed seals between 1973 and 2007. They then compared the levels to the length of the so-called "summer ice-free season," a warm period marked by vanishing sea ice in the seals' habitat. They found that the seals accumulated more mercury during both short (2 months) and long (5 months) ice-free seasons and postulate that this is related to the seals' food supplies.

Higher seal mercury concentrations may follow relatively short ice-free seasons due to consumption of older, more highly contaminated Arctic cod while relatively long ice-free seasons may promote higher pelagic productivity and thus increased survival and abundance of Arctic cod with the overall result of more fish consumption and greater exposure to mercury. Longer ice-free seasons resulting from a warming Arctic may therefore result in higher mercury levels in ringed seal populations as well as their predators (polar bears and humans).

Journal reference:

1. Gaden et al. **Mercury Trends in Ringed Seals (Phoca hispida) from the Western Canadian Arctic since 1973: Associations with Length of Ice-Free Season**. *Environmental Science & Technology*, 2009; 090323151940053 DOI: 10.1021/es803293z

Adapted from materials provided by American Chemical Society.

http://www.sciencedaily.com/releases/2009/05/090504165950.htm

Hush, Memory

By LIESL SCHILLINGER

WHEN I FORGOT

By Elina Hirvonen Translated by Douglas Robinson 184 pp. Tin House Books. Paper, $12.95

Certain events belong not just to the country in which they occur but to the wider world, not only in imagination but in repercussion, and not only politically but on a personal level. The assassination of Archduke Franz Ferdinand in Sarajevowas one such event, the bombing of Hiroshima another, the My Lai massacre still another. In our own era, the Sept. 11 attacks have been felt throughout the world. We know this to be true, but it's with an odd sensation of unexpected, wakening connection that you understand, as you read "When I Forgot," a first novel by the Finnish journalist and filmmaker Elina Hirvonen, that 9/11 "happened" in Finland too.

Finland — that trout-shaped squiggle of a landmass between Sweden and Russia, birthplace of Sibelius and the Saarinens, of the Nokia cellphone and Marimekko — is 4,000 miles from New York. And yet, ask the Finns, "Where were you on Sept. 11, 2001?" and chances are you'll get a precise answer. They were aware of our crisis; they felt implicated.

For Anna Louhiniitty, the narrator of Hirvonen's novel, 9/11 was the day her psychologically disturbed older brother, Joona, whom she'd hoped was getting better, called her in a panic. The night before, she'd helped him write an online personal ad, hoping that, now he was taking medication that "didn't make his face swell up and didn't slur his speech," some woman might fall for her brother "as for any other man." That morning, Anna had cheered herself with the image of "a Joona who got out of bed, went to the shop, and took the tram without sweating and making other passengers decide to sit somewhere else." But as America's morning caught up with Finland's afternoon, Joona watched on television as the planes crashed into the distant towers, harmed himself in disturbed reaction, then phoned his sister for help. "A sentence came to me as if I had heard it on the radio," she recalls, sitting beside Joona in a taxi on the way to the hospital, registering his unshaven face, unbrushed teeth, unwashed body, bandaged and bleeding hand. "Her brother is mentally ill. I pressed my forehead to the cab window. She's taking her brother to the mental hospital. She. I."

"That September day," Anna remembers, "in that taxicab hurtling across Helsinki toward the hospital on the other side of the park, I stopped seeing Joona as a little boy whom adulthood and the future awaited somewhere. That day I saw him for the first time as a man with a dirty beard and skin that smelled of illness. At the same moment I saw myself as a woman whose whole life was in danger of drowning in that man's sick-smelling world." The catastrophe in New York provides her with a counterpoint of bitter comfort: "It began to sink in that a terrible thing had happened outside our home as well."

Hirvonen doesn't begin Anna's story on that charged date. We meet her more than a year and a half later, in the first weeks of the war with Iraq, as Anna, now a reporter, sits in a Helsinki cafe, mentally shuffling images of her distant and recent past: the brother she worshiped as a child, with his "golden hair and ringing voice," and that same brother grown up, accosting her at an anti-Iraq-war protest in a "flapping bathrobe and hospital slippers," standing in wet snow.

Anna has come to the cafe to read Michael Cunningham's novel "The Hours," seeking refuge from her thoughts in this other "world I am allowed to enter," with its account of one day in the lives of three

different women in three different eras, inspired by Virginia Woolf and her character Mrs. Dalloway. But as hard as she tries, Anna can't concentrate on the story. While she broods about Joona, frets over a deadline and fields worried calls from her boyfriend and her mother, she tries to look like the "kind of woman who sits in a cafe in the afternoon eating salad and losing myself in a good book" — in other words, tries to "imagine I'm someone else."

In "Mrs. Dalloway," set in 1923 and published in 1925, less than a decade after the end of what was then called the Great War, Woolf described the mood of her times: "This late age of the world's experience had bred in them all, all men and women, a well of tears." In her exposition of the thoughts and conversations of an Englishwoman and her circle (including a veteran driven mad by the war) on a single London day, Woolf embarked on a great experiment, showing how a lifetime may be contained and revealed in small, seemingly inconsequential details. Hirvonen repeats this experiment, differently yet deftly, and Douglas Robinson's translation is so smooth that, but for the foreign names, one could forget the book was not originally written in English. The novel's quiet clockwork encompasses a long, reflective "moment in April," a single day in Helsinki unlike yet akin to Woolf's "life; London; this moment of June."It was Anna's writing teacher, now her boyfriend — an American named Ian Brown — who had introduced her and her fellow students to Woolf in a seminar three years earlier, "talking about this dazzlingly intelligent woman who lived a hundred years ago and who wanted to capture even the tiniest movements of the mind, to dive into a person's inner world." During the lecture, Anna had bristled at his fervor: "I wanted to raise my hand and tell him that remembering isn't really all that great. Memory is one of life's burdens that we can do nothing about. I wanted to stand up, make the note-taking and enthusiastic nods stop and shout that all I want is an escape from memory."

At the time, she didn't know that Ian also had memories to escape, that he was the son of a father who had fought in the Vietnam War and returned from combat mentally ill. For years, Ian had persuaded himself that his father's sickness was temporary, had saved his wages in hopes of buying a home in the country where they could live together and his father could have a workshop for building model planes and boats. It was only after Sept. 11, when Ian visited his father in the hospital's psychiatric ward and found him unkempt, "hoarse from smoking," with "not the faintest idea who had come to see him," that Ian realized he would never recover. Soon after, Ian accepted a teaching position in Helsinki, fleeing the pathos of ground-zero New York and the small tragedy of his family.

Like Ian, Anna grew up with a father who was prey to frightening mood swings — a father who had himself been raised by a disturbed veteran, a man "almost unrecognizable" and prone to violent rages after his return from World War II. Anna and Joona's father met their mother at a protest of the Soviet invasion of Czechoslovakia.

So many conflicts darken the brew of Anna's quiet cup of coffee in that peaceful Helsinki cafe, it's no wonder she can't focus on her book. The wonder is that she would even try. "My time is a coffee stain dried on the table, mascara on my cheek, a battery bar that has disappeared from the display on my mobile phone," she thinks. "I've lost control of time and have not accomplished a single thing all day. Maybe I'll never accomplish anything ever again."

All that most people can hope to make sense of, wherever and whenever they live, Hirvonen suggests, is their understanding of themselves and of their own capabilities. Such insights are hard to come by when you're alone. Before she met Ian, Anna had sought relationships with men who were dangerously weak and needed her help — "junkies who'd run out on rehab, car thieves awaiting prison sentences and alcoholics dreaming of revolution" who made it easy for her to feel comparatively stable. "The more bedraggled the man sleeping in my bed was, the more clarity I felt. I could feel that I represented a world filled with fresh air and long walks, healthy breakfasts and the hope that someday everything would work out."

In opening herself up to Ian, a kindred spirit from abroad who bears news of another kindred spirit — a novelist from another century — Anna learns that she can receive help as well as give it. Potent, fragile and tender, "When I Forgot" is really the story of "When I Remembered," of a woman summoning the courage to unlock her memories and share them, and feeling the relief of exhaling a breath held too long.

Liesl Schillinger is a regular contributor to the Book Review.

http://www.nytimes.com/2009/05/10/books/review/Schillinger-t.html?_r=1&8bu&emc=bua1

I Love You More

By SUSAN DOMINUS

BAD MOTHER

A Chronicle of Maternal Crimes, Minor Calamities, and Occasional Moments of Grace

By Ayelet Waldman

213 pp. Doubleday. $24.95

Writing about motherhood is a little bit like writing about sex — in both cases, the author confronts the challenge of finding something new to say about a subject so powerful that all but the most inspired language sounds either trite or overblown.

In an essay she wrote for The New York Times back in 2005, Ayelet Waldman found something new to say about both sex and motherhood, or at least something rarely heard spoken aloud: that she loved her husband even more than she did her four young children.

Some readers probably cringed at the way Waldman wrote about her own sex life ("vital, even torrid"), but they weren't the ones who tore into Waldman on "Oprah," or criticized her on the rabid parenting Web site UrbanBaby. Mostly, her attackers were indignant mothers, and they forced Waldman into what she calls, in "Bad Mother," her new book of essays about maternal guilt, the "Bad Mother perp walk," a public and painful drubbing for declarations that — among other things — her children might not appreciate.

Bold though it was, the actual message of Waldman's essay probably wasn't quite as controversial as her presentation. Waldman didn't do much to soften the stance, taking her point of view to a rhetorical extreme — she could survive the loss of a child, she felt compelled to spell out, and life would go on, so long as she had her husband. The reverse would not be true.

It wasn't the writing that riveted or repelled people in that essay, it was an immoderate honesty, which is precisely what makes "Bad Mother" occasionally absorbing reading. At its worst, that unedited quality translates, in Waldman's prose, into lazy cliché: She writes of her "briefcase traded in for a diaper bag" and makes jokes about her sagging breasts. (I'm begging here: can we please have a moratorium on that particular image in maternal memoirs?) In an essay in which she congratulates herself and her husband for sharing housework (a task made that much easier by the maid they employ), she reminds readers that "there is nothing sexier to a woman with children than a man holding a Swiffer," an insight Redbook has

probably been espousing, in one form or another, for, oh, about 30 years. She even makes tired jokes stereotyping her own identity (on ordering in dinner: "I'm a Jewish girl from the New York area, after all").

And yet it's the same uncensored rawness that made me reluctant to speed through any of Waldman's essays, for fear I'd miss some of the more jolting zingers. "Let's all commit ourselves to the basic civility of minding our own business," she concludes in an essay exhorting mothers to stop scolding one another in public. "Failing that, let's just go back to a time when we were nasty and judgmental, but only behind one another's backs."

What really makes Waldman's book interesting, as voices on motherhood go, is Waldman herself — the intensity of her positions and the way she thinks. In an essay on teaching her kids to feel good about sex, she writes about her decision to put a colorful bag of condoms on one of the top shelves in the kids' bathroom, just so they get used to the idea for when the time comes (her youngest is now 5). Objecting to her kids' playing dodgeball, she calls the gym teacher to quote, chapter and verse, the official opposing position of the National Association for Sports and Physical Education. (You might think this was in an essay on the perils of overparenting; it's actually one in which she realizes that she can't foist her own childhood anxieties onto her own socially adroit children.)

When she screws up she screws up royally, and fesses up. After a mother on one of her kids' preschool e-mail lists sends her a sanctimonious note, Waldman forwards the exchange, along with some expletive-filled commentary, to a friend. "Except I didn't hit the "forward button," she writes. "I hit 'reply to all.' " Waldman, hotheaded and opinionated, digs herself into ditches, and with "Bad Mother," sends candid shots from the pit.

Some of the essays in the collection, like one in which she worries she's failing her daughters because she lets her husband change the light bulbs, feel not just slight but neurotic, given their inclusion in a collection called "Bad Mother." And like many women who write about the difficulty of balancing work and family, Waldman does so from the privileged position of someone who has few money worries and flexible hours, which means she never has to face some of the agonizing challenges so many women do.

But that doesn't mean Waldman never puts herself on the line. In an essay called "Rocketship," Waldman takes brave risks that make the title of the book seem less like a feminist wink and more like a tortured cry of self-doubt. She describes the choice she made, over her husband's initial objection, to terminate a pregnancy when a genetic counselor informed them there was a small — but bigger than usual — chance that their son would be seriously developmentally and physically challenged. Waldman is never more moving than when she describes reading aloud, on Yom Kippur, before her entire congregation, a letter of atonement to the little boy or girl who would have been her third child. "I atoned before my husband, and my baby," Waldman writes. "I begged Rocketship's forgiveness for being so inadequate a mother that I could not accept an imperfect child." She wants no consolation from the abortion-rights crowd ("Rocketship was my baby. And I killed him"), and she's clearly unafraid of what the anti-abortion propaganda machine will do with what she has written.

Waldman doesn't always tie her essays up in a neat bow, which seems appropriately messy given the subject matter. They say that a good mother is one who doesn't need her kids to like her all the time. Of writers and their readers, Waldman's book leaves me thinking, the same might be true.

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http://www.nytimes.com/2009/05/10/books/review/Dominus-t.html?8bu&emc=bua2

The Orientalist Express

By BEN MACINTYRE

THE COLLECTOR OF WORLDS

By Iliya Troyanov.

Translated by William Hobson

454 pp. Ecco/HarperCollins Publishers. $24.99

In the heyday of Victorian expansionism, a certain sort of Englishman believed he could do anything, go anywhere, discover everything, rule everywhere. None believed in that credo more passionately than Sir Richard Francis Burton: adventurer, linguist, soldier, archaeologist, poet, spy, mystic, fencer, diplomat, pederast (possibly), sexual explorer (certainly), translator, controversialist and master of disguise. Indestructible, charismatic and extravagantly scarred (the legacy of a Somali spear that passed through both cheeks), Burton was also irascible, domineering, unquenchably curious and slightly unhinged.
Burton mastered, it was said, at least two dozen languages. He adopted Muslim customs and Islamic ritual so perfectly that he was able to complete the pilgrimage to Mecca in 1853 undetected, having completed his disguise by the radical precaution of having himself circumcised. He scandalized London by privately publishing an unexpurgated translation of the Kama Sutra. He plunged into the African interior in search of the source of the Nile, a journey of almost unimaginable discomfort and courage that ended, predictably enough, in a celebrated public feud with his companion, John Hanning Speke.
This strange and brilliant man constantly invented and reinvented himself, and despite his voluminous writings, he remains an enigma. In “The Collector of Worlds,” Iliya Troyanov has turned Burton’s unbelievable life into believable fiction, achieving a rounded and satisfying portrait that traditional biography could never match.
This is not the first time Burton has appeared in fiction. He is referred to by name in the 1912 novel “The Lost World” by Sir Arthur Conan Doyle. In that book, a character remarks wistfully that “the big blank spaces in the map are all being filled in, and there’s no room for romance anywhere.” Burton, as imagined by Troyanov, is compelled by the need to fill in the empty spaces. “What other aim can there be except to find a meaning for the white patches on the world’s maps?” he observes.
That is one of the few moments of introspection Troyanov allows his character. Instead of revealing Burton through his own voice and thoughts, the novelist tells Burton’s story largely through the observations of others: the Indian servant who acts as his domestic factotum and procurer; the other pilgrims on the hajj to Mecca; the former slave who guides him into the uncharted heart of Africa. This many-voiced narrative can be confusing at times, but it cleverly turns convention on its head: rather than allowing Burton to explain his own life, it makes him the object of curiosity and wonder, explored by the very people he has come to “discover.” Burton himself is the exotic.
The first act of the three-act drama covers Burton’s service in India with the British East India Company in the 1840s. While his fellow imperialists devote themselves to bridge and billiards, Burton plunges into the rich linguistic, spiritual and sexual life around him. He even attempts to learn the language of animals,

gathering a troop of monkeys to dine with him nightly — farcical occasions that dismay his servants and fellow officers alike. Burton's extraordinary grasp of Indian languages and his talent for disguise made him the ideal spy. Too good, in the view of his seniors. When sent to investigate a male brothel allegedly frequented by his brother officers, Burton produces such a detailed report it is assumed he must have been a customer. Burton's refusal to reveal the identity of an Indian informant compounds the official view that he has, in that most damning of British colonial euphemisms, "gone native."

Burton — in both fiction and real life — didn't care. There was only one person whose opinion he truly valued. In his most memorable line of poetry, he voiced an adamantine self-belief: "Do what thy manhood bids thee do / From none but self expect applause; / He noblest lives and noblest dies / Who makes and keeps his self-made laws."

Burton's account of his pilgrimage to Mecca made him famous. In "The Moonstone," Wilkie Collins transformed him into Mr. Murthwaite "the celebrated Indian traveler, who, at risk of his life, had penetrated in disguise where no European had set foot before." Yet this was no mere act of imperial derring-do. Burton was motivated by the urge to witness and record, to immerse himself in the different and borrow other worlds.

Troyanov depicts a man flitting among cultures and identities, part pious Muslim, part Christian English officer, part pilgrim, part spy. Burton is the quintessence of the sensitive, acquisitive traveler, absorbing as he passes, taking on color from his surroundings, but never settling, never faithful. One of the Ottoman officials, cogitating on Burton's possible motives for the hajj, observes piquantly that "because he believes in everything and nothing, he can . . . transform himself into any precious stone."

There is more than a flicker of autobiography here, for Troyanov has himself collected many worlds on the way to this novel. Born in Bulgaria in 1965, he fled to West Germany with his family when he was 6, and he grew up in Kenya. His travel books "Mumbai to Mecca" and "Along the Ganges" describe his own visits to Muslim and Hindu holy sites. He now lives in Vienna.

Troyanov grew up speaking Bulgarian and English, and writes in German (the novel was originally published as "Der Weltensammler"). Like Burton, he seems to have transcended the notion that each of us is wedded to a single native language. In this translation by William Hobson, Troyanov paints Burton in broad strokes. Large swaths of his protagonist's life are simply omitted. Many conversations, events, thoughts and people are wholly imaginary; others are factual. Troyanov offers no clues as to where history ends and invention begins. Some will find this form of fictional biography frustrating, but for these readers there are already numerous biographies of Burton.

Troyanov succeeds at a different level, recreating that hunger for knowledge, hardship and space that was Burton's distinctive cast of mind, depicting a man at once hard to like and impossible not to admire. In some ways he was representative of his time, race and class, while resolutely nonconformist and solitary. Burton, as his African guide observes, is "like an old elephant who has withdrawn from the herd and always drinks alone at the watering hole."

