Infoteca's E-Journal

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

UA de C
Universidad comprometida

CONTENTS

Children can 'imagine away' pain

Children can be taught to use their imagination to tackle frequent bouts of stomach pain, research shows.

A relaxation-type CD, asking children to imagine themselves in scenarios like floating on a cloud led to dramatic improvements in abdominal pain.

The US researchers said the technique worked particularly well in children as they have such fertile imaginations.

It has been estimated that frequent stomach pain with no identifiable cause affects up to one in five children.

The research, published in the journal Pediatrics, follows on from studies showing hypnosis is an effective treatment for a range of conditions known as functional abdominal pain, which includes things like irritable bowel syndrome.

" **There is really a dearth of information on how to manage children with abdominal pain** "
Professor David Candy

In this study, the children had 20 minute sessions of "guided imagery" - a technique which prompts the subject to imagine things which will reduce their discomfort.

One example is letting a special shiny object melt into their hand and then placing their hand on their belly, spreading warmth and light from the hand inside the tummy to make a protective barrier inside that prevents anything from irritating the belly

The researchers, from the University of North Carolina and Duke University Medical Center, said a lack of therapists led them to the idea of using a CD to deliver the sessions.

In all 30 children aged between six and 15 years took part in the study - half of whom used the CDs daily for eight weeks and the rest of whom got normal treatment.

Among those who had used the CDs, 73.3% reported that their abdominal pain was reduced by half or more by the end of the treatment course compared with 26.7% in the standard care group.

In two-thirds of children the improvements were still apparent six months later.

Anxiety

It is not clear exactly how the technique works but studies have shown it is partly about reducing anxiety but there is also a direct effect on the pain response.

Some researchers think hypnosis-like techniques reduce "hypersensitivity" in conditions such as irritable bowel syndrome.

Study leader Dr Miranda van Tilburg said it was especially exciting that the children were able to use the technique on their own.

"Such self-administered treatment is, of course, very inexpensive and can be used in addition to other treatments, which potentially opens the door for easily enhancing treatment outcomes for a lot of children suffering from frequent stomach aches.

"Children are very good at using their imagination - when you use this in adults you have to overcome a barrier first."

Professor David Candy, a consultant paediatric gastroenterologist at Western Sussex Hospitals, said his team had tried hypnosis in a small group of children with severe abdominal pain problems and had 100% success rate.

He added they are now keen to try the guided imagery technique to see if they can replicate the US findings.

"There is really a dearth of information on how to manage children with abdominal pain and it's a very common problem which keeps children out of school."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8299719.stm

Published: 2009/10/12 06:35:04 GMT

Downturn is 'climate opportunity'

By Richard Black
Environment correspondent, BBC News website

The global recession provides a window of opportunity to curb climate change and build a low-carbon future, says the International Energy Agency (IEA).

It calculates that global greenhouse gas emissions will fall by 3% this year - an increase on previous estimates.

If governments take this opportunity to invest in clean technology, the global temperature rise can be kept below the G8 goal of 2C (3.6F), the agency says.

The findings were released at UN climate talks in Bangkok.

"The message is simple and stark: if the world continues on the basis of today's energy and climate policies, the consequences of climate change will be severe," said IEA executive director Nobuo Tanaka.

" **The cost of addressing climate change is manageable. The cost of not doing so is unaffordable** "
Yvo de Boer, UNFCCC

"Energy is at the heart of the problem - and so must form the core of the solution."

The recession is likely to mean emissions being 3% lower this year than last - and it will have a longer term impact, the IEA says, with emissions in 2020 projected to be 5% less than they would have been without an economic dip.

The biggest carbon cuts will come from improving energy efficiency, it says.

Slash, not burn

The agency presents a series of policy measures for different regions of the world and for countries at various stages of economic development.

Its prescription would lead to greenhouse gas concentrations being stabilised at the equivalent of 450 parts per million (ppm) of carbon dioxide - a level that, according to some analyses, offers a good chance that the rise in the global average temperature since pre-industrial times could be kept within 2C.

Without these policies, the agency calculates that concentrations will soar to 1,000ppm by mid-century - levels that, in many scientists' views, would lead to catastrophic and irreversible consequences.

But political and financial capital needs to be invested soon if the world is to follow the 450ppm path, it says, with emissions needing to peak around 2020.

Developed countries, which it defines as those in the OECD and/or EU, will have to slash energy-related emissions by 17% in the next 11 years and by 50% by 2030. Other major emitters such as China, India and Brazil would have to keep the rise in their emissions to 14% above current levels by 2030.

Countries in earlier stages of development would be able to increase their greenhouse gas output.

Globally, clean energy technologies would expand rapidly. In the decade after 2020, the IEA's prescription includes a threefold expansion of nuclear power, a fourfold growth in the renewables sector and a 14-fold expansion of clean coal technologies.

The cost of this transformation would be $10 trillion between 2010 and 2030, the agency says - but improving energy efficiency would save virtually the same amount.

Bangkok heat

In a foreword to the report, Yvo de Boer, executive secretary of the UN climate convention (UNFCCC), warned that all of this was contingent on tying up an ambitious global deal during December's UN climate conference in Copenhagen.

"These results should motivate us all to step up efforts to reach an agreement with the requisite ambition," he said.

"The cost of addressing climate change is manageable. The cost of not doing so is unaffordable."

Mr de Boer is currently in Bangkok, chairing a preparatory meeting of officials from governments inside the UN convention. On Monday, China and Sudan - which chairs the G77/China bloc of primarily developing nations - accused rich countries of trying to "kill off" one of the fundamentals of the Kyoto Protocol - that emission targets should be legally binding in some way.

They accuse western countries such as the US and Australia of wanting to make targets more flexible, which they fear will allow "wriggle room".

The IEA's analysis forms part of its annual World Energy Outlook, and has been released early in order that it can be discussed in the Bangkok talks.

Selected headline figures, including the recession's projected impact on emissions, were made public last month.

Richard.Black-INTERNET@bbc.co.uk

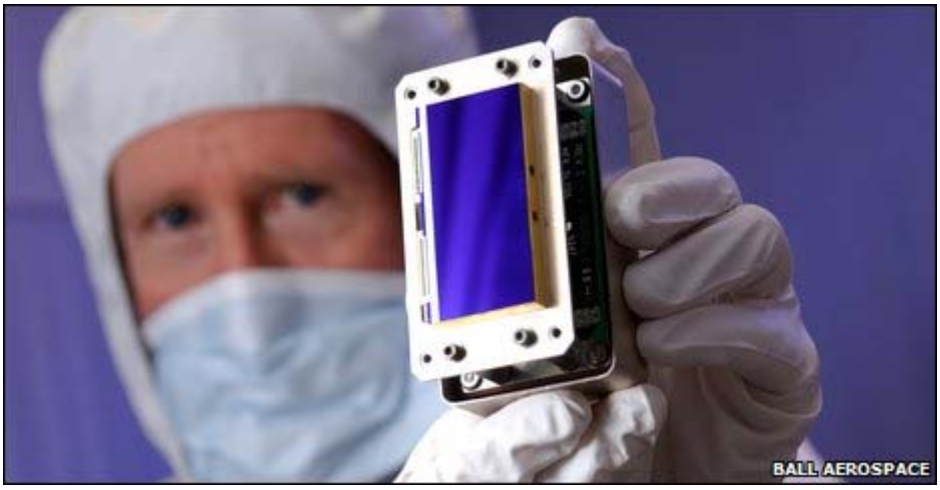
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8292175.stm

Published: 2009/10/06 10:51:01 GMT

Nobel honours 'masters of light'

By Jonathan Amos
Science reporter, BBC News

Three scientists who corralled light to transform our communications systems share this year's physics Nobel Prize.



Charles Kao is lauded for his work in the UK in helping to develop fibre optic cables, the thin threads of glass that carry phone and net data as light.

Willard Boyle and George Smith, both North Americans, are recognised for their part in the invention of the charge-coupled device, or CCD.

This light detector initiated the digital camera revolution.

The Royal Swedish Academy of Sciences, which administers the prize, said half of the award would go to Kao, who was born in Shanghai, China, in 1933 and holds UK-US citizenship.

It was his insight while working in Britain in the 1960s, said the academy, which allowed researchers to take fibre optics to a new level - to enable these thin cables to transmit light over much longer distances than had previously been possible.

Kao's team, including George Hockham, at Standard Telecommunication Laboratories in Harlow proposed the means to improve dramatically the purity - and therefore the efficiency - of the glass material used to construct the fibres.

Today, fibre optics underpin the communication age.

The hair-like cables speed data around the globe in the form of rapid pulses of light.

The modern telephony system is built on the technology, and high-speed broadband internet would not be possible without it.

Wondrous views

The other half of the prize is to be split between Boyle, aged 85, and Smith, 79. Their breakthrough was made at Bell Laboratories in the US.

The North Americans' group invented the first digital sensor, a CCD (charge-coupled device), in 1969.

The CCD contains arrays of photosensitive cells which become charged when light falls on them. The more light, the greater the charge. The chip reads out this signal, which can then be used to render an image.

The academy said the work of Canadian-born Boyle and US citizen Smith "revolutionised photography, as light could be now captured electronically instead of on film".

While the technology delivered instant pictures to the masses, CCDs have also transformed scientific observation.

Specialist detectors are now incorporated into the imaging systems of all space missions. The Hubble telescope, for example, records its wondrous views of the cosmos on CCDs. And the vivid landscapes of Mars returned by robotic vehicles have also been captured on charge-coupled devices.

Such is the pace of change that CCDs are themselves being overtaken by CMOS (Complementary Metal Oxide Semiconductor) technology. This works in a related fashion but runs cooler, is more efficient and is cheaper to produce.

Dr Robert Kirby-Harris, from the UK's Institute of Physics, celebrated the announcement. "Ours is the age of information and images, and no two things better symbolise this than the internet and digital cameras," he said.

"From kilobytes to gigabytes, and now to petabytes and exabytes, information has never been so free-flowing or, with the development of the CCD, so instantly visual. These incredible inventors who have been responsible for transforming the world in which we live very much deserve their prize."

The Nobel Prizes - which also cover chemistry, medicine, literature, peace and economics (more properly called the Sveriges Riksbank Prize) - are valued at 10m Swedish Kronor (£900,000; 1m euros; $1.4m).

Laureates also receive a medal and a diploma.

This year's medicine Nobel, announced on Monday, honoured the study of telomeres, the structures in cells that cap the ends of DNA bundles, or chromosomes.

The work has furthered our understanding on human ageing, cancer and stem cells.

Jonathan.Amos-INTERNET@bbc.co.uk

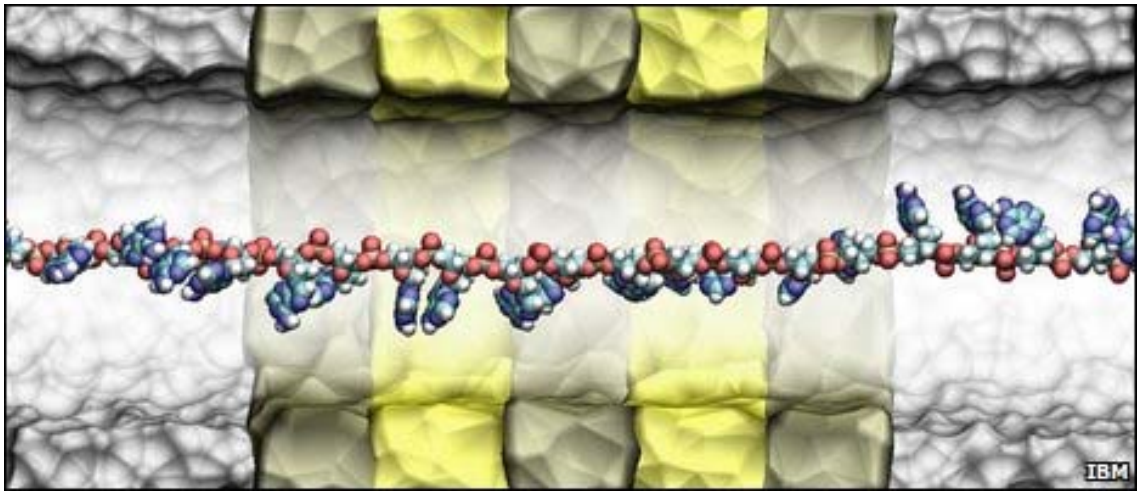
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8292372.stm

Published: 2009/10/06 11:46:20 GMT

DNA sequencing in a holey new way

By Jason Palmer
Science and technology reporter, BBC News

IBM will announce on Tuesday how it intends to hold DNA molecules in tiny holes in silicon in an effort to decode their genetic secrets letter by letter.



Their microelectronic approach solves one of two long-standing problems in "nanopore" DNA sequencing: how to stop it flying through too quickly.

The aim is to speed up DNA sequencing in a push toward personalised medicine.

IBM's chief executive Sam Palmisano will announce the plans to the Medical Innovation Summit in the US on Tuesday.

While sequencing the genomes of humans and animals has become relatively routine in a laboratory setting, the ability to quickly and cheaply sequence genomes of individuals remains out of reach.

That widely available genetic information will help bring about the era of "personalised medicine" - in which preventative or therapeutic approaches can be tailored to individuals based on their specific genetic makeup.

All-electronic

"There have been a number of attempts to sequence DNA much faster than it was sequenced when the first human genome was announced," said Gustavo Stolovitzky, a computational biologist from IBM.

"All of them use some complicated sample preparation - chopping the DNA, amplifying, reverse transcribing - and some sophisticated and labour-intensive optics," Dr Stolovitzky told BBC News.

"All this makes sequencing faster, but still slower and more expensive than it needs to be before it could be used for personalised medicine."

Instead, Dr Stolovitzky and colleagues are pursuing a method involving silicon peppered with holes just three billionths of a metre across - 20,000 times thinner than a human hair and just wide enough for one strand of DNA to pass through.

Researchers have been looking into using such nanopores for a number of years - mimicking the proteins in cell membranes that perform the same trick - because using a semiconductor offers significant advantages over biochemical and optical techniques.

"DNA nanopore sequencing continues to be one of the great candidates to do fast and cheap DNA sequencing without sample preparation or sophisticated optics, using only electronics to fetch the signal out," Dr Stolovitzky said.

Moreover, the approach could be done in a "massively parallel" way - that is, with hundreds or thousands of DNA strands passing through an array of holes on a single chip.

Trap stack

The idea is conceptually simple but devilishly difficult to carry out. Because DNA naturally carries a net electric charge, simply applying a voltage across the two sides of the chip drives the DNA strands through the holes.

However, the DNA tends to pass through too quickly to decode the identities of the individual nucleotides - letters of the genetic code - as they pass.

More than that, until they can study DNA strands moving at a more carefully controlled pace, researchers cannot develop the techniques to query the precise nucleotide they have trapped in place.

The IBM team have now hit on the idea of a chip composed of a stack of layers, each of which can hold a precisely-controlled voltage in a thin layer inside the nanopore.

These smaller voltages trap the negatively charged chemical groups called phosphates that separate individual nucleotides.

By cycling this internal voltage, the DNA strand can be made to advance one nucleotide at a time.

The team has used IBM's Blue Gene supercomputer to simulate the process in order to ensure it would work, and the team has built prototypes of the trapping nanopore. Tuesday's announcement marks the beginning of the testing and refinement stages of the process.

What remains is to investigate the means to identify the individual nucleotides trapped inside the nanopores, which is likely to rest on measuring some electrical or electronic property of each as it passes.

Stas Polonsky, another IBM researcher working on the project, remains convinced that with the benefit of a trapping mechanism, this last problem is tractable. "As a company we have a lot of expertise with electrical measurements," he said.

"We have nanopores plus the whole arsenal of microelectronics - we can integrate all these ultrasensitive circuits right on a chip, which will boost the sensitivity for measurements tremendously."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8291185.stm

Published: 2009/10/06 05:06:14 GMT

Convertibles 'bad for the ears'

Driving a convertible car can seriously damage your ears, experts have warned.

Cruising with the top down at speeds of 50-70mph (80-112km/h) exposes the ears to sound levels sometimes nearing those made by a pneumatic drill, they argue.

Long or repeated exposure to this noise of the engine, road, traffic and wind could cause permanent hearing loss, a US meeting of ENT experts was told.

Researchers said convertible drivers should consider wearing some form of ear protection, as motorcyclists do.

The research has been published in the journal Otolaryngology - Head and Neck Surgery.

In the study, noise levels immediately to the left and right of the driver were measured while travelling at different speeds.

At 50, 60 and 70 miles per hour, the noise reached between 88 and 90 decibels - higher than the generally agreed 85 decibel threshold level at which permanent hearing damage becomes a risk.

Noise levels
- A quiet room at night - 20 decibels
- An ordinary spoken conversation - 60 decibels
- A busy street - 70 decibels
- Shouting - 80 decibels
- A pneumatic drill - 110 decibels
- Aircraft taking off - 130 decibels Source: The Royal National Institute for Deaf People

The researchers repeated the test with a range of convertibles, on the same stretch of motorway, outside of rush hour, and found the same noise levels - around 90 decibels, with a high of 99 decibels.

But they also found motorists can cut the noise by rolling up the windows when driving with the top down.

This simple measure cut the level to 82 decibels.

Experts warned that the damage to hearing builds up gradually and the effects may not be noticed until years later, when it is too late.

Dr Mark Downs, of the Royal National Institute for Deaf People, said: "Noise-induced hearing loss is frequently preventable.

"Regular exposure to noise levels of 88-90 decibels when driving a convertible for several hours a day can lead to permanent hearing loss over time.

"By winding up the windows or wearing basic ear protection, such as earplugs, drivers of convertibles can still enjoy driving whilst protecting their hearing."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8292089.stm

Published: 2009/10/06 23:54:06 GMT

Med-style diet 'can battle blues'

The Mediterranean diet, already thought to protect against heart disease and cancer, may also help to prevent depression, Spanish researchers say.

They found depression was more than 30% less likely to develop in people who followed a diet high in vegetables, fruit and cereals, and low in red meat.

They studied 10,094 healthy adults over four years, the Journal of the American Medical Association reports.

However, the team stressed additional, larger-scale studies were required.

Researchers at the Universities of Las Palmas and Navarra recruited university graduates to take part.

Dietary patterns

They completed questionnaires and the researchers calculated their adherence to the Mediterranean dietary pattern (MDP) for an average of four-and-a-half years.

MEDITERRANEAN DIET FEATURES
- A high intake of monounsaturated fatty acids like olive oil
- A moderate intake of alcohol and dairy products
- A low intake of meat
- A high intake of fruit and nuts, cereals, vegetables and fish

Participants who had a strong adherence to the MDP tended to be male, ex-smokers, married and older individuals.

They were more active physically and showed a higher total energy intake.

The researchers identified 480 new cases of depression during the follow-up period - 156 in men and 324 in women.

They found that those with the highest adherence to the MDP were more than 30% less likely to develop depression.

They took into account marital status, the number of children and factors associated with a healthy lifestyle and found the relationship did not change.

Even taking account of personality traits, such as competitiveness and anxiety, had no effect on the results.

'More research needed'

Professor Miguel Martinez-Gonzalez, of the University of Navarra, said the results would have to be confirmed in longer trials with more participants but they had found a strong inverse association between the Mediterranean diet and depression.

"Thirty per cent is a large reduction in the risk and this could be very important considering the large burden of disease represented by depression.

"We know how important the Mediterranean diet is in reducing cardiovascular risk factors and the same inflammatory proteins are also raised in patients with depression."

He said it was likely that the overall dietary pattern was more important than the effect of single components and "may exert a fair degree of protection against depression".

Dr Cecilia D'Felice, a clinical psychologist, said there was mounting evidence for the importance of diet in treating depression.

She said: "What we do know is that a diet high in olive oil will enhance the amount of serotonin or brain transmitter available to you.

"Most anti-depression drugs work to keep more serotonin available in the brain."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8290632.stm

Published: 2009/10/05 23:10:38 GMT

Building a Bridge of (and to) the Future

By HENRY FOUNTAIN

PITTSFIELD, Me. — The Neal Bridge is barely a bump in the road for motorists roaring down Route 100 south of this central Maine town. It's a modest bit of the nation's infrastructure — two lanes wide and 34 feet long, enough to span a small stream.

The bridge is newer than most, as suggested by the still-black asphalt and the fresh galvanized gleam of the guardrails. But it's what is underneath that really makes the bridge stand out.

Rather than steel or concrete beams, the structure consists of 23 graceful arches of carbon- and glass-fiber fabric. These are 12-inch-diameter tubes that have been inflated, bent to the proper shape and stiffened with a plastic resin, then installed side by side and stuffed with concrete, like giant manicotti. Covered with composite decking and compacted soil, the arches support a standard gravel-and-asphalt roadway.

The bridge is the first of what its designers, about 50 miles up the road at the University of Maine in Orono, hope will be many of its type, combining composite materials with more conventional ones like concrete. With an estimated 160,000 of the nation's 600,000 road bridges in need of repair or replacement, if it or other hybrid designs catch on, they could mark a breakthrough in the use of fiber-reinforced plastics, known as F.R.P., on highways.

"This was an experiment for us," said Habib J. Dagher, director of the university's Advanced Structures and Composites Center, where the design was developed over seven years. "It was time to get out of the lab and see if it really works."

The bridge, built last November for about $600,000, is being monitored with deflection sensors and other instruments, and so far is holding up under the daily onslaught of traffic. "It went amazingly well," Dr. Dagher said. "We learned a lot. It turned out to be $170,000 less expensive than a precast bridge."

It worked so well, in fact, that it attracted the attention of the Obama administration; Transportation Secretary Ray LaHood toured the center in August. And a second, similar bridge was completed in late summer, farther north, in Anson. The fiber-arch design was the lowest of seven bids.

Long the stuff of surfboards and pleasure boats, and more recently used in aircraft wings and other components, plastic polymers reinforced with fibers were first researched for use in bridges in the 1980s. Civil engineers were attracted to them for the same reasons other designers were — their strength, light weight and corrosion resistance.

But the materials have not exactly revolutionized highway infrastructure. F.R.P. strips and sheets have been used to repair concrete or steel on existing bridges, or to strengthen structures against earthquakes. Glass-fiber rods have replaced steel in some reinforced concrete work, because corrosion of steel rebar from road de-icing chemicals destroys concrete.

When it comes to larger-scale structural components, however, fiber-reinforced plastics have had less of an impact. They have mostly been used in bridge decking, where corrosion resistance is critical and the lighter weight allows for a higher "live" load of vehicles. Only a handful of bridges have major support beams made from them.

One reason F.R.P. components haven't caught on, experts say, is that engineers and contractors have little experience with the materials, and full standards guiding their use in highway construction have not been developed.

Engineers "have to deal with life-safety issues," said John P. Busel, director of the composites growth initiative of the American Composites Manufacturers Association. "They have a desire to understand how materials fully develop and how they fully last before they specify them."

The materials also do not always interact well with others. One problem with F.R.P. bridge decks, for example, is that the road surface — asphalt or concrete, applied as an overlay — can wear out quickly, said Lijuan Cheng, an assistant professor of engineering at the University of California, Davis.

But the main argument against using fiber-reinforced plastics has been economic.

"No. 1 is the upfront cost issue," said Paul Ziehl, an associate professor of engineering at the University of South Carolina. "That's a tough one to get around."

Dr. Ziehl, who helped design and test F.R.P. beams used on a small bridge in Texas, said the problem was that no two projects were the same. "If you're going to design things that really make sense from an optimized engineering standpoint, they are going to be one-of-a-kind items at first, until economies of scale kick in," he said. The beams for the Texas bridge, for example, were custom designed and built using a labor-intensive method.

"The construction industry is very persnickety about cost," Mr. Busel said. With F.R.P. decks, he added, "we're more expensive, sometimes twice as expensive," as conventional ones. What contractors need to understand, he said, is that there are transportation, labor and equipment savings from using lighter components, and potential maintenance savings, too.

Such savings were all part of the goal for the University of Maine's design, Dr. Dagher said. Little costly F.R.P. material is used — it serves largely as a shell for the concrete, which is cheaper. The tubes help protect the concrete from de-icing chemicals, potentially reducing maintenance costs, and no internal rebar is needed. "It's exoskeleton reinforcement," Dr. Dagher said.

The arches are not the only hybrid design in use. John Hillman, an engineer and president of HC Bridge Company in Wilmette, Ill., has developed straight beams that combine polymers with concrete and steel. The basic beam consists of a rectangular F.R.P. tube with an arch-shaped conduit formed inside it. The conduit is filled with concrete, which provides compressive strength, and steel rods along the bottom of the tube provide tensile strength. The beams have been used on a test railroad bridge in Colorado and several road bridges in Illinois and New Jersey.

"Everything about the beam is designed to be compatible with conventional means of construction," said Mr. Hillman, who has been working on the design for 14 years. "We're very close right now to parity with concrete and steel on an installed-cost basis."

Mr. Hillman's beams still have to be delivered by truck, although they are light enough that several can be carried on one flatbed. The University of Maine arches, on the other hand, can be fabricated on site — the fabric inflated, bent around a simple form and infused with resin using a vacuum pump. Before they are filled with concrete they are light enough to be installed quickly, without the need for large cranes or other heavy-duty equipment. The second bridge was built in nine working days, Dr. Dagher said.

A spinoff company is working on more plans, including an 800-foot project that consists of multiple short spans. "We see single 300-foot spans in the future," Dr. Dagher said. "We're excited about taking this to the next level."

http://www.nytimes.com/2009/10/13/science/13bridge.html?_r=1&th&emc=th

In Nuclear Cleanups, Not Even Rabbit Droppings Can Be Ignored

By MATTHEW L. WALD

WASHINGTON — Anything that hops, burrows, buzzes, crawls or grazes near a nuclear weapons plant may be capable of setting off a Geiger counter. And at the Hanford nuclear reservation, one of the dirtiest of them all, its droppings alone might be enough to trigger alarms.

A government contractor at Hanford, in south-central Washington State, just spent a week mapping radioactive rabbit feces with detectors mounted on a helicopter flying 50 feet over the desert scrub. An onboard computer used GPS technology to record each location so workers could return later to scoop up the droppings for disposal as low-level radioactive waste.

The Hanford site, overseen by the federal Department of Energy, produced roughly two-thirds of the plutonium used in the nation's nuclear weapons arsenal, beginning in World War II and ending in the 1980s. Today it is the focus of the nation's largest environmental cleanup, an effort that has cost tens of billions of dollars and is expected to continue for decades.

Yet the helicopter flights, which covered 13.7 square miles and were paid for with $300,000 in federal stimulus money, took place in an area that had never been used by the bomb makers.

The area had, however, been used by rabbits that had also burrowed into other areas that were contaminated. Many of the contaminants were in the form of salts, which attract wildlife. The rabbits carried strontium and cesium, which emit gamma rays, back out of the area in their digestive tracts.

The flights were far less expensive than other strategies, said Dee Millikin, a spokeswoman for the contractor, a subsidiary of the engineering and environmental consulting company CH2M Hill.

Walking through the area with radiation detectors would have taken eight months longer and cost $1 million, she said.

The flights were first reported by The Tri-City Herald newspaper of Kenniwick, Wash.

The rabbits themselves are not a target of the operation: the area from which they picked up the contamination was paved over years ago, so the source was sealed off, Ms. Millikin said.

Rabbits were not the only biological vectors contaminated by the nuclear residue. Mice and badgers also picked it up, she said, and coyotes feed on the contaminated smaller animals. "It's basically a circle-of-life situation," she said, adding that researchers have also found traces of radioactive materials in fish of the adjacent Columbia River.