Burton's wife, Isabel, plays a minor part in this fictional rendition of his life, yet in a way she made the book necessary. Burton, the rogue male of Victorian discovery, ended his days as the British consul in Trieste, a representative of the crown but as far away from the rest of the herd as possible. When he died in 1890, his widow, to protect his "reputation," burned his private papers: the erotic translations, diaries, notes, poems, letters and unpublished manuscripts from a lifetime's wandering and observation.

It was an act of staggering literary vandalism, and one that inevitably undermined all subsequent effort at biography. Isabel Burton's bonfire ensured that a part of the explorer could never be discovered.

Troyanov's novel is itself an act of brave exploration, setting out to chart the unknown and unknowable by filling in the blank spaces of Richard Francis Burton.

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http://www.nytimes.com/2009/05/10/books/review/Macintyre-t.html?8bu&emc=bua2

Essence of the Architect

By MARTIN FILLER

CONVERSATIONS WITH FRANK GEHRY

By Barbara Isenberg

Illustrated. 290 pp. Alfred A. Knopf. $40

When architects cannot erect they write, and thus we can expect an imminent increase in publications by underemployed practitioners of the building art. However, good times or bad, producing books has been mandatory for architects ever since the modernist masters (and masterly self-publicists) Frank Lloyd Wright and Le Corbusier committed their ideas as well as their plans to print.
Frank Gehry, the most acclaimed American architect since Wright, is not a natural-born writer. To satisfy the considerable demand for personal explications of his work, Gehry, who turned 80 in February, has avoided the agony of authorship and cooperated with several interviewers on transcribed texts during the past decade.
The best of them — the architectural historian Kurt Forster's "Frank O. Gehry/Kurt W. Forster" and the curator Mildred Friedman's "Gehry Talks" (both released in 1999) — contain valuable insights into the subject's idiosyncratic approach to a profession he has recast as an experimental art form and advanced as a technical discipline.
Barbara Isenberg's "Conversations With Frank Gehry" is the latest attempt to elicit the essence of his creative method in his own words. Isenberg, a Los Angeles-based writer on the arts, exhibits neither Forster's intellectual sheen nor Friedman's comprehensive expertise, but nonetheless offers worthwhile new information for architecture devotees and an engaging introduction for general readers.
Doubtless eager to remain in her subject's good graces, Isenberg poses few questions of the confrontational sort that wise interrogators withhold until the end of a session, lest they be shown the door. For example, from her upbeat recapitulation of Gehry's Atlantic Yards project in Brooklyn — a large-scale mixed-use urban redevelopment centered on a professional basketball arena — you'd never know that the scheme has aroused heated opposition from community groups and planning experts, or that its future is imperiled by the current economic crisis.
Isenberg is no Oriana Fallaci, that fearless guerrilla of take-no-prisoners Q. and A., but she occasionally goads her subject into revealing responses. For example, Gehry (né Goldberg) is vexed by her query about his adopted surname. He defensively counters that Ludwig Mies van der Rohe, Le Corbusier and Louis Kahn also assumed new nomenclature, and wonders, "Why are people so interested in the name change?" — an odd complaint from the biggest name in contemporary architecture.
Until the stupendous success of Gehry's Guggenheim Museum Bilbao — which opened in 1997 and rendered his false modesty preposterous — the architect cultivated the persona of a neurotic bumbler much like Woody Allen. In "Conversations With Frank Gehry," he finally admits it was just a pose. As he explains, "Architects in New York . . . were kind of attracted to me as long as I was subordinate to them. As soon as I came out with work that got attention, there was kind of a backlash from them. . . . They think I'm an 'aw shucks' guy and then I turn out to be every bit as ambitious as they are."
Isenberg begins her chronological account David Copperfield style, with Gehry's childhood in a Toronto working-class Jewish family. When he was 18, the Goldbergs resettled in Los Angeles and could not have picked a better environment for a nascent architect. The city has been more hospitable to design innovation than any other American metropolis, thanks to a benign climate that forgives inexpensive

materials, an open-minded citizenry receptive to new forms of domestic living, and an air of creative freedom antithetical to the conformist tendencies of mainstream architectural firms in New York and Chicago.

Gehry was doubly fortunate to have been trained at the University of Southern California, where the first-rate architecture department sought inspiration in Pacific Rim paradigms instead of European precedents favored at East Coast institutions. Los Angeles also provided the Canadian émigré with a parallel education in American popular culture, typified by the region's cheap but gutsy "dingbat" construction vernacular and personified by the Hollywood stars Gehry was bedazzled by and subsequently befriended. "One night we saw Jennifer Jones get out of a limo," he recalls, "and I thought how elegant she was; years later, I was doing her house, and I told her that story." Gehry drops stellar names with a frequency made tolerable by his lack of boastfulness. "I don't know what to make of fame," he insists. "I see somebody like Brad Pitt, who I know, and what he goes through, and I wouldn't want to go through that. . . . I only get maybe 1 percent of that, and it's scary already."

All that notwithstanding, Gehry indicates why hanging out with the rich and famous can help an architect's business. During a trip to Bilbao, Gehry was dragooned by Thomas Krens, mastermind of the New York Guggenheim's Basque country offshoot, into joining an all-star motorcycle posse with Jeremy Irons, Diane Von Furstenberg and Barry Diller. Gehry reconnected with Von Furstenberg, who served on the board of the American Center in Paris, which he designed. She introduced him to Diller, her entertainment-mogul husband, who later asked Gehry to build the IAC headquarters in New York. (That pairing was brokered by the real estate developer Marshall Rose: "I had known his wife, Candy Bergen, for many years," Gehry notes.)

Things weren't so easy before Gehry ascended to celebrity heaven. Starting in 1965, he executed a highly creditable series of jobs for America's most enlightened postwar commercial builder, James Rouse. But the architect craved artistic status of a sort he'd never win as a developer's hired hand, and severed that lucrative connection.

Gehry broke out with an audacious 1977-78 remake of a Santa Monica bungalow for himself and his young second family. He enmeshed the pink-shingled exterior in chain-link fencing and corrugated steel, impaled it with an angular wire-glass skylight and exposed the interior's wooden lath like a Gordon Matta-Clark house-deconstruction sculpture. This residential bombshell nailed Gehry's avant-garde credentials but left establishment patrons baffled or disgusted. He lost the commission for the Museum of Contemporary Art in Los Angeles to the Japanese newcomer Arata Isozaki and seemed destined for another humiliating local rejection when a new home for the Los Angeles Philharmonic was announced in the late 1980s.

Gehry recounts a nightmarish evening while that coveted assignment hung in the balance. Jennifer Jones and her second husband, the conglomerateur and art collector Norton Simon, invited him to their birthday party for David Niven, where the host promoted Gehry to Dorothy Chandler, the imperious dowager of Los Angeles philanthropy. "I don't like his work," Chandler sniffed. "And he will not be considered to design a concert hall." Another guest disparaged a nearby Gehry house with a crude epithet, and a servant spilled a tray of buttered vegetables onto the hapless architect.

Alas, Chandler didn't live long enough to witness the triumphant opening of Gehry's Walt Disney Concert Hall in 2003. Sited across the street from the Dorothy Chandler Pavilion, Gehry's pitch-perfect auditorium and the voluptuous forms that envelop it consigned Chandler's prissy sub-classical bandbox and its notoriously dead acoustics to the dustbin of architectural (and musical) history. Disney Hall furthermore proved that Bilbao was no fluke, and that Gehry could never have prevailed without a careerist drive as ferocious as his formidable talent.

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http://www.nytimes.com/2009/05/10/books/review/Filler-t.html?8bu&emc=bua2

Blues Capitalist

By DAVID HAJDU

W. C. HANDY

The Life and Times of the Man Who Made the Blues

By David Robertson

Illustrated. 286 pp. Alfred A. Knopf. $27.95

If Beale Street could talk, it would say, “Who the hell is the guy depicted in that big statue by the entrance to the park?” W. C. Handy, once so famous as “the Father of the Blues” that he was memorialized with a bronze monument in Memphis, is not nearly as well known today to people who are not either music scholars or copyright lawyers. It has been 35 years since James Baldwin paid tribute to Handy by employing a phrase from his “Beale Street Blues” as the title of a novel, and it has been almost as long since Joni Mitchell addressed Handy directly in her song about Beale Street, “Furry Sings the Blues.” Even then, what Mitchell sang was, “W. C. Handy, I’m rich and I’m fey / And I’m not familiar with what you played.”

The reputations of other early blues artists have ballooned, in some cases to the verge of overinflation. Children of the rock era have worked hard to validate the music of their own time by historicizing it, adopting blues history as rock’s prehistory, and canonizing a select group of blues founders who best fit the image rockers like to project. This narcissistic boomer retroactivism has codified a conception of blues-making as it was practiced by the great rural innovators — Robert Johnson, Charley Patton, Blind Lemon Jefferson and others who worked in and around the Mississippi Delta during the first years of the last century. From this point of view, a legitimate historic blues artist must have been poor, unschooled, inadequately recognized in his time and perhaps beset by tragedy, as well as African-American and male (despite the prevalence of women among the most prominent singers and composers in early blues).

William Christopher Handy (1873-1958), who was the son of ex-slaves and who was raised in a log cabin in Alabama, had most of that ground covered. He even went blind — twice, once recovering his sight only to lose it years later. The main problem with Handy is one of image. Formally trained, he taught music on the college level, and through the blues compositions he astutely copyrighted and published out of an office on Broadway, he became internationally renowned and prosperous. Handy exuded erudition, urbanity, polish and affluence. That statue in the park off Beale Street portrays him well, dressed fastidiously in a double-breasted suit and tie, smiling and looking less like our received version of the Father of the Blues than the Moneyed Out-of-Town Uncle of the Blues. Maybe if he hadn’t been so rich and fey, people like Joni Mitchell would have been familiar with what he played.

In "W. C. Handy," David Robertson, who has previously written a lucid biography of the slave rebel Denmark Vesey, casts overdue light on Handy's essential role in establishing the blues as a popular art, and he does this, much to his credit, without resorting to dubious claims that Handy was the first or the best of the blues' multiple progenitors. A mark of both the evenhandedness of his scholarship and the delicacy of his writing is Robertson's resistance to the idea of Handy as the Father of the Blues — a notion that Handy himself advanced and exploited deftly during his lifetime. The stationery for his publishing company promoted the phrase as a slogan, and Handy used it for the title of his autobiography, which was published in 1941, when he was 67 and performing only occasionally as part of a nostalgia act. (Handy's book, which he wrote in collaboration with the journalist Arna Bontemps, is serious, not wholly spoiled by self-celebration and indispensable on his musical apprenticeship in black minstrelsy.)

Robertson portrays Handy as "the man who made the blues," a phrase that's a bit of a dodge. In one sense, it refers to Handy's having constructed blues from found sources, just as every blues musician — and each artist in every style of folk music — draws from the work of predecessors, changing melody lines, adding words, dropping verses, recombining elements from many songs, making old materials new and seemingly one's own. Handy's breakthrough was at once a variation on this method, the folk process, and a refutation of it: he documented blues in the form of musical notation, freezing songs in modes that suited him, and he had the music copyrighted and published.

In his memoir, Handy describes as an epiphany a chance encounter he had with a blues guitarist and singer in 1903 (or around that time — Handy is vague about the date, although in 2003 the various sponsors of the centennial Year of the Blues hung the celebration on this event). He had been waiting at the Tutwiler, Miss., railroad station for a train delayed nine hours, Handy wrote.

"A lean, loose-jointed Negro had commenced plunking a guitar beside me while I slept. His clothes were rags; his feet peeped out of his shoes. . . . His song . . . struck me instantly." The singer was "accompanying himself on the guitar with the weirdest music I had ever heard."

Handy's complicated legacy involves both the preservation and the adulteration of that weirdness. He was a classically oriented musician working in the sheet-music era. While notating the blues and disseminating it through published scores may seem unexceptional today, these acts were nearly radical at the time for their implicit argument that blues, in its mere worthiness for notation, had parity not only with Tin Pan Alley tunes but also with Western concert music. Of course, musical notation is not merely documentation; it is a kind of translation, and the tonal elasticity and rhythmic volatility of the blues are simply impossible to get across with the tempered scale and metric limitations of conventional notation. Handy relished the blues but considered it "primitive," and he clearly saw the "polishing" he did to the music as correction or improvement. Indeed, his readiness to clean up the blues so that it could be played by musicians geared to the Western tradition has long made him seem like an accommodationist.

In another sense of "making" the blues, Handy, through the songs he published and their widespread use onstage, in recordings and on film, played a dominant role in the popularization of the music across a wide spectrum of the general population. "St. Louis Blues," the best known of the many songs to bear his name as a composer, has been recorded more than 1,600 times by artists from Louis Armstrong to the contemporary jazz saxophonist Greg Osby, with Bessie Smith, Bing Crosby, Chet Atkins, Chuck Berry, Leonard Bernstein, Pete Seeger and Doc Watson in between. Through the royalties from "St. Louis Blues" and dozens of other songs under his copyright (most notably "The Memphis Blues," "Yellow Dog Blues" and "Beale Street Blues"), Handy achieved a status rare among composers associated with the blues of the early 20th century: he grew wealthy. He was skillful at both music and business, as a great many hip-hop artists are today, and he took obvious pleasure in the status his prosperity conferred among blacks and whites.

His facility with commerce as well as art has tainted Handy in the eyes of rock-era blues buffs, as if the only proper compensation for a life of blues-making were the adulation of those fans, as if the point of the blues were not to cry out against suffering, subjugation and marginalization, but to preserve those things. David Robertson harbors no such delusions. A biographer of admirable restraint, he explains the guy in the statue without stomping on the clay feet that we can't help noticing peeped out of his shoes.

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http://www.nytimes.com/2009/05/10/books/review/Hajdu-t.html?8bu&emc=bua2

Most Fundamentalist

By AZADEH MOAVENI

KHOMEINI'S GHOST

The Iranian Revolution and the Rise of Militant Islam

By Con Coughlin

Illustrated. 370 pp. Ecco/HarperCollins Publishers. $26.99

The Ayatollah Khomeini descended from an Air France jet in Tehran 30 years ago this past February to claim the mantle of his Islamic revolution. Before alighting, he was asked by a journalist how he felt upon returning to Iran after 15 years in exile. Khomeini's curt, one-word reply — "nothing" — swiftly became notorious. Millions of Iranians, not to mention the scores of politicians and scholars intent on understanding Iran's upheaval, have spent the intervening three decades trying to decipher its meaning. Did the ayatollah's calculating, pan-Islamist heart hold no affection for Iran? Was he asserting his existential distance from the West? Such questions typically preoccupy accounts of Khomeini, for even today the ayatollah remains a perplexing subject — a puritan who loved poetry, a fundamentalist capable of flexibility, a Persian-Shia chauvinist longing to inspire the Sunni Arab world. In Tehran, politicians regularly quote him to trounce rivals, but the ayatollah has left such a rich legacy of contradictory opinion that both sides of a debate can usually deploy his words to strategic effect.

The nuances of the ayatollah's character do not much interest Con Coughlin, an editor at The Daily Telegraph, in his new book "Khomeini's Ghost." He portrays Khomeini as an incorrigible, Taliban-style fanatic bent on acquiring nuclear weapons for the sake of his doomed Islamist project. "The quest for the atom bomb was a central part of Khomeini's legacy," he writes.

In the book's second section, Coughlin sets out to catalog revolutionary Iran's dirty business from 1979 down to the present, drawing a neat line from Khomeini's revolution to "so many of the challenges the world faces today." He rightly points out that Khomeini's early attempts to market his revolutionary politics abroad antagonized the Sunni regimes of the Persian Gulf, particularly Saudi Arabia, initiating an effective contest for the title of "most fundamentalist" that recast the dynamics of the Middle East for years to come.

But in measuring the success of Khomeini's supranational project, Coughlin overreaches. He describes in sweeping terms how Khomeini's vision for an Islamic state "became the manifesto for Islamic fundamentalist regimes throughout the world." That can hardly be the case, since the ayatollah's concept of rule by the clergy ("velayat-e faqih") is enshrined in a Shia reading of jurisprudence, and can hold no such direct, universal relevance for the majority of the Islamic world, which is Sunni. Coughlin argues that the legacy of the revolution is "as powerful today" as it was when Khomeini came to power in 1979.

Such endorsements would brighten any Tehran bureaucrat's day, but in reality Iran's ability to extend its ideological influence around the region has never matched its ambitions.

Coughlin tends to define Iran in black-and-white terms, writing that Khomeini "accomplished his lifelong ambition of creating an Islamic state based on the strict interpretation of Shariah law." He ignores the fact that, despite Khomeini's best intentions to vest absolute power in the state's religious leader, the Constitution provides for an elected legislature and declares that the country must be run "on the basis of public opinion." Though elections have never been free, they remain fiercely contested, and myriad institutions force an opaque but real rule by consensus.

This unworkable, dual sovereignty of the divinely appointed and the popularly elected lies at the heart of Iran's problems and is the cause of its debilitating factional strife. Coughlin has little feel for the role Iran's warring factions play in its foreign policy, and often relates only half the story. He paints a picture of Iran as a state in cahoots with Al Qaeda, writing that Tehran masterminded the escape of operatives fleeing from Afghanistan, including Osama bin Laden's son Saad, and provided them safe haven. He states that "the presence of such prominent Al Qaeda militants in Iran . . . was yet another issue that would undermine Khatami's attempts to improve relations with the West."

This is a misleading presentation of the facts. It is true that Iranian hardliners played a cat-and-mouse game with the moderate government of Mohammad Khatami, concealing Qaeda fugitives who had fled to Iran. But the Khatami government dispatched agents to hunt down at least 200 fugitives, and put them on planes back to their home countries.

Iranian officials complained at that time that they could not repatriate all of the fugitives. In the case of Saad bin Laden, for example, Iran faced a quandary — Saudi Arabia refused to accept him, and there was no framework in place to hand him over to a third country or party. Tehran sought America's help in handling these awkward cases, but was rebuffed by the Bush administration.

Coughlin stretches and contorts history with unproven allegations to tie Iran to nearly all major terrorist attacks against American interests over the past two decades. His Iran trained the Qaeda cells that bombed the American Embassies in Kenya and Tanzania in 1998, and he writes that "similar suspicions surfaced" when Al Qaeda bombed the U.S.S. Cole in 2000. He declares that Iran led a campaign of destabilization in Jordan. Even after the 9/11 attacks, he writes, Iran trained Qaeda terrorists at camps in Tehran. It is presumably at this point that the reader is meant to panic, and begin wondering why the United States decided to invade Iraq in 2003 rather than Iran.