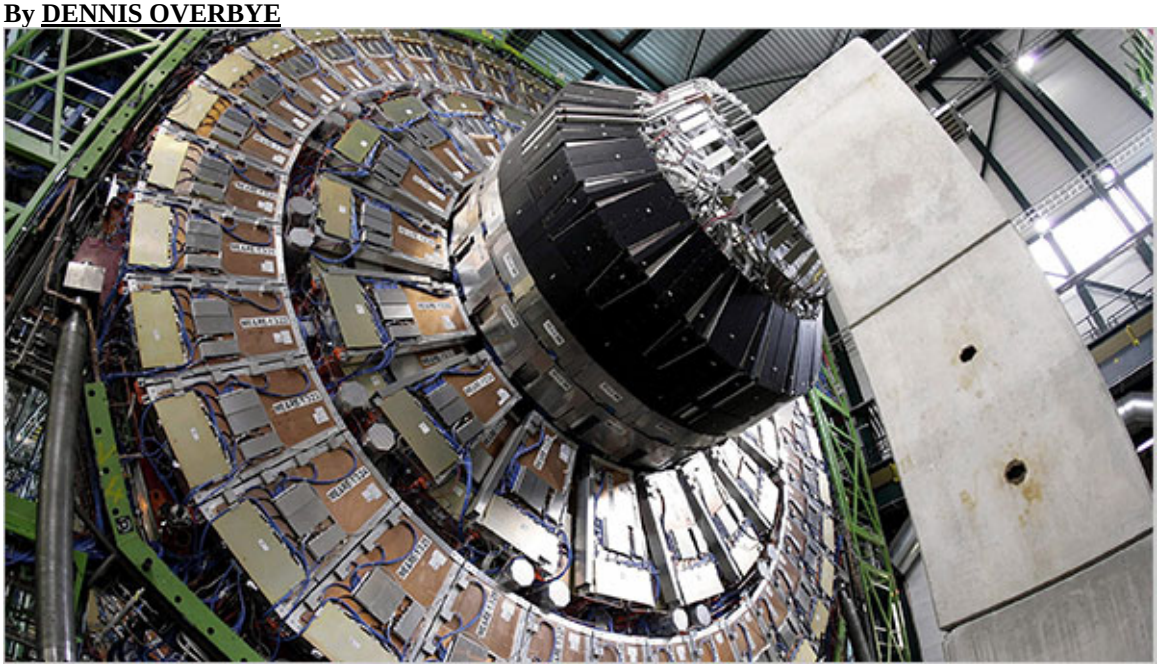
Yet roaming rabbits appear to account for the overwhelming bulk of the radioactive excrement located in the flights, Ms. Millikin said.

Technicians have monitored rodents and waterfowl at Hanford for radiation since 1947, and have identified about 5,400 incidents of "biological intrusion." It is not only animals; tumbleweeds have roots deep enough to pull up radioactive material and then carry it as they blow away, said John Price, who monitors conditions at Hanford for the Washington State Department of Ecology.
Marylia Kelley, the executive director of a California group called Tri-Valley Communities Against a Radioactive Environment, said the rabbit cleanup was "kind of funny, in a sick way."
Hanford is not the only reactor site that has prompted concern about contamination spreading to animals, Ms. Kelley said. For environmentalists focusing on the Lawrence Livermore Nuclear Laboratory in California, for example, she said, the priority is to keep endangered or threatened species like the California tiger salamander and the red-legged frog out of contaminated areas.
At that site, she said, contamination has been somewhat harder to track because it is mostly plutonium, whose main emission is alpha particles that travel only a few inches in air, unlike the gamma rays from cesium and strontium at Hanford.
Radiation is also a concern at the Savannah River nuclear site in South Carolina, where neighbors can enter a lottery every year to be allowed to hunt deer. "All harvested animals are tagged and brought to our check station, where they are monitored for cesium-137," the site's Web site advises.
"If they find something that was above the limit, they take out that part of the carcass and allow the guy to go on his merry way with the rest of it," said Robert Alvarez, an environmental expert and former Energy Department official.
In the 1980s, researchers found turtles contaminated with radioactive materials on a hog farm near the Savannah River plant. The discovery briefly prompted concern that the radioactivity could move into the human food chain, although such a pattern was not detected.
As the federal government pursues cleanups at various nuclear sites, experts have deliberately contaminated a species to further their efforts: honeybees. The Environmental Protection Agency says honeybees have been used to map radioactive materials on five federal nuclear reservations, including Hanford, as well as heavy metal pollutants.
Workers position a hive at a suspect area and wait to see what the bees come back with. Researchers can measure the radioactive content of the bees' honey or wax, but "the recommended sample is the bee itself," the agency said.

http://www.nytimes.com/2009/10/15/science/earth/15rabbit.html?ref=science

The Collider, the Particle and a Theory About Fate

By DENNIS OVERBYE



More than a year after an explosion of sparks, soot and frigid helium shut it down, the world's biggest and most expensive physics experiment, known as the Large Hadron Collider, is poised to start up again. In December, if all goes well, protons will start smashing together in an underground racetrack outside Geneva in a search for forces and particles that reigned during the first trillionth of a second of the Big Bang. Then it will be time to test one of the most bizarre and revolutionary theories in science. I'm not talking about extra dimensions of space-time, dark matter or even black holes that eat the Earth. No, I'm talking about the notion that the troubled collider is being sabotaged by its own future. A pair of otherwise distinguished physicists have suggested that the hypothesized Higgs boson, which physicists hope to produce with the collider, might be so abhorrent to nature that its creation would ripple backward through time and stop the collider before it could make one, like a time traveler who goes back in time to kill his grandfather.

Holger Bech Nielsen, of the Niels Bohr Institute in Copenhagen, and Masao Ninomiya of the Yukawa Institute for Theoretical Physics in Kyoto, Japan, put this idea forward in a series of papers with titles like "Test of Effect From Future in Large Hadron Collider: a Proposal" and "Search for Future Influence From LHC," posted on the physics Web site arXiv.org in the last year and a half.

According to the so-called Standard Model that rules almost all physics, the Higgs is responsible for imbuing other elementary particles with mass.

"It must be our prediction that all Higgs producing machines shall have bad luck," Dr. Nielsen said in an e-mail message. In an unpublished essay, Dr. Nielson said of the theory, "Well, one could even almost say that we have a model for God." It is their guess, he went on, "that He rather hates Higgs particles, and attempts to avoid them."

This malign influence from the future, they argue, could explain why the United States Superconducting Supercollider, also designed to find the Higgs, was canceled in 1993 after billions of dollars had already been spent, an event so unlikely that Dr. Nielsen calls it an "anti-miracle."

You might think that the appearance of this theory is further proof that people have had ample time — perhaps too much time — to think about what will come out of the collider, which has been 15 years and $9 billion in the making.

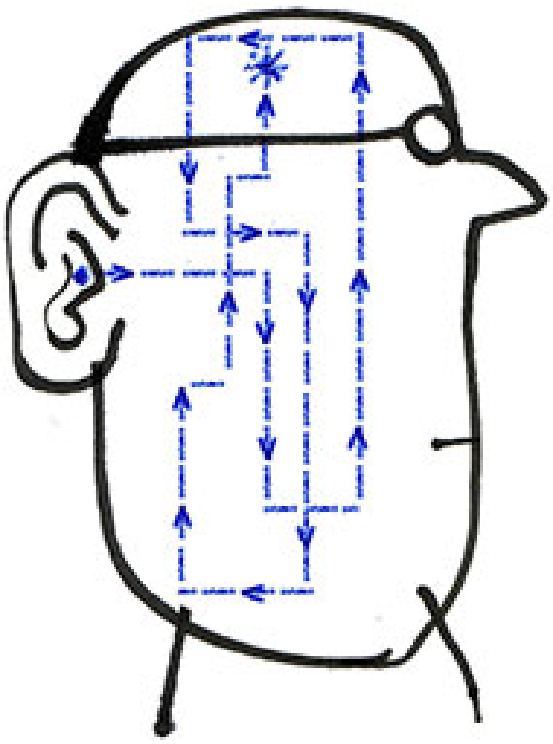
The collider was built by CERN, the European Organization for Nuclear Research, to accelerate protons to energies of seven trillion electron volts around an 18-mile underground racetrack and then crash them together into primordial fireballs.

For the record, as of the middle of September, CERN engineers hope to begin to collide protons at the so-called injection energy of 450 billion electron volts in December and then ramp up the energy until the protons have 3.5 trillion electron volts of energy apiece and then, after a short Christmas break, real physics can begin.
Maybe.
Dr. Nielsen and Dr. Ninomiya started laying out their case for doom in the spring of 2008. It was later that fall, of course, after the CERN collider was turned on, that a connection between two magnets vaporized, shutting down the collider for more than a year.
Dr. Nielsen called that "a funny thing that could make us to believe in the theory of ours."
He agreed that skepticism would be in order. After all, most big science projects, including the Hubble Space Telescope, have gone through a period of seeming jinxed. At CERN, the beat goes on: Last weekend the French police arrested a particle physicist who works on one of the collider experiments, on suspicion of conspiracy with a North African wing of Al Qaeda.
Dr. Nielsen and Dr. Ninomiya have proposed a kind of test: that CERN engage in a game of chance, a "card-drawing" exercise using perhaps a random-number generator, in order to discern bad luck from the future. If the outcome was sufficiently unlikely, say drawing the one spade in a deck with 100 million hearts, the machine would either not run at all, or only at low energies unlikely to find the Higgs.
Sure, it's crazy, and CERN should not and is not about to mortgage its investment to a coin toss. The theory was greeted on some blogs with comparisons to Harry Potter. But craziness has a fine history in a physics that talks routinely about cats being dead and alive at the same time and about anti-gravity puffing out the universe.
As Niels Bohr, Dr. Nielsen's late countryman and one of the founders of quantum theory, once told a colleague: "We are all agreed that your theory is crazy. The question that divides us is whether it is crazy enough to have a chance of being correct."
Dr. Nielsen is well-qualified in this tradition. He is known in physics as one of the founders of string theory and a deep and original thinker, "one of those extremely smart people that is willing to chase crazy ideas pretty far," in the words of Sean Carroll, a Caltech physicist and author of a coming book about time, "From Eternity to Here."
Another of Dr. Nielsen's projects is an effort to show how the universe as we know it, with all its apparent regularity, could arise from pure randomness, a subject he calls "random dynamics."
Dr. Nielsen admits that he and Dr. Ninomiya's new theory smacks of time travel, a longtime interest, which has become a respectable research subject in recent years. While it is a paradox to go back in time and kill your grandfather, physicists agree there is no paradox if you go back in time and save him from being hit by a bus. In the case of the Higgs and the collider, it is as if something is going back in time to keep the universe from being hit by a bus. Although just why the Higgs would be a catastrophe is not clear. If we knew, presumably, we wouldn't be trying to make one.
We always assume that the past influences the future. But that is not necessarily true in the physics of Newton or Einstein. According to physicists, all you really need to know, mathematically, to describe what happens to an apple or the 100 billion galaxies of the universe over all time are the laws that describe how things change and a statement of where things start. The latter are the so-called boundary conditions — the apple five feet over your head, or the Big Bang.
The equations work just as well, Dr. Nielsen and others point out, if the boundary conditions specify a condition in the future (the apple on your head) instead of in the past, as long as the fundamental laws of physics are reversible, which most physicists believe they are.
"For those of us who believe in physics," Einstein once wrote to a friend, "this separation between past, present and future is only an illusion."
In Kurt Vonnegut's novel "Sirens of Titan," all of human history turns out to be reduced to delivering a piece of metal roughly the size and shape of a beer-can opener to an alien marooned on Saturn's moon so he can repair his spaceship and go home.
Whether the collider has such a noble or humble fate — or any fate at all — remains to be seen. As a Red Sox fan my entire adult life, I feel I know something about jinxes.

http://www.nytimes.com/2009/10/13/science/space/13lhc.html?ref=science

In Mammals, a Complex Journey to the Middle Ear

By NATALIE ANGIER



Imagine what a dinner conversation would be like if you had decent table manners, but the ears of a lizard. Not only would you have to stop eating whenever you wanted to speak, but, because parts of your ears are now attached to your jaw, you'd have to stop eating whenever you wanted to hear anybody else, as well. With no fork action on your end, your waiter would soon conclude that you were obviously "done working on that" and would whisk your unbreached baked ziti away.

Sometimes it's the little things in life that make all the difference — in this case, the three littlest bones of the human body. Tucked in our auditory canal, just on the inner side of the eardrum, are the musically named malleus, incus and stapes, each minibone, each ossicle, about the size of a small freshwater pearl and jointly the basis of one of evolution's greatest inventions, the mammalian middle ear. The middle ear gives us our sound bite, our capacity to masticate without being forced to turn a momentarily deaf ear to the world, as most other vertebrates are. Who can say whether we humans would have become so voraciously verbal if not for the practice our ancestors had of jawboning around the wildebeest spit.
The middle ear also explains why mammals, as a group, have the sharpest hearing on Earth and the greatest diversity of listening styles, from the bats and dolphins that can detect pressure waves bouncing around at the spiky, ultrasonic end of the bandwidth, to elephants and humpbacked whales that can hear infrasonically, capturing the long, low sound prints muttered by their peers for miles around. All told, a new study suggests, the middle ear was such a great invention, such an essential part of being a mammal, that once evolution had seized upon it, no crude substitute or older model would do.
In the current issue of the journal Science, paleontologists report on the fossilized remains of a newly discovered mammal from the Mesozoic era, some 123 million years ago. The snouty, 3-ounce, chipmunk-size animal, named Maotherium asiaticus, lived in what is now northeastern China and darted around the feet of the dominant dinosaur overlords, as mammals had been doing for some 100 million years.
What makes this proto-Alvin noteworthy are its ears: the crisply preserved fossil indicates that Maotherium's middle ears were of a middling sort, half mammal and half reptile. Given the timing of the fossil, and evidence from still earlier mammalian fossils, the researchers believe that Maotherium represents backsliding, a reversion toward a more ancient auditory design.

But not to worry. Evolution would rediscover its three-part invention at least once, if not again and again; for by the time the ancestors of today's mammals arose, the trait had been set. Every one of the 5,400 or so known species of mammal — whether placental, pouched marsupial or weird outlying, egg-laying platypussian monotreme — has three ossicles freed from the tyranny of the mandible, freed to be all ears, all the time.

"For those of us dealing with mammalian evolution, the evolution of the middle ear is a holy grail," said Zhe-Xi Luo, curator of vertebrate paleontology at the Carnegie Museum of Natural History in Pittsburgh and an author of the new report. "Sensitive hearing made it possible for early mammals to coexist with the dinosaurs; it was really a matter of life and death." The new fossil, he said, "gives us insight into the complex evolutionary process behind this central mammalian feature."

Nature walks in delirious ways, said Neil Shubin, author of "Your Inner Fish" and a professor of organismal biology and anatomy at the University of Chicago. "This paper shows how the mammalian ear didn't proceed in a linear progression," he said. "Either it evolved multiple times independently, or it flipped back and forth, but in any event we're talking about a bush with many buds and twigs."

The finding also dovetails with recent work in molecular genetics and developmental biology. Among modern mammals, the middle ear of a fetus is one of the last structures to mature and migrate to its proper position, and even after birth the little bones may retain a few lingering filaments of so-called Meckel's cartilage, which connects the ear to the jaw in the early embryo. Dr. Luo and his colleagues suggest that a mutation to a developmental timing gene responsible for this late-stage disengagement might have essentially locked Maotherium's ears into a permanent embryonic state, just as can happen with rare human craniofacial disorders like Treacher Collins syndrome. "Fossil hunters, developmental biologists, medical geneticists, we're all meeting eye-to-eye," Dr. Luo said.

Researchers have long known that the middle ear bones of a mammal evolved from the jawbones of their reptilian forebears, and that the "repurposing" of the bones, as Dr. Shubin put it, for the sake of improved hearing occurred in parallel with the refinement and elaboration of mammalian dentition. "You go from a jaw composed of many bones in reptiles to a jaw with a single bone in mammals," Dr. Shubin said. You also go from simple, generally conical reptilian teeth arranged willy-nilly in the mouth to matched sets of molars, bicuspids and canines that come together in happy occlusion. "You see mammals actually chewing their food," said Christian A. Sidor, an expert in mammalian evolution at the University of Washington.

In other words, where a mammal's streamlined mandible might have lacked the snapping power of a crocodile jaw, its complex teeth could pick up the feeding slack and free the extra jaw bones to take on higher tasks.

Or rather, higher frequency tasks. Researchers propose that one selective pressure driving the evolution of the mammalian middle ear might have been the need to find a steady supply of insects, and even non-insectivorous humans remain exceptionally sensitive to high-pitched noises like a mosquito's whine.

The mammalian ear is also a master at detecting very quiet sounds: as an incoming pressure wave wiggles the ear drum and the ossicles abutting it, the fulcrumed motions of the bones help amplify the wave's energy before sending it along. Early mammals were probably nocturnal, the better to avoid day-hunting dinosaurs, and even today most mammals prefer to come out after dark. "It was fundamental for mammals that their elaborated sensory system was one well-adapted for a nocturnal niche," Dr. Luo said. Or for dinner by candlelight with a few silver-tongued friends.

http://www.nytimes.com/2009/10/13/science/13angier.html?ref=science

Solar Living, Without Compromising on Lifestyle

By HENRY FOUNTAIN

WASHINGTON — John Hamilton paused from tinkering with the heat pumps, pipes and tanks arrayed before him, the mechanical heart of a small house assembled on the National Mall, to read the electric meter mounted off to the side.

The digital display showed that over the previous two days, the pavilionlike structure, designed by architectural and engineering students from Virginia Tech, had drawn about 20 kilowatt-hours from the electric grid. But during the same period, double-sided photovoltaic cells on the roof had pumped about 60 kilowatt-hours back.

"That's pretty good," said Mr. Hamilton, who was tweaking the house's control systems on Thursday afternoon because his firm, Siemens, is a sponsor. "We rode it hard this morning."

The Virginia Tech team members had been busy with last-minute preparations for the opening of their project, called Lumenhaus, and of the Solar Decathlon, a federal Department of Energy competition to design and build an efficient and livable solar-powered dwelling. The 10-day event includes 20 student teams from universities in the United States, Canada and Europe.

Some groups had been scurrying around even more frantically. Students and faculty advisers from the University of Wisconsin, Milwaukee, were in hard hats, sawing and hammering, and were still working long after the 1 p.m. opening ceremonies. The Virginia Tech house's net production of energy will be worth some points in the competition. But it and the other entries will not be judged by electrical use alone. There are points to be had for architectural design, engineering skill, comfort and marketability — 10 categories in all.

"The idea is to prove to people that solar works, and you don't have to give up your lifestyle to use it," said Richard King, director of the biennial competition for the Energy Department, which gives $100,000 to each team to get the projects started. The event is also meant to get the students to think about solving energy problems in affordable ways — all the projects have to be geared to a specific market, from low to high income.

The houses, which are limited to 800 square feet, are fully outfitted with furniture, appliances and furnishings — even sheets, towels and books. Team members do not live in them, but they have to do household activities like cooking and washing clothes, and are judged on whether their systems can

maintain comfortable air temperatures and produce enough hot water. The television has to be left on six hours each day, to demonstrate that there is enough electricity for entertainment.
With the houses lined up in two rows in the shadow of the Washington Monument, the competition resembles a futuristic trailer park. There are innovative materials and designs everywhere — self-adjusting exterior blinds at Team Ontario's house that can also reflect sunlight into the building; a plastic water wall at the University of Arizona's entry that absorbs sunlight and gives off heat; and, at the Lumenhaus, movable translucent panels insulated with aerogel, which allow light through.
Solar panels, both photovoltaic and thermal, adorn the roofs. Some are mounted in the conventional way, tilted so that the sun's rays strike close to perpendicular to improve conversion efficiency. But some have panels flat mounted, or on the sides, like high-tech (and expensive) shingles, or with mechanisms to allow them to be tilted to follow the sun. The competition encourages sustainability, so most of the houses have systems to use rainwater and reuse wash water for plants. Recycled products are found on exteriors (battens made from pressed paper and wood on the University of Minnesota's house) and in interiors (cabinet doors made from pressed sorghum straw in Team Missouri's kitchen).
Many of the interiors are designed to be flexible and adaptable. At the Lumenhaus, for instance, wardrobe cabinets in the center can be slid toward the walls to isolate the bedroom from the living area, and a moveable counter can cover much of the kitchen surfaces or be used as a table.
Mr. Hamilton, the Siemens representative, liked the interior so much that he had an offer for the Virginia Tech students. "I told these guys, I'd live in this house," he said

http://www.nytimes.com/2009/10/13/science/earth/13solar.html?ref=science

Study Finds Pro and Cons to Prostate Surgeries

By RONI CARYN RABIN

Prostate cancer patients who chose minimally invasive surgery rather than more extensive operations to remove the prostate were less likely to experience complications like pneumonia, but reported higher rates of long-term problems, including impotence and incontinence, according to one of the largest studies to compare outcomes to date.

Patients achieved similar rates of cancer control regardless of which surgery they had, the analysis found.

The study, in Wednesday's Journal of the American Medical Association, is not considered the last word on the subject, several experts agreed. But it raises questions about claims of superiority of minimally invasive laparoscopic and robotic-assisted surgeries, which have led to a surge in their popularity.

"People intuitively think that a minimally invasive approach has fewer complications, even in the absence of data," said Dr. Jim C. Hu, the study's lead author, who is director of urologic robotic and minimally invasive surgery at Brigham and Women's Hospital in Boston. "Men who were well educated and had higher incomes were actually more likely to embrace this approach, often due to aggressive marketing by hospitals that had spent $1.5 million to acquire the robots. I think the technology has been oversold."

In one version of prostate removal, called open surgery, a surgeon makes an incision that is several inches long. With minimally invasive surgery, also called laparoscopic surgery, the surgeon operates through a series of small incisions using tools and a camera for the operation. With robotic surgery the surgeon sits at a computer and manipulates a robot to do the operation through the small openings.

In 2003, minimally invasive radical prostatectomies, which include robotic surgeries, made up fewer than 10 percent of prostate removal surgeries. By 2006-7, they constituted 43 percent of procedures.

The Harvard researchers who did the study assessed the outcomes of 1,938 men who had minimally invasive prostate surgery from 2003 to 2007 and 6,899 men who had open surgery. They used Surveillance, Epidemiology and End Results, or SEER, data from the National Cancer Institute representing 26 percent of the American population, linking it with Medicare data.

The men in the study — all of them 65 or older — who underwent minimally invasive surgery had shorter hospital stays, fewer respiratory complications and other surgical complications, and were far less likely to receive a blood transfusion. But they had more complications involving the genital and urinary organs immediately after surgery, with 4.7 percent having those complications, compared with 2.1 percent of open surgery patients.

When the researchers looked at lasting complications more than 18 months later, they found that men who had minimally invasive surgery were at greater risk of suffering from incontinence and erectile dysfunction than those who had open surgery.

For each 100 men who had minimally invasive surgery, some 15.9 percent were at risk of being incontinent each year, while 26.8 percent experienced erectile dysfunction, compared with 12.2 percent and 19.2 percent, respectively, each year for every 100 men who had open surgery, the study calculated.

Several surgeons who specialize in robot-assisted procedures said the study was limited because it was unable to distinguish between those using robot technologies and older minimally invasive techniques.

Many experts said the outcomes of experienced surgeons were better than those reported in the study.

"I almost exclusively do robotic prostatectomy now because I think that, despite this manuscript, there is clear evidence that it is comparable, in terms of continence, potency and tumor control," said Dr. Joseph Smith, the chairman of urologic surgery at Vanderbilt University School of Medicine.

But Dr. Smith added, "I don't think there's anything demonstrating it to be superior."

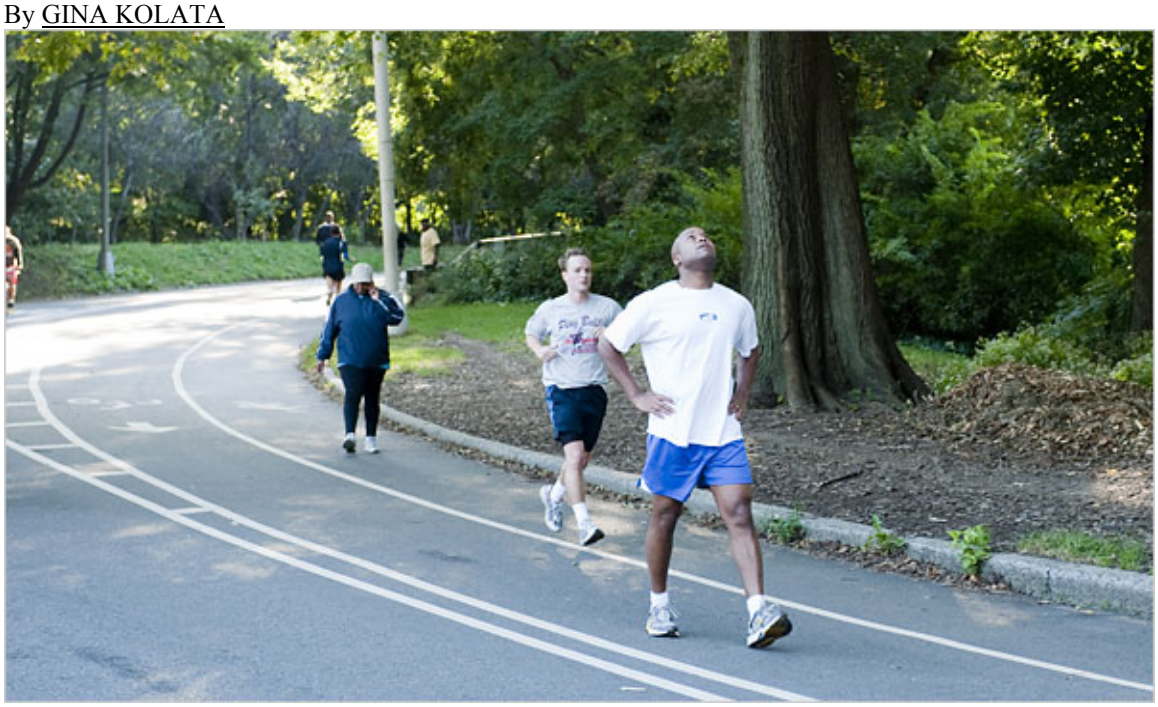
Dr. Peter Scardino, chief of surgery at Memorial Sloan-Kettering, said the study was important because it reported on data that did not come just from one medical center or one region.

"At the end of the day," Dr. Scardino said, "what all the studies will show is that it's not the tools the doctor uses, but the experience and skill of the surgeon. There's nothing magical about the laparoscopic or robotic."

http://www.nytimes.com/2009/10/14/health/research/14prostate.html?ref=health

Is the Exercise Cool-Down Really Necessary?

By GINA KOLATA



MY husband and I were riding our bikes not long ago, and when we were about a mile from home, we did our usual thing. We call it the sprint to the finish: ride as hard and as fast as we can until we reach our driveway, racing to see who could get there first.

We pulled up, slammed on our brakes and hopped off our bikes. A neighbor was walking by and said, "How did you do that?"

"I just put on my brakes," I told him. No, he said, he meant how could we just stop like that without cooling down? Strange as it might seem, that had never occurred to me. But the cool-down is enshrined in training lore. It's in physiology textbooks, personal trainers often insist on it, fitness magazines tell you that you must do it — and some exercise equipment at gyms automatically includes it. You punch in the time you want to work out on the machine and when your time is up, the machine automatically reduces the workload and continues for five minutes so you can cool down.

The problem, says Hirofumi Tanaka, an exercise physiologist at the University of Texas, Austin, is that there is pretty much no science behind the cool-down advice.

The cool-down, Dr. Tanaka said, "is an understudied topic." "Everyone thinks it's an established fact," he added, "so they don't study it."It's not even clear what a cool-down is supposed to be. Some say you just have to keep moving for a few minutes — walking to your car after you finish a run rather than stopping abruptly and standing there. Others say you have to spend 5 to 10 minutes doing the same exercise, only slowly. Jog after your run, then transition into a walk. Still others say that a cool-down should include stretching.

And it's not clear what the cool-down is supposed to do. Some say it alleviates muscle soreness. Others say it prevents muscle tightness or relieves strain on the heart.

Exercise researchers say there is only one agreed-on fact about the possible risk of suddenly stopping intense exercise. When you exercise hard, the blood vessels in your legs are expanded to send more blood

to your legs and feet. And your heart is pumping fast. If you suddenly stop, your heart slows down, your blood is pooled in your legs and feet, and you can feel dizzy, even pass out.

The best athletes are most vulnerable, said Dr. Paul Thompson, a cardiologist and marathon runner who is an exercise researcher at Hartford Hospital in Connecticut.

"If you are well trained, your heart rate is slow already, and it slows down even faster with exercise," he said. "Also, there are bigger veins with a large capacity to pool blood in your legs." That effect can also be deleterious for someone with heart disease, said Carl Foster, an exercise physiologist at the University of Wisconsin-La Crosse, because blood vessels leading to the heart are already narrowed, making it hard for blood to get in. "That's always a concern," Dr. Foster said. "But to my knowledge there is not a wealth of experimental data."

But does it matter for the ordinary, average athlete? "Probably not a great deal," Dr. Thompson said. And, anyway, most people don't just stand there, stock still, when their workout is over. They walk to the locker room or to their house or car, getting the cool-down benefit without officially "cooling down."

The idea of the cool-down seems to have originated with a popular theory — now known to be wrong — that muscles become sore after exercise because they accumulate lactic acid. In fact, lactic acid is a fuel. It's good to generate lactic acid, it's a normal part of exercise, and it has nothing to do with muscle soreness. But the lactic acid theory led to the notion that by slowly reducing the intensity of your workout you can give lactic acid a chance to dissipate.

Yet, Dr. Foster said, even though scientists know the lactic acid theory is wrong, it remains entrenched in the public's mind.

"It's an idea we can't get rid of," he said.In fact, Dr. Tanaka said, one study of cyclists concluded that because lactic acid is good, it is better not to cool down after intense exercise. Lactic acid was turned back into glycogen, a muscle fuel, when cyclists simply stopped. When they cooled down, it was wasted, used up to fuel their muscles.As far as muscle soreness goes, cooling down doesn't do anything to alleviate it, Dr. Tanaka said. And there is no physiological reason why it should.That's also the conclusion of a study of muscle soreness by South African researchers who asked 52 healthy adults to walk backward downhill on a treadmill for 30 minutes — an exercise that can cause sore leg muscles. The participants were randomly assigned to cool down by walking slowly uphill for 10 minutes or simply to stop exercising. The result, the researchers reported, was that cooling down did nothing to prevent sore muscles.

And muscle tightness?

"In a different generation we would have called it an old wives' tale," Dr. Foster said. "Now I guess I'd call it an old physiologists' tale. There are no data to support the idea that a cool-down helps." But, he added, once again, "it's an idea we can't get rid of."

Exercise researchers say they act on their own advice.

Dr. Thompson says if he is doing a really hard track workout he will jog for a short distance when he finishes to avoid becoming dizzy. If he runs a half marathon, he will "start shuffling forward," after he crosses the finish line, for the same reason.

As for Dr. Tanaka, he does not cool down at all. He's a soccer player and, he says, he sees no particular reason to do anything after exercising other than just stop.

http://www.nytimes.com/2009/10/15/health/nutrition/15best.html?ref=health

PANGUITCH JOURNAL
A Rare Case of Homegrown Medicine

By KIRK JOHNSON

PANGUITCH, Utah — Dr. Mitch Miller drove through town on a recent sunny afternoon — a journey that took all of five minutes — and stopped his pickup near a vacant lot. A new home was being built there, a mile from the hospital where he works.

"It's way too big for us," Dr. Miller said, gazing over what was still just a stick frame, rising in a race with the colder weather that has already started to settle in here at 6,600 feet on the southern Utah plateau. "But we figure we're going to be here forever, so we should have it the way we want."

The rule of thumb in small-town America is that doctors go away. End of story. Rural spots like Panguitch — population 1,500, 90 minutes to the nearest city of any size — are increasingly pressed to have doctors at all. Rarer still are physicians like Dr. Miller, 32, who grew up here, went away to study and hone his craft, then came back to practice. He and his wife, Ashlee, and their three children, ages 1, 2 and 5, returned last summer.

The "forever" word that Dr. Miller uses with such casual aplomb is pretty unusual, too. At a time when many Americans are struggling to glimpse much past the next paycheck or layoff notice, "forever" connotes the long-view perspective, the life mapped out, the sense of a future that can be seen and grasped.

Perhaps it is something in the water. Dr. Miller is one of three physicians at Garfield Memorial Hospital — 41 beds and two trauma rooms adjacent to a meetinghouse for the Church of Jesus Christ of Latter-day Saints — and none of them have ever worked anywhere else since their residency training. First jobs became careers. One of Dr. Miller's colleagues has been here 10 years, the other 15.

Garfield Memorial is a place where many of the employees have deep local roots and specialty medicine does not exist. It is primary care and all hands on deck when the emergency room has business, which means, the doctors say, that they do not compete and egos get checked at the door.

"We share everything alike, even sometimes in making rounds because we figure three heads are better than one," said Dr. Richard Birch, 50, the hospital's medical dean with 15 years under his stethoscope.

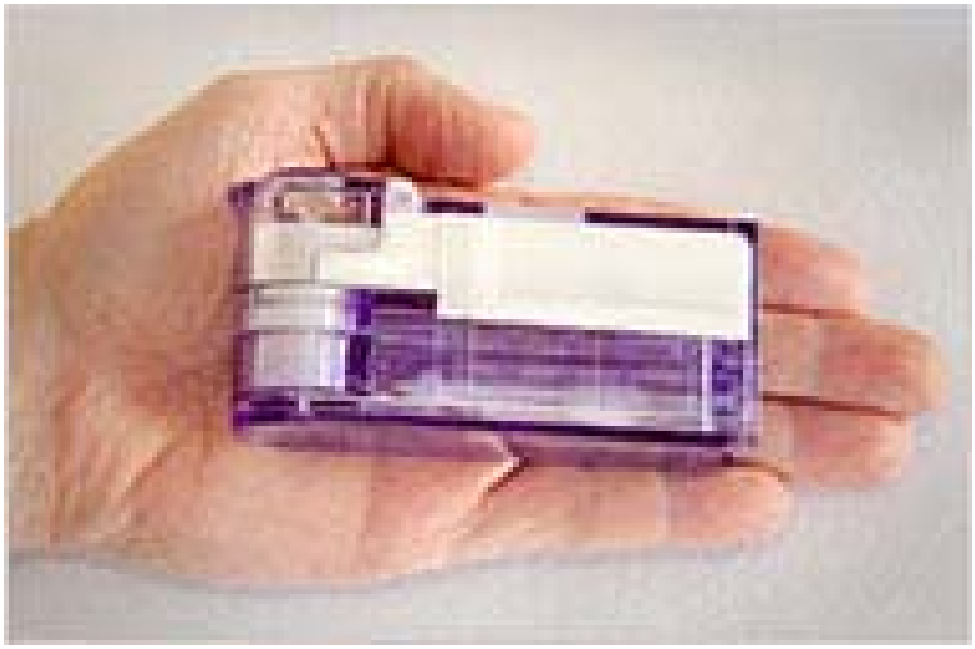
Hospital employees and town residents say Garfield Memorial and the town of Panguitch are also deeply intertwined.

Over the decades, the hospital has been owned by the Mormon Church, and, more recently, by a nonprofit company in Salt Lake City, Intermountain Healthcare. But in 2000, after years of financial losses that

Intermountain said it could no longer sustain, an arrangement was worked out transferring ownership to the county while continuing under Intermountain's management.
Residents passed a sales tax increase for a hospital subsidy and formed a foundation. Malpractice insurance rates under the Intermountain umbrella stayed affordable, the doctors say, which allowed Garfield to continue delivering babies, a medical service that has faded especially fast in other rural communities around the nation.
Those interconnections in turn led to a feeling of local ownership, and the expression of sentiments that can sound very old-fashioned, if not jarring, at a time when health care has become polarized.
"We're so proud of our hospital," said Anna Pollock, a volunteer at the Hospital Foundation's thrift store, which sells donated second-hand clothing and other items and pours about $3,500 a month into the hospital, for equipment.
The rolling rhythms of the tourism trade are crucial as well to understanding this place. Panguitch, founded by Mormon settlers in the 1870s, including Dr. Miller's ancestors, once thrived as the downtown for an empire of sheep ranches. But the local constellation of national parks — Bryce Canyon, Zion and Capitol Reef are within a 100-mile radius, drawing upwards of three million visitors a year — is the bigger force now.
The summer flood-tide of tourist injuries and illnesses — altitude sickness, sprained and broken ankles (Bryce Canyon Specials in hospital jargon), heart congestion and heat exhaustion — keeps the hospital's work varied, and bolsters the bottom line as well because most tourists, hospital administrators say, have health insurance.
"It makes every season different," said Dr. Todd Mooney, 42, who has practiced here for 10 years. "But when it's over, there's definitely a collective 'whew.' "
Dr. Miller grew up steeped in those seasonal tides. His family ran a motel and campground near Bryce Canyon, which gave him a taste of the outside world, he said, and also a stern education in what it takes to tough it out in a place like this. Summers were spent living by the motel, winters back in town, watching his parents get by until spring on the odd job and make-do.
Now, that cycle of local life is once again turning — tourist medical cases slowing to a trickle, belt-tightening around town already begun. Most of the motels and restaurants will be closed by the end of the month.
"It's tourism in the season, unemployment in winter," said Tony Russo, 24, who grew up in Las Vegas and now leads all-terrain vehicle trips into the back-country. Mr. Russo drove to the hospital with his wife Cassandra, 31, on a recent evening to have a doctor examine their two children.
Dr. Miller, earlier that same day, was checking in on Dorothy Martin, a 73-year-old artist from Laporte, Colo. Ms. Martin had been in the hospital for nearly a week by then, after an evacuation from Grand Staircase-Escalante National Monument, about 75 miles from here. Her heart condition had flared up while she was on a hike with her husband.
"I was looking for a place to paint," she said from her hospital bed.
Dr. Miller listened to Ms. Martin's lungs and said that her blood-oxygen levels had climbed to respectable levels.
"I think you're good to go," he said, "unless you've enjoyed it so much you want to stay."

http://www.nytimes.com/2009/10/14/us/14utah.html?ref=health

A New Way to Inhale, Not Inject, Insulin
By ANNE EISENBERG



PEOPLE with diabetes often inject themselves with insulin at mealtime to help control their blood sugar levels. But a new, palm-size device may let them discretely inhale a dose of insulin instead of using a needle.

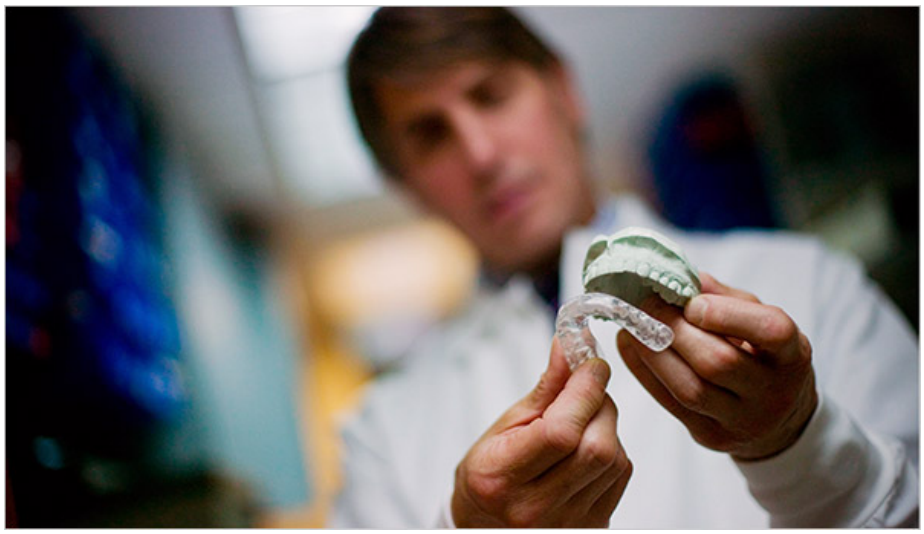
A small inhaler and insulin powder created by the MannKind Corporation, a drug developer in Valencia, Calif., are before the Food and Drug Administration for marketing approval.
The insulin powder, called Afresa, is inhaled into the lungs, dissolves there and then travels into the bloodstream, says Matthew J. Pfeffer, chief financial officer at MannKind.
Using insulin or other drugs to control blood sugar helps diabetics avoid serious complications, including heart disease, kidney failure, blindness and nerve damage.
The use of insulin in an inhaled form is not new. It was introduced by Pfizer with a product called Exubera in 2006. But the inhaler used with Exubera was large and awkward, some critics contended, which may have been a reason the product didn't become popular. It was withdrawn less than two years after federal approval.
But MannKind may have better prospects because of its smaller inhaler and fast-acting insulin. Mr. Pfeffer says the MannKind inhaler fits neatly in one hand, and a second-generation versions the company is using in clinical trials is even smaller, the size of a whistle.
Patients put insulin doses — pre-packaged in cartridges — into the inhaler and turn the mouthpiece to release the insulin. The inhaler uses no electricity or compressed gas. "The patient's breathing action does the job," Mr. Pfeffer said. "The airflow through the cartridge allows the powder to be inhaled."
The system now before the F.D.A. is for adults with Type 1 diabetes, which often begins in childhood, and Type 2 diabetes, which typically occurs when people are older.
Simos Simeonidis, a senior biotechnology analyst at the New York investment bank Rodman & Renshaw, who wrote a report on MannKind, said he expected its system to be available next year, if the F.D.A. approved. (Dr. Simeonidis has no stock in MannKind, but Rodman & Renshaw has provided investment banking services for it.)
Leonid Poretsky, chief of endocrinology at Beth Israel Medical Center in New York and director of the Gerald J. Friedman Diabetes Institute there, said that the MannKind system will face many problems even if it is approved.
"Injections today are essentially painless," he said of the short, thin needles that are commonly used to inject insulin. And you don't necesssarily "have to draw from a bottle into a syringe. Injections work so well that the advantages of a new route like this are unclear."

Dr. Poretsky was also concerned about using the lungs to transport drugs. “It’s possible for people to stay on insulin for decades,” he said. “The whole issue of exposing the lungs to insulin for a long period of time has to be examined carefully.”
Dr. Gerald Bernstein, a New York-based endocrinologist who is a former president of the American Diabetes Association, agreed that the long-term use of inhalable insulin might carry risks for some patients. Dr Bernstein is vice president of the Generex Biotechnology Corporation, which is developing an insulin delivered through the lining of the mouth.
“It’s counterintuitive to use the fragile cells of the alveoli,” the tiny air sacs within the lungs, “to get insulin to the bloodstream,” he said. “The lungs were developed to transport gases, not proteins.”
Mr. Pfeffer of MannKind said that the company’s clinical data included no signs of damage to lungs.
DR. DAVID M. NATHAN, a professor of medicine at Harvard Medical School and director of the Massachusetts General Hospital Diabetes Center, said that even if safety issues were addressed, there could be other long-term problems with Afresa. He questioned whether MannKind’s inhalable product could achieve the same level of blood sugar control as that obtained with injections or insulin pumps.
“Insulin inhalers are tricky to use,” he said. “The amount you breathe in can be variable.” But he acknowledged that injections aren’t perfect and that many people would prefer to get their insulin in a more convenient way.
Mr. Pfeffer said trials by MannKind had shown a high consistency in doses by patients using the inhalers. If all goes well at the F.D.A., Mr. Pfeffer says he thinks that MannKind will eventually go to market with the smaller dispenser now in trials. “The expectation,” he said, “is that we will launch with the whistle-sized inhaler” — which, by the way, was given the internal company name “Dreamboat” by its design team.
“Perhaps we’ll consider a different name, though,” he said.
E-mail: novelties@nytimes.com.

http://www.nytimes.com/2009/10/11/business/11novel.html?ref=health

When Stress Takes a Toll on Your Teeth

By CAMILLE SWEENEY



WITH economic pressures affecting millions of Americans, dentists may have noticed a drop in patients opting for a brighter smile, but they are seeing another phenomenon: a rise in the number of teeth grinders.

"I'm seeing a lot more people that are anxious, stressed out and very concerned about their financial futures and they're taking it out on their teeth," said Dr. Steven Butensky, a dentist with a specialty in prosthodontics (aesthetic, implant and reconstructive dentistry) in Manhattan.
One of his patients lost hundreds of thousands of dollars invested with Bernard L. Madoff. Another reported that he had lost a job with a seven-figure salary. A third, a single mother with a floral design business on Long Island, said she was working twice as hard for half as much.
"All three are grinders, directly affected by what's going on out there," Dr. Butensky said, gesturing outside his Midtown office window.
Dr. Robert Rawdin, another Manhattan dentist with a specialty in prosthodontics, said he had seen 20 to 25 percent more patients with teeth grinding symptoms in the last year. And in San Diego, Dr. Gerald McCracken said that over the last 18 months his number of cases had more than doubled. They, along with other dentists interviewed for this article, chalk it up to the economy.
"We're finding in a lot of double-income families, we have the people who have lost jobs and are worried, and then we have the spouse, who still has the job, with the added pressure and uncertainty," Dr. McCracken said. "This can cause some real grinding at night."
With or without economic hardship, 10 to 15 percent of adult Americans moderately to severely grind their teeth, according to Dr. Matthew Messina, a dentist in Cleveland and a consumer adviser for the American Dental Association.
Because it is a subconscious muscle activity, most grinders grind without realizing it, until a symptom such as a fragmented tooth or facial soreness occurs.
While many experts believe that genetics may play a role in bruxism (or teeth grinding), stress has long been known to set off clenching and grinding in some people, Dr. Messina said. "Recession breeds stress and our body responds to stressful events so in times like these, the incidence of bruxism goes up," he said, adding that over the last year or so he had heard from dentists around the country who had seen an uptick in patients with bruxism while also complaining about financial stress. In his own practice, he said he had treated twice as many cases in the last year than in the year before.
"Stress, whether it's real or perceived, causes flight-or-fight hormones to release in the body," he said. "Those released stress hormones mobilize energy, causing isometric activity, which is muscle movement, because that built-up energy has to be released in some way."
The most expensive option for rebuilding teeth damaged by grinding is with veneers, but this year, dentists say that many of their bruxism patients are requesting one of the least costly treatments: a night

guard, also known as an occlusal splint. Manufacturers said sales of these devices had gone up. "Our night guard sales have increased 15 percent over the prior year," said Greg Pelissier, a manager at Glidewell Laboratories, a maker of custom restorative, reconstructive and cosmetic dental products based in Newport Beach, Calif.

New drugstore products have also come to market, including a disposable night guard, Grind-No-More (about $30 for 14 guards). Its makers hope it will appeal to on-again-off-again grinders.

Stan Goff, executive editor of Dental Products Report, a monthly publication, wrote in an e-mail message that all this teeth grinding "may be playing a role in the introduction of several new products designed to not only prevent bruxism, but to help fight against tooth sensitivity" and other conditions that are aggravated by grinding.

While experts believe bruxism is not a dental disorder per se, but rather originates in the central nervous system, the condition can greatly affect the teeth and the entire craniofacial structure.

"Normally, we exert about 20 to 30 pounds per square inch on our back molars when we chew," Dr. Rawdin said. "But teeth grinders, especially at night without restraint, can exert up to as much as 200 pounds per square inch on their teeth."

Some nocturnal grinders will grind up to 40 minutes of every hour of sleep. The relentless wear and tear can quickly erode enamel (10 times faster than that of nongrinders), fracture teeth, affect bite and damage the temporomandibular joint at the hinge of the jaw, and the masseter muscle, which controls the jaws. Jaw and face pain, as well as earaches and headaches, may also occur.

"I kind of thought I was going crazy," said Adrienne Lee Kornstein, 48, a patient of Dr. Butensky, whose floral design business in Jericho, N.Y., has suffered because of the economy. "A tooth broke for what seemed like no reason, and by the time I got to Dr. Butensky, I'd been to my physician, other dentists, even a dermatologist to try to get relief from migraines and facial pain I was taking painkillers for. I had no idea I was grinding or that grinding your teeth could even lead to all that."

The most common treatment for the disorder is to wear a night guard, which may not only alleviate grinding but, in some cases, train someone to stop grinding altogether.

Fitted in the dentist's office, a custom guard is usually a clear, hard plastic device that runs over the top or lower teeth from front to back and prevents the top and bottom molars from making contact. Although not cheap (the price can range from $350 to $1,000), most dentists prefer a custom guard to over-the-counter guards, which are usually made of softer material and can encourage chewing and exacerbate masseter muscle activity.

There are also smaller prefabricated splints that a dentist can customize. These are generally cheaper than the fitted full arch guards and require fewer adjustments. But some dentists argue they are not as effective as the full arch guards.

Many teeth grinders interviewed said they would not go to bed without their night guards.

"Sometimes I wake up in the middle of the night and having my guard in makes me more aware if I'm tensing my body or gripping my jaw, and I can just take a moment to relax," said Alisa Fastenberg, 50, a graphic designer in Manhattan.

Other treatments for teeth grinding include acupuncture, medical massage, hypnosis and Botox injections into the masseter muscle to relax the muscle enough to stop it from going into spasms without changing one's chewing function.

"Grinding is like body building," said Dr. Alexander Rivkin, a head and neck surgeon at Westside Aesthetics in Los Angeles, who has also seen an increase in grinding-related cases this past year. "The constant workout of the masseter muscle, the largest in the head, builds up that muscle and that can cause a lot of pain, not to mention make the face appear more square."

He added, "For, I'd say, 85 percent of the people who come to me complaining about headaches, jaw soreness and pain, Botox injections into the masseter muscle on both sides of the face is the answer."

But even something as simple as taking time before bed to de-stress has been known to help.

"Good sleep hygiene goes a long way to keeping the mind relaxed and the jaws from starting to smack together," said Dr. McCracken, who has studied the relation of sleep to teeth grinding. "We know that the stress center of the brain is directly next to the part of the brain that controls teeth grinding. We're not sure how it relates to the disorder, but it's intriguing. Lately, I even tell my patients, before they go to bed, not to watch the news."

http://www.nytimes.com/2009/10/08/fashion/08SKIN.html?ref=health

The Colbert Report

- David A. Bell
- October 7, 2009 | 12:00 am

The Information Master:

Jean-Baptiste Colbert's Secret State Intelligence System

By Jacob Soll

(University of Michigan Press, 277 pp., $65)

That resonant piece of verbal shorthand, TMI--or Too Much Information--would make a fine epigraph for our age. Anyone with an Internet connection today has access to exponentially greater quantities of writing, images, sound, and video than anyone on earth could have imagined just twenty years ago. Small wonder that we have become obsessed with the idea of "information" as an abstract substance independent of its content--something that we accumulate, measure, and "process," rather than ponder and understand. And small wonder that the management and control of information, whether by its "producers," by governments, or by corporations such as Google, has emerged as an increasingly important political concern, and as a subject of scholarship.

This scholarship, in the field of history, has recently taken an intriguingly paradoxical turn. While the extreme availability of information today should presumably have highlighted its relative paucity in earlier periods, historians--most notably Ann Blair--have in fact extended the concept of "information overload" all the way back to the sixteenth century, arguing that while we now associate the phenomenon with the internet, the printing press had a comparable effect. Until its invention, most literate people had access to relatively little written material. They could manage to read literally everything they could get their hands on. After Gutenberg, however, books multiplied rapidly, and soon many libraries became too large for their owners to read more than a small percentage of the texts. It became necessary to devise strategies for dealing with the excess. Scholars invented systems of note-taking, methods of summarizing and skimming, and principles of triage. As Francis Bacon famously remarked: "Some books are to be tasted, others to be swallowed, and some few to be chewed and digested: that is, some books are to be read only in parts; others to be read, but not curiously; and some few to be read wholly, with diligence and attention." That is, among other things, a comment about coping.

We cope in the same way; and anyone who identifies Wikipedia with the end of civilization should be reassured to learn that early modern Europeans already possessed an impressive arsenal of intellectual crutches and shortcuts, some of them quite dubious. By the seventeenth century there already existed a large genre of reference works, compendia, and reading guides, so as to lead the uninitiated through the increasingly dense thickets of learning, sometimes at breakneck speed. Some readers made use of little else, with classical compendia particularly prized for the quick simulacra of learning that they provided. As Jonathan Swift advised young critics, "Get scraps of Horace from your friends, / And have them at your fingers' ends." More serious scholars put together their own guides and reference works. Ann Blair has shown that many of the greatest Renaissance thinkers had no compunction about attacking their books with scissors, cutting and pasting what they considered the crucial passages into commonplace books or card files for easy reference. By illuminating all these systems, methods, and reference works, Blair and her fellow scholars are giving us a new vision of Renaissance learning, grounded not simply in our own reading of the texts, but in an attempt to grasp what people at the time actually knew, and how they knew it.

Printed books and periodicals were not the only form of writing to proliferate wildly in early modern Europe. So did reports, memoranda, briefs, circulars, directives, and all the masses of paper that form the crinkly carapaces of modern governments. By the time of the French Revolution, it had become almost impossible for officials to imagine how earlier ages survived without them. "The ministry is a world of paper," wrote Saint-Just at the height of the Terror. "I don't know how Rome and Egypt governed without this resource." Saint-Just also identified the problems that arose as a result: "Government is impossible with too many words . . . the demon of writing makes war on us, and government stops." In short, early modern government needed information management just as much as early modern scholarship did.

The development of state information management might seem a dull subject. Ledgers, account books, and filing systems generally do not make for heroic drama or grand epic. Yet in the hands of Jacob Soll these mundane objects become strangely mesmerizing. A gifted intellectual historian known for a fine book on seventeenth-century French humanism and politics, Soll here shifts his attention to the core of the early modern state, and the attempt by the French monarchy under Louis XIV to establish a new sort of political pre-eminence over its large, diverse, and notoriously fractious nation: what historians today call the project of absolutism. In this process, Soll argues convincingly, officials began consciously to treat the generation, the control, and the management of information as a central instrument of power.

It helps that Soll's story has a genuinely fascinating protagonist. He is Jean-Baptiste Colbert, Louis XIV's chief minister. A ruthless and brilliant parvenu who rose to the commanding heights of French society and became the chief promoter of the economic policies known as mercantilism, Colbert is a well-known historical figure. But Soll reveals a new side of him, casting him as a sort of magnificent obsessive--a practical-minded Casaubon who pursued, throughout his life, an impossible dream of universal knowledge. Colbert, as Soll shows, took inspiration from the humanist scholars who longed to create a usable universal library, but he sought to direct his own information management system toward the single goal of strengthening the French monarchy. He would not collect information in general, but information of use in governing. And instead of making it available to all interested readers, he would hoard it as a valuable commodity, deploying it publicly only when it served the purpose of the state.

In designing this system, Soll argues, Colbert brought together two very different European traditions: not just the forms of information management developed in the humanist Republic of Letters, but also the reporting and accounting systems developed by Europe's great merchant houses. Here one great inspiration came from the Fugger family of Augsburg and its vast sixteenth-century trading empire, which depended on regular news reports from a far-flung network of correspondents (in a very real sense, the first "reporters"), and on sophisticated filing and accounting methods to manage them. Colbert himself came from a mercantile background in eastern France, and had an education appropriate to the milieu, with more attention to calculation and the mysteries of double-entry bookkeeping than to the subtleties of Latin verse.

In his early years, this mercantile background brought Colbert a great deal of scorn, both from the grand aristocrats who dominated the French state and the humanist scholars who advised them. They mocked his vulgar manners, his bourgeois dress (especially his "merchant's collar"), and his literary ignorance. But to Cardinal Mazarin, Richelieu's successor as France's chief minister in the war-torn 1640s, Colbert's talents for managing money spoke more eloquently than the scholars' talent for glossing Tacitus: thanks to him, Mazarin's personal fortune swelled to tens of millions of French pounds, an astonishing sum for the period.

While treating Colbert as a sort of glorified servant, Mazarin nonetheless made him his principal accountant and trusted adviser, and then, most crucially, his librarian. The cardinal possessed the largest and best-kept library in France, which would become the core of the royal library, and thus the direct ancestor of today's Bibliothèque Nationale. Colbert grasped that the position gave him privileged access to precisely the sort of information that Mazarin most needed to protect and strengthen the prerogatives of the monarchy against increasingly sharp challenges from at home and abroad.

To understand Colbert's strategies for collecting and managing information, it is necessary to understand something about the Baroque disaster area that was the early modern French state. Soll rightly calls it "staggeringly arcane--a feudal web of laws and taxes." Since the Middle Ages, the French monarchy had allowed layer after layer of institutions, laws, and practices to accumulate, often in competition with each other, and each possessing their own royally guaranteed privileges and responsibilities. The resulting confusion was a dream for lawyers and a nightmare for almost everyone else. France's provinces had one set of boundaries when it came to the authority of royal governors, another when it came to legal jurisdictions, another when it came to royal tax collecting, and still others for excise taxes, internal tariffs and Catholic dioceses. Enlightenment commentators repeatedly likened the structure to a huge half-ruined mansion, and dreamed of blowing it up and starting again from scratch. (It is small wonder that the first great project of the French Revolutionary state was the literal demolition of that hated symbol of royal power, the Bastille.) But the kings of the Old Regime, however "absolute" their supposed authority, could not simply call in the wrecking ball, because their regime, always skating the edge of bankruptcy, depended on the revenue gleaned from the complex and confusing web of privileges that ambitious subjects remained ever willing to pay for.