But the reader should be aware that in marshaling his argument, Coughlin is careless with names, associations and even basic facts. He mistakenly states that Iran uses the Muslim calendar, rather than the Iranian; that the human rights lawyer Shirin Ebadi won the Nobel Prize in Literature, rather than the Nobel Peace Prize; and that women in Iran are required to wear the black chador (they are required to cover their hair and wear coats, but official codes permit some sartorial freedom).

At times, Coughlin takes out of context documents that are available in the public realm. Khomeini "unequivocally declared his support for an Iranian atom bomb," he says, paraphrasing quotations from a letter written by Khomeini, leaked to the public in 2006. But the letter refers only indirectly to Iran's need to pursue nuclear weapons. Khomeini was responding to a letter by a military commander outlining what the depleted Iranian forces would require to win the war against Iraq. It does not explicitly call for Iran to develop nuclear weapons and hardly qualifies as the smoking gun Coughlin brandishes throughout his final chapters. With such an abundant record of actual Iranian transgressions with regard to its nuclear program, such leaps are unnecessary.

At a time when Washington is dispensing with its failed policy of belittling and ignoring Iran, it is disappointing that Coughlin's book cannot offer the nuanced analysis policy makers need. Iran is not only the most powerful nation in the Persian Gulf, but arguably the only country in the region where people are weary of political Islam and inclined to view the United States favorably. These rare qualities make Iran a nation of unique potential to the Obama administration, as it turns to rehabilitating America's image in the Middle East.

Coughlin offers no thoughts on how the West ought to proceed. He concludes limply that as long as Khomeini's heirs are in power, Iran will remain defiant. Given the current attitudes in Washington about Iran, it seems Coughlin's book has arrived one administration too late.

Azadeh Moaveni is the author of "Honeymoon in Tehran: Two Years of Love and Danger in Iran."

http://www.nytimes.com/2009/05/10/books/review/Moaveni-t.html?8bu&emc=bua2

Ruthless in Manhattan

By MICHAEL KAZIN

THE FIRST TYCOON

The Epic Life of Cornelius Vanderbilt

By T. J. Stiles

Illustrated. 719 pp. Alfred A. Knopf. $37.50

Americans have always been ambivalent about men who turn small businesses into gigantic ones. We marvel at their cleverness and daring — and envy the manifold pleasures they buy and discard at whim. Yet we assume that anyone so big must also be bad. Tycoons get blamed for making the marketplace less free, for corrupting politicians, for exploiting the ordinary folk who work in their companies. Some of the corporate rich then try to enhance their reputations with ostentatious philanthropy. No wonder that in this most capitalist of nations, our leading capitalists usually garner as much suspicion as love.

Cornelius Vanderbilt spent little of his long life fretting over his image. If Americans were not grateful for the many steamships he built, the major railroad lines he integrated into a common system, the stock market panics he soothed and the Grand Central Terminal he constructed with his own millions, that was their fault, not his. Vanderbilt was the richest man in 19th-century America; at his death in 1877, he possessed, at least on paper, one-ninth of all the American currency in circulation. But like other corporate giants of his era and ours, he saw no reason to apologize for manufacturing and managing commodities everyone wanted and needed. “Vanderbilt was many things, not all of them admirable,” T. J. Stiles says in this perceptive and fluently written biography, “but he was never a phony. Hated, revered, resented, he always commanded respect, even from his enemies.” That respect stemmed, in part, from how he earned his fortune. During the early years of the republic, most rich Americans had inherited their wealth from mercantile or planter ancestors. Like their fellow patricians across the Atlantic, they tended to equate good breeding with the right to rule. Vanderbilt left school at the age of 11. But as a self-taught, self-made entrepreneur, he had no equal.

Vanderbilt grew up on Staten Island, the son of ambitious farmers who were determined to profit from the commercial bounty being frantically pursued in the booming city across the bay. Cornelius routinely took his father’s boat to Manhattan and back; sometimes, he spent all night in the small vessel in order to grab the first job the next morning. By his 20th birthday, Vanderbilt had made enough cash to compete for trade up and down the coast. While a tiny number of men his age were leisurely studying the classics in Cambridge and Princeton, Vanderbilt became a prosperous “shopkeeper of the sea.” He was also one of the first Americans to learn to construct and operate steamships — the greatest innovation in transport since the invention of sail.

Vanderbilt erected a continental empire on his love and mastery of the age of steam. It was a perilous industry: captains eager to destroy the competition routinely pushed engines beyond their limits. Boilers exploded. Ships crashed into one another. Deaths were common. Vanderbilt often challenged other owners to races, piloting boats of his own design with ferocious cunning, if not always to victory.

But the Commodore (a name he cherished) accomplished his most impressive feats away from the steering wheel. By slashing fares and buying out rival firms, Vanderbilt achieved a near monopoly on steamship travel between New York and Boston. During the California gold rush, he hacked out a passage through Nicaragua to carry the forty-niners and their mail from ocean to ocean. Midway through the Civil War, he loaned his largest and fastest ship to the Union Navy to chase down Confederate

raiders. Once victory was won, he switched his energies to the railroad business and soon controlled a network of lines that ran from New York to Chicago.

Like a great athlete, Vanderbilt lived to compete. As a septuagenarian, he still relished racing a team of fancy horses on the outskirts of Gotham. His "resolution is indomitable," The New York Herald gushed. But Henry J. Raymond, the editor of The Times, introduced a new metaphor by likening Vanderbilt to a robber baron. Similar to the medieval German nobles who "swooped down upon the commerce" of the Rhine "and wrung tribute from every passenger that floated by," Vanderbilt gained maximum profits by gaining maximum control of whatever market he entered.

Manipulating stock prices was as essential to that end as offering low fares and efficient service. In the fall of 1869, Vanderbilt arrested a Wall Street panic by pumping millions of dollars into companies on the verge of failing. But he had helped bring on the "Black Friday" crisis in the first place by flooding the market with shares of his own railroads to foil the plans of Jay Gould, a rival baron. "Vanderbilt appeared in the role of a hero," Stiles says. "Closer inspection reveals that a blood-chilling ruthlessness infused all his actions."

Stiles, the author of a biography of Jesse James, writes with both the panache of a fine journalist and the analytical care of a seasoned scholar. And he offers a fruitful way to think about the larger history of American elites as well as the life of one of their most famous members.

Vanderbilt may not have been the "first" tycoon in the United States — the fur merchant John Jacob Astor probably deserves that title. But, as Stiles contends, the Commodore was a leading exemplar of a new class of businessmen. All were Northerners, and most believed fervently in the strong Union their toil and wealth had knit together.

Corporate ethics, however, were honored more in banquet rhetoric than in deeds. Vanderbilt and his cost-conscious brethren naturally preferred friendly negotiations to forceful or dishonest tactics. Yet when polite methods failed, they were quite willing to buy off politicians, double-cross former partners and have the police break up strikes by their workers. Although Vanderbilt habitually dressed in the simple black-and-white outfit of a Protestant clergyman, his only religion was economic power. "Vanderbilt," Stiles writes, "was a paradox — both a creator and a destroyer."

Several of his 13 children had reason to feel a similar ambivalence about the old man. As kind patriarch, the Commodore either employed his sons or staked them to businesses and careers of their own. He also carefully scrutinized the marriage choices of both daughters and sons and treated them to some of the most lavish weddings in the land. Vanderbilt was quick, however, to judge any sign of dependency as a flaw of character. He labeled one son a "sucker" for borrowing money. Another son tried to keep his gambling addiction a secret from his father, lest Vanderbilt cut him off.

As a notoriously "hard man," the Commodore had just a little room in his heart for charity and none at all for guilt. The one time he donated a substantial amount of money was to seed the university in Nashville that bears his name. What motivated that late-life gift, characteristically, was a desire to reconcile the South and North so that, under the leadership of a new elite, the whole nation might prosper.

Soon after Vanderbilt's death, such confidence was shaken by a wave of violent strikes and increasing alarm about the plight of the urban poor. A generation of reformers and radicals convinced the public that clever capitalists with untrammeled powers could not be trusted to make decisions that benefited the majority of Americans. Since last year, the entire world has had to relearn that lesson. Yet the Commodore also grasped the need for strict regulation, if only for his corporate underlings. As a longtime secretary put it, "He thought every man could stand watching."

Michael Kazin's most recent book is "A Godly Hero: The Life of William Jennings Bryan." He teaches history at Georgetown University.

http://www.nytimes.com/2009/05/10/books/review/Kazin-t.html?8bu&emc=bua2

Losing Face

By MARY JO MURPHY

VANISHED SMILE

The Mysterious Theft of Mona Lisa

By R. A. Scotti

241 pp. Alfred A. Knopf. $24.95

Four hundred years before Picasso reassembled women with eyeballs where breasts should be and noses poking out of ears, Leonardo da Vinci put a smile on a woman's face — right where nature intended and yet unlike any smile before it or since. It was Mona Lisa's, and on the morning of Aug. 22, 1911, it wasn't there.

Who stole the painting from the Louvre and why is the subject of the beguiling "Vanished Smile: The Mysterious Theft of Mona Lisa," by R. A. Scotti, whose last book, "Basilica," told the story of St. Peter's in Rome.

An absence of clues meant an abundance of theories, and Scotti advances them all in a collection of arresting but disparate narratives. Insatiable American millionaires were snapping up the masters (and were reliable dupes of forgers). Had a thief delivered "Mona Lisa" or her twin to J. P. Morgan? Perhaps it was a lovesick swain; a young man, probably German or Austrian, had been visiting her regularly, gazing soulfully into her eyes. There was also the theory of a Sorbonne psychologist: "Mona Lisa" might be the captive of a sexual psychopath who would treat her with "sadistic violence and fetishistic tendresse," then return her when he was "through with her." Such was the lure of "Mona Lisa."

But by far the most captivating of Scotti's assemblage of vermilion herrings is the one that led to Picasso and the poet and provocateur Guillaume Apollinaire. How delicious if the bad boys of Paris, "the outlaws of traditional art, riding into town like the cowboys of the Wild West to slay the Renaissance gods," had been the culprits. They had motive, following a Modernist creed first enunciated by the Marquis de Sade: "In art, one has to kill one's father."

Apollinaire urged the destruction of museums "because they paralyze the imagination." Picasso complained that "we have infected the pictures in museums with all our mistakes, all our poverty of spirit." The mischievous pals also had opportunity, in the form of a sometime secretary to Apollinaire

who went on regular shopping expeditions to the ridiculously unsecured Louvre. Picasso wound up in possession of two small Iberian statues lifted by the secretary. Their features are apparent in his Cubist masterpiece “Les Demoiselles d’Avignon.”

But, alas, the thief of the statues was not the thief of the Leonardo. The lengthy chapter on Picasso doesn’t take Scotti’s readers anywhere near “Mona Lisa,” though it does provide a finely detailed and not always flattering portrait of the swaggering avant-gardist as a quavering and disloyal friend after Apollinaire is briefly arrested.

It seems initially that Scotti, who has written several thrillers, intends to cast her book as the pitting of wits of a criminal mastermind and a Sherlock Holmes, so laboriously does she draw the minor characters who try to solve the theft and the possibly invented characters who may have committed it. The problem is, today, almost 100 years later, no “mastermind” has been identified. The only person ever implicated was a Louvre laborer and professed Italian patriot who showed up in Florence with “Mona Lisa” two years after he supposedly walked off with her, announcing that he had escorted her back “home.”

But he was thought too dim to have acted alone. Scotti’s Sherlock, the foremost French criminologist of his day, Alphonse Bertillon, never did sniff the man out. But it is in padding the criminologist’s role that Scotti is at her most strained: “Bertillon seemed as out of place at most crime scenes as the Virgin Mary at the Folies-Bergère.” “Bertillon approached the empty frames as cautiously as a lion trainer who understands the imperfect line between the tame and the feral.” One wishes for the vanished simile. Or at least that the blank wall that drew record crowds to the Louvre in the aftermath of the theft really was a reflection of the perfect Modernist crime.

Mary Jo Murphy is an editor at the Week in Review section of The Times.

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The Darwins' Prenup

By BRUCE BARCOTT

CHARLES AND EMMA

The Darwins' Leap of Faith

By Deborah Heiligman

Illustrated. 268 pp. Henry Holt & Company. $18.95. (Ages 12 and up)

ANIMALS CHARLES DARWIN SAW

An Around-the-World Adventure

By Sandra Markle

Illustrated by Zina Saunders

45 pp. Chronicle Books. $16.99. (Ages 7 to 10)

Charles Darwin was nothing if not methodical. In the summer of 1838, two years after his round-the-world journey on the Beagle, the 29-year-old naturalist drew a line down the center of a sheet of paper. Topping one column, he wrote "Marry." On the other, "Not Marry." In the middle, he wrote "This is the Question."

Among the benefits of marriage: companionship, children and "charms of music & female chit-chat." The drawbacks: loss of freedom, adventure and time to pursue his scientific work (all that chit-chat). His famous conclusion? "Marry — Marry — Marry Q.E.D." Quod erat demonstrandum: Thus it is proved.

It wasn't quite so simple as that, though, as Deborah Heiligman reveals in "Charles and Emma," a delightful book about the question at the heart of the Darwins' marriage. Even before he wooed and wed the charming Emma Wedgwood, Darwin suspected that his growing religious doubts, fed by scientific discoveries that seemed to disprove the biblical creation story, might dash his chances for matrimonial harmony. "He knew that these doubts and his revolutionary thoughts about transmutation" — what we know as evolution — "and the creation of species would stand in his way of finding a wife," Heiligman writes. "Most women were believers and wanted their husbands to be believers, too."

The issue was especially close to the heart of his intended fiancée. Emma's beloved sister Fanny had died young, and Emma believed that leading a good Christian life would allow her to reunite with Fanny in heaven. The idea of being parted from her husband — for he, as a nonbeliever, would be heading south after death — might be too much for her to bear.

Darwin went to his father for advice. "Conceal your doubts!" Dad said.

The son, as sons are wont to do, heard Dad's advice and promptly did the opposite. In a fireside chat, he revealed all. Emma, the sharp-minded daughter of progressive, free-thinking parents, didn't see it as a deal breaker. She wouldn't insist on word-for-word biblical belief, she told Charles, just an openness to the love of Jesus. That, he could live with. Thus began an extraordinary marriage, one bound together by love, respect and a shared lifelong struggle with the question of God.

One of the pleasures of "Charles and Emma" comes in watching Darwin, giant of science, grapple with the mundane challenges of marriage and day-to-day life. One day he's discovering a key to the evolution of species in the beak of a finch, the next he's buying a house and removing a dead dog from the backyard. When Charles mentions that he and a friend might wish to dine every evening at London's

Athenaeum Club, his fiancée lets him know that if he plans to hit the clubs with his "excellent steady old friends" every night, he's got another think coming.
Theirs was a happy marriage built on compromise. He was tidy, she was not. Charles often walked the family to church but didn't go in, preferring to stroll around the village while Emma and the children prayed. When the Darwins suffered the heartbreaking death of two children (they had 10 in total), Emma never read their suffering as punishment for her husband's lack of faith.
In today's climate of division between religion and science, it's instructive to read about a marriage in which the two cultures improved each for exposure to the other. Heiligman's most revealing insight comes near the end of the book, as Darwin, having developed his ideas in private for 20-some years, spends a feverish 13 months writing them up in "The Origin of Species." Without Emma, he might well have written a combative, antireligious treatise — "The God Delusion" of his day. Instead, his experience with his wife's tolerant, reasonable brand of faith led him to temper his tone.
"Had he spent more time with free-thinking, liberal intellectuals and less time sitting on the sofa with Emma," Heiligman writes, "perhaps then he would not have been quite so conciliatory and conservative in his writing of the book." Emma acted as her husband's first reader and toughest editor. As she read the manuscript, "there were parts that made her cringe; passages that she worried would move people farther away from God," Heiligman writes. "But she only criticized the argument to help Charles spell it out more clearly."
Though the church didn't exactly embrace Darwin's radical ideas, the clarity of his arguments and his evenhanded tone disarmed critics who would dismiss his book as the ranting of a heretic. Thanks to Emma, the theory of evolution would have to be challenged on evidence and logic alone.
A final note: To mark this year's 150th anniversary of the publication of "The Origin of Species," a raft of Darwin titles are on their way to bookstores. My two old favorites, David Quamman's "Reluctant Mr. Darwin" and Jonathan Weiner's "Beak of the Finch" (written by Deborah Heiligman's husband), are a bit beyond my 7-year-old son's reading level, but "Animals Charles Darwin Saw" is a wonderful picture-book introduction to Darwin and his dangerous ideas. Sandra Markle tells Darwin's story in clear prose spiced with interesting vignettes (like the time young Charles stored a bombardier beetle in his mouth — bad idea), and Zina Saunders brings the scenes alive with colorful woodcut illustrations. My favorite line: "Sometimes the idea of evolution still makes people angry." Kids, you don't know the half of it.
Bruce Barcott is the author of "The Last Flight of the Scarlet Macaw."

http://www.nytimes.com/2009/05/10/books/review/Barcott-t.html?8bu&emc=bua3

Happy to Be Me . . . or Me!

By BRUCE HANDY

LITTLE OINK

By Amy Krouse Rosenthal. Illustrated by Jen Corace

Unpaged. Chronicle Books. $14.99. (Ages 3 and up)

SPOON

By Amy Krouse Rosenthal. Illustrated by Scott Magoon

Unpaged. Disney Hyperion Books. $15.99. (Ages 2 to 6)

YES DAY!

By Amy Krouse Rosenthal. Illustrated by Tom Lichtenheld

Unpaged. HarperCollins Publishers. $14.99. (Ages 4 to 8)

DUCK! RABBIT!

By Amy Krouse Rosenthal. Illustrated by Tom Lichtenheld

Unpaged. Chronicle Books. $16.99. (Ages 3 and up)

The writer Amy Krouse Rosenthal has published 11 picture books since 2005. Four of those 11 made their debut between February and May of this year, a rate of one a month. But before I tell you how terrific they all are, I should note that according to Rosenthal's Web site, she has another six slated for release in 2010 and 2011 — a mere three per year. Is she resting on her laurels?
"Maybe one day I'll turn into a ballet dancer, I don't know. But writing is the only thing that makes sense for me," Rosenthal, now in her early 40s, told her hometown Chicago Tribune in 2004, back when she was merely a successful author of books for adults (notably the memoir "Encyclopedia of an Ordinary Life," a cross between Jean Kerr and Dave Eggers), an online columnist and the host of a Chicago Public Radio program, the ironically named "Writers' Block Party." "I don't know how to stop," she said of writing. "I don't know how not to do it. If I see something interesting, it's hard for me not to take a note or scribble something down on the palm of my hand." (I know how not to write: Amy, haven't you heard of suddenly needing to look up old girlfriends or boyfriends on Facebook?)

Is there something about children's books that attracts the prolific, or at least the nonprocrastinating? By some measures, Rosenthal is an absolute slacker. The estimable Dan Gutman ("Jackie & Me," "The Homework Machine") has knocked out more than 50 books since 2000, while the equally estimable Andrew Clements ("Frindle," "Lunch Money") has at least 40 to his credit over the same period, with three more due this year. Neither author, judging from my haphazard readings of their work, has issues with quality control. Maybe writing for children unleashes the energy and uncomplicated eagerness of youth. Maybe it dispels grown-up emotions like despair, self-loathing and Amazon-sales-rank-envy that can stunt the output of writers for mature audiences. The fact that the average children's book is quite a bit more slender than, say, some Robert Caro doorstop no doubt aids productivity: any single volume of Caro's three-volume-and-counting Lyndon Johnson biography would probably contain enough words to fill up thousands of children's books, if you could write a children's book with the word "cloture" in it that anyone would want to read.

Maybe kids' book writers simply have more fun. That certainly seems to be the case with Rosenthal. For all I know, she may suffer torment upon torment in front of a blank screen, but the results read as if they were a pleasure to write. Her books radiate fun the way tulips radiate spring: they are elegant and spirit-lifting. Among her gifts is an ability to take what in other hands could have been a thin premise — a piglet who hates being messy, in the case of "Little Oink"; a young spoon who wishes he was a fork or a knife or chopsticks, in "Spoon" — and wring all kinds of sly, nifty variations out of it, the way Buster Keaton could choreograph a comic ballet around a simple prop or set-up. Better yet, her jokes sing with specificity and an understanding of children.Take poor Little Oink. All he wants is to be tidy. He digs for truffles with a spade and brings knife, fork and bib to the trough; that's how filth-averse he is. "All my friends get to clean their rooms," he whines to his parents. "Why can't I?" Well, what red-blooded 5-year-old isn't going to crack up hearing that? Little Oink tries his best to mess up his room, to be a good pig, but his father remonstrates: "I still see toys in their bin, mister." At last, a hero who serves as both surrogate id and role model. The book is a sequel of sorts to "Little Pea," about a young pea who wishes he didn't have to eat candy for dinner, and "Little Hoot," about a young owl who wishes he could go to bed early — a Bizarro World trilogy for kids, all three elevated further by Jen Corace's droll, fine-tuned illustrations. There are probably a million children's books (half of them written by Jamie Lee Curtis) about learning how to be happy with oneself, finding one's inner strengths, etc., etc. (and another half-million animated features exploring more or less the same terrain), but I'm pretty sure no one before Rosenthal thought to approach this perennial from the point of view of a utensil. "Spoon," my favorite of the quartet under consideration here, could almost be read as a sweet, subtle parody of the genre, but better yet it should just be read. The title character wishes he could cut or stab like his pals Knife and Fork, or be exotic like his twin buddies Chopsticks, but as his mom points out: "You know, Spoon — I wonder if you realize just how lucky you are. Your friends will never know the joy of diving headfirst into a bowl of ice cream. They'll never know what it feels like to clink against the side of a cereal bowl. They'll never be able to twirl around in a mug, or relax in a hot cup of tea." For Spoon, this does the trick. "His mind was racing," Rosenthal writes, "he felt so alive!" I love that line: so joyous and yet, for a kids' book, so relatively mordant, or even kind of heartbreaking, spoons being inanimate and all. Scott Magoon's witty drawings get the tone just right. It couldn't have been easy: you try drawing a winsome spoon. "Duck! Rabbit!" and "Yes Day!" represent Rosenthal's third and fourth collaborations (ever; not just this week) with the illustrator Tom Lichtenheld. "Yes Day!" tells what happens on a new holiday, when parents must say yes to every request. Happily, this is not a cautionary tale, and as with all of Rosenthal and Lichtenheld's books, the endpapers have some of the best jokes. As for the wonderful "Duck! Rabbit!" it is the funniest children's book ever based on a 19th-century-style optical illusion (or more properly, the Internet tells me, "ambiguous figure"). I hope that doesn't sound like I'm damning the book with faint praise: it's funny by any standard. The title character — whose bunny ears can be mistaken for a duck's bill, or vice versa, depending on how you choose to perceive things — generates a very amusing debate between two unseen observers, who finally bury the hatchet only to stumble across an anteater whose long tail could be mistaken for a brachiosaurus's neck, or, again, vice versa.

Not only is "Duck! Rabbit!" a good laugh, it's also a public service: ambiguity is an underrated state, and the sooner children are introduced to it the better. I look forward to "Hag! Hottie!" and "Wineglass! Couple About to Kiss!"

Bruce Handy, a frequent contributor to the Book Review, is a writer and deputy editor at Vanity Fair.

http://www.nytimes.com/2009/05/10/books/review/Handy-t.html?8bu&emc=bua3

Urban Nature Boy

By SHERIE POSESORSKI

THE CURIOUS GARDEN

Written and illustrated by Peter Brown

Unpaged. Little, Brown Books for Young Readers. $16.99. (Ages 3 to 6)

The High Line, an elevated freight train track on Manhattan's West Side, out of use for nearly three decades, has inspired many visions of reclamation. Steven Holl, an architect, described it as "a suspended green valley in the Manhattan Alps." Just a glance at photographs of the eerily beautiful site makes you immediately understand why. The city and developers, however, thought otherwise, wanting to demolish it.

Thanks to the devoted efforts of a community group, Friends of the High Line, the abandoned track is now in the midst of being transformed into a park and promenade, the first portion of which will open to the public this June. Its revitalization was the inspiration for a quietly marvellous picture book, "The Curious Garden," by Peter Brown.

Young Liam is the only walker on the streets of an urban dystopia where residents — no surprise — prefer to remain indoors. Brown's first acrylic and gouache spread pictures the metropolis as bleak and forbidding as one of Charles Sheeler's cityscape paintings, its only visible inhabitants factories, high-rises and roadways. The only movement comes from plumes of smoke joining the polluted haze of the beige sky, and the only sign of life comes from red-haired Liam and his red umbrella and rain boots, tramping through his sepia equivalent of Dorothy's Kansas, a solitary explorer.

One rainy day, he sights a stairway leading up to an elevated train track, and climbs it, discovering a patch of wildflowers and plants struggling to survive amid the tracks.

As inventive as Chowder, the bulldog in Brown's two picture books (who saw bones not merely as tools for dental hygiene but as artistic supplies), the dedicated Liam is determined to turn this mangy growth into a garden.

But first he has to turn himself into a gardener, which Brown captures with the gentle, mischievous, affectionate humour that permeates his delightful tale. No Edward Scissorhands, Liam gives the poor plants a near crew-cut with his pruning, and almost drowns them by overwatering. "The plants patiently waited while Liam found better ways of gardening," Brown dryly narrates.

Liam persists. In the fallow season of winter, Liam prepares for spring by reading books on gardening and gathering the tools and skills to bring his secret garden to full bloom. Nature is much as a character in the story as Liam is, and their relationship develops into a companionable and nourishing — on both sides — friendship.

As the garden blooms and spreads along the track, Brown depicts its progress with the bright Technicolor palette of the Land of Oz. The sky glows a glorious blue, and verdant moss and dazzling wildflowers, the product of Liam's tender gardening, expand into the city, nature's nature turning out to be as adventurous as the boy's. Moss and ivy warm high-rises and wildflowers decorate sidewalk cracks, as all variety of gardens and greenery begin to take root in the city, along with a fleet of budding gardeners, truly transforming it into an Emerald City that is oasis, playground and canvas — check out those topiaries!

As all good, enduring stories are, "The Curious Garden" is a rich palimpsest. Echoing the themes of "The Secret Garden," it is an ecological fable, a whimsical tale celebrating perseverance and creativity, and a rousing paean, encouraging every small person and every big person that they too can nurture their patch of earth into their very own vision of Eden.

Sherie Posesorski's young adult novel "Shadow Boxing" will be published in August.

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The Bonfire of China's Vanities
By PANKAJ MISHRA

One cold afternoon last fall I met Yu Hua at the state-run Friendship Hotel in Beijing. Cheerfully, he described to me the incipient international fame of his most recent novel, "Brothers," one of China's biggest-selling literary works. He had just returned from Hong Kong, where the novel was short-listed for the Man Asian Prize; he was leaving soon for Paris to receive an award for the book, which had just been translated into French. With the breezy insouciance that unbroken success creates, Yu then began to recount a somewhat irreverent memory of Mao Zedong's death.

Though nearly 50, Yu, who wears his hair short and spiky, looks relatively young. He speaks in emphatic bursts, his face often flushing red, and he is quick to laugh. It was, in fact, his boisterous laugh that almost got him into trouble on the morning of the solemn announcement of Mao's death. Responding to orders that blared out from loudspeakers, he assembled with hundreds of other students in the main hall of his small-town high school. "Funereal music was played, and then we had to hear the long list of titles that preceded Mao's name, 'Chairman,' 'Beloved Leader,' 'Great helmsman . . . ,' " Yu recalled. "Everyone loved Chairman Mao, of course, so when his name was finally announced, everyone burst into tears. I started crying, too, but one person crying is a sad sight; more than a thousand people crying together, the sound echoing, turns into a funny spectacle, so I began to laugh. My body shook with my effort to control my laughter while I bent over the chair in front of me. The class leader later told me, admiringly, 'Yu Hua, you were crying so fervently!' "

He paused, and then jumped 13 years to a memory of another momentous — and more traumatic — event in China's modern history. In the spring of 1989, when tens of thousands of protesters filled Tiananmen Square, Yu was living in Beijing, partaking of the cultural excitement and political hopefulness of post-Mao China. Already a major figure in the city's artistic avant garde, Yu biked every day to Tiananmen Square to express solidarity with the student protesters.

As Yu described the widespread civilian support for the students, a note of passion entered his voice, and the menu he had elegantly snagged off a passing waiter lay open and unread in his lap. "The word 'people' was much used in the Cultural Revolution," he said. "It is a very loaded term in China, it is used a lot, but until the mass protests in 1989 I did not realize what the word meant."

His voice grew louder as he recalled the bloody suppression and aftermath of the protests. I became nervous. Yu, a short, thickset man with bulging eyes, could easily pass unnoticed in a crowd of Chinese peasants and workers, but he does not exactly strive for self-effacement. We were sitting in the corner of the hotel lobby, partly concealed by a large pillar and surrounded by a thick fog of cigarette smoke. Yu, a restless chain smoker, insists on ignoring China's new ban on smoking in public places.

The hotel was full that day of young executives from nearby I.T. offices, any one of whom might have recognized Yu, who is frequently mentioned as a likely candidate for the Nobel Prize in Literature. Though official repression of the memory of Tiananmen has ensured that few young Chinese know much about the struggles for democracy waged in the 1980s, cybersavvy youth of the kind we were surrounded by are still likely to take a sternly nationalistic line with a Chinese writer or intellectual criticizing the

events of June 1989 to a foreigner. Indeed, as Yu spoke, a trendily dressed young woman looked up from the glowing screen of her laptop to squint at him.

Yu seemed totally oblivious to potential eavesdroppers. His face was red as he came to end of his memory of 1989. Turning to me, he said: "Sorry to take off like that. But this was a big turning point for all of us. After June 1989 people in China lost interest in politics. In 1992 Deng Xiaoping made his famous 'Southern Tour,' calling for faster market reforms, and the economy started to take off. The ideals of nation and socialism began to look empty. People became focused on making money.

"I, too, began to enjoy the fruits of capitalism," he added, and laughed.

Yu was only partly joking. For someone who started out in China's brief moment of counterculture in the 1980s as a writer of bleak, experimental and defiantly unsalable stories, Yu has gone on to receive an ample share of the fruits of capitalism. Published in two parts in 2005 and 2006, "Brothers," which traces the fortunes of two stepbrothers from the Cultural Revolution to China's no-less-frenzied Consumer Revolution, has sold more than a million copies in China, not counting the probably higher sales of innumerable pirated editions.

The novel, which will be published in an English translation later this month, may also prove to be China's first successful export of literary fiction. Certainly, foreign readers will find in its sprawling, rambunctious narrative some of China's most frenetic transformations and garish contradictions.

"Brothers" strikes its characteristic tone with the very first scene, as Li Guang, a business tycoon, sits on his gold-plated toilet, dreaming of space travel even as he mourns the loss of all earthly relations. Li made his money from various entrepreneurial ventures, including hosting a beauty pageant for virgins and selling scrap metal and knockoff designer suits. A quick flashback to his small-town childhood shows him ogling the bottoms of women defecating in a public toilet. Similarly grotesque images proliferate over the next 600 pages as Yu describes, first, the extended trauma of the Cultural Revolution, during which Li and his stepbrother Song Gang witness Red Guards torturing Song Gang's father to death, and then the moral wasteland of capitalist China, in which Song Gang is forced to surgically enlarge one of his breasts in order to sell breast-enlargement gels.

The reasons for the novel's commercial success seem clear. It invokes the widely experienced violence and suffering of the Cultural Revolution while also drawing on another resonant theme in China: the outlandish lifestyles of the rich and famous, especially nouveau-riche entrepreneurs like Li. Li represents the country's new cultural icons, whose large appetites for money, women and cars keep the innumerable Chinese bloggers and Internet chat rooms transfixed with both admiration and revulsion.

Other writers have dealt with the Cultural Revolution and the counter-revolutions of post-Mao China — the wealthy entrepreneur inChi Li's "Coming and Going," one of the country's most successful novels and TV series of the last decade, also provoked much fascinated ambivalence among middle-class Chinese and the many millions more aspiring to be. But Yu brings to his potent mix of market-tested subjects the ambition, energy and flair of a born provocateur. He seems less interested in representing modern-day China through mimetic realism than in evoking it through a bawdy semi-fantastical narrative, in which human bodies are frequently and gruesomely violated in recurring scenes of debauchery, brutality and death.

Yu's provocations may have succeeded better than he hoped; enraged critics have made "Brothers" one of China's most controversial novels in recent years. Yu, who is one of the very few literary writers to have flourished in the new China, always seemed a bit suspect to puritanical critics. But "Brothers" has aroused a special malice among many readers, both online and in print, who accuse Yu of caring more for profit margins than for literature. When the second part of the novel came out in 2006, a famous literary critic at Beijing University, who championed Yu's short fiction in the 1980s, told me that the former avant-gardist had learned how to work China's new marketplace and "make money." Other reviewers doubted Yu's grasp of the details of Chinese life. Online forums debated with special vigor whether it would have been possible for a man in a small Chinese town in the early 1960s to spy on women's bottoms in a public toilet and then, in the process, slip and drown in a cesspool.

Last year an anthology of criticism titled "Pulling Yu Hua's Teeth" charged the author of "Brothers" with several crimes: selling out to the very forces of commercialism and vulgarity anatomized in his novel; promoting a negative image of China and Chinese writers to the West; sinking into "a world of filth, chaos, stench and blackness, without the slightest scrap of dignity"; being a carpetbagging peasant who gives himself literary airs.

"Good people are not rewarded," one critic writes, "the kind do not die a good death, scoundrels take the upper hand, love proves false, only money is praised, but there is nothing behind money but

lasciviousness and ugliness." Opening the teeth-pulling operation with an article claiming that Yu's writing consists of four bad teeth — a black tooth, a yellow tooth, a false tooth and a carious tooth — the book systematically excavates Yu's dentures over four parts, ending with a conclusion titled "It's Not the Toothache but the Pain That Kills You."

Yu betrayed no signs of postoperative stress when I asked him recently about the reaction to his book. He dismissed "Pulling Yu Hua's Teeth" as "sensationalism" and robustly rejected the accusation that he performs for a Western audience. "My books are more popular in China than anywhere else," he said. "If they weren't, these critics would have a point."

When I first met Yu one evening in Shanghai in 2006, he confidently described to me his vision of "Brothers" as a social and moral critique of China's evolution. Yet he was suffering from a version of postpublication angst common among authors — the cankerous feeling that his work, and its vision of China lurching between political authoritarianism, extreme poverty, consumerist excess and moral depravity, was not being taken seriously enough. High sales and popular acclaim had not taken the sting out of the venomous reviews. But almost three years of a sustained critical assault on "Brothers" seems to have hardened Yu. He now sees the attacks in sociological rather than literary terms, as exposing a fault line between generations, and his detractors as typical of China's new nationalists — people too young to have any memory of their country's previous traumas but obsessed with boosting China's image as a rising power vis-à-vis the West.

"The main reason that the book was attacked is because it exposes the dark side of China," he told me when we met again in Beijing. "A highly respected critic in Fudan University, Chen Sihe, pointed this out. 'Look at the critics who are attacking this book,' he said, 'They are all young. Older critics have a more ambiguous take.' "

Yu added, "Younger writers don't like to see books that reveal the dark side of China; they live very comfortable lives; they don't believe in the dark side of China; they are not even aware of the hundreds of millions of people still living in extreme poverty."

Yu himself seems to have rarely turned away from the dark side of things. He first became known in the late 1980s as a writer of surreal short fiction whose raw violence — in one story, a 4-year-old strangles his cousin, a baby, in order to "enjoy the explosive crying"; in another, a young girl is hacked to pieces — brashly defied the hygienic pieties of socialist realism to which China's state-supported writers were expected to conform.

Yu switched to melodramatic realism in 1992 in his novel "To Live." This atrocity-rich tale of a forbearing peasant whose son dies after a blood transfusion to save a party official was turned into an internationally successful film by Zhang Yimou, China's most prominent director. It won the Grand Prix at the 1994 Cannes Film Festival. Both "To Live," and his next novel, "Chronicle of a Blood Merchant"(1995), in which a peasant traffics in his own blood to supplement his meager income, remained resolutely focused on the tragic aspects of China's modern history. But it was not until Yu traveled to the West that he began to think about a broader fictional canvas that would depict China's chaotic present as well as its past. In 1995 he went abroad for the first time, to the French seaside town St. Malo, for a literary festival. "The foreign journalists there," he recalled, "would often ask me about the Cultural Revolution, and it occurred to me what a barbarous and bizarre experience China had had."