In this context, the single most valuable sort of information for the government concerned precedents. What share of its tax revenues did a particular town owe to the central state? How much had it actually turned over in the past? Who had the right to name its aldermen? How much could be charged for the privilege? What right did its courts have to interpret or obstruct royal legislation? What had taken place in previous disputes? If the crown controlled the sources of information on such questions, it could resolve disputes in its own favor without incurring the charges of arbitrary rule and despotism that might destroy confidence in the system altogether.

Mazarin made good use of Colbert's talents in this area, and so did Mazarin's pupil King Louis XIV. When Mazarin died in 1661, the twenty-three-year-old Louis declared he would henceforth manage the government himself. But Colbert became chief minister in all but name, and continued to build his state information system. Most immediately, he worked with the king to stifle challenges to royal authority from the obstreperous sovereign courts (*parlements*). And this was only the beginning. In the 1660s, he began to train, and send throughout the country, a cadre of "professional state observers" to put together what amounted to a political fact book of France: population numbers; information on land holdings, regulations and laws; sketches of important personalities; data on economic activity. Soon Colbert expanded his ambitions to include neighboring countries as well. When he sent one observer--his son--to Italy, in 1671, he gave him the following instructions. In each state, he said,

look at . . . its situation, its military forces, the number of its peoples, the greatness of the state, the number and size of cities, towns, and villages, the quantity of the peoples that compose the whole; the form of State government, and if it is aristocratic . . . of the names and status of noble families that have

taken or will take part in governing the Republic; their different functions; their general and particular councils; who represents the State,

in whom the sovereign power lies and who resolves peace and war, who makes laws; etc . . . the suffrages collected and the results taken and pronounced; the particular councils for the militia, the admiralty, justice, for the city and for the rest of the State; the laws and the customs under which they live; in what consist the militias meant to guard the main square. . . . Visit the public works, maritime and on ground, all the palaces, public houses, and generally all that is remarkable.

The letter itself proves that it is in no way anachronistic to apply terms like "information gathering" and "information management" to the seventeenth century.

The letter also gives evidence of Colbert's mania. He worked feverishly, always collecting, filing, and calculating. Soll calls him "a man apparently never happier than when filling out account ledgers." He reserved his anger above all for his son, whom he trained to take his place but who, predictably, could never live up to expectations. "I will visit every night my table and papers," the son promised Colbert obsequiously in 1671, "and I will expedite, before going to bed, that which I can, or I will put aside and send later, before marking, in my agenda that I will keep exactly on my table, the affairs that I will have sent out." But he repeatedly let down his demanding parent, who scolded him with cold fury in 1676: "You must still take care to look after your papers . . . [as] I asked you to do, and which I still do every day, for you, and which I now find rolled in a desk, in the worst state of filth, in spite of the fact that they contain the quintessence of the spirit of the most accomplished people in the kingdom." Outside the troubled bosom of his family, Colbert showed little emotion, earning the sobriquet of *le nord*--the north--from Madame de Sévigné.

Not surprisingly, Colbert's long-term goal proved impossible to realize. Soll defines it as the idea that "all knowledge, formal and practical, could be used together in one archival system to understand and master the material world." Colbert could no more complete this system than the Renaissance humanists could complete their ideal universal library.

Indeed, Louis XIV finally concluded that it was better not even to try, lest the attempt end up placing excessive power in hands other than his own. In 1683, after Colbert's sudden death (probably from a kidney stone), the king dismantled the system, and spread the responsibilities of information collecting and management among different ministries. Soll suggests, quite plausibly, that in doing so Louis "hobbled" the French state, making it even less possible to manage and setting it on the path to the mammoth bankruptcy and breakdown that, a century later, would usher in the French Revolution.

Yet Colbert did accomplish a great deal. He bought whole libraries and archives, and by the time of his death, the royal library had tripled in size, housing some 36,000 books and 10,500 manuscripts. His aides produced by far the most systematic and detailed descriptions of the country ever attempted, and for the first time in history the "nation" of France began to come into focus as a social unity that could be managed and transformed by political action. Colbert trained a cadre of talented officials to implement all these projects. He also enlisted some of the most gifted intellectuals of the day to help, including Charles Perrault, the famous author of fairy tales, and the academician Jean Chapelain. And he made excellent use of the information that he harvested, particularly against the principal sources of domestic resistance to the king's absolutist project: the *parlements* and the Catholic church. In 1682 he deployed his vast erudition to ensure wide support for measures subjecting the church to an unprecedented degree of state control.

Colbert also worked to restrict the public flow of information, and here he set particularly long-lasting precedents. He made secrecy his byword, and insisted that no one outside government had any right to a knowledge of its workings--particularly its financial workings. Soll depicts him at work ensuring that no Paris printer could learn Greek or Latin without official approval, so that potentially seditious classical scholarship would remain under close surveillance. He shows Colbert striving to suppress Richard Simon's pioneering critical treatment of the Old Testament--one of the first attempts to treat Scripture as a

historical text--and promoting the idea that "history should serve only to conserve the splendor of the King's enterprises." While Louis XIV abandoned other elements of Colbert's information system, he happily retained all of these.

Soll tells this story in wonderfully lucid prose, and with a great gift for concision. Colbert emerges from his pages not only as the patron saint of modern bureaucrats, but as a forceful--if somewhat repellent--personality, and as another of the great early modern figures who sought to gain unprecedented knowledge of, and mastery over, the material world. What Galileo and Newton strove for in natural science, and Hobbes and Montesquieu in political science, Colbert, we now see, pursued in the less glorious but still vital realm of management and paperwork. In revealing this side to the minister, Soll has made a major contribution to our understanding of early modern history.

The principal criticism to be leveled at the book--a distinctly odd one, for an academic monograph--is that there is not enough of it. Even Soll's talent for concision does not save some chapters from feeling sparse, and Colbert's great enterprise devoid of a thicker and richer context. Soll does give tantalizing glimpses of this context. He knows the precedents for Colbert's projects well--especially those carried out by Italian and Spanish monarchs. He discusses them clearly, if briefly, and shows how Colbert's ambitions outstripped those of his predecessors. He also gives a brief, intriguing sense of how the story continued in the eighteenth century and afterward. But here, particularly, some important issues could have used fuller attention.

Following the French historian Roger Chartier, Soll suggests that the more the absolute monarchy became associated with secrecy, the more its opponents deployed the banner of "publicity" to resist it, seeking to promote both the free circulation of information and free debate about what that information meant. The antithesis of Colbert's philosophy of state secrecy came in the visions of a public sphere of free, rational, critical debate developed in the eighteenth century by writers such as Malesherbes, Condorcet, and Kant. As Soll astutely points out, this dialectical relationship between secrecy and publicity makes the state a much more important actor in the development of the early modern public sphere than most of its historians (who have principally studied the institutions of the sphere itself, such as salons and coffee houses) have recognized.

Soll then gestures toward the modern consequences of the story. "Even for the most open of democracies," he writes, "the culture of state secrecy is necessary and potent, but at the same time, in its very essence, perverse and dangerous." True enough, but while such sentences conjure up images of a malevolent Dick Cheney, the true modern heirs of Colbert's information system did not work in the office of the American vice president, but in Hitler's Chancellery, in Stalin's Kremlin, and in the East German Ministry of State Security, infamously known as the Stasi. It was in the bulging files that the Stasi insanely tried to compile on each and every East German citizen, enlisting a substantial proportion of the population to spy on the rest (and each other), that Colbert's dream of encyclopedic information came closest to realization. Since the collapse of communism, the spirit of Colbertism lingers on in such places as Moscow, Beijing, and Teheran. And it is in such places that dissidents are now deploying the tools of the current information revolution, from e-mail to Facebook to Twitter, to establish a new public sphere in defiance of state secrecy.

What distinguishes democracy from authoritarian rule, on the level of information systems, is that in democracy such systems have the double purpose of informing the state about its citizens and its citizens about the state. What is at stake here is the principle of accountability. In absolutist France, the state's agents were ultimately accountable to no one but the king. Colbert's system, with its accompanying bureaucracy and paperwork, allowed the state to keep watch on civil society, but not the reverse. Democratic societies, however, demand this reversal. As the historian Ben Kafka has recently shown, French revolutionaries in 1789 made public accountability a key demand, and wrote it into the

Declaration of the Rights of Man and Citizen. From now on, Saint-Just's "demon of writing" would provide a public record of the state's doings, and therefore help to protect citizens against the abuses of its agents. Modern bureaucracies remain riven by this tension between the two purposes of "public information."

More broadly, Soll does not engage explicitly enough with the large, fascinating question of how the control of information relates to the control of knowledge. He deals at great length with one of

Colbert's minions, a certain Joseph-Nicolas Foucault, but another Foucault, the philosopher Michel, lurks ineluctably in the background of any book of this sort. Foucault's famous work on knowledge and power mostly investigated very different issues from the kind of information management that Soll explores. It showed the ways that the naming of things, the categorization of knowledge, and the construction of "discourses" can radically shape the field of human action. In his later years, Foucault brought this perspective to bear more closely on questions of governance, looking at how practices of categorization and discipline work through institutions to shape and control individual "subjects" (what he called "governmentality"). But his orientation toward philosophical problems rather than historical ones, and his tendency to see "discourses" and practices as all-encompassing and uniform, make it difficult for his work to explain actual processes of historical change. For this reason, careful historians still tend to shy away from invoking him too sweepingly.

Yet Soll's fine book makes clear that Colbert's ministry represented not only a crucial stage in the development of state information management, but also something new in the broader history of ideas. The mercantile perspective the minister brought to bear on statecraft and scholarship was, despite the mirage of universal knowledge it came bound up with, deeply utilitarian. When trying to understand and to evaluate the information that he so assiduously collected and organized, Colbert applied a single clear criterion: its practical use-value to the French state. In a world of statesmen and scholars obsessed with fame, glory, and eternal salvation, the introduction of such a perspective at the very summit of the state represented a significant change. Colbert may have been a quintessential figure of the Old Regime in his attachment to royal power and noble privilege, but in his utilitarian and empirically minded way of thinking he was nothing less than a precursor of the Enlightenment. Soll notes that the great *Encyclopedia* of Diderot and d'Alembert made reference to Colbert no less than 143 times.

The path from Colbert to the Enlightenment needs further investigation. So, for that matter, does the path to the Enlightenment from the scholarly forms of information management studied by historians such as Blair. How does our relationship to formal knowledge change when we do not read through a book from start to finish, submitting ourselves to its logic and authority--when we impose our own organizational scheme on it through sophisticated forms of note-taking and the use of reference guides? The suddenness and completeness of the shift from one form of reading to another should not be exaggerated, but the phenomenon still has clear importance to the development of what we call, however imperfectly, modernity. The still more radical challenge to reading posed by the electronic dissemination of texts likewise promises, in the long run, to have profound effects on our broader intellectual universe.

The great irony about Colbert is that the ways of knowing that he championed would ultimately prove incompatible with the social and political values that he defended. He himself, of course, did not see any contradiction between a utilitarian perspective and a system of absolute monarchy grounded in the divine right of kings, brutal religious intolerance, and social privilege; but later generations would see a flagrant contradiction, and act decisively to resolve it. In this sense, the aristocrats and the scholars who saw Colbert as an alien, threatening presence in their midst had things exactly right. It is true, as Jacob Soll claims, that in the short term the French monarchy benefited from Colbert's ministrations, and might have benefited still more if his "system" had persisted after his death. From another perspective, however, he was less the state's servant than one of its gravediggers.

Source URL: http://www.tnr.com/article/books-and-arts/the-colbert-report

Short Cuts

- David Thomson
- October 13, 2009 | 12:00 am

Robert Altman: The Oral Biography

By Mitchell Zuckoff

(Knopf, 592 pp., $35)

Here is your exam question: who is the last American movie director who made thirty-nine films but never won the Oscar for best director? Name the film by that director that cost the most money, and name the film of his that earned the most. Clue: *The Departed*, which must have been around Martin Scorsese's thirtieth picture, and did win the directing Oscar, cost $90 million (four times as much as any of this man's films cost)--so don't go that way. Background info: *Gosford Park* cost $15 million; *Nashville* cost $2.2 million; *M.A.S.H.* cost about $3.5 million, and earned around $70 million; *Popeye* cost $20 million (in 1980). Here is your assignment: assess and reconcile these allegations in an essay of approximately 3,000 words. (Note: banish from your mind any insinuation that nowadays a director who makes thirty-nine films *has* to be given a best director Oscar--though it is not easy to think of many that fecund who don't have a bronze fetish to nurse at night.)

So while you have something useful to do, let's consider Mitchell Zuckoff's book on Robert Altman. In the recent history of rather stale or perfunctory books about movie directors, Zuckoff has done something quite special. Although the author is not known as a writer on film, he shows an unusual sense of the collaborations and the conflicts in a group process. Also, he grasps the way in which Altman was always inclined to make a battleground of his own projects--the earnest but passionate misunderstandings between Altman and Warren Beatty on *McCabe & Mrs. Miller* are so beautifully rendered that we begin to see how the actor's notion of John McCabe and the director's had to be at odds for that film to be so funny and so poignant. This is a smart, amusing, lively book, full of anecdotes and a generous step toward perceiving the glorious and perverse ways of Altman himself. I hope the book prospers, because that will assist the enjoyment of some complex films, and because Zuckoff's achievement is preparation for a full appreciation of what Patrick McGilligan delivered in his book *Robert Altman: Jumping Off the Cliff*, which appeared twenty years ago. (Zuckoff falls short of the obligation of "biography" by not even mentioning the earlier book.)

Today Altman is regarded with automatic respect. As a film-maker, he worked past the age of seventy-five (despite a heart transplant). He eventually won an honorary Oscar from the Academy for a career "that has repeatedly reinvented the art form." And, compared with the outlaw celebrated by McGilligan,

we know Altman as the director of *The Player*, *Short Cuts,* and *Gosford Park*, major works in the estimate of most critics and all coming after 1989. Let us remember that when McGilligan jumped off the cliff of taste, his subject's most recent works had been *HealtH*; *Popeye*; *Come Back to the Five and Dime, Jimmy Dean, Jimmy Dean*; *Streamers*; *Secret Honor*; *Fool for Love*; *Beyond Therapy*; and *O.C. and Stiggs*. There is something to be said for some of those films--*Secret Honor*, *Jimmy Dean*, even *Popeye*--but the greatest Altman enthusiasts would admit that this was the period of his doldrums. Yes, he kept working under adverse financial conditions, and nearly everything he did was "unexpected," but in general the gap between *Nashville* and *The Player*, 1975 to 1991, is one in which Altman seems adrift, or more than uncommonly out of love with himself and the world. It is a period that has to be accounted for in any analysis of his greatness as an artist.

Altman was eighty-one when he died, in 2006, which places him in the generation of American directors shaped by World War II and the remarkable place of cinema in the testing days of the 1930s and 1940s. He was born and brought up in Kansas City, and he was a pilot at the tag end of the Pacific war, a member of a crew, and someone who survived great peril in flimsy aircraft. It made a gambler out of him--or someone who declined to be as responsible as others. He was a big handsome kid who ran through a couple of early marriages as he took up documentary film-making at the Calvin company in Kansas City, a Midwest business for industrial films--but no fiction. This was rare training, and every biographical account testifies to how far some early ties lasted for decades in Altman's life. But it is striking that he did not really "go" Hollywood. Calvin was a robust, independent company in the non-fiction field, and a place where Altman learned everything he needed about the techniques of film.

Where do film directors come from? When you ask that question, you begin to grasp Altman's maverick nature. Directors came from good schools--Joseph Losey and Bob Rafelson were Dartmouth; Elia Kazan was Williams College; Howard Hawks was Cornell. There were some from the military--William Wellman, Henry Hathaway, Sam Fuller. There were kids who somewhere or other immersed themselves in show business from the earliest age, learning everything--Hitchcock, Minnelli, Ford. Some were refugees--Wyler, Zinnemann, Wilder. There even came a time, in the 1960s, when would-be directors strolled in and out of film school--Bogdanovich, Coppola, Lucas--as if bypassing life. There were also people who came out of the theater--radical, experimental, wayward souls such as Orson Welles, Nicholas Ray, or Preston Sturges. And in America there had always been the tradition of the adventurer who had tried a bit of everything, who had written or acted on stage, who boxed, rode horses, gambled and searched for gold--John Huston is the champion of that school, and it followed that Huston seldom agreed with, say, Hitchcock that making movies was the only possible occupation in the world.

Robert Altman fit none of these molds, just as he never managed to conform to the image of a Hollywood director. At school he was not much taken with anything except pranks and mischief. He liked to have a good time and he enjoyed the facilities of that philosophy--a little booze, some girls, late nights, and spare time. He had an instinct for moviemaking, proved on training films at Calvin, and occasionally he decided that he really ought to try Hollywood. But several visits in the post war years came to nothing. He was busy and well-intentioned, but sort of aimless--is it possible that he never took himself that seriously? A few years later, he admitted that "I started in the film business not too long ago, right here on this soundstage. It was a stormy beginning, and as I remember, I was in such a hurry to 'make it' that I often forgot to stand still long enough to do what it was I was trying to do. I'm not sure--even today--that I knew what it was I was trying to do, but I do know that I tried very, very hard, and ran around and around my goal until either I or it became like tigers turning into a circle of melted butter. And never once stopping to wonder what it was I was chasing--or was it, by then, chasing me."

Ambition in movies was supposed to be more sharply focused, but Altman seemed to exist in his own haze. Gradually, during the 1950s and early 1960s, he gathered real credits: he did a bad picture called *The Delinquents*, and that got him the co-directing job on a maudlin documentary, *The James Dean Story*. (But there was no hint that Altman identified with Dean, or his troubled generation, or the mawkish theme song on the Dean film--"Let Me Be Loved.") He did some work directing television and he made a sci-fi

picture called *Countdown*. What that meant was that as he came to make *M.A.S.H.*, in 1970, he was already forty-five--in a movie world in which people such as Coppola, Lucas, Scorsese, Bogdanovich, and Spielberg were getting their break at half his age. Was the Kansas City man a late developer, or a drummer who moved to his own lazy beat?

Altman nearly missed out on *M.A.S.H*. He was not well known enough. There were arguments that it was right for Stanley Kubrick. But two friends, George Litto and Ingo Preminger, carried the day, despite the studio's refusal to give Altman any points on profits. Then the picture was a breakout hit after Fox had thought it would need a lot of changes. Riotous preview screenings showed that Altman's insouciance and irreverence had caught a new young mood of 1970. So the military field hospital in Korea abandoned every hallowed sense of duty and respect. It treated the doctoring as a bloody job for hip young guys worried about tee times and fucking nurses. Of course it was truer to life than any war comedy had ever been, and beneath the blood and the wisecracks it was easy to mistake Korea for Vietnam--who really knew, when it had been shot at Malibu and in the L.A. canyons? *M.A.S.H.* was a merciless celebration of a men's club--perhaps the only sane way to handle a war--and was so steadily funny that audiences were either offended or charmed. But they were never indifferent. As much as any movie of the 1970s, *M.A.S.H.* divided the crowd--and though it got a best-picture nomination and a nod for Altman himself, the grindingly archaic *Patton* won those Oscars. In hindsight, we are left wishing that the inspired teasing and disrespect of Donald Sutherland and Elliott Gould could be ladled over the pomp of George C. Scott!

M.A.S.H. came from a novel that the distinguished scenarist Ring Lardner Jr. had adapted. But then Altman proceeded to trash and re-do Lardner's script--the Oscar was the writer's reward, said the deadpan Altman. At last a personal style was at work: the film was an excuse for an ensemble in which outward codes of rank and duty were dismantled by improvisation and insurrection. The players refused to take anything seriously, and Altman reduced everyone to the level of "support." All of a sudden you could detect an attitude in Altman that most set-piece American movies were stuffed, and deserved deflation and deconstruction. In time *M.A.S.H.* was a smash (the only one of Altman's career), and so liberating that it paved the way for a TV series that increasingly settled for the sweet routines of character, comedy, and anti-war sentiments. The astonishing thing about the movie *M.A.S.H.*--and Altman made not a penny from the TV show--is that it did not even bother to be anti-war.

Neither McGilligan nor Zuckoff really explains how the breakthrough of *M.A.S.H.* changed Altman, or directed him. In part, this is because both authors found him elusive, rather less than honest, an opportunist, a man who rarely liked to reflect (in public) on his inner being or processes, but someone who could take steady advantage of all those around him. Altman does not make a natural or a comforting hero. He was a drinker, a marijuana connoisseur, a womanizer, a regular exploiter of his own writers. He seems to have had an innate antagonism to the storytelling contribution of his scripts. In interviews Altman could be skittish. Was he unreliable, forgetful, or stoned? In 1975 (after *Nashville*), this prompted a searching essay by Robin Wood called "Smart-ass and Cutie-pie," on how far Altman was an artist or just a whimsical man at play. Wood's point remains valid, and it is sad that Zuckoff never picks it up. As with his own best characters, some sense endures of Altman as a lost soul or a bereft nihilist. He was also something of a fraud.

Yet a lot was revealed by the success of *M.A.S.H.* An astonishing calm and self-confidence--an arrogance nearly--took over in a series of films in which Altman pursued intense personal fantasy or began to strip the old wallpaper from Hollywood genres. Once lackadaisical or casual, he now seemed impassioned and driven: *Brewster McCloud*; *McCabe & Mrs. Miller*; *Images*; *The Long Goodbye*; *Thieves Like Us*; *California Split*; *Nashville*; *Buffalo Bill and the Indians*; *3 Women*. It is one of the great runs of work in American film. The Chandler film is a satire on or a travesty of private-eye pictures, and *McCabe & Mrs. Miller* might be re-titled *How the West Was Lost*; and all these movies caught the audience off guard. As a bicentenary picture, *Buffalo Bill* was an exposé of all the hype and fraud in Americana. Rather than a

tribute to country music and its spirit, *Nashville* was a pastiche in which any actor could and did write a country hit song. Country music hated the picture.

And just to torment the industry aroused by that $70 million take on *M.A.S.H.*, the next nine films were disasters, flops, near misses, or half-hits. The blithe pattern of Altman's career was established, well in advance of the "independent" movement in American cinema. If he could somehow find the money to make a film--albeit at his own ground level, where big names contributed themselves for scale--he hardly cared about the result. He would never recapture the fiscal dynamic of *M.A.S.H.*, but he would never go to ground, or stop working.

There was more going on. Often using wide screens, Altman was developing a drifting camera style that roamed around its own imagery. He seemed sometimes to ooze in and out of his own film world. The cinematographer Vilmos Zsigmond was vital to this effort, but just as important was the way Altman began to mix multi-track sound recordings so that the sound focus seemed to move, with the result that no one could be quite sure what was said or heard. The creative climax of this style must be *McCabe & Mrs. Miller*, where Warren Beatty, the precise, controlling actor, grew increasingly angry and flummoxed that audiences could not hear every word he was agonizing over. Altman was nonchalant about the blur or the fuzz--it was a strength, he said, it was just like life. His films were becoming like a shifting surface, a labyrinth of ambiguity in which very little was fixed or certain. He was also rejecting the idea--the old Hollywood scheme--that films and life are about just a few people. Life, Altman insisted, is always a ragged circle in which anything that happens is contingent on how it registers on others. Misunderstanding may be a surer path of existence than the old tidy understanding.

Many people said that seeing an Altman picture was like being in a haze, a daze, a drug trip. For every claim that the style was ushering in a new openness of attitude, there were counters that it was just a lazy, dreamy director incapable of making up his mind. That is why the director-star conflict on *McCabe* goes to the heart of the film: is McCabe a tragic hero or a hopeless chump? Does Altman care, and is he trying to get us to care, or does nothing really matter in the drift? Mrs. Miller's opium habit promotes the same detachment.

The argument is still open over the group of films as a whole. *Nashville*--much praised in its day by Pauline Kael, who lashed herself to Altman's uncertain mast (thereby guaranteeing her subsequent betrayal)--looks like a perilously chic contrivance, with twenty-four characters for the sake of that many, vivid in performance but very sketchy in writing, and in a languid circus that needs the sudden intrusion of assassination to give it shape and an ending. So *Nashville* may be overrated. On the other hand, *The Long Goodbye* and *McCabe & Mrs. Miller* are surely among the most beautiful and musical films ever made. Altman loved music, and jazz especially (see the jam session movie that goes along with *Kansas City*), and *Goodbye* and *McCabe* are eccentric musicals--with one refrain all through the first and Leonard Cohen's mutterings in the other. Moreover, Altman had reached a visionary insight that while Warren Beatty was a piercing but neurotic movie star, Elliott Gould's Philip Marlowe was quite simply one of the hippest pieces of acting in the annals of film.

The Altman of those years was like Ingmar Bergman in the way he had gathered a creative family. It was a gang of oddball actors who had never quite found themselves elsewhere: Gould, Keith Carradine, Geraldine Chaplin, Henry Gibson, Shelley Duvall, Jeff Goldblum, and Lily Tomlin, awkward in everyone else's films, but stunning for Altman. And he had his team behind the camera too, variously co-producers, co-writers, co-friends, and enablers--Tommy Thompson, Joan Tewkesbury, Robert Eggenweiler, Scott Bushnell, and Alan Rudolph. He was a producer for friends--and so he helped such valuable people as Alan Rudolph (*Remember My Name*) and Robert Benton (*The Late Show*), and much later there was a friendship and artistic alliance between Altman and Paul Thomas Anderson. It seemed a happy family until, all of a sudden, Bushnell sought more power and all was upheaval. Both McGilligan and Zuckoff

do pretty well at tracing the internecine politics and the odd escapism with which Altman was a capricious emperor who would distribute favors and then give you the back of his hand.

He was not always an easy or safe man to like, or take for granted. The two books show very different experiences. Zuckoff was hired, he says, near the end of Altman's life, to help write a memoir that would make a nice payday. (Altman was always short of money.) It was to be a book about the work, not the life. They had long sessions of talk and smoking. They became friends, and Zuckoff succumbed to comradeship with an old man who was frail but persevering. Altman's great kindness to Zuckoff was in dying, for that took away any chance of chagrin and dismay in an abused author. But Zuckoff was persuaded by Altman's loyal and long-suffering third wife, Kathryn, and by opportunity, to do a book about the life, too--and to do it as an oral biography, adapting to the director's habit of a circular form and letting everyone have his or her say, even if it comes down to Faye Dunaway's official kiss-off--"I don't have anything to say about Mr Altman. I never worked with him. I don't have any time to give you on the subject"--instead of deep dish on the temperature of their implausible affair.

Zuckoff is a good interviewer and a better editor of the results. But his circle of contacts is smaller than McGilligan's, and it does not carry the bitterness of McGilligan's discovery: that the self-serving haze of forgetfulness in Altman's life often demanded a painstaking readiness to track down the small people who could give the lie to the great man's lofty and sentimental version of things. The McGilligan book is finally more revealing, because its author was never taken in by Altman or smothered in his embrace.

In the end there is room for both books, because Altman's best films and his rather chilly elegance have entered our imaginary existence. Very few directors have been so good at detecting the lonely people in the crowd. Beatty's John McCabe seems like the cock of his jaunty walk, yet he yarns away to himself to prove he exists; Gould's Philip Marlowe is so twisted out of shape by old codes of honor that he may have his best conversations with his cat. Altman left traps in the ground around himself: no major director made so many awful films. But if some director had made only *M.A.S.H.*, *McCabe & Mrs. Miller*, *The Long Goodbye*, *3 Women*, and *Short Cuts*, there would be no doubt about his ultimate importance. Yes, he was a trickster and a tricky bastard, a bit of a double-cross. But do not forget that he introduced those lifelike realities at the very moment when innocent and foolish film followers were ready to believe that directors must be heroes, saints, or Santa Claus. We owe him plenty.

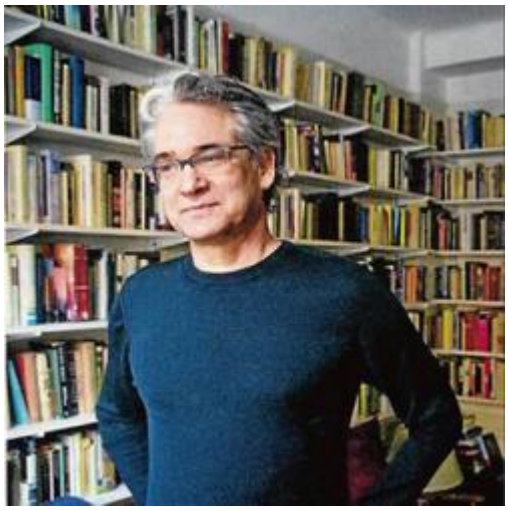
David Thomson is the author of The New Biographical Dictionary of Film and Have You Seen? A Personal Introduction to 1,000 Films.