Almost miraculously, "Brothers," which contains graphic descriptions of the violence of the Cultural Revolution, including the suicide of a man who hammers a nail into his skull, managed to escape Chinese censors. Yu said he profited from his experience with Zhang Yimou, who cannily altered the story of "To Live" in order to make the film version palatable to Chinese authorities: among other things, Zhang made the son's death seem like a tragic accident. "As he made the changes I became very impressed by how well Zhang Yimou seemed to understand the Chinese Communist Party. But the film still got banned. After that, I stopped caring about what the censors would think."

It was his publishers rather than the state censors who wanted cuts in "Brothers." But they relented after Yu threatened to withdraw his book. "They knew," he said, "that the book would sell; they are willing to take more risks with the censors because they are not state-supported anymore and have to fend for themselves in the marketplace." For Yu the publication of his novel is a sign of slow but steady progress in China. "Ten years ago, 'Brothers' could not have been published," he said. "It may take another 10 years for a movie to be made out of it."

We were sitting with Yu's wife, Chen Hong, a poet who now devotes most of her time to looking after their son, in the living room of the apartment they rent in West Beijing. We were surrounded by the marks of a temporary existence: new Ikea-style furniture, mismatched curtains, piled-up books and a general air

of neglect. Yu explained that he and his wife were waiting for their son to finish school before moving to Hangzhou in his ancestral province, Zhejiang. He didn't like Beijing; it was too big and impersonal. The neighboring apartments, for instance, housed "hair salons," often a front, in China, for brothels, with bright neon lights. "I tell my friends we live in a red-light district," he joked, and his wife, a woman with a delicate pale face and loose long hair, broke into a melodious laugh.

One room in Yu's austere apartment is reserved for surfing the Internet, which is probably the most revealing window on modern China. But Yu said he spends more time in his study, another stark room with a laptop computer on a clean desk. He added that he didn't need to rely on the Internet; he had personally experienced the weird mutations of China's consumer culture described in the novel. He remembers turning on the television in the 1990s to find nothing but beauty pageants: every town in China seemed to host them.

He disputes the charge that the details in the novel are far-fetched; reality can be equally, sometimes even more, gruesome in China. "After the book was published, an academic friend wrote to me to say that his father had also killed himself by hammering a nail into his skull," he said. "Three readers said that their father's corpse had to be mutilated in order to fit into the coffin. A New York Times journalist who interviewed me in 2006 thought that businesses offering hymen reconstruction was extremely unlikely; he then discovered that they existed all over China."

When I asked Yu if he had ever contemplated breast-enlargement, like Song Gang in "Brothers," he and his wife laughed. But both grew somber as Yu recalled his childhood, no less infected by the grotesque for being relatively untouched by the chaos of the Cultural Revolution. Born in 1960, Yu grew up in a small town called Haiyan in Zhejiang province (a breeding ground of many Chinese artists and intellectuals including Lu Xun, the pioneer of modern Chinese literature). Despite the Cultural Revolution, Yu recalled, life was generally monotonous — except when a criminal was to be executed, when "the whole town would become as lively as festival time." Yu remembers the executions as the "most thrilling scenes of my childhood, seeing the criminal kneeling on the ground, a soldier aiming a rifle at the back of his head and firing."

His father was a doctor — but this makes him sound grander than he was, for he worked, Yu said, wearing a bloodstained smock in one small room and lived with his family across the road. Their home also faced a public toilet, where nurses often dumped tumors, and the local mortuary. "On hot summer days, it was cool inside the mortuary," Yu recalled, "and since the corpses were deposited only at night, I often took a nap there. Sleeping at night in our home, we would be woken by the sound of people crying."

Yu now attributes the relentless bleakness of his early fiction to his childhood exposure to brutality and death. "I was unable to steer my writing away from bloodshed and violence," he said, "Writing during the day, I'd have one character killing another, characters dying in pools of blood. At night, asleep, I would dream that I was about to be killed by someone else."

Yu never went to college. "My entire education was encompassed by the Cultural Revolution," he said. "I went to school in 1966 and came out in 1976, so I never received a proper education." Then, like many "barefoot doctors" in China in the late 1970s, Yu underwent only some very basic training before he became a dentist.

He claims he became a writer because he hated his job: "the inside of a mouth is one of the ugliest spectacles in the world." In the early '80s he was living in a small town between Shanghai and Hangzhou. From his window he often observed workers of the local Cultural Bureau, the Chinese state's salaried writers and artists, loafing in the streets. "We were all very poor in those days," Yu recalled. "The difference was that you could work hard to be poor as a dentist, or you could do nothing and still be poor as a worker in the Cultural Bureau. I decided I wanted to be as idle as the workers in the Cultural Bureau and become a writer."

Yu wrote a short story and sent it off to a literary magazine in Beijing. An enthusiastic phone call from its editor soon put him on the path to paid idleness at the Cultural Bureau. Yu seems to have relished manipulating the Communist system to his own ends. "I was deliberately late on the first day at the bureau office," he told me. "Later I would only go once a week, and then finally only once a month to collect my salary."

In 1993 the royalties from "To Live" enabled Yu to leave his job altogether. "My friends," he recalled, "say I have enjoyed the best of both ideologies: first receiving a writer's stipend under socialism and now royalties in the free-market regime."

Though Yu's account of his beginnings as a writer is lighthearted, from the first his works of fiction provoked serious critical attention. Published in such major literary magazines as Zhongshan, Shouhuo

and Shanghai Wenyi, his stories, with their surreal violence and cruelty, seemed to deftly summarize China's history; their metafictional devices also spoke of a formal ambition rare among Chinese writers. As early as 1991 the critic Henry Zhao predicted that Yu was "destined to occupy a long page in Chinese literature."

Remarkably, Yu seems to have had as little apprenticeship in writing as he had in dentistry. Books were hard to come by during the Cultural Revolution, or they would circulate in mutilated form, like the torn copy of a novel by Guy de Maupassant, which Yu read the middle of ("I remember it had a lot of sex," he said) without knowing its title or author. His formative reading experience was provided by the big character posters of the Cultural Revolution, in which people denounced their neighbors with violent inventiveness. "I remember," Yu said, "walking home from school and reading each poster as I walked along. I was not so much interested in the revolutionary slogans as in the stories."

He had never cared much for Chinese writers; only later did he come to appreciate Lu Xun's resolve to diagnose Chinese society and culture through literature. Like many of his peers recoiling from socialist realism, Yu was drawn to the icons of Western high modernism whose work began to appear in translation in China in the 1980s, in particular Kafka, Bruno Schulz and Borges. The delicate fictions of the Japanese writer Yasunari Kawabata were also a great early influence. "Kawabata taught me the importance of detail," Yu recalled. "I would buy two copies of his novels whenever I saw them. One to read and the other to keep in pristine condition on my shelf."

So why did he abandon avant-garde experimentalism? Yu says he discovered that his characters had their own lives, which he could not control. By the early 1990s, when almost all major works of international fiction were being translated into Chinese, he was also reading more widely, particularly novels by V. S. Naipaul and Toni Morrison. But there seem to have been extraliterary reasons, too, for the general retreat from aesthetic radicalism among Yu's generation. The critic Chen Xiaoming, who teaches at Beijing University, once told me that by 1992, as China's economy hectically expanded and the state began to withdraw its cultural subsidies, publishers were increasingly forced to sink or swim in the marketplace. In the new era of mass culture, which TV dramas and popular music dominated, there were fewer takers for avant-garde fiction, and its practitioners had to improvise or face irrelevance.

This sounds true: Su Tong, one of the more famous avant-gardists in the 1980s, turned to writing historical romances. In an apparent concession to his commercial times, Yu scripted an episode for a TV show titled "China Models." "It was for the money," he jokingly admitted to me. But he also claims that he was led to a more populist aesthetic by a new idea of his social responsibility as a writer. As he sees it, boldly experimental writing of the kind he and other writers produced in the 1980s was a rejection of the official orthodoxy of Mao's notion that literature ought to serve the Communist regime's political ends. "We wanted to say," Yu told me, "that writing is not in the service of anything other than itself."

Yu claims that he was forced to reconsider his stance of aesthetic autonomy after the events of June 4, 1989, and reconfigure his notion of the relationship between writer and society, especially as he confronted the problems created by China's breakneck modernization in the 1990s. This meant embracing the old Chinese model of the writer as social critic and a pared-down style of cinematic brevity and much earthy humor. It meant, too, writing about China's large but invisible majority in the age of globalization: peasants and workers in villages and small towns.

Yu now looks back wryly on his reputation as a militant advocate of l'art pour l'art. He said he had recently been persuaded to conduct a public conversation with Alain Robbe-Grillet during the latter's visit to Beijing. He didn't think much of the high priest of the nouveau roman, to whom he was often and inaccurately compared in the past. "He was just an old codger," Yu said and laughed.

EExpressing a preference for engagé over ivory-tower literature is unlikely to endear Yu to left-leaning readers in China. "If the right-wingers," Yu said, "hate 'Brothers' for its depiction of capitalism in China, the left dislikes it for its depiction of the Cultural Revolution."

I put this to Wang Hui, the most prominent of intellectuals described as part of China's New Left, which maintains that many of China's peasants and workers have yet to reap the benefits of the newly globalized economy. Wang is an old friend of Yu's and wrote a foreword to a collection of his essays. (It was Wang who first encouraged Yu to begin writing essays in the late 1990s, publishing them in Dushu, the magazine he edited until 2007.) Yu told me that, broadly, he shared the New Left's criticism of Chinese-style capitalism, its tendency to create wealth in the cities while bypassing the countryside. Wang, however, seemed reluctant to wholeheartedly endorse "Brothers."

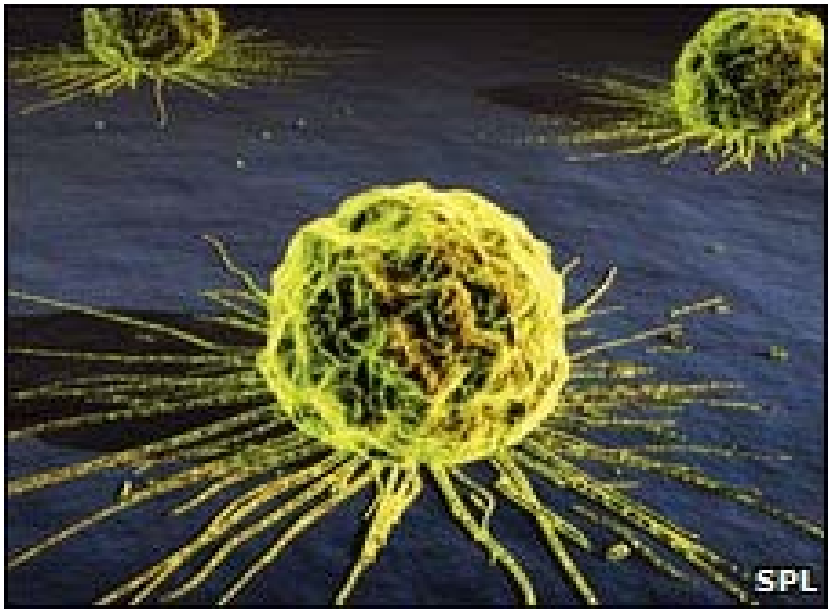
"The first part reproduces the conventional 'grand narrative' of the Cultural Revolution as a time of unrelieved suffering and betrayal," he told me. "I actually find the second part more interesting, because

the author is no longer in control of his narrative. But, you know, we are old friends, and we haven't really discussed this book." As he said this, Wang put an arm around Yu. We were at a restaurant in West Beijing that serves the cuisine of Zhejiang, Yu's native province. I had traveled to it in a taxi with Yu and noticed a strain of writerly competitiveness in his terse responses to my questions about contemporary Chinese novelists: he read mostly Mo Yan, Wang Anyi and Su Tong. No, he didn't much read young Chinese writers or the Chinese Nobel Laureate Gao Xingjian, who lives in a suburb of Paris. Ma Jian, the author of the blackly satirical novel "Beijing Coma," who lives in self-imposed exile in London, is barely known in China. He was more interested in foreign authors; he had recently read Ian McEwan's novel "On Chesil Beach" and also introduced a collection of the British novelist's stories in Chinese translation.
Yu spoke warmly, though, of Wang, whom he first met in Beijing in the 1980s and who is one of the very few people he sees frequently. At the restaurant they sat together, presenting a study in contrasts: Wang, unfailingly thoughtful, and Yu, as jaunty as ever. Yet they radiated an easy mutual regard, built upon the shared experience of the tumultuous late 1980s in Beijing and amusement at how significantly things had changed in their own lives since they were provincial students during the Cultural Revolution. Wang seemed to cherish the mischievous — what he called the "jokemaking" — side of Yu.
They had just returned from a trip to Nepal, where they went whitewater rafting together. Yu chortled as he recalled his attempts to hold on to his boat amid the swirling waters. "It's very dangerous," he said, "very dangerous." But he grew visibly aggrieved when I asked him if he followed the Olympic Games in Beijing. The organizers promised to sell tickets online on a first-come-first-served basis, and he tried to buy them as soon as they were made available. But he wasn't able to get the best seats for the basketball matches and then found empty rows in the stadium whose neatness hinted at early block sales to party bigwigs. "Typical Communist Party corruption," Yu bellowed, and for once I was glad for the loud Muzak playing in the restaurant.
He fell silent after this, chain-smoking in his quiet but tense manner, as Wang spoke of the Western financial crisis and its implications for China's export-oriented economy. The stock market was in a steep decline; factories on the coast were closing. The discussion seemed to bore Yu. When I remarked that President Hu Jintao's then-imminent visit with President Bush was very likely an exercise in futility, he said, "These politicians are mostly a waste of time."
He perked up only when I asked him what he thought of Zhang Yimou's contribution to the opening ceremony of the Beijing Olympics. He said he felt sympathetic to Zhang, who is often accused of selling out to Communist authorities as well as to commercial interests. "He would have reached the end of his career very quickly had he persisted in making films like 'To Live.' He had to live with the realities of Chinese society. And it is different for filmmakers. I can always publish in Taiwan if I am restricted in China. In China, too, the political atmosphere has gone back and forth from closed to open, and I have been lucky in hitting the troughs."
Later in the taxi home, sitting next to the driver, Yu spoke of a threat to artistic expression in China newer than state control. "I am really worried about the new nationalism," he said. "Anything slightly critical of China appears in foreign media, and the nationalists are swarming online, attacking it. I tell these angry youth that The New York Times doesn't criticize China as much as it criticizes America. Basically they are ignorant. They think the American media is always praising American presidents. The problem is that the younger generation hasn't lived through poverty, collectivism; it is lacking in restraint, its references are very few, the experience is so limited."
We were moving down Beijing's stately avenues, past the quasi-imperial grandeur of its postmodern architecture. Yu seemed eager to return to his sparsely furnished study and the room with the Internet. Earlier that day at his home he spoke of how his son, who has known only post-Mao China, would nevertheless witness extraordinary transformations in his own lifetime since the capitalist economy was bound to collapse. Yu barely looked out of his window as he said: "These young nationalists have no sense of ambivalence, no idea of life's ambiguities. But when times are hard, their attitude will change, become more mature, and because capitalism in this form cannot go on in China, it has to end, those hard times will come soon."
Pankaj Mishra is the author, most recently, of "Temptations of the West: How to Be Modern in India, Pakistan, Tibet and Beyond." He last wrote for the magazine about the Egyptian novelist Alaa Al Aswany.

http://www.nytimes.com/2009/01/25/magazine/25hua-t.html

Smear tests important in over 50s

Cervical screening continues to pick up abnormalities in women over 50, say UK researchers, despite calls to cut the programme in older women.



There has been "much discussion" about whether to continue smear tests in 50 to 64 year olds, the Institute of Cancer Research team said.

But a study of two million women found serious cases would not be picked up if screening was removed in this group.

Around 2,700 women are diagnosed with cervical cancer each year in the UK.

The disease is the second most common cancer in women under 35 and in 99% of cases is caused by the common sexually transmitted infection HPV.

The idea behind screening is to pick up pre-cancerous changes and treat them before they become an invasive disease.

" **We know that screening saves lives - this message has been loud and clear for younger women in recent months** "
Dr Anne Szarewski, Cancer Research UK

Women over 50 have a lower incidence of these changes or "lesions" with 10% of women in their 20s having abnormalities but only 1% in those over 50.

Previous studies have concluded that because the risk is lower in older women, screening may be causing more harm than good.

But a study of smear tests done in women aged 20 to 64 years between 1988 and 2003 found that screening does in fact pick up serious abnormalities, the British Journal of Cancer reported.

It showed two-thirds of abnormal smears were picked up in women who had two previous negative results in their 40s.

Removing screening in older women, even in those who have had no prior signs of lesions, would miss a group of women who develop abnormalities later in life, the researchers said.

Missed cases

The study was carried out in the south of England where the risk of cervical cancer is less than average and so even more cases might be missed in other areas of the country they said.

Currently, women aged 25 to 49 are invited for screening every three years, and 50 to 64 every five years in England.

The government is reviewing the age at which screening starts as women are invited for tests at age 20 in other UK countries.

Study leader Dr Roger Blanks said if you could stop screening at 50 that would save a huge amount of money and anxiety.

"But the data we have is there is not this dramatic decrease so we can't say they are no longer at risk."

He added further research was needed to see if there were any "very low risk groups" where screening could be stopped.

Dr Anne Szarewski, clinical consultant for Cancer Research UK, said that sexually transmitted infections are rising at a faster rate in people over 45 than in any other age group.

"We know that screening saves lives - this message has been loud and clear for younger women in recent months.

"This large study adds to the recent evidence that women over 50 should continue to be screened, as they continue to be at risk of developing cervical cancer."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8038318.stm

Published: 2009/05/08 00:45:16 GMT

Home light therapy psoriasis hope

A specialist light treatment for psoriasis is just as effective and safe when given at home as in hospital, say Dutch researchers.

Phototherapy using UVB light is rarely used in the UK because of limited availability and the number of hospital visits required.

But a study of 200 patients found the same results with home treatment.

One UK expert said the British Medical Journal study highlighted an important treatment gap in psoriasis care.

Psoriasis is a common disorder caused by too rapid production of new skin cells, causing red scaly patches.

" **In my area there are very large numbers of people who don't have access to phototherapy which is a shame as it's a very effective and safe treatment** "
Professor Alex Anstey, Royal Gwent Hospital, Wales

Up to 3% of the UK population is affected by the non-contagious condition which can cause significant disability.

For those who have access to UVB treatment at their local dermatology unit, a course usually entails three visits each week for between eight to 10 weeks.

It works by dampening down the immune overreaction in the skin.

One reason that the treatment is usually done in hospital is because most dermatologists believe that home phototherapy is inferior and that it carries more risks.

In the latest study, patients with psoriasis from 14 hospital dermatology departments were randomly assigned to receive either home UVB phototherapy or hospital-based treatment.

Home treatment was equivalent to hospital therapy both in terms of safety and the effectiveness of clearing the condition.

And those treated at home reported a significantly lower burden of treatment and were more satisfied.

Equal treatments

Study leader Dr Mayke Koek, from Utrecht University Medical Centre, said: "We knew a lot of dermatologists are not convinced of the safety and effectiveness of UVB phototherapy but our theory was they should be equally safe."

"One of the most important findings was a lot of patients treated at home were more satisfied."

Professor Alex Anstey from the Royal Gwent Hospital in Newport, Wales, said with the exception of Scotland, phototherapy in the UK was limited to people who lived near a big hospital.

"In my area there are very large numbers of people who don't have access to phototherapy which is a shame as it's a very effective and safe treatment."

He said that the equipment - similar to a tanning bed, but a different type of light - costs between £5,000 and £10,000 but was very cheap compared with some of the new biological therapies in use and could be lent to patients for the duration of their treatment.

Gladys Edwards, chief executive of the Psoriasis Association, said the guidelines on treating psoriasis should be reviewed in light of the new research.

"Patient choice is important and for some patients managing their UV treatment at home would clearly be preferable.

"It is crucial, however, that there is absolutely clear guidance and information on when this is appropriate and how it should be managed for patients and clinicians."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8038206.stm

Published: 2009/05/08 00:44:36 GMT

Wild fruit trees face extinction

By Victoria Gill
Science reporter, BBC News

The wild ancestors of common domestic fruit trees are in danger of becoming extinct, scientists have warned.

Researchers have published a "red list" of threatened species that grow in the forests of Central Asia.

These disease-resistant and climate-tolerant fruit trees could play a role in our future food security.

But in the last 50 years, about 90% of the forests have been destroyed, according to conservation charity, Fauna & Flora International.

The Red List of Central Asia identifies 44 tree species in Kyrgyzstan, Kazakhstan, Uzbekistan, Turkmenistan and Tajikistan as under threat from extinction.

It cites over-exploitation and human development as among the main threats to the region's forests, which are home to more than 300 wild fruit and nut species including apple, plum, cherry, apricot and walnut.

Antonia Eastwood, the lead author of the research, described the region as a "unique global hotspot of diversity".

"A lot of these species are only found in this area," she told BBC News. "It's very mountainous and dry, so many of these species have a great deal of tolerance to cold and drought.

"A lot of our domestic fruit supply comes from a very narrow genetic base," she continued. "Given the threats posed to food supplies by disease and the changing climate, we may need to go back to these species and include them in breeding programmes."

Farming fruit

Kazakhstan and Kyrgyzstan are thought to be the ancestral homes of familiar favourites such as Red Delicious and Golden Delicious.

The US Department of Agriculture has already sponsored expeditions to Kazakhstan, during which scientists have collected samples with the aim of expanding the genetic diversity of farm-grown apples.

This type of genetic foraging, Dr Eastwood explained, allows domestic lines to be crossed with wild strains, producing varieties more resistant to diseases such as apple scab, a fungus that can devastate crops.

"But these countries lack the resources to conserve their valuable trees," added Dr Eastwood.

This year, as part of the the UK Darwin Initiative, Fauna & Flora International is working with scientists in Kyrgyzstan to carry out research on threatened trees and develop methods to harvest the fruit sustainably.

The organisation is training local scientists and involving communities in the planning and managing of their own forests.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8036785.stm

Published: 2009/05/07 09:18:28 GMT

Shrimp tuned to ocean temperature

By Victoria Gill
Science reporter, BBC News

Stocks of northern shrimp, the essential ingredient in the ubiquitous prawn cocktail, could be badly affected if ocean temperatures rise.

Researchers report, in the journal Science, that shrimp eggs hatch within days of each spring phytoplankton bloom - the main food source for the larvae.

They conclude that shrimp are adapted to local temperature, which determines how long eggs take to develop.

If seas warm, as predicted, shrimp stocks could collapse, the team says.

The international team of scientists found that, throughout the north Atlantic - from Cape Cod in the US to to Svalbard in Norway - northern shrimp (*Pandalus borealis*) eggs hatched, on average, in time with the bloom.

This is the period when food is abundant, so the larvae have a far better chance of survival.

But to get the timing right, the shrimp must mate during exactly the right period during the previous year.

"They don't do this on a year by year basis - deciding to mate a week later because the algal bloom will be a week later," said Peter Koeller, a researcher from the Bedford Institute of Oceanography, who led the study.

"This is on evolutionary time scales - they have adapted to local conditions."

This means it would be impossible for the shrimp to adapt to a rapid change in temperature at the seafloor, where they live.

Shrimp boats

Dr Koeller's team collected samples of shrimp daily and counted the proportion of females that were still carrying their eggs. With satellite imaging, they were able to compare the timing of the algal blooms to the release of the larvae.

As Dr Koeller pointed out, an explosion in the northern shrimp population in the 1980s and 1990s was linked to a drop in sea temperatures at that time.

He said it was feasible that the opposite could happen "as the climate changes".

"As surface waters warm, this would eventually result in warmer water at the bottom, which would lead to faster development of eggs and earlier hatching," he explained.

"The larvae would be further removed from period of food abundance, which would mean poor survival rates and fewer shrimp."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8037888.stm

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Possible site of free will found in brain

19:00 07 May 2009 by **Ewen Callaway**

Free will, or at least the place where we decide to act, is sited in a part of the brain called the parietal cortex, new research suggests.When a neurosurgeon electrically jolted this region in patients undergoing surgery, they felt a desire to, say, wiggle their finger, roll their tongue or move a limb. Stronger electrical pulses convinced patients they had actually performed these movements, although their bodies remained motionless.

"What it tells us is there are specific brain regions that are involved in the consciousness of your movement," says Angela Sirigu (pdf format), a neuroscientist at the CNRS Cognitive Neuroscience Centre in Bron, France, who led the study.

Brain stimulation

Sirigu's team, including neurosurgeon Carmine Mottolese, performed the experiments on seven patients undergoing brain surgery to remove tumours.In all but one case, the cancers were located far from the parietal cortex and other areas that Mottolese stimulated. One patient's tumour sat near the parietal cortex, but did not interfere with the experiments, Sirigu says.

And because the patients were awake during the surgery, they could answer questions."Did you move?" a researcher asked a 76-year-old man after lightly zapping a point on his parietal cortex.

"No. I had a desire to roll my tongue in my mouth," he responded.After a stronger pulse to the parietal cortex, a 42-year-old man exclaimed: "My hand, my hand moved." Sirigu's team saw no signs of movement.

Action loop

Sirigu's team also discovered that stimulating another brain area – the premotor cortex – provoked involuntary, unconscious movements in the same patients.The team's work points to two brain areas involved in the decision to move a limb and then execute the action. Sirigu speculates that the parietal cortex makes predictions about future movements and sends instructions to the premotor cortex, which returns the outcome of the movement to the parietal cortex.

In day-to-day life, we rely on both brain regions to move about, she says. "You need both systems, the parietal and premotor cortex to generate intention and check whether this is followed through."

'Ground breaking'

Patrick Haggard, a neuroscientist at University College London, says the experiment breaks ground because it pinpoints volition to a specific part of the brain, allowing scientists to experimentally control it."That's extremely interesting, because up to now it has been very difficult for neuroscientists to deal with the idea of intentions or wishes or will," he says.

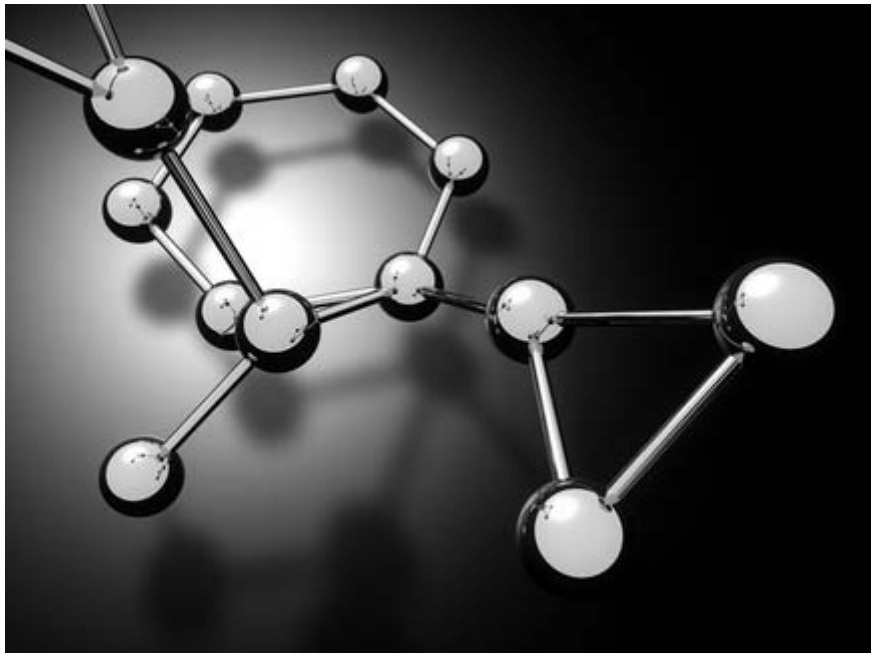
However, Haggard says no one should be surprised that the experience of volition can be liked to specific brain areas. "I can't think of any way you can have conscious experience other than as a result of neurons in your brain firing."

Journal reference: *Science* (DOI: 10.1126/science.1169896)

http://www.newscientist.com/article/dn17092-possible-site-of-free-will-found-in-brain.html

Nanotechnology: New Risks But No Rules

By: David Richardson



Barely a decade after the industry got its start, nanotechnology is poised to sweep the globe. Touted as the next industrial revolution, potential uses for nanomaterials include highly efficient solar collectors, medical devices capable of delivering medications to individual cells, odor-free gym socks and invisible sunscreen lotion.

Nanotechnology fabricates and manipulates objects at a very small scale, less than 100 nanometers in size. For an idea of how small that is, a sheet of paper is 100,000 nanometers thick. A red blood cell is 7,000 nanometers across while a DNA molecule is 2.5 nanometers across. The fullerene, a ball-shaped molecule with wide-ranging potential in commerce and industry, is a man-made sphere of carbon with a diameter of just 2 nanometers and can be fabricated using as few as 60 individual carbon atoms.

At the nanoscale, some materials show unusual properties not apparent in bulk-size versions of the same materials. For instance, carbon atoms formed into nanotubes have exhibited tensile strength many times that of steel, while at the nanoscale, substances that are normally chemically inert, such as gold, can act as a powerful chemical catalysts.

These changeling qualities have elevated nanomaterials to star status in science, industry and commerce. According to a recent survey by Lux Research, which tracks emerging technologies, 807 consumer products, marketed by 420 companies, contain engineered nanomaterial components. Lux reports that there are $140 billion worth of "nano-enhanced products" already on the market, while it projects market expansion to $3.1 trillion worldwide by 2015.

Inevitably — through normal use, accidental spills or disposal at end of the life cycle — nanoscale materials will enter the wider environment. And for Richard Denison, senior scientist with the Environmental Defense Fund, that raises major questions.

Denison says the dispersion of products containing nanomaterials "has gotten way out ahead of our knowledge about them, their possible effects on the environment and on human health."

Denison noted he is not opposed to nanotechnology in general. "The high probability is that only a small fraction of the materials would carry risks," he says, noting that the problem is determining which ones.

One popular application for nanomaterials has already shown the potential for deleterious effects, at least on the man-made environment. Zhiqiang Hu, a researcher from University of Missouri, has shown that nano-sized silver oxide particles infused in gym socks and some clothes washing equipment to kill germs and keep everything smelling fresh don't always stay put. He says the silver-oxide can wash off and can be carried along with rinse water to the local wastewater treatment facility. Once there, the particles retain their antibacterial properties, impairing the reproduction of the helpful bacteria that play an essential role in water treatment.

According to *Chemistry World*, J. Clarence Davies, a former senior official at the U.S. Environmental Protection Agency, said, "There is good reason to believe that at least some kinds of nanomaterial are a threat to human health or the environment, and at the moment we really don't have any regulatory system for dealing with that."

He has called for the Obama administration to "quickly implement new oversight mechanisms for nanotechnology. Such actions include collecting safety information on uses of nanomaterials in food production and packaging; updating federal occupational safety laws; and defining nanomaterials as 'new' substances under federal laws, thereby allowing agencies such as the Environmental Protection Agency and the Food and Drug Administration to obtain more information on nanomaterials."

Few Answers From EPA

Denison says Environmental Defense Fund, along with several technology and environmental advocacy groups, several years ago, began a dialogue with the EPA to begin mapping out a nanomaterials regulatory strategy.In January 2008, the EPA initiated a Nanomaterials Stewardship Program, a voluntary reporting program aimed at gathering information about nanomaterials either currently on the market or contemplated for commercialization.

The program encourages manufacturers, importers and users of engineered nanoscale materials to provide the EPA with information about these materials — including their physical and chemical properties, hazards, uses, scope for potential exposure and associated risk management practices.

According to EPA spokesman Dale Kemery, the program also includes an alternative voluntary "in-depth" branch, through which companies will develop and submit to the EPA "health and environmental effects data" on a subset of nanoscale materials that they use.As of December 2008, 11 months into the program, only 29 companies and organizations had enrolled, submitting information on a mere 123 out of a total of 2,084 potential nanomaterials.

Davies, the former EPA official under the George H.W. Bush administration now serving as an adviser to the Project on Emerging Nanotechnologies at the Woodrow Wilson International Center for Scholars in Washington, D.C., sees a good reason for the low enrollments: "There is no incentive right now for anybody to submit information," he saidDenison agreed. He said the original recommendations of EPA's own advisory panel contained both voluntary and workable mandatory reporting provisions, which would have made the data-collection process much more efficient, but, according to Denison, the agency favored an entirely voluntary approach.

A close examination of submissions that have been posted on the EPA's NMSP Web site reveals, Denison says, additional shortcomings of the voluntary disclosure approach. For example, as a protection for proprietary information, EPA provided companies the option to designate certain categories of product information confidential. According to Denison, the use of the confidential designation highlights the

most prominent feature of several of the company reports - how little information they offer, obscuring, in some cases, even the name of the material that is the subject of the disclosure.

But Bill Gulledge, nanotech group manager for the American Chemistry Council, which represents chemical manufacturers, said the level of participation in the EPA's stewardship program has been encouraging. Looking over a list of the first 20 or so participating companies, he said the major nanotech players in the chemical manufacturing field are well represented.

Gulledge believes early participation in the program may have stalled because of "misunderstandings about the level of commitment required." Gulledge says he tells his constituents that the EPA does not require companies to perform environmental health and safety tests of their nanoscale materials, but it does require companies to report information already on hand or readily accessible.

In spite of such a modest request, Gulledge says outreach among chemical manufacturers has been a continuing challenge. Nevertheless he has begun "encouraging members to sign up for the in-depth program."

Providing the government with in-depth information on their nanoscale products, Gulledge says, will give companies the opportunity to help build the knowledge base needed for appropriate regulation. But equally important, he said it gives them the opportunity to properly "frame" the information they provide about the materials they either use or have under development.

Same, Only Different

A major quandary facing nanotechnology regulation is how to classify identical chemical substances with divergent properties.The EPA's Kemery said many nanoscale materials are already regulated under the agency's long-standing Toxic Substances Control Act, which requires manufacturers of new chemical substances (i.e., those not on the act's existing Chemical Substances Inventory) to provide specific information to the agency for review prior to manufacturing the chemicals or introducing them into commerce.

However, many nanoscale materials have the exact chemical composition of their bulk scale counterparts, but as mentioned earlier, have potentially, very different physical properties and effects.

For this reason Denison, Davies and other observers would like to see nanoscale derivations with novel properties treated as new substances for regulatory purposes.In his recommendations for the new administration, "Nanotechnology and Oversight: An Agenda for the New Administration," Davies laid out a new course for the National Nanotechnology Initiative. He recommends setting aside $100 million in the fiscal 2009 budget for nanotechnology risk research that would proceed in tandem with applications and developmental research. The President's 2009 NNI budget proposes an increase from the $35 million allocated to ESH R&D in 2005 to $79 million for the coming fiscal year. The voluntary nanomaterials stewardship program remains, for the time being, the primary means of gathering EHS data on existing nanomaterials.

In congressional testimony delivered in February at a hearing titled Revisiting the Toxic Substances Control Act of 1976, Davies advocated for major procedural and reporting changes in the law. In reference to nanotechnology, he said, "There is a large mismatch between the current regulatory system and the characteristics of 21st-century science and technology."Davies says the government must play the key role in safely ushering in this new technology even if it demands the creation of new forms of oversight. "Given the potentially great impact of a failure to identify and control an adverse effect of nanotechnology, should we really leave its identification and control in the hands of those who are producing it?"

http://www.miller-mccune.com/science_environment/nanotechnology-new-risks-but-no-rules-1171

Would You Like Nutrition Info With That?

By: Ryan Blitstein

You ever see those big posters at fast-food chains? You know, the ones filled with all that nutritional information?

Don't worry. Hardly anyone else has, either.

New research out of Yale University published in the *American Journal of Public Health* shows that just 0.1 percent of customers visiting restaurants like McDonald's and Burger King actually look at the nutritional content they display or offer in pamphlets. What the eating public doesn't know may hurt them: Many prior studies have shown that people underestimate the caloric content of fast-food meals, which are higher in calories than food cooked at home.

Though fast-food joints alone can't be blamed for America's obesity epidemic, public health advocates argue they contribute heartily to the problem, with the average U.S. resident eating six meals or snacks outside the home each week. More prominent nutritional information might help them make healthier eating choices.

About half of America's largest chain restaurants make some food content numbers available to visitors. Christina Roberto, who's pursuing joint doctorates in clinical psychology and in epidemiology and public health, wanted to know if customers are paying attention. So she led a team that dispatched research assistants to McDonald's, Burger King and the ostensibly healthful Au Bon Pain and Starbucks. During various times of day, they visited franchises on Manhattan's Upper West Side, in New Haven, Conn., and in two Connecticut malls.

Researchers bought food and brought books, then sat down to observe whether customers accessed nutritional information via wall posters, pamphlets or an on-premises computer.

At McDonald's, only one woman and one man out of 1,501 people looked at the numbers before buying food, with another pair doing so after their purchases. Out of the 4,311 patrons at eight different restaurants, just six looked at the nutritional information before paying.