Source URL: http://www.tnr.com/article/books-and-arts/short-cuts

Seize the Pen

In his essays on the writing life, Michael Greenberg emerges as figure out of Bellow.

- Adam Kirsch
- October 8, 2009 | 12:00 am



For years, I have been reading Michael Greenberg's remarkable column in the *Times Literary Supplement* and wondering what the English make of it. The New York Jewish quality of Greenberg's take on the writer's life, under the rubric "Freelance," is emphasized by the way he takes turns writing the column with an English poet, Hugo Williams, who is a writer of a wholly different species. Williams is deeply ensconced in the world of poetry-writing programs, residencies, and workshops--the whole infrastructure of institutionalized creativity, which seems no less formidable in the United Kingdom than in the United States. When Williams is not writing about giving a reading or teaching a class, he is often discussing his wife's chateau in France, or his father, a British theater and film star from the 1950s.

If Williams comes out of a David Lodge novel, however, Greenberg undoubtedly belongs in a book by Saul Bellow. "As I saw it, the real sacrifice was on the part of those who had to toe the line and forswear a free-style existence," Greenberg writes of his adolescent self, cleverly alluding both to the title of his column and to that famous freelance, Augie March: "'First to knock, first admitted,' in Saul Bellow's words. 'Sometimes an innocent knock, sometimes a not so innocent.'" Following this creed, Greenberg never went to college, choosing instead to run away from home as a teenager, then prowl New York and the world in search of the writer's elixir, experience. Yet in *Beg, Borrow, Steal: A Writer's Life*--the terrific new collection of Greenberg's "Freelance" columns, just published by Other Press--he is mainly concerned to show the downside of experience. The book is a chronicle, not of failure exactly, but of constant struggle--against the slipperiness of the writer's vocation, against the psychological burdens of family and Jewishness, but most straightforwardly, as the title suggests, the struggle just to earn a living.

In other words, Greenberg is engaged with the very subjects that made the first generation of American Jewish writers so elementally vigorous. That is why this slender book makes such a strong impression: it is as though Bellow or Alfred Kazin were transported to post-millennial New York, bringing their toughness and romanticism to bear on our softer and more familiar world. Greenberg himself hints at this quality of his writing in a typically self-deprecatory piece about his early struggles to publish a novel. In the early 1980s, Greenberg writes, he sent his manuscript to the influential editor Ted Solotaroff, who returned it with a note: "This manuscript represents everything I hate in fiction." Greenberg was devastated, of course; but years later, when he read Solotaroff's memoir *Truth Comes in Blows*, he realized that his novel must have struck all too close to home. "With its complicated, immigrant-minded fathers and their sons," Greenberg now sees, "my novel must have seemed old hat to him, a story of Jewish marginality that, in America at least, was passé."

In a certain sense, the style of Jewish marginality that Greenberg writes about *Beg, Borrow, Steal* does seem passé, or at least to belong to the past, if only for socioeconomic reasons. We are accustomed to reading about Jewish peddlers on the Lower East Side in the 1890s, and their struggling intellectual sons in the 1930s. Follow that lineage down to the present, and the great-grandson who becomes a writer is likely to have an MFA from Iowa and a tenured teaching job; if he writes about Jewishness, it will be in a nostalgic, quasi-magical-realist style.

In *Beg, Borrow, Steal*, however, the familiar timeline of assimilation and upward mobility has been discarded. Instead of his grandfather, we find Greenberg himself working as a peddler (the time appears to be the early 1970s), selling knockoff cosmetics on Fordham Road in the Bronx. Greenberg befriends a Chilean food-vendor named Lucho, who teaches him the tricks of the trade--above all, which security guard to bribe to avoid being rousted. But this gesture of friendship, like most such gestures in Greenberg's world, turns out to have been a con. The day before Easter, when Greenberg has done great business and is carrying a lot of cash, Lucho doesn't show up to work; instead, three teenagers come and rob him, presumably on his friend's instructions.

The moral is one Bellow would have approved: the life of the mind is okay for idealists, but real life is dog-eat-dog. This was also the creed of Greenberg's own father: "To get by in my father's world, you had to be tough, like he was. He didn't have colleagues, only enemies. Every dollar, he taught us, had to be pried away from men who would just as soon see us starve." No wonder Greenberg's book is full of crooks and operators--from Henry, the young coffee-shop barista who expects Greenberg to look on approvingly as he robs the till, to Hugh, a junkie who feeds Greenberg's curiosity with stories about thieving techniques before burglarizing his apartment. There is something of Rinaldo Cantabile, the gangster pal of Charlie Citrine in *Humboldt's Gift*, in such figures, and in Greenberg's suspicious-but-amused relationships with them.

The central irony of Greenberg's memoir--for that is what *Beg, Borrow, Steal* amounts to--is that it was his literary idealism, in rebellion against his brutal father, that landed Greenberg in such brutal and unideal places. Greenberg's war with his father begins, appropriately, in the book's very first sentence: "My old man was like Zeus's father Cronos: he couldn't bear the idea that any of his children might surpass him." The literary son fighting the businessman father is the oldest of modern Jewish tropes, going back to Kafka and Freud, but we seldom see it in such vigor in late 20th-century America. Greenberg's fight was literal: he writes of the moment his father "took a wild swing at me. I dodged it easily, hearing the crush of bone as his fist hit the wall. I fled the apartment, and when I returned, three days later, his hand was in a cast."

No wonder Greenberg is so conflicted about the burdens of family, and of Jewishness. In one of the book's most charged sections, he writes about circumcision: "In ancient times, it fell to the father to do the job on his son himself, driving home the idea that masculinity belonged to God or to the priests who spoke for him. For Freud, this was proof of the violence of the father who crashes in on the paradise of mother and child." Greenberg's reluctance to inflict such "violence" on his son meant that he went uncircumcised, while ironically, "his Cuban and black crib mates were circumcised as a matter of course." When, shortly afterward, the doctor informed Greenberg that the boy should be circumcised to treat a rare condition--"a one-in-a-million occurrence"--it is like a cosmic reminder that Jewishness cannot be ducked.

Greenberg's refusal to join the family scrap-metal business was another kind of rebellion, and a more successful one, as we see from the fates of his brothers who fell in line: "For thirty years they tormented each other with accumulated rancor." Yet Greenberg's literary career has been anything but idyllic: he writes about his experiences ghost-writing for minor celebrities, writing narration for a golf documentary (though he doesn't know how to play golf), and punching up Hollywood scripts. At a low moment, he compares himself to Wilky in Bellow's *Seize the Day*, "who has persisted in his quest to be an actor just long enough to make himself unfit for the more lucrative professions." But this book, with its intrepidity, humor, and dark insight, offers its own, irrefutable justification for the "writer's life."

Adam Kirsch is a senior editor at The New Republic. *This piece originally appeared in* Tablet Magazine [1].

Source URL: http://www.tnr.com/article/politics/seize-the-pen

Money Can Buy Happiness, If You're Paid By the Hour

By: Tom Jacobs

Why are Americans such workaholics? The issue has long perplexed sociologists, who have put forth various theories on why workers in the U.S. tend to put in longer hours and take shorter vacations than their counterparts in Europe. Why do so many Yanks believe earning extra income is more important than enjoying leisure time?

Newly published research provides a possible answer. Americans, it turns out, are more likely to be paid by the hour than workers in most industrialized nations. And people who get paid an hourly wage are more likely to link well-being to income.

In the *Personality and Social Psychology Bulletin*, Sanford DeVoe of the University of Toronto and Jeffrey Pfeffer of Stanford University present evidence that being paid by the hour leads workers "to rely more on income when evaluating their happiness."

"The prevalence of hourly pay — or, for that matter, billing time by the hour, or other organizational practices that affect the salience of a connection between time and money — is therefore a reasonable candidate for beginning to understand cross-national differences in the determinants of happiness, and also in preferences for work and leisure," they conclude.

According to a 2002 paper by economist Daniel Hamermesh, the only industrialized country besides the U.S. in which hourly pay is fairly common is Australia. "There is no postwar tradition of hourly paid jobs in Western Europe," he wrote in the *Industrial and Labor Relations Review*. He added that the percentage

of American workers paid by the hour held steady or slightly increased from the late 1970s to the late 1990s, for reasons that are not at all clear.

Intrigued by such numbers, DeVoe and Pfeffer have been studying the psychology of the hourly wage for years now. In a 2006 paper, they reported that people paid by the hour "weighed economic returns more strongly in making tradeoffs between time and money." They also found that "participants randomly assigned to calculate their hourly wage rate expressed greater willingness to trade more time for money."

Their just-published paper looks specifically at the relationship between wage structure and happiness. It describes four studies.

One used data from the first wave of the National Survey of Families and Households, a cross-sectional survey of American adults conducted in 1987-88. Participants were asked their income and whether they were paid a salary or an hourly wage. To measure happiness, they were asked: "Taken things all together, how would you say things are these days?"

The researchers found that after controlling for various factors, including the number of hours worked, the person's education level and marital status, "income had a greater effect on happiness for those employees paid by the hour."

In another study, salaried participants were asked to calculate their approximate hourly wage rates and then evaluate their subjective feelings of well-being. These people "exhibited a relationship between income and happiness similar to those of people normally paid by the hour," the researchers report.

This strongly suggests the x-dollars-per-hour equation is simple and concrete enough to make a huge psychological impact. We may shrug off the fact we've "wasted" an hour doing nothing, but "wasting" $26.74 is something else entirely.

Ben Franklin advised us to "remember that time is money." The American economic system, for better or worse, seems to be structured in a way that keeps that adage alive.

http://www.miller-mccune.com/news/money-can-buy-happiness-1524

Environmental Change Drives Evolutionary Change, Eventually

Tiny bryozoans in sediments dredged up from the bottom of the Caribbean Sea reveal that environmental change drove evolution. (Credit: Aaron O'Dea)

ScienceDaily (Oct. 13, 2009) — Hungry, sexual organisms replaced well-fed, clonal organisms in the Caribbean Sea as the Isthmus of Panama arose, separating the Caribbean from the Pacific, report researchers from the Smithsonian Tropical Research Institute and Scripps Institution of Oceanography. The fossil record shows that if a species could shift from clonal to sexual reproduction it survived. Otherwise it was destined for extinction, millions of years later.

Closure of the Isthmus of Panama involved a protracted sequence of volcanic and tectonic events. During the final phase, between about 4.5 and 3.5 million years ago, the Caribbean underwent a major change from a pea soup-like environment, fed by nutrient-rich waters surging up along South America, into a crystal-clear, nutrient-poor environment.

"As the Caribbean Sea was cut off from the Pacific Ocean, many new species appeared in the fossil record, and all reproduced sexually," said Aaron O'Dea, who holds a Tupper Postdoctoral Fellowship at the Smithsonian Tropical Research Institute.

Well-preserved fossils show that cupuladriid bryozoans, colonial animals similar to corals that walk around on the sea floor, reproduced either by cloning or by sex. To clone a new colony requires immediately available energy, so when nutrients are scarce, it's better not to fragment. Nutrients to form eggs and sperm needed for sex can, on the other hand, accumulate slowly over time.

O'Dea, with Jeremy Jackson, emeritus staff scientist at the Smithsonian and director of the Center for Marine Biodiversity and Conservation at Scripps Institution of Oceanography, measured the relative amount of cloning and sex occurring in species over the last 10 million years in the Caribbean. "The two

forms are unmistakable," explained O'Dea. "You can clearly see the first individual that founded a sexual colony, while a clonal colony preserves the fragment from the previous colony from which it cloned."

As predicted, clonal bryozoans rapidly disappeared from the record as the Caribbean was isolated. Species that survived did so by becoming increasingly robust to reduce the chances of fragmentation while those that failed to evolve went extinct. They are still found in the nutrient-rich eastern Pacific.

But not everyone agreed that the extinctions which occurred 1-2 million years later in the Caribbean were caused by the formation of the Isthmus—a pattern also seen in corals and molluscs. Now these authors have the evidence to be sure.

"It's important to distinguish between ecological extinction—when these organisms stopped being important players in the game—and actual extinction, when they disappeared from the geological record," said Jackson. "The idea that extinction may be delayed by millions of years after the cause is worrisome. Today an overwhelming number of species are being reduced in abundance. The forecast from the fossil record is that even if they survive now, the ultimate cause of their extinction may already have passed us by."

Journal reference:

1. Aaron O'Dea and Jeremy Jackson. **Environmental change drove macroevolution in cupuladriid bryozoans**. *Proc. Roy. Soc. B.*, DOI: 10.1098/rspb.2009.0844

Adapted from materials provided by Smithsonian Tropical Research Institute, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/07/090728223020.htm

A High Fat Diet During Pregnancy Can Lead To Severe Liver Disease In Offspring

ScienceDaily (Oct. 13, 2009) — Scientists have discovered a previously unknown link between a mother's diet in pregnancy and a severe form of liver disease in her child.

In a study, published in the journal *Hepatology,* researchers at the University of Southampton found that a high fat diet during a woman's pregnancy makes her offspring more likely to develop a severe form of fatty liver disease when they reach adulthood. The findings are another piece in the jigsaw for scientists who believe diets containing too high levels of saturated fat may have an adverse effect on our health.

Non-alcoholic fatty liver disease (NAFLD) is a condition associated with obesity and caused by the build up of fat in the liver. The condition advances in some people and it is important to understand the factors that contribute to disease progression. Until recently, NAFLD was considered rare and relatively harmless but now it is one of the most common forms of liver disease that may progress to cirrhosis a serious life threatening chronic liver disease.

Professor Christopher Byrne, with colleagues Dr Felino Cagampang and Dr Kim Bruce, of the University's School of Medicine and researchers at King's College London, conducted the study, funded by the BBSRC. Prof Byrne explained: "This research shows that too much saturated fat in a mother's diet can affect the developing liver of a fetus, making it more susceptible to developing fatty liver disease later in life. An unhealthy saturated fat-enriched diet in the child and young adult compounds the problem further causing a severe form of the fatty liver disease later in adult life."

The next stage of this research, also funded by the BBSRC, will be to understand, more precisely, the reason why fatty liver disease develops and to intervene to prevent the fatty liver disease occurring.

The University's School of Medicine has a worldwide reputation for its pioneering research into the relationship between mothers' diets in pregnancy and future health problems in their offspring.

Journal reference:

1. Bruce et al. **Maternal high-fat feeding primes steatohepatitis in adult mice offspring, involving mitochondrial dysfunction and altered lipogenesis gene expression**. *Hepatology*, 2009 DOI: 10.1002/hep.23205

http://www.sciencedaily.com/releases/2009/10/091012095705.htm

New Mobile Lab Allows Researchers To Study Air Quality, Health Effects

MSU professor Jack Harkema is seen atop AirCARE 2, his team's second mobile lab to study air pollution and its damaging health effects. (Credit: Image courtesy of Michigan State University)

ScienceDaily (Oct. 13, 2009) — A new mobile air research laboratory will help a team of researchers led by a Michigan State University professor better understand the damaging health effects of air pollution and why certain airborne particles - emitted from plants and vehicles - induce disease and illness.

Jack Harkema, a University Distinguished Professor of pathobiology and diagnostic investigation in the College of Veterinary Medicine, will deploy the new 53-foot, 36,000-pound center - dubbed "AirCARE 2" - throughout southern Michigan, including metropolitan Detroit.

"The mobile laboratory allows us to analyze 'real-world' pollution in communities that may be at risk," he said. "We can study why certain ailments, such as asthma, cardiovascular disease and even obesity, may be more pronounced after exposure to particulate air pollution."

With about 450 square feet of indoor laboratory space, the $400,000 center helps researchers study fine and ultrafine particles in air pollution. These small particles have been found to increase mortality and morbidity among susceptible people with pre-existing health conditions such as heart disease.

Housed in a converted semitrailer, the mobile laboratory pulls air from the surrounding atmosphere through an air-particle concentrator, allowing the scientists to selectively collect the particles and analyze for chemical components that may be responsible for damaging health effects.

Researchers can study the subtle effects of controlled particle exposure on both laboratory animals and human subjects, providing clues on why and how pollutant particles are so harmful to the heart and lungs. Harkema works closely with environmental and biomedical researchers from the University of Michigan on the projects.

"We know particles in the air can exacerbate pre-existing respiratory and cardiovascular disease in people," Harkema said. "We need to understand why. There are many different components to air pollution, and we want to determine which of these are most harmful and where there come from."

The addition of the new mobile laboratory allows Harkema and U-M collaborators Robert Brook, a cardiologist, and Gerald Keeler, an atmospheric scientist, to conduct a new study funded by the Environmental Protection Agency. As part of the project, Harkema, Brook and Keeler will deploy AirCARE 2 in rural southeastern Michigan to study the cardiovascular health effects of transported air pollution originating from distant emission sites in Michigan or adjacent states.

AirCARE 2 was partly funded through the MSU strategic partnership grant, the Michigan Agricultural Experiment Station, the College of Veterinary Medicine and the Office of the Vice President for Research and Graduate Studies. The new fine particle concentrator in the AirCARE 2 received some funds from the Electric Power Research Institute and the American Petroleum Institute.

The first MSU Mobile Air Research Laboratory, AirCARE 1, currently spends six months of the year in metro Detroit conducting air pollution studies and then six months in Los Angeles as part of a six-university partnership known as the federal Southern California Particle Center in California. The $8 million partnership, funded by the EPA and led by UCLA, is a five-year endeavor to investigate how exposure to airborne particles affects health and how the impact varies with the source, chemical composition and physical size.

Adapted from materials provided by Michigan State University.

http://www.sciencedaily.com/releases/2009/10/091007171741.htm

A Tree's Response To Environmental Changes: What Can We Expect Over The Next 100 Years?

Forest in West Virginia. How will increasing concentrations of atmospheric carbon dioxide (CO2) be affecting trees and, ultimately, affecting water and carbon cycles? (Credit: Copyright Michele Hogan)

ScienceDaily (Oct. 13, 2009) — The many environmental issues facing our society are prevalent in the media lately. Global warming, rainforest devastation, and endangered species have taken center stage. Our ecosystem is composed of a very delicate network of interactions among all species and the non-living environment. Predicting how each component of this complex system will respond to the many environmental changes sweeping the globe is a challenging problem today's scientists face.

A recent article by Dr. Abraham Miller-Rushing and his colleagues at Boston University published in the October issue of the *American Journal of Botany* explores how increasing concentrations of atmospheric carbon dioxide (CO_2) may be affecting trees and, ultimately, affecting water and carbon cycles.

It is known that increasing concentrations of atmospheric CO_2 affect the physiology and behavior of many organisms, and in plants, changes to the pores (stomata) on the surface of leaves are one example of these effects. Stomata allow air (containing CO_2) to pass into the leaf while water vapor passes out of the leaf. Plants use carbon dioxide to produce sugars during the process of photosynthesis. With increasing concentrations of atmospheric CO_2, stomatal density decreases while rates of photosynthesis increase. The decrease in stomatal density results in decreased water loss through the leaves.

"These changes in stomatal behavior and water use efficiency can, in turn, have large impacts on plants and can alter ecosystem-scale water and carbon cycling," Miller-Rushing said. "For example, soil moisture, runoff, and river flows might increase and drought tolerance in individual plants might improve."

The relationship between atmospheric CO_2 concentrations and stomatal density is so constant over the long term that scientists are able to use stomatal density of fossilized leaves to determine historical atmospheric CO_2 concentrations. However, short-term responses to changes in CO_2 concentrations have previously been found to be much more variable, and very little concrete data exist on how long-lived organisms respond to changing CO_2 concentrations. "We currently do not know how the anatomy and

water relations of individual trees will respond to changes in climate and atmospheric concentrations of CO_2 over their lifetimes," Miller-Rushing said. "Understanding these responses will be key to predicting how forests might contribute to changes in carbon and water cycles over the next 100 years."

Miller-Rushing and his colleagues examined the stomatal density on leaves, the length of the cells that surround the stomata (called guard cells), and the leaves' efficiency of water use (a measurement that compares the amount of carbon that is converted to sugar with the amount that passes through the stomata) in 27 trees growing at the Arnold Arboretum in Boston, Massachusetts for the past century. By examining several dried specimens from each plant that had been collected over the past hundred years, they were able to assess these characteristics in a temporal framework. During this period, global atmospheric CO_2 concentrations increased by approximately 29%. Miller-Rushing and colleagues found that stomatal density declined while guard cell length increased in oaks and hornbeams, although these changes were not dependent on the magnitude of changes in CO_2 concentrations. Intrinsic water use efficiency did not change significantly over time, suggesting that it may not respond to changes in CO_2 concentrations over the lifetimes of individual trees, possibly because of compensating changes in stomatal density and guard cell size.

"This finding may have important implications for models that predict changes in future climate, carbon, and water cycles," Miller-Rushing stated. "We also demonstrated a new method that will allow researchers to investigate these questions in greater depth, namely by using herbarium specimens sampled repeatedly from the same trees, as is often done at botanical gardens."

As understanding the rippling impacts caused by various changes to the environment becomes increasingly more important, proper methodology to address these questions has become essential.

Journal reference:

1. Miller-Rushing et al. **Long-term relationships among atmospheric CO2, stomata, and intrinsic water use efficiency in individual trees**. *American Journal of Botany*, 2009; 96 (10): 1779 DOI: 10.3732/ajb.0800410

Adapted from materials provided by American Journal of Botany, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/10/091007091752.htm

Polymorphisms Of The Interleukin-1 Gene Complex May Influence Alcohol Dependence

ScienceDaily (Oct. 13, 2009) — Cytokines are small proteins secreted by cells that serve as molecular messengers between cells. Pro-inflammatory cytokines – which function in the immune system – may be involved in alcohol dependence (AD). A study of three polymorphisms of the interleukin-1 gene complex (IL-1) and one of the tumor necrosis factor-alpha (TNFα) has found that IL-1 may directly contribute to AD among Spanish Caucasian males.

"Cytokines are proteins which mediate and regulate the inflammatory reaction in infectious and autoimmune diseases," explained Pilar A. Sáiz, associate professor of psychiatry at the University of Oviedo, Spain and corresponding author for the study. "Clinical observation of increased circulating levels of pro-inflammatory cytokines such as IL-1 and TNFα in patients with alcohol liver disease suggests that they might play a role on the pathogenesis of the disease. Additionally, these cytokines act in the central nervous system affecting the functionality of the serotoninergic and dopaminergic systems, which have been also related to the pathophysiology of AD, and with the brain reward systems involved in alcohol reinforcement."

Sáiz and her colleagues recruited 200 (169 males, 31 females) AD patients from an outpatient detoxification unit, as well as 420 (216 males, 204 females) healthy individuals without a history of drug/alcohol/psychiatric problems (known as "controls"), from the north of Spain. All of the Spanish Caucasian participants were genotyped for four polymorphisms –IL-1α -889 C/T, IL-1ß +3953 C/T, IL-1RA (86bp)n, and TNFα -308A/G – and assessed at baseline and again at six months for alcohol intake, addiction severity, and biomarkers of alcohol intake.

"We found that AD male patients and healthy control male patients differed in the genotype frequencies of the IL-1RA polymorphism owing to an excess of the A1/A1 genotype in the AD males," said Sáiz. "On the other hand, analysis of the IL-1 gene complex revealed a higher frequency of the IL-1a -889C / IL-1b +3953C / IL-1RA A2 haplotype in the control group than among the AD patients, as well as in the abstainers after six months of follow-up compared to the nonabstinent patients."

A haplotype is a combination of alleles at multiple loci that are transmitted together on the same chromosome, Sáiz explained. Prior research has suggested that the study of single polymorphisms may miss more complex haplotype effects, she added.

"In short, this haplotype seemed to exert a protective effect and was related to better outcomes," said Sáiz. "These findings provide further tentative evidence of the role of the IL-1 gene complex in AD as well as evidence that the nature of the associations may be direct, gender-specific, or involve haplotype effects."

She cautioned readers to remember, however, that AD is influenced by both genetic and environmental factors. "We are talking about a multifactorial polygenic disorder caused by a combination of small variations in different genes, often in concert with environmental factors," she said. "In spite of great efforts, the exact genes related to the pathophysiology of alcoholism are yet unknown. Our work represents a small piece of the puzzle."

Co-authors of the ACER paper were: Maria P. Garcia-Portilla, Eva M. Díaz and Julio Bobes of the Department of Psychiatry in the School of Medicine at the University of Oviedo, Spain; Gerardo Florez of the Unidad de Conductas Adictivas at the Hospital Santa María Nai, Spain; Paul Corcoran of the Department of Psychiatry in the School of Medicine at the University of Oviedo, and the National Suicide Research Foundation, Ireland; Celso Arango of the Unidad de Adolescentes in the Department of Psychiatry at the Hospital General Universitario Gregorio Marañon, Spain; Blanca Morales, Victoria Alvarez and Eliecer Coto of the Laboratory of Molecular Genetics at the Hospital Universitario Central de Asturias, Spain; Juan C. Leza of the Department of Pharmacology in the School of Medicine at the Complutense University of Madrid; and Sandra Alvarez and Luis Nogueiras of the Unidad Asistencial

"As Burgas," Spain. The study was funded by the Instituto de Salud Carlos III of the Centro de Investigacion Biomedica en Red de Salud Mental (CIBERSAM).

Journal reference:

1. . **Polymorphisms of the IL-1 Gene Complex are Associated with Alcohol Dependence in Spanish Caucasians, Data from an Association Study**. *Alcoholism: Clinical & Experimental Research*, December, 2009

Adapted from materials provided by Alcoholism: Clinical & Experimental Research, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/09/090918181448.htm

Radio Waves 'See' Through Walls

On the left, a person walks around inside a square of 28 radio transceivers (mounted on plastic pipes) in the Warnock Engineering Building's atrium at the University of Utah. The person creates "shadows" in the radio waves, resulting in the image displayed on right, in which the person appears as a reddish-orange-yellow blob. University of Utah engineers also showed this method can "see" through walls to make blurry images of people moving behind the walls. They hope the technique will help police, firefighters and other emergency responders apprehend burglars and rescue hostages, fire victims and others. (Credit: Sarang Joshi and Joey Wilson, University of Utah)

ScienceDaily (Oct. 12, 2009) — University of Utah engineers showed that a wireless network of radio transmitters can track people moving behind solid walls. The system could help police, firefighters and others nab intruders, and rescue hostages, fire victims and elderly people who fall in their homes. It also might help retail marketing and border control.

"By showing the locations of people within a building during hostage situations, fires or other emergencies, radio tomography can help law enforcement and emergency responders to know where they should focus their attention," Joey Wilson and Neal Patwari wrote in one of two new studies of the method.

Both researchers are in the university's Department of Electrical and Computer Engineering – Patwari as an assistant professor and Wilson as a doctoral student.

Their method uses radio tomographic imaging (RTI), which can "see," locate and track moving people or objects in an area surrounded by inexpensive radio transceivers that send and receive signals. People don't need to wear radio-transmitting ID tags.

One of the studies – which outlines the method and tests it in an indoor atrium and a grassy area with trees – is awaiting publication soon in *IEEE Transactions on Mobile Computing*, a journal of the Institute of Electrical and Electronics Engineers.

The study involved placing a wireless network of 28 inexpensive radio transceivers – called nodes – around a square-shaped portion of the atrium and a similar part of the lawn. In the atrium, each side of the square was almost 14 feet long and had eight nodes spaced 2 feet apart. On the lawn, the square was about 21 feet on each side and nodes were 3 feet apart. The transceivers were placed on 4-foot-tall stands made of plastic pipe so they would make measurements at human torso level.

Radio signal strengths between all nodes were measured as a person walked in each area. Processed radio signal strength data were displayed on a computer screen, producing a bird's-eye-view, blob-like image of the person.

A second study detailed a test of an improved method that allows "tracking through walls." That study has been placed on arXiv.org, an online archive for preprints of scientific papers. The study details how variations in radio signal strength within a wireless network of 34 nodes allowed tracking of moving people behind a brick wall.

The method was tested around an addition to Patwari's Salt Lake City home. Variations in radio waves were measured as Wilson walked around inside. The system successfully tracked Wilson's location to within 3 feet.

The wireless system used in the experiments was not a Wi-Fi network like those that link home computers, printers and other devices. Patwari says the system is known as a Zigbee network – the kind of network often used by wireless home thermostats and other home or factory automation.

Wilson demonstrated radio tomographic imaging during a mobile communication conference last year, and won the MobiCom 2008 Student Research Demo Competition. The researchers now have a patent pending on the method.

"I have aspirations to commercialize this," says Wilson, who has founded a spinoff company named Xandem Technology LLC in Salt Lake City.

The research was funded by the National Science Foundation.

How It Works

Radio tomographic imaging (RTI) is different and much less expensive than radar, in which radar or radio signals are bounced off targets and the returning echoes or reflections provide the target's location and speed. RTI instead measures "shadows" in radio waves created when they pass through a moving person or object.

RTI measures radio signal strengths on numerous paths as the radio waves pass through a person or other target. In that sense, it is quite similar to medical CT (computerized tomographic) scanning, which uses X-rays to make pictures of the human body, and seismic imaging, in which waves from earthquakes or explosions are used to look for oil, minerals and rock structures underground. In each method, measurements of the radio waves, X-rays or seismic waves are made along many different paths through the target, and those measurements are used to construct a computer image.

In their indoor, outdoor and through-the-wall experiments, Wilson and Patwari obtained radio signal strength measurements from all the transceivers – first when the rectangle was empty and then when a person walked through it. They developed math formulas and used them in a computer program to convert weaker or "attenuated" signals – which occur when someone creates "shadows" by walking through the radio signals – into a blob-like, bird's-eye-view image of that person walking.

RTI has advantages. "RF [radio frequency] signals can travel through obstructions such as walls, trees and smoke, while optical and infrared imaging systems cannot," the engineers wrote. "RF imaging will also work in the dark, where video cameras will fail."

Even "where video cameras could work, privacy concerns may prevent their deployment," Wilson and Patwari wrote. "An RTI system provides current images of the location of people and their movements, but cannot be used to identify a person."

Would bombardment by radio waves pose a hazard? Wilson says the devices "transmit radio waves at powers 500 times less than a typical cell phone."

"And you don't hold it against your head," Patwari adds.

Radio 'Eyes' to the Rescue

Patwari says the system still needs improvements, "but the plan is that when there is a hostage situation, for example, or some kind of event that makes it dangerous for police or firefighters to enter a building, then instead of entering the building first, they would throw dozens of these radios around the building and immediately they would be able to see a computer image showing where people are moving inside the building."

"They are reusable and you can pick them up afterwards," he says.

The technique cannot distinguish good guys from bad guys, but at least will tell emergency personnel where people are located, he adds.

Patwari says radio tomography probably can be improved to detect people in a burning building, but also would "see" moving flames. "You may be able to look at the image and say this is a spreading fire and these are people," says Patwari.

Wilson believes radio imaging also could be used in "a smarter alarm system. … What if you put radios in your home [built into walls or plugged into outlets] and used tomography to locate people in your home. Not only would your security system be triggered by an intrusion, but you could track the intruder online or over your phone."

Radio tomography even might be used to study where people spend time in stores.

"Does a certain marketing display get people to stop or does it not?" Wilson asks. "I'm thinking of retail stores or grocery stores. They spend a lot of money to determine, 'Where should we put the cereal, where should we put the milk, where should we put the bread?' If I can offer that information using radio tomographic imaging, it's a big deal."

Radio image tracking might help some elderly people live at home. "The elderly want to stay in their homes but don't want a camera in their face all day," Wilson says. "With radio tomographic imaging, you could track where they are in their home, did they get up at the right time, did they go to the medicine cabinet, have they not moved today?"

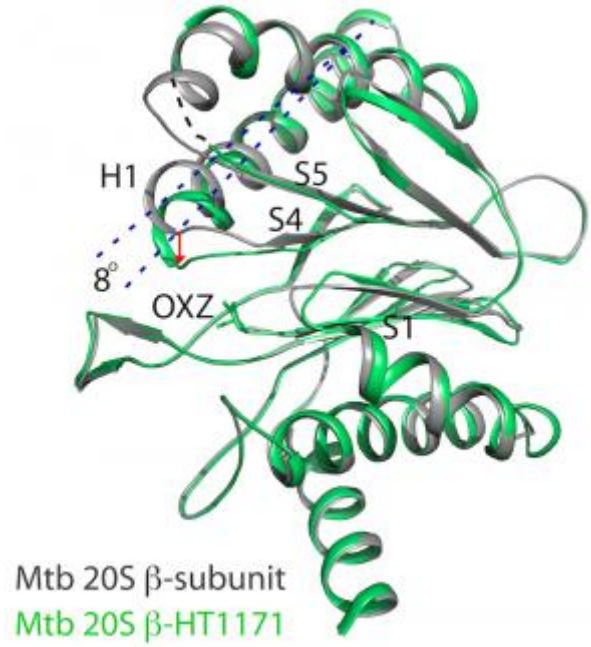
Wilson says a computer monitoring the radio images might detect an elderly person falling down the stairs based on the unusually fast movement.

He says radio tracking also might be a relatively inexpensive method of border security, and would work in dark and fog unlike cameras. Another possible use: automatic control of lighting, heating and air conditioning in buildings, says Wilson. Radio tracking might even control sound systems so that the best sound is aimed where people are located, as well as noise cancellation systems which could be aimed automatically at noise sources, Patwari says.

Adapted from materials provided by University of Utah.

http://www.sciencedaily.com/releases/2009/10/091012084217.htm

Inhibitors Of Important Tuberculosis Survival Mechanism Identified



A close-up view of one portion of the TB proteasome before (gray) and after (green) interaction with an inhibitor molecule. The inhibitor molecule causes a conformational change (indicated by dotted lines and red arrow) that interferes with the ability of protein substrates to bind to the proteasome complex. In combination with other changes triggered by the inhibitor, this conformational change disables the proteasomes function in a highly specific way. Such inhibitors may thus be an effective strategy for combating TB. (Credit: Image courtesy of DOE/Brookhaven National Laboratory)

ScienceDaily (Oct. 12, 2009) — Attempts to eradicate tuberculosis (TB) are stymied by the fact that the disease-causing bacteria have a sophisticated mechanism for surviving dormant in infected cells. Now, a team of scientists including researchers from the U.S. Department of Energy's (DOE) Brookhaven National Laboratory, Stony Brook University (SBU), Weill Cornell Medical College, and The Rockefeller University has identified compounds that inhibit that mechanism — without damaging human cells.

The results, described in the September 16, 2009, issue of *Nature*, include structural studies of how the inhibitor molecules interact with bacterial proteins, and could lead to the design of new anti-TB drugs.

"Our structural studies reveal the detailed mechanism by which these inhibitor molecules work, and explain the species selectivity that allows them to disable TB while largely sparing human cells," said co-corresponding author Huilin Li, a Brookhaven biophysicist and associate professor at SBU.

Mycobacterium tuberculosis, the bacterium that causes TB, infects one person in three worldwide. Most infected people remain symptom-free because the bacterium is kept in check within immune system cells. These cells produce compounds such as nitric oxide, which scientists believe damage or destroy the bacteria's proteins. If allowed to accumulate, the damaged proteins would kill the bacteria.

But TB bacteria have a sophisticated way to remove the damaged proteins — a protein-cleaving complex known as a proteasome — identified in earlier research by this same team.* By breaking down damaged proteins, the proteasome allows the bacteria to remain dormant, and possibly go on to cause active TB. Finding drugs to disable the proteasome would be a new way to fight TB.

In developing proteasome-inhibitor drugs, scientists face several hurdles. A significant one is the fact that human cells also possess proteasomes, which are essential to their survival. To be effective, the drugs would have to specifically target the TB proteasome without adversely affecting the human protein-cleanup complex.

Collaborating scientists led by Carl Nathan at Weill Cornell Medical College screened 20,000 compounds for TB proteasome inhibition activity. They identified and synthesized a group of inhibitors, which they then tested for their ability to inhibit the proteasome inside the mycobacteria. They also tested the compounds' effect on monkey epithelial cells and human immune system cells in culture.

Two compounds proved to be effective against the TB bacteria while showing no apparent toxicity to mammalian cells. Additionally, the compounds exerted no antibacterial activity against a range of other bacteria, demonstrating that they appear to have a high degree of specificity for the TB microbes. Furthermore, the inhibition of the TB proteasome appears to be irreversible and about 1,000-fold more effective than the minor inhibition observed against human proteasomes.

To learn more about the inhibitory mechanism and the basis for its species selectivity, Li's group determined the atomic-level crystal structures of TB proteasomes following exposure to the inhibitors. These studies were performed at the National Synchrotron Light Source (NSLS) — a source of intense x-ray, ultraviolet, and infrared light beams at Brookhaven Lab.

The structural studies revealed that the inhibitor molecules block the proteasome's ability to degrade proteins in more than one way: by producing a direct chemical change to the proteasome active site, and by altering the conformation of the "pocket" into which protein fragments bind before being degraded.

"This conformational change constricts the pocket to the point that it cannot accommodate a protein substrate," said Li. "The many amino acid residues of the TB proteasome involved in this conformational change, some far away from the active site, are different from those in human proteasomes. This might explain why such dramatic inhibition is not observed in the human proteasome, as the human enzyme may not be able to undergo the same structural change."

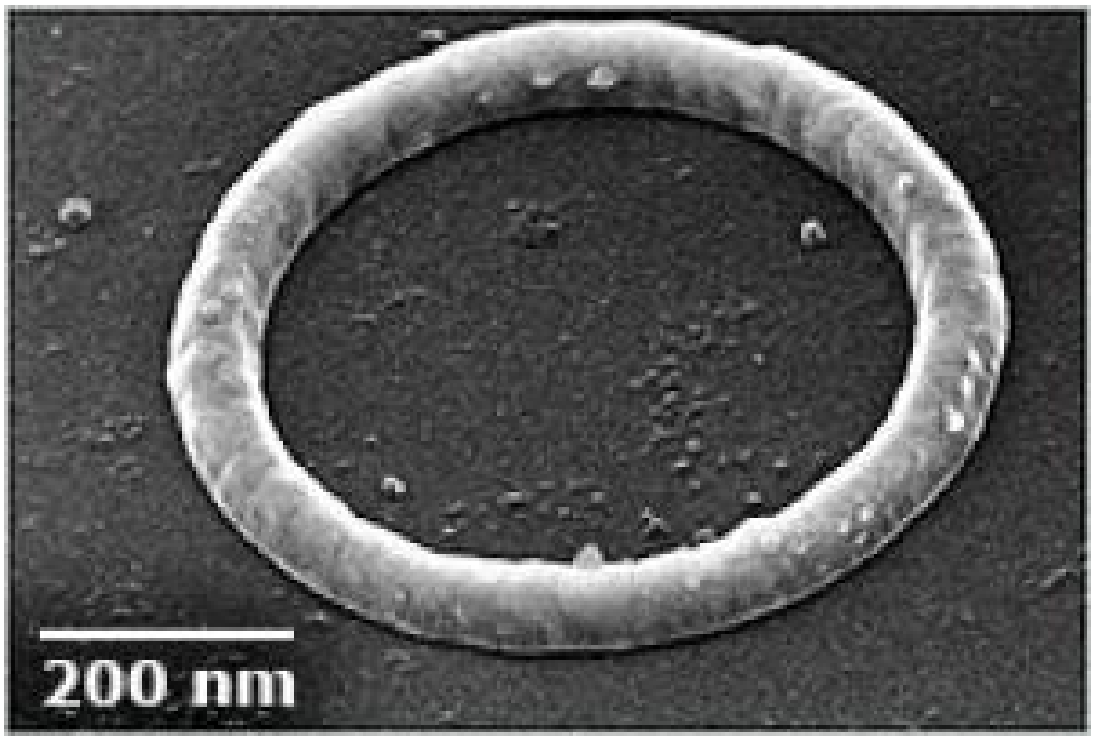
A detailed understanding of the steps by which these inhibitors cause the conformational changes could therefore guide the design of the next generation of anti-TB drugs.

This research was funded by grants from the National Institutes of Health (NIH) and the Milstein Program in Chemical Biology of Infectious Diseases at Weill Cornell Medical College. The NSLS at Brookhaven Lab is supported by the Office of Basic Energy Sciences within the DOE Office of Science.

Adapted from materials provided by DOE/Brookhaven National Laboratory.

http://www.sciencedaily.com/releases/2009/09/090916133510.htm

Physicists Measure Elusive 'Persistent Current' That Flows Forever



Harris made the first definitive measurement of an electric current that flows continuously in tiny, but ordinary, metal rings. (Credit: Jack Harris/Yale University)

ScienceDaily (Oct. 12, 2009) — Physicists at Yale University have made the first definitive measurements of "persistent current," a small but perpetual electric current that flows naturally through tiny rings of metal wire even without an external power source.

The team used nanoscale cantilevers, an entirely novel approach, to indirectly measure the current through changes in the magnetic force it produces as it flows through the ring. "They're essentially little floppy diving boards with the rings sitting on top," said team leader Jack Harris, associate professor of physics and applied physics at Yale. The findings appear in the October 9 issue of *Science*.

The counterintuitive current is the result of a quantum mechanical effect that influences how electrons travel through metals, and arises from the same kind of motion that allows the electrons inside an atom to orbit the nucleus forever. "These are ordinary, non-superconducting metal rings, which we typically think of as resistors," Harris said. "Yet these currents will flow forever, even in the absence of an applied voltage."

Although persistent current was first theorized decades ago, it is so faint and sensitive to its environment that physicists were unable to accurately measure it until now. It is not possible to measure the current with a traditional ammeter because it only flows within the tiny metal rings, which are about the same size as the wires used on computer chips.

Past experiments tried to indirectly measure persistent current via the magnetic field it produces (any current passing through a metal wire produces a magnetic field). They used extremely sensitive magnetometers known as superconducting quantum interference devices, or SQUIDs, but the results were inconsistent and even contradictory.

"SQUIDs had long been established as the tool used to measure extremely weak magnetic fields. It was extremely optimistic for us to think that a mechanical device could be more sensitive than a SQUID," Harris said.

The team used the cantilevers to detect changes in the magnetic field produced by the current as it changed direction in the aluminum rings. This new experimental setup allowed the team to make measurements a full order of magnitude more precise than any previous attempts. They also measured the persistent current over a wider range of temperature, ring size and magnetic field than ever before.

"These measurements could tell us something about how electrons behave in metals," Harris said, adding that the findings could lead to a better understanding of how qubits, used in quantum computing, are affected by their environment, as well as which metals could potentially be used as superconductors.

Authors of the paper include Ania Bleszynski-Jayich, William Shanks, Bruno Peaudecerf, Eran Ginossar, Leonid Glazman and Jack Harris (all of Yale University) and Felix von Oppen (Freie Universität Berlin).

Journal reference:

1. A. C. Bleszynski-Jayich, W. E. Shanks, B. Peaudecerf, E. Ginossar, F. von Oppen, L. Glazman, and J. G. E. Harris. **Persistent Currents in Normal Metal Rings**. *Science*, 2009; DOI: 10.1126/science.1177734

Adapted from materials provided by Yale University.

http://www.sciencedaily.com/releases/2009/10/091011071349.htm

Rockets Can Run On Toffee, Engineer Demonstrates

Ray Wilkinson and rocket. (Credit: Image courtesy of University of Hertfordshire)

ScienceDaily (Oct. 12, 2009) — An engineer at the University of Hertfordshire helped to demonstrate to BBC 1's *Bang goes the Theory* audiences recently that rockets can run on toffee.

"We are obviously not proposing that rocket manufacturers or jet companies start thinking about using toffee to fuel their engines but they could consider more environmentally-friendly materials," said Ray Wilkinson, Principal Lecturer in Aerospace Design and Rocket Propulsion at the University. "Rockets do not necessarily have to be run on materials derived from oil as there may be alternatives that perform well and are very viable."

Wilkinson worked as a consultant to the show and worked with one of the show's presenters, Jem Stansfield, to develop a hybrid rocket motor fuelled by toffee to power a bicycle which can reach speeds of thirty miles an hour. All of the important safety and performance testing was carried out at the University of Hertfordshire, and the team also used toffee to power a railway trolley which can reach speeds of 150 miles per hour.

Earlier this year, Wilkinson and a student team also developed a rocket sled which will reach over 1200 miles per hour in about a third of a second.

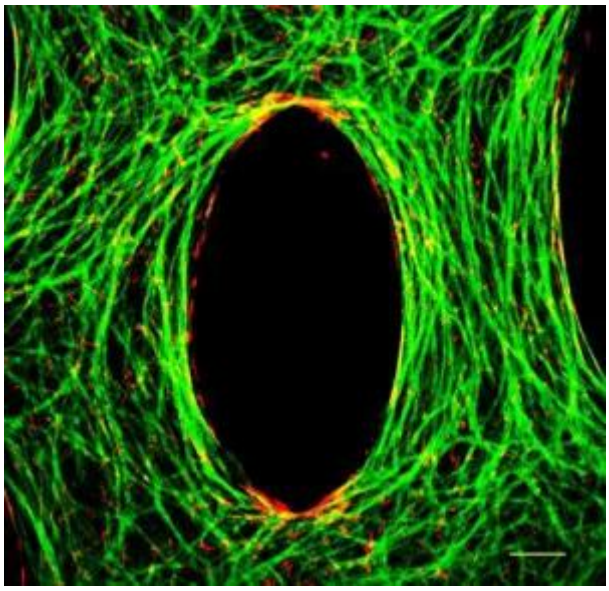
Rocketry started at the University of Hertfordshire in October 2005. The purpose is to develop a rocketry presence to motivate students, carry out some research and development and to help with student recruitment. From a fresh start, the group has progressed quickly from model rockets into high-power rocketry. They have built a number of rockets, and have several being built at the moment. The largest rocket built to date, at almost four metres long, was featured in *The Times* at the end of August, when it was flown to about 8000 feet in Scotland during International Rocket Week.

For more information, visit: http://www.rockets.herts.ac.uk.

Adapted from materials provided by University of Hertfordshire, via AlphaGalileo.

http://www.sciencedaily.com/releases/2009/10/091006104316.htm

New Strategy For Mending Broken Hearts?



This immunofluorescence staining image shows the cardiomyocytes in green and the fibroblasts interspersed around them in red. The cells are aligned around the central pore. (Credit: Brian Liau)

ScienceDaily (Oct. 12, 2009) — By mimicking the way embryonic stem cells develop into heart muscle in a lab, Duke University bioengineers believe they have taken an important first step toward growing a living "heart patch" to repair heart tissue damaged by disease.

In a series of experiments using mouse embryonic stem cells, the bioengineers used a novel mold of their own design to fashion a three-dimensional "patch" made up of heart muscle cells, known as cardiomyocytes. The new tissue exhibited the two most important attributes of heart muscle cells -– the ability to contract and to conduct electrical impulses. The mold looks much like a piece of Chex cereal in which researchers varied the shape and length of the pores to control the direction and orientation of the growing cells.

The researchers grew the cells in an environment much like that found in natural tissues. They encapsulated the cells within a gel composed of the blood-clotting protein fibrin, which provided mechanical support to the cells, allowing them to form a three-dimensional structure. They also found that the cardiomyocytes flourished only in the presence of a class of "helper" cells known as cardiac fibroblasts, which comprise as much as 60 percent of all cells present in a human heart.

"If you tried to grow cardiomyocytes alone, they develop into an unorganized ball of cells," said Brian Liau, graduate student in biomedical engineering at Duke's Pratt School of Engineering. Liau, who works in the laboratory of assistant professor Nenad Bursac, presented the results of his latest experiments during the annual scientific sessions of the Biomedical Engineering Society in Pittsburgh.

"We found that adding cardiac fibroblasts to the growing cardiomyocytes created a nourishing environment that stimulated the cells to grow as if they were in a developing heart," Liau said. "When we tested the patch, we found that because the cells aligned themselves in the same direction, they were able to contract like native cells. They were also able to carry the electrical signals that make cardiomyocytes function in a coordinated fashion."

"The addition of fibroblasts in our experiments provided signals that we believe are present in a developing embryo," Liau said. The need for helper cells is not uncommon in mammalian development.

For example, he explained, nerve cells need "sheathe" cells known as glia in order to develop and function properly.

Bursac believes that the latest experiments represent a proof-of-principle advance, but said there are still many hurdles to overcome before such patches could be implanted into humans with heart disease.

"While we were able to grow heart muscle cells that were able to contract with strength and carry electric impulses quickly, there are many other factors that need to be considered," Bursac said. "The use of fibrin as a structural material allowed us to grow thicker, three-dimensional patches, which would be essential for the delivery of therapeutic doses of cells. One of the major challenges then would be establishing a blood vessel supply to sustain the patch."

The researchers plan to test their model using non-embryonic stem cells. For use in humans, this is important for many reasons, both scientifically and ethically, Bursac said. Recent studies have demonstrated that some cells from human adults have the ability to be reprogrammed to become similar to embryonic stem cells.

"Human cardiomyocytes tend to grow a lot slower than those of mice," Bursac said. "Since it takes nine months for the human heart to complete development, we need to find a way to get the cells to grow faster while maintaining the same essential properties of native cells."

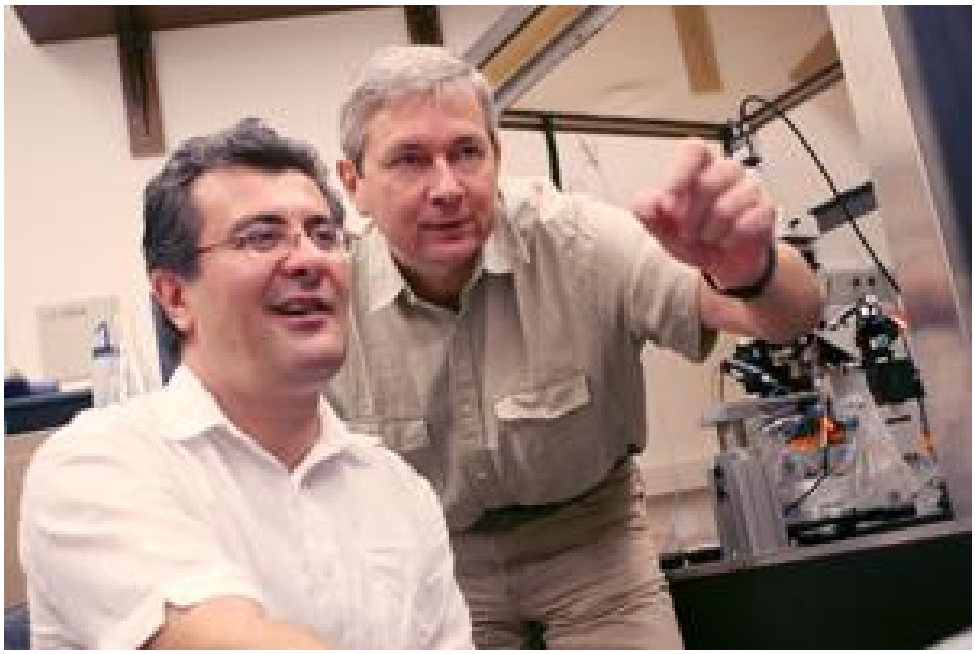
If they could use a patient's own cells, the patch would also evade an immune system reaction, Bursac added.

The research was supported by National Institutes of Health, the National Heart Lung Blood Institute and Duke's Stem Cell Innovation program. Other Duke members of the research team were Weining Bian and Nicolas Christoforou.

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

http://www.sciencedaily.com/releases/2009/10/091011184432.htm

New Findings About Brain Proteins Suggest Possible Way To Fight Alzheimer's



Drs. Joachim Herz (right), Murat Durakoglugil. (Credit: Image courtesy of UT Southwestern Medical Center)

ScienceDaily (Oct. 12, 2009) — The action of a small protein that is a major villain in Alzheimer's disease can be counterbalanced with another brain protein, researchers at UT Southwestern Medical Center have found in an animal study.

The findings, available online in the journal *Proceedings of the National Academy of Sciences*, suggest a promising new tactic against the devastating illness, the researchers said.

The harmful protein, called beta-amyloid, is found in the brain and, when functioning properly, suppresses nerve activity involved with memory and learning. Its normal function can be likened to a red traffic light, restraining nerve cells from getting overexcited when they receive stimulating signals from neighboring cells. People with Alzheimer's disease, however, accumulate too much beta-amyloid – the traffic light gets stuck on "red" and nerve cells become less responsive.

Another brain protein, called Reelin, acts as a "green light," stimulating nerve cells to respond more strongly to their neighbors' signals.

The new study shows that applying Reelin directly to brain slices from mice prevents excess beta-amyloid from completely silencing nerves.

"If we can identify a mechanism to keep the nerve cells functioning strongly, that might provide a way to fight Alzheimer's disease," said Dr. Joachim Herz, professor of molecular genetics and neuroscience at UT Southwestern and the study's senior author.

In the study, the researchers recorded electrical currents in the mouse hippocampus, an area of the brain associated with learning and memory. From their experiments they determined that Reelin and beta-amyloid interact with the same protein complex, called an NMDA receptor, which plays an important role in coordinating chemical signals between adjacent nerve cells.

They found that Reelin activates and strengthens the response of the NMDA receptor. In the presence of too much beta-amyloid, the receptor migrates into the cell, reducing the cell's sensitivity to incoming signals. By contrast, in strong concentrations of Reelin, the receptor remains active and the cell has the green light to continue receiving normally.

Dr. Herz said the study is especially important because this mechanism involves another protein involved in Alzheimer's called ApoE4, which is the primary risk factor for the most frequent late-onset form of the disease. The receptor that binds to ApeE molecules also binds to Reelin, and is part of the red-light/green-light complex that controls the sensitivity of the NMDA receptors.

"These results imply that Reelin, ApoE and beta-amyloid converge on the same molecular mechanism, which is critical in the Alzheimer's disease process, and Reelin may be a common factor to fight both beta-amyloid and mutated ApoE," Dr. Herz said. "This study establishes a rationale that ApoE receptors have an action that can keep the Alzheimer's disease process at bay by preventing damage in the first place."

The researchers are currently studying the role of ApoE4 in this mechanism. Mimicking or preserving normal Reelin function to stimulate the ApoE receptors might provide a path to stave off the disease, Dr. Herz said.

Other UT Southwestern authors included lead author Dr. Murat Durakoglugil, assistant instructor of molecular genetics; graduate student Ying Chen; Dr. Charles White, professor of pathology; and Dr. Ege Kavalali, associate professor of neuroscience.

The study was funded by the National Institutes of Health, the American Health Assistance Foundation, the Perot Family Foundation and the Humboldt Foundation.

Adapted from materials provided by UT Southwestern Medical Center.

http://www.sciencedaily.com/releases/2009/10/091006122330.htm

Electrostatic Surface Cleaning

The equipment removes fine dust particles effectively from product surfaces -- and collects them safely. (Credit: Copyright Fraunhofer IGB)

ScienceDaily (Oct. 12, 2009) — It's often the little things that count in industrial manufacturing processes. Particles less than half the diameter of a hair in size can significantly impair quality in production. For example, there should be no particles larger than five micrometers on the packaging film of food and medicines, as these could contaminate the contents.

Tiny particles also cause problems in the printing industry, as they reduce the quality of the print if they remain on the surface of the paper. And fine particles on electrical components can cause operational failures.

Manufacturers usually resort to a type of vacuum cleaner to remove the dust – it blows air on the contaminated surface, then sucks this in again, together with the undesired particles. However, this method does not effectively remove particles smaller than 20 micrometers, as the electrostatic force causes the majority of them to remain on the surface.

Researchers at the Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB in Stuttgart have developed a system which also removes these fine dust particles effectively from the product surfaces. Colleagues from NITO A/S in Denmark, Ziegener + Frick GmbH in Ellhofen and the Danish Innovation Institute were involved in the development process.

"The system guarantees the quality of the product and improves the working environment of employees, as it reliably collects the harmful particles, preventing them from going into the air and then into the lungs of employees," says Sukhanes Laopeamthong, a researcher at the IGB.

The researchers charge the dust particles with positive ions. A negatively charged electrode attracts the positively charged dust particles, the resulting force lifting the dust particles easily from the surface of the product. A controlled air current carries them to the dust collector. Prior to the construction of the test equipment, the researchers have already resolved a few questions using special simulation software.