"My hypothesis was that it'd be a small number," Roberto said. "I just didn't think it would be that small."

To increase the chances that people will see health information, she and other health researchers suggest, municipalities should require menu labeling — including the caloric content and other nutrition data on menu boards, just as such statistics are printed on packaged food bought in grocery stores.

A handful of recent studies have indicated menu labeling's promise. At Subway restaurants in New York City, customers who saw calorie information purchased 52 fewer calories than those who didn't. One study by the County of Los Angeles Department of Public Health, based on relatively conservative assumptions, projected that instituting a requirement would avert 43 percent of the nearly 7 million-pound annual weight gain in the county.

New York is one of nearly 50 cities, counties and states (ranging from Arkansas to California) where legislators have introduced such laws. It's also among the dozen municipalities where the regulations have passed. In Washington, Sen. Tom Harkin, D-Iowa, and Rep. Rosa DeLauro, D-Conn., have been pushing various versions of the similar Menu Education and Labeling (MEAL) Act since 2003.

Representatives of the restaurant industry have fought hard against the measures, even suing New York City twice (unsuccessfully) in an attempt to block its rule. The National Restaurant Association, which didn't return calls for comment about Roberto's study, has argued menu labeling increases costs and may deplete revenues, and that unsophisticated citizens may have trouble interpreting nutritional information. As an alternative, chain restaurants have favored voluntary actions, such as offering submenus with healthier options.

Last October, the industry launched the Coalition for Responsible Nutrition Information, an advocacy group that aims to replace the patchwork of state and local menu labeling laws with federal legislation. But instead of Harkin and Delauro's stringent MEAL Act, restaurants prefer the Labeling Education and Nutrition (LEAN) Act, co-sponsored by two senators, Democrat Tom Carper of Delaware and Republican Lisa Murkowski of Alaska, and two congressmen, Democrat Jim Matheson of Utah and Republican Fred Upton of Michigan.

LEAN would require chains with 20 or more outlets to make nutritional data available for customers at restaurants — just not on the menus. If customers want information about items like sugar and sodium content, they must request them. In other words, the legislation requires exactly the sort of information offerings that Roberto's research indicates has little effect.

"It's not an effective way to disseminate information if no one's using it," Roberto said. "Consumers really have a right to know."

http://www.miller-mccune.com/health/nutrition-info-with-that-1195

To Manage Wildfires, Manage Change First

By: Michael Todd

Jennifer Balch considers herself a "tropical fire ecologist," a term that would have been an oxymoron a half-century ago. The tropics are, by popular definition, sweaty places with lots of water dripping everywhere and things going squish with every footstep. Sure they're hot, but that's only one part of the three needed for fire.

Balch, a postdoctoral fellow of the National Center for Ecological Analysis and Synthesis at the University of California, Santa Barbara, does her fieldwork in the Brazilian state of Mato Grosso, at the southern end of the Amazon rain forest. Such rain forest, she explained, might see a wildfire every couple of centuries, and then only when the predominant environmental variable was severe drought.

But times are different now, and the combination of climate change and intentional fires set to peel back the jungle to create pastures or cropland has made the study of "tropic fire" genuinely timely.

"It was almost a misnomer to say that fire occurred in a tropical forest just a few decades ago," mused Balch, who's worked in the Amazon since 2004. Now, she said, fires in many tropical forests occur every couple of decades — which isn't all that different from areas commonly associated with wildfires, like the Western United States or Australia.

Fires in the jungle are more likely at the edges of the tropical forest — hence her work on the Amazon's arc of deforestation, where the savannah meets the humid forests (a zone known as the transitional forest). Fire is more common too when forests are diced into pieces — more edge, after all — or when the canopy of leaves and branches is broken, allowing sunlight and breezes to dry out the accumulated vegetable matter on the forest floor or the detritus of earlier incomplete burns.

Balch was the lead co-author, with David Bowman, of a recent paper in *Science* magazine headlined "Fire in the Earth System." That ambitious paper, among other things, suggested that intentionally set fires used

to peel back the world's forests for cultivation have generated a fifth of the human-generated carbon dioxide pumped into the atmosphere in the 250 years since the dawn of the Industrial Revolution.

Her work is on the burning edge, literally, of wildfire and human-caused — or anthropogenic — fires. When people meet forest, the story is ultimately predictable — expect fire.

Down Under

David Bowman has studied the history of fire in a very different environment, the world's most arid inhabited continent, Australia. And after years of watching indigenous Australians wrangle fire to craft their own habitat, he feels most people are at best imperfect users of fire and at worst serial bunglers.

An ecologist based at the University of Tasmania, he only has to let his mind wander north, across the Bass Straight to the state of Victoria, to see the consequences of that bungling. In February, a series of wildfires — some apparent arsons — broke out in the forested areas northeast of Melbourne, ultimately killing more than 200 people.

To Bowman, the best way to look at the Victorian fires is to go back, 45,000 years back, to be exact, when Australia's indigenous people brought fire to the continent. "It's a deeply important question," he said, "what do indigenous people do with fire? Were they skillful with fire?"

In the aborigines' case, Bowman finds the answer is yes. He found their use pragmatic, to bend the natural habitat to do things like create a surplus of kangaroo to hunt, protect their own resources from wildfires or clear land for planting or transit. They left behind a patchwork of burnt and untouched areas, a "habitat mosaic." And, Bowman said, "They had effectively tamed fire to create a benign habitat — for them." He's further argued that their stewardship, for such it was, even resulted in greater biodiversity for the continent.

Skip forward several dozen millennia, and enter the European settlers with a different take on fire. Rather than tame fire, they felt it was better to subdue it, to ensure that nothing burned.

"It was a rational response," Bowman argues, "but uninformed historically." And after World War II, with plenty of military hardware lying around that could be used to fight fires, "They said, 'We will now wage total war with fire.'

"We are now looking at defeat in that war," he concluded. "I call it Smokey the Bear blowback. After each wildfire, fire had a nasty habit of coming back bigger and harder."

The Victorian fires have been a poster child for that defeat. While the root lay back to European settlement, the proximate factor was tremendous heat. "We had weather conditions," Bowman explained, "that in terms of the historical frame, were absolutely unprecedented. The fire index, which was scaled to 100, showed fire conditions were almost 200. There was an extreme dry period, and extreme absence of rainfall, and 47-degree air temperatures (116 degrees Fahrenheit). The eucalyptus oil flash point is 50 degrees" — and the forests were filled with native eucalyptus.

Bowman noted that the actual physical processes in the Victorian fires are still largely unknown, but he described balls of fire blowing out of the trees and people dying from the radiant heat alone. The fire also changed the land surface itself, to the point of exfoliating granite — something normally seen on geological time scales, and not just one black Saturday.

Change You Can Believe In

So while working at different poles of wildfire research — Amazonian wildfires usually creep along at 15 meters an hour, with the flames rarely rising above knee height — both scientists see the potent interaction of people and flame.

Part of it comes from how people manage the lands under their stewardship — setting fires in the Amazon to clear more land for crops or cattle, keeping fires "tamed" in the rural-urban areas where nice homes meet stunning forest vistas, introducing everywhere non-native plants, often grasses that dry to tinder in the late summer.

But they also see something else. Changing climatic conditions, the hook in their Science paper, is creating new behavior in wildfires. It's making those Amazonian wildfires occur in an exponentially quicker cycle, and it's making areas more used to wildfires — such as Victoria state or Balch's current home in Santa Barbara, Calif. — much more inflammable.

As they wrote in Science, "Human landscape management is implicated in these fire regime transitions, yet underlying climate patterns also alter fire behavior."

It's not just the "warming" aspect of global warming — the higher spring and fall temperatures, the abnormal spiking outliers —that appear to be creating bigger and more frequent wildfires. It's the "change" part of climate change — earlier snowmelt, rain at different times of the year, or in differing amounts — that create new challenges. And those challenges then create the next round of change, their paper stated clinically: "Climate conditions are a fundamental driver of fire spread, and fire-induced emissions influence future climate scenarios and fire weather." (The latter idea was explored in the Miller-McCune.com piece "Smokey's Legacy."

"So we get larger fires, more frequent fires, and fires where we haven't usually seen them," Balch noted. "It's not fire so much that we have to manage, it's change. Change is what we have to manage."

For example, in Brazil she's not hectoring big landowners to lay off their Zippos. She's working alongside them. In Mato Grosso, the work is on the land of Grupo Amaggi, a major agribusiness firm in Brazil that uses fire to clear its own land for cultivation. They're not receiving any money, but having a supporting environment to conduct research that might impinge on their way of doing business is a genuine contribution.

"Yes, the forest needs to be converted in their eyes," Balch said, "but wildfires are something no one really wants," especially when those same fires can destroy Grupo Amaggi's own crops or facilities.

In the Victoria fires, Bowman suggested that even with the unusual conditions — and even excluding the outright arson behind some of the fires — humankind played a role. "We've got the most extreme fire conditions we can imagine, but if all the humans were extracted, it's quite possible we would have those exact same climatic conditions and would have no fire.

"If there is any benefit or virtue in such a catastrophe, it's the hope that people connect that these aren't singletons, they aren't outliers, they aren't anomalies. Once you start there, you can begin the necessary actions that respond to that."

http://www.miller-mccune.com/science_environment/to-manage-wildfires-manage-change-first-1202

The Marks of Childhood or the Marks of Abuse?

By PERRI KLASS, M.D.

I had just started out in practice when one day I examined a little boy, maybe 4 years old, and discovered around his neck the clear mark of a noose. I asked him what had happened; he said he didn't know. I asked his mother; she said she didn't know, but it was the fault of her ex-husband. I had to tell her I was filing a report with the Department of Social Services — the child had clearly suffered an inflicted injury.

My training had included many slide shows about the stigmata of cigarette burns, belt marks and other suspicious injuries, but it was the first time I had been the person alone on the front line, looking at a mark on a child, knowing something was wrong. My colleague Dr. Lori Legano is a pediatrician who specializes in child abuse at the Frances L. Loeb Child Protection and Development Center at Bellevue Hospital. Part of her job is to testify in court and to speak to judges and juries about a range of marks and bruises and what they indicate.

She has to integrate a pediatrician's understanding of child development and behavior with a growing body of forensic information about child abuse. Bumps and bruises, after all, can be expected in any young child who is learning to walk. But some injuries are inconsistent with developmental stage: "If you don't cruise, you don't bruise." So a child who isn't mobile shouldn't have those marks, let alone broken bones. And then there are intrinsically suspicious marks, or marks in the wrong places.

This year, the study of child abuse is coming of age as a medical specialty. In November, the first medical board exam will be offered in a new official specialty, child abuse pediatrics. Knowledge and research that have accumulated over decades about the effects of physical abuse and sexual abuse are being codified into a curriculum; fellowship training in the field will have to meet certain standards; an expert, testifying in court, can expect to be questioned about being board-certified. "When I started doing this in 1984, nothing that I do now was even known," said Dr. Carole Jenny, a professor of pediatrics at Brown and the director of the child protection team at Hasbro Children's Hospital in Providence, R.I. "The first week I was working in the field, it was a child who had reportedly had a torn hymen or no hymen, and the defense attorney said, 'But doctor, aren't some children born without hymens?' and I said, 'I don't

know!' And we initiated a study in the newborn nursery and we counted 1,100 baby girls." Every one had a hymen.

Like most pediatricians, I am intimidated by the idea of testifying in court. But all of these specialists have answered questions from lawyers on many occasions; the witness box is a basic part of the landscape of the new specialty. "So many of these victims are children who could never explain to us what happened to them — they're not swearable," said Marjory D. Fisher, chief of the special victims bureau in the Queens district attorney's office. Without pediatricians trained in child abuse, she continued, "we would never be able to prevail in these cases because the victims are too young; they don't possess the ability to testify."

In my training, from the beginning, I was taught to worry about burns. Cigarette burns were always suspicious; immersion burns suggested that a child might have been punished by being dunked in too-hot water. So, of course, it was cigarette burns that brought my own young son to the emergency room one night during my residency when I was on call; he had run full tilt into a stranger in a restaurant who was holding a lighted cigarette. (Yes, I trained so long ago that people could smoke in restaurants.)Dr. Philip Hyden, medical director of the Kapi'olani Child Protection Center in Honolulu, is an expert on burns. To help figure out whether a burn could have occurred accidentally (as in an apartment building in which someone in another apartment flushed a toilet and the bath water suddenly turned scalding hot), he asks detectives to check the water temperature at the same time on the same day of the week that the injury occurred.

Go to the home, turn on the hot water, wait to see how hot it gets — and then you'll have an idea how long the child would need to have been in contact with the water for the burn. Could it have happened with a single splash, or was the child held in hot water? "If Mom says the kid fell into the tub and you go into the bathroom and the water won't go higher than 125," Dr. Hyden told me, "you know that water can burn that kid, but it's going to take a lot of time to do it."Regularly, he says, he finds himself trying to explain the physics of burns to a judge or jury: "The hotter the water, the much quicker the burn is, exponentially quicker rather than just linear." When my son came to the emergency room with cigarette burns, I found out what it was like for a parent to watch doctors suspect child abuse. Did this story make sense? (Yes.) Did the child confirm it? (Yes.)

But the incident made enough of an impression on my colleagues that a year or so later, when the same child came back with a broken femur at age 4, an attending doctor said to me, with the harsh humor of the emergency room: "I don't know, Perri. First cigarette burns, now a major fracture — doesn't look so good for you." (I knew enough to be theoretically glad that abuse was on his mind; on the other hand, 20 years later, I haven't forgotten or forgiven the remark.)To be board-certified in this new specialty will also mean thoroughly understanding the medical conditions that are sometimes mistaken for child abuse — the easily broken bones of osteogenesis imperfecta, for example, or the dramatic bruising that can happen with hemophilia. The parents of children with these medical conditions are often themselves traumatized when the suspicion of child abuse is raised, and one role for a specialist is to make sure that even esoteric alternative explanations are considered.

"We spend a lot of time ruling out abuse," Dr. Jenny said. Forty percent of the children referred to her for evaluation turn out, in her best judgment, not to have been abused.The child abuse experts don't want the rest of us in the profession to stop thinking about the subject. "I think the average pediatrician can diagnose this, even though it's becoming a specialty," Dr. Legano said.

But it's an emotionally difficult diagnosis for a pediatrician to contemplate, especially when it concerns a family you feel you know well. And all too often, it is a diagnosis we fail to consider in families that don't match our mental profiles of abusers. That's why pediatricians and parents alike need all the clinical experience and all the science we can get, deployed on the side of the children.

http://www.nytimes.com/2009/05/12/health/12klas.html?_r=1&nl=8hlth&emc=hltha1

Unemployment May Be Hazardous to Your Health

By RONI CARYN RABIN

Even as the U.S. Labor Department released figures showing that the economy lost more than half a million jobs in April, researchers on Friday made public a large study with an unsettling finding: Losing your job may make you sick.

A researcher at the Harvard School of Public analyzed detailed employment and health data from 8,125 individuals surveyed in 1999, 2001 and 2003 by the U.S. Panel Study of Income Dynamics.

Workers who lost a job through no fault of their own, she found, were twice as likely to report developing a new ailment like high blood pressure, diabetes or heart disease over the next year and a half, compared to people who were continuously employed.

Interestingly, the risk was just as high for those who found new jobs quickly as it was for those who remained unemployed.

Though it's long been known that poor health and unemployment often go together, questions have lingered about whether unemployment triggers illness, or whether people in ill health are more likely to leave a job, be fired or laid off.

In an attempt to sort out this chicken-or-egg problem, the new study looked specifically at people who lost their jobs through no fault of their own — for example, because of a plant or business closure.

"I was looking at situations in which people lost their job for reasons that...shouldn't have had anything to do with their health," said author Kate W. Strully, an assistant professor of sociology at State University of New York in Albany, who did the research as a Robert Wood Johnson Foundation scholar at the Harvard School of Public Health. "What happens isn't reflecting a prior condition."

Only 6 percent of people with steady jobs developed a new health condition during each survey period of about a year and a half, compared with 10 percent of those who had lost a job during the same period. It didn't matter whether the laid off workers had found new employment; they still had a one in 10 chance of developing a new health condition, Dr. Strully found.

David Williams, a professor at the Harvard School of Public Health who was not involved in the research, said the study is a reminder that job loss and other life stressors have a tremendous impact on both mental and physical health and contribute to the development of chronic conditions.

"We know that stress affects health," said Dr. Williams, director of the Robert Wood Johnson Foundation Commission to Build a Healthier America. "It causes changes in physiological function in multiple ways, and it can lead to alterations in health behavior. People no longer exercise, they eat more, they drink more. People who smoke, smoke more on high stress days."

"There is a lot of focus on the economic downturn, but there is not much attention being paid to the health consequences of the downturn," he added. "This study shows that it does not take a long sustained period of unemployment to see health effects."

http://www.nytimes.com/2009/05/09/health/09sick.html?nl=8hlth&emc=hltha1

Vitamins 'undo exercise efforts'

Taking vitamins after exercise may undo some of the beneficial effects of the workout, research suggests.

Some advocate taking antioxidants like vitamin C and E to help protect the body from harmful chemical by-products it creates in breaking into a sweat.

But German scientists now believe these "free radicals" may actually be good for us and even buffer against diabetes, PNAS reports.

And mopping them up with antioxidants may do more harm than good.

" **Sometimes we need to consider whether taking supplements is actually beneficial** "
Dr Sarah Aldred Exercise biochemistry expert at the University of Birmingham

It is thought that antioxidant vitamins may be able to prevent damage to the body's tissues called "oxidative stress" by eliminating the free radicals which are said to cause it.

This damage has been implicated in several major diseases including cancer and heart disease as well as normal ageing.

But Dr Michael Ristow, of the University of Jena, and his team have shown free radicals may have a positive effect on the body by increasing its sensitivity to insulin - something that is lost in type 2 diabetes.

And this effect is blocked by antioxidant vitamins.

Too much of a good thing

Men who took vitamin C and E supplements showed no changes in their free radical levels, whereas those who did not take these antioxidants showed increased levels of free radical oxidative stress.

After four weeks of intensive exercise training, insulin sensitivity was restored only in the group of men who did not take antioxidant supplements.

The men who took the vitamin supplements fared worse, metabolically.

Dr Sarah Aldred, a lecturer in exercise biochemistry at the School of Sport and Exercise Sciences at the University of Birmingham, said: "It doesn't mean that antioxidants like vitamin C and vitamin E are bad for us, it just means that sometimes we need to consider whether taking supplements is actually beneficial.

"As this study shows it is not actually always the case."