What electrical field strength is required to lift the dust particles? What are the required characteristics of the air current transporting the particles? The test equipment removes on average 85 percent of dust particles smaller than 15 micrometers and more than 95 percent of dust particles bigger than 15 micrometers. The researchers are presenting the exhibit at the Parts2Clean trade fair from 20 to 22 October in Stuttgart (hall 1, stand F 610/G 709). The scientists expect the system to be operational in industry in approximately two years.

Adapted from materials provided by Fraunhofer-Gesellschaft.

http://www.sciencedaily.com/releases/2009/10/091007091647.htm

Monkey mothers 'coo' over babies

By Rebecca Morelle
Science reporter, BBC News

The tender interactions between mothers and newborns might not be limited to humans, scientists report.

Researchers have discovered that the way rhesus macaque mothers bond with their babies strikes a remarkable resemblance to human behaviour.

The females make exaggerated facial expressions, kiss-like contacts and gaze intently at their babies.

The study, published in Current Biology, could help trace the origins of the mother-infant bond.

" **We started to see that mothers had a very rich way of communicating with their infants** "
Professor Ferrari

The researchers studied 14 mother-infant pairs over the first two months of their lives at the National Institute of Health's (NIH) primate centre in Maryland, US.

Professor Pier Ferrari, from the department of functional and evolutionary biology at the University of Parma, Italy, and the laboratory of comparative ethology at NIH, said: "We started to see that mothers had a very rich way of communicating with their infants."

The researchers found that the mothers would gaze intently at their newborns, sometimes even taking their baby's face with their hands and gently pulling it towards them to get an even closer look.

They would also engage in "lipsmacking" - an affectionate form of expression, where the macaques rapidly open and close their mouths.

Professor Ferrari added: "They also touch the infant's face with their mouths - as if they are trying to remove something.

"And this very much resembles the kiss that we have in our own species.

"Possibly the evolution of the kiss might have originated from this kind of interaction."

And just as human babies respond to their mother's behaviour, baby macaques would react by returning their mother's gaze, or responding to lipsmacking with a similar gesture.

"The infant is not just a passive subject," Professor Ferrari told BBC News.

Short lived

However, unlike in humans, the researchers discovered that after approximately one month, the mother-infant exchanges in macaques became much less frequent or stopped.

Professor Ferrari said this could be down to the fact that macaque babies develop much more quickly than human babies; a two-week-old macaque baby is very roughly comparable to one-year-old human baby.

He added: "Independence from the mother occurs very early."

Professor Ferrari said that for years this kind of mother-baby interaction was thought to be a uniquely human trait - although more recently, some studies have suggested chimpanzees also share some of these emotional interactions with their babies.

He said: "Instead, we can trace the evolutionary foundation of those behaviours, which are considered crucial for the establishment of social exchange with others, to macaques."

Further study of macaques, he added, could help to shed light on why these kind of interactions are important and also how they came about.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8296464.stm

Published: 2009/10/08 16:06:15 GMT

Royal blood disorder identified

DNA analysis has revealed the identity of the "cursed blood" disorder that afflicted the British Royal Family in the 19th and early 20th centuries.

Scientists say the disease inherited by Queen Victoria's descendants was probably a severe form of the blood clotting disorder haemophilia B. The scientists examined DNA samples extracted from the skeletal remains of Russia's Romanov family. The research is published in the journal Science. Their analysis included the remains of Queen Victoria's great grandson Crown Prince Alexei.

Scientists already knew that males of the Royal Family at that time suffered from a type of haemophilia.

But their latest analysis of the remains of Victoria's Russian descendants helped identify the exact form. Modern analytical techniques allowed the scientists to amplify the very degraded DNA. They discovered a mutation in a gene on the X chromosome that codes for the production of Factor IX, a substance that causes blood to clot.

This genetic mutation is the cause of haemophilia B. Because this blood disorder is linked to the X chromosome it passed on through the maternal line, but is only manifested in male descendants.

This is because males have only one X chromosome, so the mutation on that single chromosome is "expressed" as the disease. Females only carry the disease, because their second X chromosome is extremely unlikely to have this same, very rare mutation.

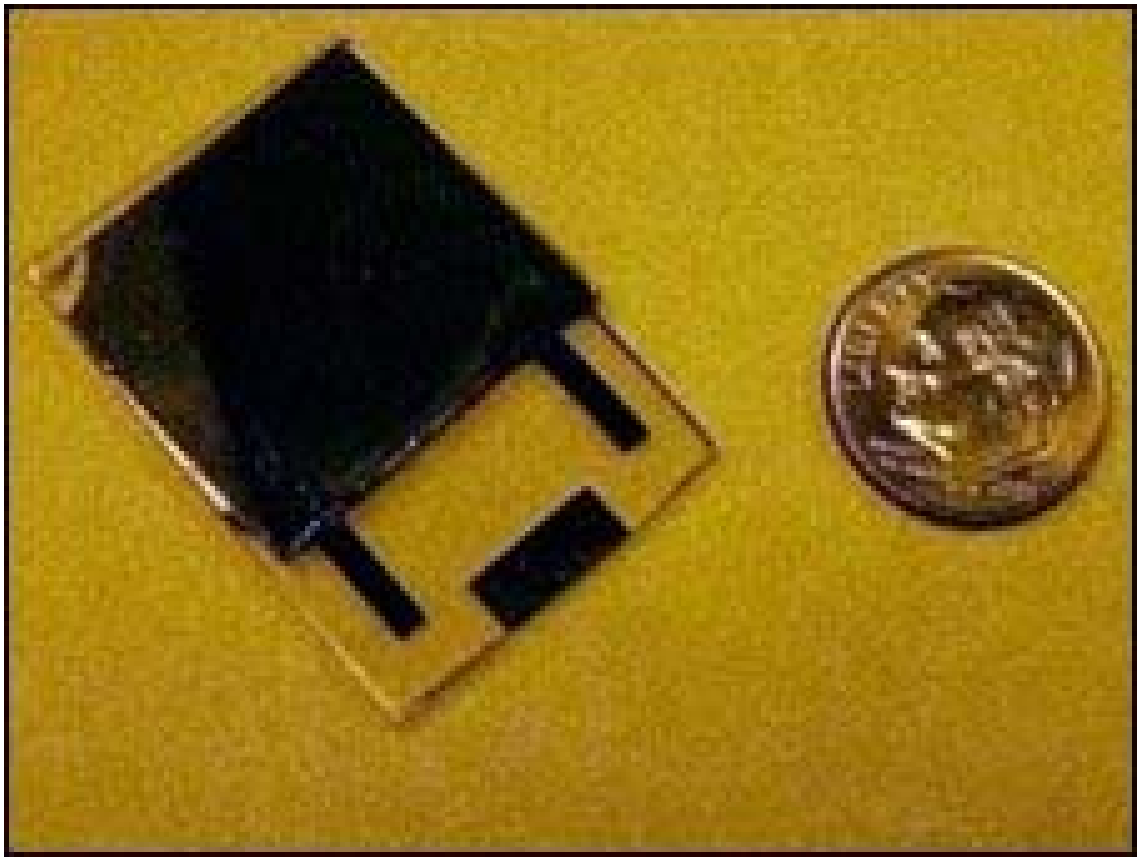
Dr Evgeny Rogaev from the University of Massachusetts led the research. He told the BBC that it was the "final chapter" in the confirmation of the Romanov family's remains. He added: "We have resolved a medical mystery from the past."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8297467.stm

Published: 2009/10/08 18:26:19 GMT

Tiny 'nuclear batteries' unveiled

Researchers have demonstrated a penny-sized "nuclear battery" that produces energy from the decay of radioisotopes.



As radioactive substances decay, they release charged particles that when properly harvested can create an electrical current.

Nuclear batteries have been in use for military and aerospace applications, but are typically far larger.

The University of Missouri team says that the batteries hold a million times as much charge as standard batteries.

They have developed it in an attempt to scale down power sources for the tiny devices that fall under the category of micro- and nano-electromechanical systems (Mems and Nems).

The means to power such devices has been a subject of study as vigorous as the development of the devices themselves.

Liquid solution

Nuclear batteries are an attractive proposition for many applications because the isotopes that power them can provide a useful amount of current for phenomenally long times - up to hundreds of years or more.

As a result, they have seen use in spacecraft that are fired far off into the cosmos. But for applications here on Earth, their size has limited their use.

The Missouri team, led by Jae Wan Kwon, employed a liquid semiconductor to capture and utilise the decay particles.

Most nuclear batteries use a solid semiconductor to harvest the particles, but the particles' extremely high energies means that the semiconductors suffer damage over time.

This means that to build a battery that can last as long as the isotope inside, they must be built larger.

The team's solution incorporates a liquid semiconductor, in which the particles can pass without causing damage. They are now working to further miniaturise the batteries.

And although the whole idea hinges on the use of radioactive materials, the devices are safe under normal operating conditions.

"People hear the word 'nuclear' and think of something very dangerous," Dr Jae said.

"However, nuclear power sources have already been safely powering a variety of devices, such as pacemakers, space satellites and underwater systems."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/8297934.stm

Published: 2009/10/08 17:15:41 GMT

Cards 'can support mentally ill'

People should consider sending cards and gifts to friends and family suffering with mental health problems, experts say.

The Royal College of Psychiatrists said cards and gifts were a simple way to support people with mental illness.

The college even said it may aid their recovery.

It made the plea after carrying out a poll of 131 mental health patients, which showed over half did not receive any gifts or cards when they were ill.

This compared with just a third who did not get presents the last time they were physically ill.

Recovery

More than eight out of 10 of the people surveyed said receiving a "get well soon" card would help their recovery.

" **If anything increases feelings of isolation and unworthiness just when you're at your lowest ebb, this does** "
Trisha Goddard

The college is launching two of its own gift cards with the greeting: "Thinking of you at this time. Hope things improve soon."

A spokesman said existing greeting cards often had inappropriate images and words that were not suitable for a mental health problem.

Dr Peter Byrne, chair of the college's education committee, said: "I have worked in general and psychiatric hospitals for over 20 years, and there is no greater demonstration of the hidden prejudice against people with mental illness than the bedside lockers.

"In psychiatric units, there is barely a card or any other reminder that the outside world cares.

"People often don't know what to do or say when a friend or relative is ill with a mental health problem - so they end up doing nothing."

Isolation

Trisha Goddard, a television presenter who has spoken about her battles with depression and breast cancer, said: "When I was diagnosed with breast cancer last year, I was inundated with 'get well soon' cards all of which were really touching.

"If you're thinking I only got those cards because I'm in the public eye, let me tell you this - when I lived in Australia, I was equally in the public eye and yet when news leaked out that I was in a psychiatric hospital following a breakdown, not a peep, no cards and certainly no flowers.

"If anything increases feelings of isolation and unworthiness just when you're at your lowest ebb, this does."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8297039.stm

Published: 2009/10/09 00:16:38 GMT

ACME United Nations Memorial Space Inspired by Cells

by Bridgette Meinhold, 10/13/09

A recent competition earlier in 2009 held by the city of Chungju in South Korea made a call for a memorial space in the city's United Nations Peace Park. Coming in at 3rd place was London-based firm ACME with their dramatic hive-like design. Drawing from the very core of what the United Nations is, this building is comprised of individual cells combined together to form a cube structure, mirroring how the UN is made up of individual countries who come together to form one entity. ACME's proposal also includes an idyllic green roof and plenty of natural daylight. The structure is built from hexagonal cells on the exterior as well as throughout the interior. Built as a metaphor for how the UN operates and functions, this memorial space is meant to "represent the nature of the organization, where many different nations come together to create one entity, but without losing their individual identities." Inside there are two conference halls, a theater, an exhibition space and an assembly hall for 1,500 people. The cellular design will also serve as a multi-function meeting space and house offices, restaurants, meeting and educational space as well as public viewing platforms. An open staircase winds up th exterior of the building and leads all the way up to the roof, where a public garden and green roof await. Rooms, meeting space and public areas are all well lit by natural daylight. We're quite taken with this design proposal and considering it received 3rd place, we'd love to know what the first and second place designs were.

+ ACME

Via Designboom

http://www.inhabitat.com/2009/10/13/acme-united-nations-memorial-space-inspired-by-cells/

Gigantic Coal Gasometers Transformed into Thriving Communities

by Diane Pham, 10/14/09

In 1896 the Viennese authorities decided to invest in large-scale gas and electric utilities, so they constructed what became Europe's largest gas plant. After nearly a century long run the plant was decommissioned, and left behind were four massive gasometers. These incredible structures were cast off, but a recent revitalization project led by Jean Nouvel, Coop Himmelb(l)au, Manfred Wehdorn, and Wilhelm Holzbauer have transformed these four tanks into spectacular and thriving communities.The gasometers are four gigantic gas tanks enclosed by a brick façade, each approximately 230 feet tall, 197 feet in diameter, and with a storage capacity of over 3 million cubic feet. Once used for the storage of coal gas, the gasometers were retired in 1984 as the city shifted over to natural gas. By 1981 these structure were classified as heritage buildings due to their unique architecture, and thus escaped demolition. Despite random use since the closing of the plant (see the setting in the James Bond movie *The Living Daylights*. Also see: rave venue hosting Gazometer-Raves – the term "Gazometer" was coined on its scene) they remained on the whole abandoned empty containers.Vienna knew the value of these amazing structures couldn't be left to dematerialize before their eyes so in 1992 the city called for new ideas that would revitalize these monuments. What came were designs by the architects Jean Nouvel, Coop Himmelblau, Manfred Wehdorn and Wilhelm Holzbauer, and between 1999 and 2001 the Gasometers were gutted leaving only the brick exterior and parts of the roof. The structures were then renovated into 615 new apartments, a student dormitory, offices, a day care center, a multiplex, over 70 shops, restaurants, bars and cafes an events hall, and the Vienna National Archive!Today the gasometers form a unique city center all their own, with a strong sense of community given its abundant housing and diversity of destinations. Numerous theses and dissertations in psychology, urban planning, journalism and architecture have been written about the phenomenon which has arisen from the project.

+ Jean Nouvel

+ Coop Himmelb(l)au

+ Manfred Wehdorn

+ Wilhelm Holzbauer

http://www.inhabitat.com/2009/10/14/gigantic-coal-gasometers-transformed-into-thriving-communities/#

Graft Lab's Vertical Village in Dubai Has Spider Web of Solar Panels

by Yuka Yoneda, 10/07/09

At first glance, Graft Lab's dazzling complex in Dubai may appear to have a cluster of sparkling geometric pools at its base. But upon further inspection, the web-like structures are actually something even more desirable than a place to take a dip in the hot desert – a means of collecting the scorching rays of the sun and transforming them into energy. Dubbed the Vertical Village, this multi-use building and accompanying massive array of solar collectors was designed to work smarter, not harder, which is expected to earn it a LEED Gold certification when it is completed.

The architects at Graft Lab (also responsible for the unique and ethereal Bird Island) must have been taking good notes in their LEED classes because the Vertical Village incorporates the most basic mantras of energy-efficiency in hot climates: reducing solar gain and maximizing solar production. Each hockey-stick-shaped building within the village is self-shading on its north side and on the east-west axis to reduce long-angle sun penetration. A massive bed of solar collectors lies at the south end of the complex and has the ability to automatically position itself toward the sun to maximize solar-energy aggregation. The roof of the village has veins like a leaf which can break up the solar field into smaller, more manageable portions.

Aside from its energy-harvesting features, the Vertical Village is also quite breathtaking to behold. The way that the buildings have been sliced and tilted gives each one a unique, futuristic look. Residents and visitors will be able to take full advantage of hotels, cinemas, restaurants, shops and a theater.

+ Graft Lab

Via Ecofriend

http://www.inhabitat.com/2009/10/07/graft-labs-vertical-village-in-dubai-has-spiders-web-of-solar-panels/

LG Unveils Solar Powered E-Book Reader

by Mike Chino, 10/11/09

If we were stuck on a desert island with only one book, this recently unveiled solar e-book would be at the top of our list! Designed by LG Display, the sleek reader features a wafer-fin photovoltaic cell that provides it with a steady stream of solar energy. Whereas most e-books run the risk of losing juice mid-sentence through your next novel, this solar reader's omnipresent energy source makes it a winning design in our book.At first glance e-readers offer a great set of benefits over paper-bound books – they're light, versatile, and a great alternative to lugging around a tote full of dead tree tomes on your next trip. The rise of e-readers also stands to stem the environmental repercussions of the publishing industry, as books can be released online rather than incurring the energy, materials, and cost that it takes to manufacture, print, and ship them across great distances. However these new reading mediums have one glaring fault – can you imaging the frustration of running out of juice mid-sentence and halfway through Infinite Jest?LG's new solar e-book aims to address this issue by harnessing the sun's rays to power its display. The device features a 10 centimeter wide thin-film panel that is .7mm thin – the width of a credit card. Energy efficiency is a strong concern with portable readers, and it looks like LG may have hit on a winning feature set with their e-book – 4-5 hours spent sitting in the sun will provide a full day's worth of reading time. Mr. Ki Yong Kim, head of the Solar Cell Office at LG Display has stated that "eBbooks are attracting a lot of attention because they offer the advantage of storing thousands of books' worth of contents in an easy-to-carry device. The idea of e-book combined with solar cell will offer users the added benefit of longer usage. We will continue to provide users with enhanced convenience and value to solidify our lead in next-generation, environmentally friendly products."Everyone knows that trying to read a computer screen outdoors can be a total pain, so we hope that LG has included a passively-lit e-paper display option in the device. A working prototype of the solar e-book will be on display at the International Meeting on Information Display (IMID) this week in Seoul.

+ LG Display

Via OLED-Display.net

http://www.inhabitat.com/2009/10/11/lg-unveils-solar-powered-e-book-reader/

Nature's Art: Striped Icebergs and Frozen Waves of Antarctica

by Beth Shea, 10/10/09

Norwegian sailor Oyvind Tangen, 63, captured nature at its most mysterious and beautiful while on board a research ship 660 miles north of the Antarctic. His stunning photographs of brilliantly colored icebergs, remind Tangen of, "…striped candy I bought as a child." His images remind us of nature's eye-candy, which is now forever documented as a testament to the majestic beauty that unfolds on our planet.

The diagonal blue stripe in the mountainous iceberg shown above (rising 30 meters above the ocean's surface) was created when the ice sheet filled with meltwater and froze so quickly that no bubbles formed. Algae is also one of nature's coloring tools. Salty seawater may freeze the submerged surface of an iceberg once it falls into the sea, and if it is rich in algae, a green stripe may appear. Other hues that color the icebergs include yellow, black and brown and are caused by sediment that is picked up when an ice sheet grinds downhill toward the sea.

The image above is of an "ice wave" caused by glaciation, the melting and re-freezing of ice formations over long periods of time. Scientist Tony Travouillon captured the impressive, awe-inducing shots of these waves that are frozen in time.

In case you're questioning the validity of these photos and whether or not they have been doctored with photo software, Hoax-Slayer verifies that they are indeed real. In these events, Mother Nature is an artist who requires no touch-ups

http://www.inhabitots.com/2009/10/10/behold-natures-art-striped-icebergs-and-frozen-waves-of-antarctica/

Heart of the Matter
By GEORGE PACKER

STRIPPING BARE THE BODY

Politics Violence War

By Mark Danner

626 pp. Nation Books. $28.95

Mark Danner has carved out a European niche in American letters: that of the reporter who, in addition to digging up facts and getting stories, writes about the political and moral condition of his country with the intention of pushing public policy toward fundamental change. He is nothing if not ambitious, and his work straddles the subject matter and rhetoric of several disciplines: international relations, narrative journalism, opinion writing, even literary criticism. The title of his new collection of articles from two decades, "Stripping Bare the Body: Politics Violence War," borrows the style of countless works of poststructuralist theory. Danner has recently become an essayist with a prominent place in national debates about torture and the war on terror, and the tone of his pieces ranges from the serious to the self-serious.

Danner began as a magazine journalist, and his reportorial and narrative talents are best displayed in the first section — a three-part series, originally published in The New Yorker in 1989 (where I have been a staff writer since 2003), on the end of the rule of the Duvaliers in Haiti and the turbulent years that preceded the election of Jean-Bertrand Aristide as president. Today those events seem far away and of limited relevance — who remembers Leslie F. Manigat? — but under the scrutiny of a writer with Danner's eye and insight, post-Duvalier Haiti remains a nightmare, no less contemporary than 1930s Germany as chronicled by William L. Shirer in "Berlin Diary."

What interests Danner, in Haiti and the other brutal, brutalized countries described in this collection, isn't people — other than the leaders interviewed, individuals are mostly absent — but the landscape of political violence. He pays minute attention to the details of mutilation on the bodies that appear

overnight around Port-au-Prince, and he devotes thousands of erudite words to the history that led to the murderous rule of the Duvaliers. Danner's title is meant to convey the notion that atrocities expose both the innards of a society and its power structure. Throughout these three articles, descriptive realism and political analysis are in perfect balance, and Haiti is permanently revealed.

After his work on Haiti, and his excavation of a Salvadoran army atrocity of the early 1980s (the story filled almost an entire issue of The New Yorker in 1993 and was published as a book, "The Massacre at El Mozote"), Danner turned away from eyewitness reporting. The second section of "Stripping Bare the Body" consists of a series of essays, first published in The New York Review of Books, that reconstruct the Balkan wars of the 1990s after the fact, almost entirely through the work of other journalists and authors. In the fourth and final section, made up of essays on the war on terror and Iraq, Danner relies on close reading of documents unearthed by investigative reporters — the Taguba report on Abu Ghraib, the Downing Street memo on planning for the invasion of Iraq — more than on his own observations. He made several trips to Iraq, but unlike in Haiti, his reporting there was undertaken to argue rather than to learn.

Untethering his essayistic ambitions from ground-level journalism does not serve Danner well. A tendency toward inflated writing and overstatement starts to appear: there are too many self-dramatizing turns of phrase, like "The first time I was killed, or nearly so"; too many moments when the writer, confronted with a destroyed city or a bloody mess of dismembered bodies, finds George F. Kennan or Henry James coming to mind.

These literary affectations are heightened by an air of seeing through everything, conveyed in a heavy reliance on scare quotes and knowing titles like "The Real Election" and "Abu Ghraib: Hidden in Plain Sight." When Haitians lined up to vote amid violence in 1987, Danner interviewed their political leaders and admired their courage; when Iraqis did the same in 2005, he went looking for "the desired symbolic justifications, the capstone in the narrative building already under construction that day." Danner watches human struggle and misery at such a remove that he can't resist taking issue with a young Kosovar woman who is quoted in a news article comparing her family's expulsion from Pristina with the experiences of the Jews in World War II. "Such drawing of half-century-old parallels, of the parallel, derives in fact from a failure of memory," Danner intones. "How much more comfortable to invoke Europe in the 1940s than Croatia and Bosnia in the 1990s." Not as comfortable as condescending to a refugee.

This superior stance doesn't flag even when Danner contradicts himself. He switches, without explanation or loss of confidence, from criticizing to endorsing the first President Bush's refusal to remove Saddam Hussein at the end of the gulf war; he sounds just as assured deploring the Powell doctrine as enshrining it. Still, when a Red Cross report on torture by the Bush administration falls into Danner's hands, the result is one of the book's best essays. A reporter again, with a great find, he can stop pumping up his prose, and the article achieves a powerful equilibrium between fact and voice.

Most of the book is a relentless exposure of American hypocrisy, weakness and illusion across three administrations and at least five wars. Danner's dissections of the corruption of government language are devastating: he's a great exegete of official mendacity, with apparently endless material on hand. But all this anatomizing of Washington is performed by way of Serbia, Bosnia and Iraq. Since Danner the essayist doesn't take the care to understand these societies the way that Danner the reporter did in Haiti, violence in no way strips them bare. Without individual stories or political analysis to accompany the horrifying (and numbingly repeated) descriptions, violence reveals nothing — it's just violence.

In his introduction, Danner quotes Plato on the irresistibility of looking at dead bodies, and then he writes: "Violence horrifies us, transfixes us, draws the eye and ignites the passions; 'overpowered by desire,' we have no choice but to look." But Danner's desire doesn't seem to come with any conflict. It's not that he has no choice but to look — it's that he doesn't want to look anywhere else.

The voyeurism is especially creepy when it's directed at material unearthed by others, but it also turns up on the occasions when Danner is lucky enough to see mayhem firsthand. He arrives in a Sarajevo marketplace almost immediately after a mortar has landed: "We three passed through the bloody topography, tracing our way slowly past torsos and parts of torsos, past arms and hands and bits of limbs and unidentifiable hunks of flesh, all mixed with blackened metal and smashed vegetables." Danner takes the opportunity to try to count the number of victims, but he's thwarted by the fact that they're in too many pieces to know which leg goes with whose head (a frustration that he returns to several times in the collection). In the introduction, Danner's realization that torture has been a central concern of his writing ever since college gives him a frisson of pleasure, and in the afterword, he admits to "a secret preference

for the violent outcome," even if it means his own death. Words like "relish," "savor" and "erotic" appear too close for comfort to descriptions of destruction.

An attraction to scenes of torture and dismemberment, portrayed in carefully composed literary tableaus, is a brave thing to confess, and in the work of an artist it would provide much grist for interpretation. But for an essayist whose habitual stance is one of detached moral outrage, it's at the very least problematic. Danner published most of this work in liberal magazines, but his hero is Kennan, the author of the cold war doctrine of containment and no liberal in the contemporary sense. Kennan had little patience for either morality or moralism in foreign policy; his vision, purified in bureaucratic battles 60 years ago, was guided by the north star of the balance of power between national interests narrowly construed. Danner, too, is a realist — he even wrote 30 pages against the expansion of NATO into Eastern Europe in the 1990s, a position Kennan also held. This point of view has served Danner well in his far-reaching criticisms of the foreign policy of George W. Bush, especially on Iraq, and including the president's approval of torture: "What we can say definitively is that the decision has harmed American interests in quite demonstrable ways."

But what about Bosnia? This is the war that leads Danner into unacknowledged tangles and reveals the disconnection at the heart of his work. He wrote the equivalent of an entire book condemning America's failure to intervene in Bosnia. At various points, he ventures ad hoc arguments for American involvement — spheres of influence, the Atlantic alliance. These are realist arguments, and because they add up to a rather weak case, few other realists made them. Far stronger is the justification based on moral grounds, and in Danner's account it's suggested, urgently, by the sheer accumulation of atrocities. But he doesn't make the moral case. It's as if there were no relation between the critique of American foreign policy that's the abiding theme of the book and the piles of corpses to which his gaze is always riveted.

George Packer is the author of "The Assassins' Gate" and the forthcoming "Interesting Times: Writings From a Turbulent Decade."

http://www.nytimes.com/2009/10/18/books/review/Packer-t.html?nl=books&emc=booksupdateema3

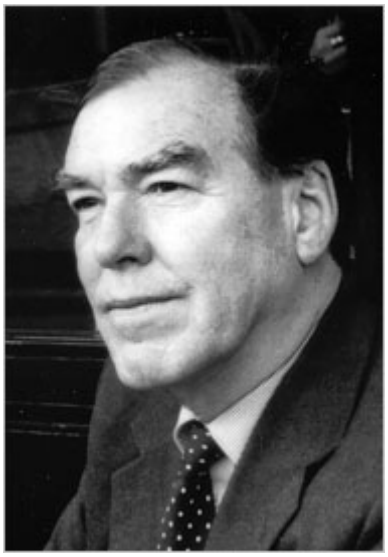
America's War, British View
By DWIGHT GARNER

THE AMERICAN CIVIL WAR

A Military History

By John Keegan

Illustrated. 396 pages. Alfred A. Knopf. $35.



John Keegan — dapper, lantern-jawed, a man who pounds facts into place as if with a sledgehammer — is the military historian's military historian. A longtime senior lecturer at the Royal Military Academy at Sandhurst, he is the author of 20 fearsomely erudite books, including "The Second World War," "The Battle for History" and "The Face of Battle." If he did not exist, the History Channel would not be able to invent him.

Mr. Keegan's new book, "The American Civil War," bristles with data that will send a thrill down any military geek's leg: details about tactics, geography, economics, ideology, generals, psychology, demographics, weaponry, even weather. But the human element has, puzzlingly, gone missing. Distant and chilly, "The American Civil War" seems to have been written by a mainframe computer buried deep in a fortified bunker. It's as soulful as a stack of punch cards.

Not all of Mr. Keegan's books are this way. Though he has never fought in a war, he has written (especially in "The Face of Battle") with real insight and feeling about the experience of both grunts and generals. But here the soldiers feel mostly like chess pieces, moved about the board amid a cloud of cigar smoke.