Dr Elisabeth Weichselbaum of the British Nutrition Foundation said: "Antioxidants protect the cells in your body from damage and therefore help to reduce the risk of certain diseases such as cancer.

"But you should not consume high doses on a regular basis as this can have negative effects on your body.

"If you stick to a healthy and varied diet, you generally get enough of the nutrients you need and you don't run the risk of consuming large amounts that may be harmful for you."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8043456.stm

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Chemical clue to dementia decline

Scientists have pinpointed compounds in the spinal fluid which may give an early warning of how fast patients with mild dementia will decline.

The level of these chemicals seems to correlate with the rate at which thinking, learning and memory skills fade as dementia takes its toll.

The finding raises hope of being able to target treatment at those in most need from an early stage.

The US study appears in the journal Archives of Neurology.

" **This interesting research could lead to a new way of detecting people with dementia early, before they develop devastating symptoms** "
Dr Suzanne Sorensen Alzheimer's Society

Research is currently focused on trying to find effective treatments for dementia in its early stages.

However, to test the effectiveness of new approaches researchers need to enrol people into clinical trials when they are still at the earliest stages of the disease.

But this can prove problematic, as it is difficult to anticipate how symptoms of dementia will progress in a patient still in the earliest stages.

This latest finding, from the Washington University School of Medicine, St. Louis, may provide researchers with a way of selecting patients whose condition is most likely to deteriorate, and thus from who they have most to learn when testing the impact of new therapies.

Ultimately, it might also assist doctors in deciding who to target as more invasive and potentially harmful disease-modifying treatments for dementia become available.

The latest study was based on 49 people who had been diagnosed with very mild Alzheimer's disease.

Fluid sample

A sample of spinal fluid was taken from each, and analysed for levels of several chemicals - or biomarkers - associated with Alzheimer's.

The patients were then followed up an average of three-and-a-half years later.

The researchers linked accelerated progress of Alzheimer's to several low levels of a protein called amyloid, and high levels of two other proteins, called tau and phosphorylated tau 181.

The disease also progressed more rapidly in people whose tau level was relatively high in comparison to their amyloid level.

Dr Susanne Sorensen, head of research at the Alzheimer's Society, said: "This interesting research could lead to a new way of detecting people with dementia early, before they develop devastating symptoms.

"This is absolutely vital if we are to find drugs that help people at an early stage.

"Everybody experiences dementia differently. This study could also help identify people at particular risk of a steep decline in thinking, learning and memory skills, making it easier to see how effective potential new treatments are."

Rebecca Wood, chief executive of the Alzheimer's Research Trust, agreed the technique could potentially lead to earlier and more accurate diagnosis of Alzheimer's, and help scientists develop new treatments.

She said: "Although examining spinal fluids can be uncomfortable for patients - and new developments could alleviate such discomfort - this research will help scientists assess the effectiveness of treatments being tested and developed."

Story from BBC NEWS:
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Evolution is slowing snails down

Matt Walker
Editor, Earth News

Garden snails are evolving slower metabolisms.

Natural selection is favouring snails with reduced metabolic rates, researchers in Chile have discovered.

It is the first time that evolution has been shown to select for this trait in individuals of any species.

Snails with lower metabolisms are at an advantage because they have more energy to spend on other activities such as growth or reproduction, the researchers say in the journal Evolution.

Roberto Nespolo and Paulina Artacho of the Southern University of Chile in Valdivia examined a long standing biological hypothesis known as the "energetic definition of fitness".

"This predicts that animals that spend less energy will have more surplus for survival and reproduction," says Nespolo.

We could recover the dead because of their shells and because they did not move more than a couple of metres each year
Evolutionary biologist Roberto Nespolo

Few studies have tested the idea, and three done on rodents could not find any evidence it was true. "Ours is the fourth and the first to demonstrate significant directional selection on metabolism," says Nespolo.

Nespolo and Artacho measured the size of almost 100 garden snails *(Helix aspersa).* They also gauged their standard metabolic rate (SMR), by measuring how much carbon dioxide each animal produced while at rest.

The standard metabolic rate is a measure of the minimal amount of energy an animal requires to stay alive.

"Standard metabolic rate is the energy required for maintenance. In other words, having less maintenance permits you to have more energy for other activities, such as growth and reproduction. That's why less metabolism represents higher fitness," says Nespolo.

After seven months, they recaptured the animals, collecting the empty shells of those which had died.

Survival of the SMR

They found size did not predict which animals survived. But metabolic rate did, with surviving snails having a metabolic rate 20% lower than that of the snails that didn't survive.

And the lower each snail's metabolic rate, the greater its chance of survival. That means that nature is selecting for snails that are more energy efficient, says Nespolo.

Nespolo's and Artacho's study worked in part because of the snails they chose to study.

Previous research examined metabolism in wild mice. But it's impossible to know whether mice that disappear from a study have died, or simply moved away. So it's difficult to accurately measure how many mice survive year to year.

By studying garden snails living in purpose-built enclosures, Nespolo and Artacho avoided this problem, as their snails did not move far and left behind empty shells when they died.

"We could recover the dead because of their shells and because they did not move more than a couple of metres each year," says Nespolo.

Snail's pace

The researchers now plan to answer the ultimate question: is having a slow metabolism linked to moving slowly?

If it is, that means that snails are not only evolving to use energy more slowly, but are increasingly moving at an even lower snail's pace.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/earth/hi/earth_news/newsid_8043000/8043689.stm

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Scientists offer thalidomide clue

Scientists claim they have finally worked out how and why the drug thalidomide caused limb defects in thousands of babies.

Mothers had taken the drug to relieve their morning sickness in the late 1950s and early 1960s.

A University of Aberdeen-led team said a component of the drug prevents the growth of new blood vessels in the developing embryo.

About 10,000 babies whose mothers took the drug were born with disabilities.

The most common defect was to the limbs of babies. They were born with stunted arms or legs or, in some cases, no limbs at all.

" **We have put to rest a 50-year puzzle, in finally deducing how thalidomide triggers limb defects and why it appears to target limbs preferentially** "
Dr Neil Vargesson University of Aberdeen

It took some time for evidence of birth defects to be linked to thalidomide.

In the 1960s, it was discovered the drug had an effect on some of the painful symptoms of leprosy.

And in the 1980s, scientists once again became interested in the drug's complex properties when researchers began to explore its use in the treatment of a number of diseases, such as cancer.

The Aberdeen researchers said the drug could be re-developed without the component they have highlighted.

Lead researcher Dr Neil Vargesson said: "We have put to rest a 50-year puzzle, in finally deducing how thalidomide triggers limb defects and why it appears to target limbs preferentially.

"Thalidomide is a complicated drug with many actions, but which of these cause limb defects and, as importantly, how this action causes defects, has eluded researchers for many years.

"Many theories have been put forward but this is the first paper to conclusively show that it is the antiangiogenic property of the drug - that element that inhibits new blood vessel formation - that is to blame for the defects."

'Safer form'

He said the drug was taken by women early in their pregnancy to combat morning sickness, typically at around five to nine weeks, although morning sickness in some women can last a lot longer.

"This specific timeframe is crucial as that is when the limbs of babies are still forming," he said.

"The blood vessels involved in this process, at this stage of pregnancy, are still at an immature stage when they rapidly change and expand to accommodate the outgrowing limb."

Dr Vargesson added: "It remains possible that we could make a safer form of the drug that has the clinical benefits for sufferers of leprosy but does not cause limb defects."

However, Dr Martin Johnson of the Thalidomide Trust criticised the research.

He said: "The study does not appear to take into account the wide range of damage caused by thalidomide other than limb damage.

"It also does not take into account explanations that are already widely accepted in the scientific community."

The paper has been published in Proceedings of the National Academy of Sciences.

Story from BBC NEWS:
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Lincoln Center: Mixed Reviews

By ANTHONY TOMMASINI

ON May 14, 1959, when President Dwight D. Eisenhower broke ground at Columbus Avenue and 64th Street for what would become Lincoln Center for the Performing Arts, he joked that maybe the whole project was unnecessary. In a makeshift tent Leonard Bernstein had just conducted the New York Philharmonic in Copland's "Fanfare for the Common Man" and other works. "If they can do this under a tent," the president said, "why the square?"

Turning serious, he forecast that this ambitious endeavor, which wound up costing $185 million, would become a "mighty influence for peace and understanding throughout the world."
Fostering international peace is a rather lofty standard by which to measure the success of Lincoln Center as it begins its 50th-anniversary celebrations on Monday morning at the newly renovated Alice Tully Hall. What really matters is that night after night, as the founders envisioned, the plaza is abuzz with crowds heading into Avery Fisher Hall, the Metropolitan Opera House, the Vivian Beaumont Theater and the other performance spaces of the center's 12 constituents.

Yet if a sprawling performing-arts complex like Lincoln Center were proposed today, it would never be built. Some of the impediments would be practical: the daunting costs, the lack of political consensus, the shift in attitudes toward large-scale urban development projects that displace entire neighborhoods. But the larger question is whether such a complex should be built in the first place. The idealistic assumption that sparked the creation of Lincoln Center — that orchestras, opera companies, ballet troupes and theaters would have much to gain by becoming partners in a centralized complex — would be vigorously challenged today.

Nothing can be more energizing to the cultural life of a city than dynamic performing arts institutions. But the danger in grouping them together is that the creative identities of individual institutions — a bold modern dance company, a great symphony orchestra — can blur behind the walls of an officious encampment. The promise of arts organizations working in sync can become a daily grind of competing boards and directors stifled by bureaucracy.

These are the fair complaints that have been leveled at Lincoln Center and at cultural complexes that followed in other cities. Still, there is potential for synergy between performing arts institutions that share

a common campus and a board of overseers. Lincoln Center was conceived with that vision. And today that spirit can best be felt each summer with the Lincoln Center Festival, when member institutions devise innovative, collaborative projects and presentations.
So, for good and bad, New York is stuck with the mixed-bag that Lincoln Center has become. To its great credit the center is now in the midst of an ambitious $900 million renovation project that promises to galvanize, demystify and literally open up the plaza to new ventures and audiences.

Lincoln Center dates from a time when cities were widely regarded as crowded, chaotic and forbidding. For arts enthusiasts, the new complex, which required clearing away more than 16 acres of a badly run-down neighborhood, promised to be safe, modern and convenient, a cultural citadel with concert halls, opera houses, a duplex theater and more, built with travertine columns and gleaming windows. There would be amenities galore and ample underground parking. Luring suburbanites to Lincoln Center was essential to its success. Once Philharmonic Hall (now Avery Fisher Hall) opened in 1962, it was possible for a music lover to drive in from the suburbs, park, have a little meal, attend a performance and return home without setting foot on a New York sidewalk.

It's worth remembering, as Eisenhower emphasized at the groundbreaking, that in addition to symbolizing America's increasing interest in "cultural matters," Lincoln Center offered a "stimulating approach to one of the nation's pressing problems: urban blight." Yet the families living in the tenements that the center supplanted would surely have stronger defenders today.
At the start almost everyone involved with Lincoln Center said the right things about access to the arts for all citizens. As Eisenhower put it, Americans would now have "new and expanded opportunities for acquiring a real community of interest through common contacts with the performing arts." But however principled the intent, it was not matched by the imposing architecture, which suggested a "little white palace on a hill," as Jane S. Moss, Lincoln Center's adventurous vice president for programming put it in a recent interview.

Back then, though it took much cajoling, the constituent institutions were willing to throw in their lots together. But today, when everyone seems to love cities again, most arts institutions in big metropolitan areas want their own turf so they can interact with neighborhoods and establish distinctive identities. Think of the Public Theater in the East Village, which opened in 1967 with an acclaimed production of "Hair." Placing a theater way, way off Broadway in a run-down section of town was a leap of faith. Now the Public is the centerpiece of a thriving neighborhood, as Joseph Papp, the theater's visionary founder, was certain it would be some day.

For a time after Lincoln Center was built other cities raced to imitate it, even if many projects were ill-conceived, like the sprawling, ugly Barbican in London. The ideal of the cultural complex still holds sway in Dallas, where this fall the $338 million Dallas Center for the Performing Arts, dominated by a new house for the Dallas Opera, will begin its inaugural season. But that is an exception to a long trend away from collaborative centers.

Some institutions — like the Metropolitan Opera, a colossus with a devoted audience — are so big that it hardly matters where they are located. That the Met is part of Lincoln Center minimally affects the way it functions.

But the struggling New York City Opera has been an unhappy fit at Lincoln Center since it moved to the New York State Theater (now renovated and renamed the David H. Koch Theater) in 1966. Its previous home, New York City Center, was far from a proper opera house, but the company had a feisty character there. At Lincoln Center, City Opera has long been the junior partner in a skewed arrangement with New York City Ballet. Being literally in the shadow of the Met has made it harder for City Opera to show the public that it is not a lesser Met but an alternative company with a different mission and inventive ethos. In his 11 years as general and artistic director, Paul Kellogg tried mightily to extricate City Opera from Lincoln Center and move it to its own home. By the time he stepped down in 2007 he had given up. Now the company, which recently seemed close to collapse, has announced an intriguing, though much-reduced, season for 2009-10. In any case City Opera's current financial crisis is mostly the result of a

bungled search for a new director and other bad decisions; the company's board has itself to blame for much of the trouble, not Lincoln Center.
Then there is the New York Philharmonic. In the mid-1950s, with John D. Rockefeller leading the way, the Philharmonic was the prime mover in getting Lincoln Center off the ground. Yet the orchestra suffered in the process of moving from the acoustically glorious Carnegie Hall. Today the Philharmonic must make do with a hall it finds acoustically disappointing, despite several extensive renovations over the years. Administrative and rehearsal facilities at the orchestra's Avery Fisher home are barely adequate.
The Met also agitated for the creation of Lincoln Center. In June 1956 the Met and the Philharmonic signed a joint line of credit for $200,000 to start planning the big move. The Met's old house at Broadway and 39th Street was a grand, endearing and storied place with fine acoustics. But its exterior suggested "police headquarters or the United States Customs," as the critic Harold C. Schonberg wrote in The New York Times in 1960. And the backstage facilities were impossible. Large pieces of sets covered with canvas were sometimes lined up on the sidewalk outside. A new Met was badly needed, and the well-equipped house that opened in 1966 was deemed a success from the start.

The Philharmonic was not nearly as fortunate. What is often forgotten in recounting the genesis of Lincoln Center is that starting in 1954, when talks of replacing Carnegie Hall with a hotel or office tower began in earnest, the Philharmonic had the option of buying the building. After several years of dithering, the Philharmonic passed.

Why didn't the orchestra grab it? Hindsight is easy. At the time Carnegie Hall was run-down with a limited backstage area and essentially no lobby. Reports put the cost of renovation, including "air-cooling," at $1.5 million, added to a purchase price that topped $4 million, a hefty sum for what would still have been an inadequate space for the orchestra. Yet had the Philharmonic taken the plunge, Lincoln Center might never have been built, or else it might have been scaled back to become essentially a new home for the Met.

On Sept. 23, 1962, Leonard Bernstein conducted the Philharmonic in the inaugural concert of Philharmonic Hall, with Jacqueline Kennedy among the honored guests. In The New York Times the next day Mr. Schonberg reported that the sound of the orchestra from one section of the hall was "a little dry, with not much reverberation and a decided lack of bass." Other critics were much more negative.
The inadequacy of Avery Fisher Hall's current acoustics is greatly exaggerated. On a good night, when the Philharmonic is inspired, the sound has richness, clarity and presence. Did anyone in the audience think about acoustics in January when Gustavo Dudamel conducted the orchestra in an electrifying performance of Mahler's Fifth Symphony?

A bigger problem, reflecting the downside of being one of many Lincoln Center constituents, is the way the Philharmonic's tenant status is affecting the renovation of Avery Fisher. Plans are stuck in place because the orchestra and the center have been unable to agree on the nature and extent of the project. The auditorium seats 2,738. Ideally the capacity would be brought down to less than 2,400, the maximum, most acousticians agree, if an orchestral hall is to have vibrant sound. But Lincoln Center makes money from renters of Avery Fisher, including schools and colleges that need every available seat for graduation ceremonies.

Not surprisingly, Ms. Moss, the vice president, prefers to cite the benefits of having a single arts complex where different institutions share facilities and function as neighbors. Lincoln Center, she said, has an "iconic meaning" for the public.

"Having these arts organizations together, with this über identity, has absolutely brought in new audiences," she added, calling it an "extraordinarily democratic approach to the arts."
But it could also be argued that the complex's citadel-like feeling has deterred potential audiences. With its institutional appearance, Lincoln Center does not look at first glance like a place for innovative or experimental work.

And yet, thanks in part to Ms. Moss, the center has been a hotbed of unusual programming and creative educational projects for the last 15 years. It is significant, though, that some of the most daring recent presentations have occurred off campus, like last summer's multimedia production of Bernd Alois Zimmermann's visionary, complex modernist opera "Die Soldaten," which the Lincoln Center Festival presented in the Park Avenue Armory.

To get a deeper sense of how Lincoln Center could live up to its dream of being a magnet for the city's artistic life, one has only to watch a video relay of a live Met performance in the plaza with crowds of grateful opera buffs, or witness Midsummer Night Swing, when the plaza is transformed into an outdoor dance hall.

In this regard the reopening of Alice Tully Hall in February — the first completed project in the overall renovation — is the most encouraging development at Lincoln Center in years.
The results are exhilarating. The old entrance made the hall look like a bunker protected from above by a useless pedestrian overpass. The inner lobby felt cramped and isolated. But now, with its expansive see-through lobby, an inviting new restaurant and fanciful outdoor courtyard, the hall practically shouts at people to come on in.

As the redevelopment continues, the willingness of the constituents to cooperate will be tested. The renovation of Avery Fisher Hall could force the Philharmonic into a nomadic existence for two full seasons. Will the Chamber Music Society of Lincoln Center, the very possessive resident ensemble at Alice Tully Hall, make multiple dates available for Philharmonic concerts? Will Jazz at Lincoln Center do the same?

Whatever one's take on the Lincoln Center at its 50-year milestone, the institution is certainly doing its part to stimulate the sagging economy. At a time of severe recession, when arts organizations everywhere are cutting back and even going under, Lincoln Center remains committed to its nearly $1 billion renovation project. Arts lovers in New York should be gratified to see the scaffolding and walled-off excavation sites in the plaza. Having long ago chosen the all-together-now approach to creating an performing arts complex, Lincoln Center is determined to make the best of it.

http://www.nytimes.com/2009/05/10/arts/music/10tomm.html?partner=rss&emc=rss