If Mr. Keegan's book isn't going to replace James McPherson's "Battle Cry of Freedom" (1988) as the go-to single-volume history of the Civil War, however, it is unusual and valuable for other reasons. Mr. Keegan, who is British, takes the long view — a European view — of that war, putting it into broad historical context amid history's great conflicts, from the Napoleonic wars and World War I to Vietnam. This is a war that, it's clear, perplexes him. "The American Civil War is one of the most mysterious great wars of history," he writes, "mysterious because unexpected, mysterious also because of the intensity with which it took fire." Mr. Keegan traces this brush fire as it burned across the Eastern half of the country, and he provides dense accounts of nearly every important battle, from Sumter to Shiloh, from Antietam to Chickamauga, to William Tecumseh Sherman's march to the sea.

The mysteries pile up, central among them how the overmatched Confederate Army managed to fight so well for so long. (One Confederate soldier, asked by his Union captors why he was fighting, replied, "Because you are here." Mr. Keegan observes, "It was, and remains, as good an answer as any.")
One of Mr. Keegan's favorite topics is how geography, when it comes to war, is often destiny. The sheer size of the American battlefield astounds him. "The territory of the 11 seceding states" alone, he writes, "forms a rough quadrilateral of nearly a million square miles' extent."
The theater of war was vast, the territory of the United and Confederate States combining to create, Mr. Keegan writes, one of the largest single landmasses "over which any conqueror had ever attempted to impose his will, larger than Napoleon's Europe, larger almost than Genghis Khan's Eurasia."
Because the South had few if any large cities to attack, Mr. Keegan notes, its army "presented itself as the only target at which to strike." But that army could be elusive. The sprawling territory on which this war was fought offered "the opportunity to disengage at will" and retreat into the terrain's open spaces.
Mr. Keegan acutely observes, "Though the truth was not perceived until much later in the war, and then only by a few professional Northern soldiers of brutal imagination, the Southern mind was the only profitable target in the Confederacy."
"The American Civil War" is a dense book, but a quirky one as well. In part this is because of Mr. Keegan's usages, some of which seem more appropriate to a rugby scrimmage than to battle. Some Union soldiers begin to "knock the Confederates about." Others get into "a classic pickle." Soldiers are observed "milling about this way and that." Some Confederate strategies are not "really worth the candle."
Mr. Keegan is opinionated, and a few of his opinions will be fighting words for some. Sherman's march is likened to Hitler's campaigns in Eastern Europe. He writes sensitively of the experience of black soldiers during the war, but observes, "Faced by the ferocity of their Southern antagonists on the battlefield, they simply could not stand up to combat as white soldiers did."
He writes about Southern women as if he is commenting on the Westminster dog show: "Southern women are a distinctive breed even today, admired for their femininity and outward-going personality."
Mr. Keegan's vast knowledge about the history of war ornaments "The American Civil War," but it can lead to pedantic asides. He's loath to leave any of his erudition off the table.
If he makes an observation about, say, Gen. Robert E. Lee's failure to win a major decisive battle against the Union Army, he will follow it with sentences like these: "Indeed the era of decisive battles was drawing to a close. There would be several during Prussia's wars of unification in 1866-71, notably the victory of Königgrätz-Sadowa against Austria, and Sedan against France in 1870."
However, Mr. Keegan teases out the Civil War's parallels with World War I with great aplomb, from how troops were mobilized through methods of attacking enemy trenches. He also catches, quite movingly, the essential difference between these two wars.
"The Great War is always spoken of with regret in Europe," he writes. "It is the Continent's tragedy, the cause of many of its persisting troubles, the war without justification or point."
Not so the Civil War, the memory of which "strikes a chill" but also "brings a glow of pride, at the sacrifice a previous generation was ready to make in the cause of ideals held central to its life by modern America: equality, human freedom, the rights of the individual before the law."
At moments like these Mr. Keegan climbs out of the bunker and stands tall indeed.

http://www.nytimes.com/2009/10/16/books/16garner.html?ref=books

One Nation, in Broad Strokes
By ROBERTA SMITH

"American Stories: Paintings of Everyday Life, 1765-1915" is a wild ride. It fills nine galleries at the Metropolitan Museum of Art with 103 paintings that the museum calls "iconic." Generally the claim is justified.

As it trundles through 150 crucial years of American life and art, the show, which opened on Monday, provides glimpses of great chunks of history: the fight for independence, the settling of the West, the tragedy of slavery and the immigrant-filled tenements of the Lower East Side. To one side are numerous prominent landmarks of American painting: "Watson and the Shark," John Singleton Copley's tumult of water and flesh; Mary Cassatt's "Little Girl in a Blue Armchair," with its deft, psychologically subtle Impressionism; and Winslow Homer's snapshotlike "Croquet Scene." Perhaps most iconic of all is George Caleb Bingham's "Jolly Flatboatmen," a dynamic opposition of inanimate horizontals and quite animated humans.

To the other side are unfamiliar gems of genre painting like John Greenwood's comic "Sea Captains Carousing in Surinam," which borrows liberally from Hogarth; and Christian Friedrich Mayr's "Kitchen Ball at White Sulphur Springs, Virginia," an antebellum depiction of a black wedding celebration that is remarkably free of condescension or caricature. And down the middle are scores of less gemlike genre paintings, full of plots and props and stilted emotions.

"American Stories" has been organized by H. Barbara Weinberg, the Met's curator of American paintings and sculpture, and Carrie Rebora Barratt, its associate director of collections and administration, in association with Bruce Robertson, a consulting curator at the Los Angeles County Museum of Art, and Margaret C. Conrads, a curator at the Nelson-Atkins Museum of Art in Kansas City, Mo.

The show's title declares their intentions in very specific terms. This is an exhibition of paintings that tell stories about Americans and their country. The work is exclusively figurative, limited to portraits of people and depictions of events real or plausible, hence no mythological or religious subjects, fantasies or landscapes. In addition all the artists are trained to some extent, hence no folk art or limner portraits.

Nevertheless the curators have cultivated a large and many-splendored agenda that often has a mind of its own. Section titles like "Stories for the Public, 1830-1860," "Stories of War and Reconciliation, 1860-1877" and "Cosmopolitan and Candid Stories, 1877-1915" have a one-size-fits-all feeling.

On the walls organizing principles flit among period, style, none of the above or brown, given the preponderance of darkish genre paintings in certain galleries (where dark red walls don't help). The wall texts pinpoint more subtle themes: the emergence of an art-buying middle class that was less interested in patrician portraits than in portrayals, however idealized or glossed over, of their daily lives; the national trauma of the Civil War, which intensified the desire for this idealization; and the degree to which this trauma came across anyway, especially in paintings that touch on race. In this context the Impressionism of Cassatt and John Singer Sargent provides aesthetic relief, but also comes across as a double avoidance since it presents beguiling images in a European style.

In a sense this exhibition is a pitched battle about how painting should tell stories in a country whose history was unfolding at high speed and whose narrative was not quite like anything the world had even seen.

In many instances you may be pulled into the intricacies of a genre painting's worldview purely for its anthropological richness and psychological confusion. Eastman Johnson's elaborate, Rembrandt-esque "Negro Life at the South," for example, centers on a black banjo player surrounded by small groups of figures who seem to have wandered onstage to act out courtship, motherhood and, in the case of a girl intently reading a book, intellectual curiosity, while a white woman, surprised and impressed, peeks in from the wings.

Elsewhere not even anthropology redeems the sweet, contrived narratives of the paintings. Gossip is exchanged, war news is shared, cakes are baked, new bonnets are paraded before budget-minded husbands, nuclear families assume stereotypical roles in cluttered drawing rooms. Simple light and space are mostly absent; the results are formally cramped, emotionally manipulative and drab, even while they illuminate the wellspring of Norman Rockwell's hackneyed art.

Against all this, works by Cassatt, Homer, Bingham, Thomas Eakins, William Sidney Mount and George Bellows consistently steal the show, commanding your attention almost before you recognize them, partly because they telegraph intriguing combinations of light, space and form — and even psychological subtlety. Note the way three paintings by Homer, including "Croquet Scene," grab your eye from the short back wall of the fifth gallery, or the startling clarity of Thomas Anshutz's "Ironworkers' Noontime," where a frieze of muscular men taking a break in a factory yard combines an updated Classicism with starkly contemporary reportage. Seeing it reminds us once more that despite the power it has in reproduction, it is actually rather small.

Similarly, Mount's spacious, lucid "Eel Spearing at Setauket" leaves us free to look and think for ourselves. Almost a landscape in disguise, it depicts a majestic black woman standing in a skiff, teaching a white boy how to fend for himself. It also reveals an intimate emotional bond while signifying a larger co-dependency that was — and to a great extent remains — corrosive in both directions.

At times the curators emphasize the works' contrasts. The fifth gallery opens with Homer's "Dressing for the Carnival," a patchwork of deep shadows and bright colors that accords a black family a striking solemnity that feels completely contemporary in body language and mood. Next to it, Theodor Kaufmann's "On to Liberty" depicts fugitive slave women and their children fleeing north during the Civil War, but the composition and figures recall Nicolas Poussin and Claude Lorrain — they might almost be shepherdesses.

The show has too many outstanding works ranging across too much history and art history to be orderly, which empowers viewers and gives them plenty to work with. Its reach is signaled in the opening gallery, where six waterbound paintings symbolize the ocean (of water and experience) separating America from Europe. Also here are Watson and his shark and Mount's eel-spearing lesson, joined by Bingham's "Fur Traders Descending the Missouri"; Homer's foreboding "Gulf Stream," with a black man adrift on a small disabled boat circled by sharks; and a second, more cheerfully recreational Homer, "Breezing Up (A Fair Wind)"; along with Eakins's study in pensive, ennobled athleticism, "The Champion Single Sculls (Max Schmitt in a Single Scull)."

This gathering of aquatic war horses also discreetly taps several of the show's recurring themes — including commerce, class and leisure time, exploration, and survival and race. In the final gallery the urban stories of John Sloan, Bellows and other members of the Ashcan School face off against the Wild West renderings of Frederic Remington and the like, indicating artistic and social conflicts that persist in some form to this day.

For better and for worse "American Stories" establishes genre painting as part of the nation's artistic DNA. In these days of institutional belt tightening, its gathering of "iconic" works — drawn from 45 museums across the county— is unlikely to happen again anytime soon. It invites repeated visits, providing insights into the national consciousness and lack of same. It explores the art and ambition of painting with incredible richness. It keeps slavery — the most irreducible fact of American history — before us in ways that illuminate both past and present. Its strength lies in its openness and synthesis of different points of view. If those aren't life lessons for the moment, nothing is.

"American Stories" runs through Jan. 24 at the Metropolitan Museum of Art, (212) 535-7710, metmuseum.org.

http://www.nytimes.com/2009/10/16/arts/design/16stories.html?ref=design

'ROCOCO AND REVOLUTION,' 'WATTEAU TO DEGAS'
A Double Dose of French Savoir-Faire

By KEN JOHNSON

It is appropriate that "Rococo and Revolution: Eighteenth-Century French Drawings" should appear opposite the fabulous William Blake exhibition at the Morgan Library & Museum, for it offers everything that irritable English mystic abhorred in the art of his contemporaries: naturalism, earthy sensuality, refined craftsmanship and worldly sophistication. Seen against the background of Blake's eccentric, neo-Gothic style and cosmic imagination, those qualities come more vividly to light.

The nearly 80 drawings selected from the Morgan's own collection include excellent pieces by most of the era's best-known artists, from the Rococoists Watteau and Fragonard to neo-Classicists like Jacques-Louis David and Étienne-Louis Boullée. It was organized by Cara Dufour Denison, curator emerita for the Morgan.

Meanwhile, as if the Morgan's embarrassment of riches were not enough, the Frick Collection presents "Watteau to Degas: French Drawings From the Frits Lugt Collection," a delectable exhibition of 18th- and 19th-century drawings. In addition to works by many of the artists in the Morgan show, the 64 pieces on view include remarkable sheets by Ingres, Delacroix and Degas, among others. Selected by the Frick's curators Colin B. Bailey and Susan Grace Galassi, all are from a celebrated collection in Paris, now called Fondation Custodia, assembled by the art historian Johannes Frederik Lugt (1884-1970), a k a Frits.

While it is pure coincidence that these exhibitions are happening at the same time, taken together they make for one terrific show, a reminder to the digital age of what we lose when we sacrifice the art of drawing by hand to the programs of machinery. Because the Morgan's is a notch more exciting, it's a good idea to start at the Frick.

Both shows have equally fine drawings by Watteau. At the Frick, executed in his signature combination of red, black and white chalks and with a touch that is at once loose and exacting, his image of a young woman relaxing in a chaise longue in a low-necked striped gown is tenderly erotic. The Morgan's Watteaus include studies of barefoot female models in billowing white dresses and a page with the heads of two little girls that is heart-tuggingly sweet. In his ability to capture human vitality and his empathy for women, Watteau was in Rembrandt's league.

With certain other artists, however, the Morgan has distinctly superior examples. There are some appealing pieces by Fragonard at the Frick, including a small, deft self-portrait of the diminutive artist — he was 4-foot-11, notes a wall label — seated in an armchair. A red chalk drawing of ruins engulfed by

leafy trees exemplifies his way with pastoral romance. But looking at the Morgan's small picture of tiny figures dallying amid garden statuary and architecture in a park, rendered by Fragonard with a near-miniaturist touch in glowing color, is like coming to the Land of Oz after the monochromatic world of Kansas.

A more surprising piece by Fragonard at the Morgan is a sensitive portrait of a Neapolitan girl in traditional costume. Made in gray washes, it has a straightforward, unsentimental realism you don't ordinarily associate with the painter of mildly prurient, confectionery fantasies like "The Swing."

The Frick has a lively street scene by the genius draftsman Gabriel de Saint-Aubin, but the Morgan's paperback-size drawing by the same artist of a chemist giving a demonstration in an ornate hall is miraculous in its handling of light and space and its nearly microscopic detailing of people and objects.

Drawn in charcoal and white chalk on blue paper, the Frick's study of a curtain gathered by a cord by Pierre-Paul Prud'hon has a luminous smoothness that makes you want to see more. Other pieces by the artist hanging nearby are less interesting, but at the Morgan there are some gorgeous Prud'hons, also in charcoal and white chalk on blue paper. One is a shapely, standing nude woman, the other a dreamy picture of sun-dappled trees in a park.

Unlike the Morgan's show, the Frick's extends into the 19th century, which is fortunate because we get to see an exquisite little oval portrait by Ingres of his smiling fiancée, drawn in pencil and highlighted in white gouache. Also, one of the best works in either show is the head of a soldier by Degas from early in his career. Based on a portrait by the Italian Mannerist Bronzino, the man has ruddy, leonine features rendered in red chalk and shiny metal shoulder armor painted in gouache. With the tiny figure of a soldier on horseback borrowed from Ucello in the background landscape, the picture exudes a feeling of mythic romance far from the modern social realities Degas would later turn to.

Among gems by lesser-known artists at the Frick are François-Marius Granet's sunny, postcard-size view of the stone terrace outside his country home in Aix-en-Provence in the south of France, with Mont Sainte-Victoire rising in the distance, and a pale watercolor study of rock formations in the Alps made at an altitude of 10,000 to 12,000 feet by Viollet-le-Duc, an architect and amateur geologist.

Unusually hair-raising is Louis-Jean Desprez's "Slaves of Vedius Pollio Thrown Alive to the Moray Eels," in which a naked man tumbles into a rectangular pool, stocked with what were said to have been man-chomping lampreys, at the home of a famously cruel ancient Roman.

One of the strangest pictures of all, at the Morgan, is an ink drawing of a vast, vaulted library interior envisioned by the architect Boullée, whose fantastic designs for immense structures never went beyond the paper they were so precisely realized on. In its breathtaking scale it is more like a set for a science-fiction movie than like anything conceivably buildable in reality. Or it could be a mausoleum for Urizen, William Blake's repressive god of lawful rationality?

"Rococo and Revolution: Eighteenth-Century French Drawings," at the Morgan Library & Museum, 225 Madison Avenue, at 36th Street, (212) 685-0008, themorgan.org. Through Jan. 3.

"Watteau to Degas: French Drawings From the Frits Lugt Collection," at the Frick Collection, 1 East 70th Street, Manhattan, (212) 288-0700, frick.org. Through Jan. 10.

http://www.nytimes.com/2009/10/16/arts/design/16drawing.html?ref=design

Cool or Classic: Arts District Counterpoints

By NICOLAI OUROUSSOFF

DALLAS — Civic leaders have been trying to give this city a cultural heart for decades now, but the results have always felt more like a loose collection of unrelated buildings than a cohesive urban vision. The Morton H. Meyerson Symphony Center, a subdued limestone building designed by I. M. Pei, did little to enliven the downtown arts district when it opened in 1989. Even the critically acclaimed Renzo Piano-designed Nasher Sculpture Center, which opened nearby in 2003, was not enough to transform the area.

The latest additions to the district, the Dee and Charles Wyly Theater and the Margot and Bill Winspear Opera House, are scheduled to open on Sunday. Facing off across Flora Street, the district's main thoroughfare, they embody radically different design philosophies, one coolly experimental, the other a traditional take on civic architecture cloaked in a modern wrapper. Yet together they give the area the cultural stature Dallas has long been craving.

Of the two, the Wyly Theater has attracted the most attention from architecture buffs, mostly because of the office politics that surrounded its creation. The theater began as a collaboration between Rem Koolhaas, one of the great architectural minds of his generation, and the young partner who once ran his New York office, Joshua Prince-Ramus. Halfway through the design process Mr. Prince-Ramus abruptly broke off from Mr. Koolhaas, his Dutch mentor, to start his own office, REX. He took over the design of the Dallas project, and the two have hardly spoken since.

It's the kind of rupture that could have led to architectural disaster: a haphazard design that no one wants to take credit for. But although the result is neither as revolutionary as Mr. Koolhaas's best work nor the kind of project that announces the arrival of a brilliant new talent, it is striking that the project is so good given the circumstances.

A machinelike interior clad in metal, the Wyly evokes a magician's box of tricks and, if used well, should allow for continual reinvention of the theatergoing experience. The design proves that when an initial concept is strong enough, it can survive even the vagaries of the architecture world.

Situated a short walk from the Nasher Sculpture Center, the Wyly Theater's tall, blocky form is wrapped in a skin of vertical aluminum rods, with only a few windows cut through to suggest the life inside. The architects placed the stage at ground level with windows on three sides so that when the blackout curtains are raised, passers-by can catch glimpses of it.

To get to their seats, audience members will first descend along a vast outdoor ramp, 167 feet at its widest point, down to the lobby, which is one level below ground. The lobby is a generic concrete space — a social mixing chamber designed to build anticipation for the main event above. From there, narrow staircases set in the lobby's back corners lead up to the theater.

This sequence — down into the earth and back up again — is an effective architectural trick, an inversion of the neo-Classical grand staircase. The idea is to create a sense of slight disorientation, of leaving the outside world behind, and in doing so preparing the mind for the more intimate experience of the performance. Emerging from one of the dark little staircases, you feel the full force of the theater's height, and of the unfolding experience — the sense of mystery, anxiety and then sudden release — you've just been through.

But it is the theater hall itself and the machinery that supports it that are the main event. The proscenium wall, like the scenery, can be raised and lowered electronically. Stage floors can drop away and reappear. Several tiers of balconies can be mechanically rearranged in any number of configurations, surrounding the stage on three sides one night, drawing together in a more traditional arrangement the next.

The purpose of all this engineering is not just to facilitate quick set changes; it also allows the director to manipulate and fine-tune the relationship between actors and audience. If the machinery is used as

intended, patrons will find that the emotional distance between them and the actors will change in unexpected ways with each performance.

The design feels like a cheeky take on the idea of the megalomaniac star architect. "You want a monumental, 'iconic' building?" it seems to ask. "Well, here's a big, generic-looking box whose interior changes every time you think you have a fix on it." And as if in response to the notion of the architect as control freak, it leaves the manipulation of interior spaces, and of the people who inhabit them, to the building's tenants.

Still, the Wyly falls short of much of Mr. Koolhaas's recent work, most obviously in the detailing. The sloped entry plaza that leads down into the lobby is decorated with trees and planters and lights embedded in the pavement, which together turn a strong, clear gesture into something cute and fussy. The walls and ceiling of an upper-level terrace are covered in artificial turf, a superficial flourish that is out of character with the rest of the design.

The building's exterior is a bigger disappointment. Mr. Prince-Ramus said he fought hard to have the windows that surround the stage at ground level open to the street in the form of four big sliding doors, which would have allowed the life of the theater to spill onto the sidewalk. But because of budget cuts, only two pivoting doors were built.

The building's unevenly striated aluminum surface, meanwhile, feels dull and its facades surprisingly tame. The thrill of this building, in the end, lies not in the details but in the transformative powers of the machine inside.

The Winspear, the new opera house across the street designed by Norman Foster of Foster & Partners, doesn't match the innovation of the Wyly, but its bright lipstick-red form makes a nice counterpoint. Conceived as a classic horseshoe design packed inside a faceted glass case, it is an old-fashioned statement about architecture as public art, in the spirit of 19th-century Paris.

An enormous canopy extends from the building in all directions, providing shelter for a public plaza. The canopy, supported on a grid of slender steel columns, consists of thousands of knife-blade-thin louvers set at an angle to block daylight while allowing skyward views. Mr. Foster envisions it as a breezy refuge during Dallas's hot summer months. The canopy is also an informal foyer, allowing the social world of the opera to merge with the city.

From the plaza people can gaze through the opera house's glass facade into the lobby, which is dominated by a broad staircase leading to various balcony levels. The 60-foot-high lobby is a contemporary version of Charles Garnier's Paris Opera, an ornate neo-Baroque masterpiece built near the end of the 19th century when the bourgeois city of grand boulevards and voyeuristic pleasures was just asserting itself. Garnier's genius was to pull the life of the boulevard right up into his opera house, creating the world's greatest monument to people-watching. At the Winspear, Mr. Foster clearly wants to produce a similar effect, but the result is not quite as dazzling. Because the main entrance is set slightly off the axis of the rest of the building to line it up with the plaza, people are forced to turn and walk across to the lobby before they reach the bottom of the grand staircase. The odd asymmetry makes the entry feel slightly cramped. And visitors don't experience anything like the impact of stepping into the Paris Opera's lobby and seeing tiers of people staring down at them from all sides.

The main performance hall is an elegant if familiar space that is more about putting you at ease than about sex appeal. Four tiers of balconies, their fronts clad in a crinkly surface of 12-karat gold leaf, embrace the room. A 70-foot-tall chandelier is designed to retract into the ceiling when a performance starts — a riff on the chandelier at the Metropolitan Opera House in Manhattan.

It is a conservative design, especially when compared with projects like Frank Gehry's Walt Disney Concert Hall in Los Angeles or Jean Nouvel's Copenhagen Concert Hall — dazzling structures whose emotional force have made the formality of a conventional hall seem boringly obsolete.

Still, it's solid work. And taken with the Wyly Theater's design, it is a welcome contribution to this city's growing cultural district, helping to fill it out with the kind of strong, serious forms that can begin to give Dallas the cultural presence that it has never had. The no-nonsense approach of these buildings — one cautiously experimental, the other more backward looking — should fit nicely in our new era of cautious restraint, even if they were designed when the excesses were still not over.

http://www.nytimes.com/2009/10/15/arts/design/15dallas.html?ref=design

A Perpetual Outsider With a Museum of His Own

By MICHAEL KIMMELMAN

STRASBOURG, France — It seemed a good moment, what with another round of sex scandals making news, to get a European perspective from Tomi Ungerer.

The Alsatian-born former bad boy of Madison Avenue, best-selling children's book author, longtime Council of Europe good-will ambassador for children and education, and voluminous illustrator of bondage and other erotica is still going gangbusters after 77 years. "I have to warn you," he said of his own volubility, when I arrived at his doorstep, "There's a lot I want to say." Frankly, I had a hard time getting a word in edgewise.

I had meant to quiz Mr. Ungerer about Silvio Berlusconi and Roman Polanski and the French culture minister who, after defending Mr. Polanski, had to go on television to explain why, as he had written in an autobiography, he paid to sleep with young men in Asia. (They have a different vetting process for government officials over here.)

To prepare, I stopped into Mr. Ungerer's museum. Strasbourg has set one up for its native son on a big square. Since he has produced dozens of books and thousands of drawings and collected, because he's obsessive, curious and not a little perverse, a vast assortment of toys along with back issues of everything from American Funeral Director to the Sears, Roebuck catalog, all of which he is eager to show the world, it was natural (natural if you're Mr. Ungerer, anyway) that he would have a museum. It has been around for two years, and the other morning several dozen elderly French and German visitors escaped the autumn drizzle to peruse pictures of copulating frogs and naked women trussed up like chickens.

Mr. Ungerer lives a short drive away. He splits his time between here and the remote town in far western Ireland where his wife and children occupy a large farm. Back in the 1960s he was a wild and crazy fixture on the commercial art scene whose libertine liberalism, extraordinary facility, charm and whimsy captured a moment while leaving a few East Hampton hostesses wincing at the mere mention of his name.

He arrived in New York in 1956, as he likes to tell the story, with $60, a trunk full of drawings and the remnants of a disease he had caught while serving with the Camel Corps in Algeria. Assignments at Sports Illustrated and Esquire and a contract with Ursula Nordstrom, the legendary children's book editor at Harper & Row, for what became "The Mellops Go Flying," about a family of Gallic pigs, got him started. The book was a smash, and so was he.

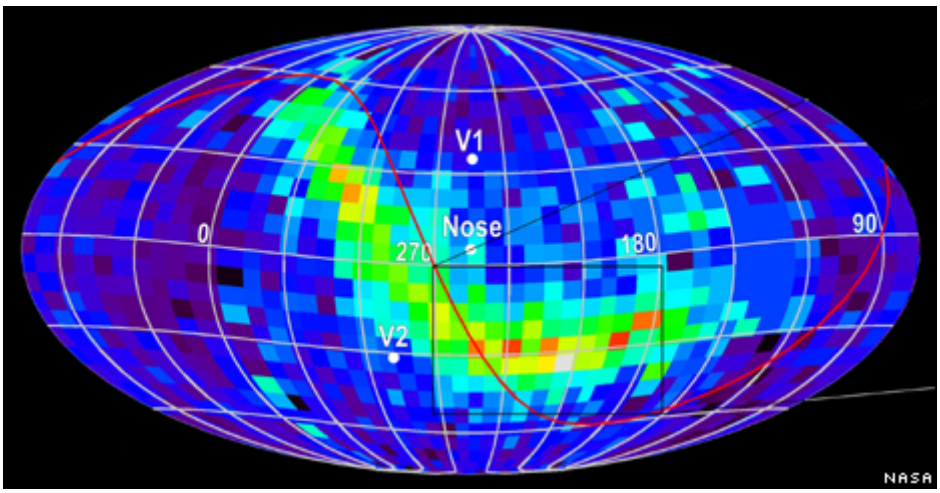
After which he spent about a dozen years — before he moved to remote Canada to get away from it all, then back here to Europe — cornering one after another major ad campaign around the world. He also devised antiwar posters; worked for Otto Preminger and Stanley Kubrick; wrote more children's books, not a few of which scared the living daylights out of sensitive kids; and drew deft cartoons whose pointed

social satire mixed healthy outrage with a very European sort of contempt for what passed as moral behavior in American society.
"Hope is a four-letter word," he announced the other morning, while rolling a Golden Virginia cigarette between beefy fingers — "workers' hands," he wanted to make clear.
"I believe in doubt," he said.
It helps to remember that he comes from an old family of watchmakers, precise and artisanal. His father, a skilled clock designer, artist and engineer, died when his son was 3, leaving the family in penury but also leaving a library in which his son learned to dream. When Alsace became German overnight, French was banned in school, and Mr. Ungerer discovered what it meant to become rebellious.
"It gave me my first lesson in relativity and cynicism," he recalled about that time. His second lesson came after the French returned in 1945 and treated him like a traitor for speaking with a German accent. That's why, or partly why, he describes Paris as "the most beautiful frame for my ugliest memories," why he calls himself Alsatian and European but not French, and why, when he got up to answer the telephone at one point, he mixed up languages with his interlocutor like a chef making bouillabaisse.
Did I mention he kept a slave? He did that, too, years ago. He let this information drop the way one might in passing remark on having relatives in Toronto or liking walnuts. The woman had arrived at his doorstep in New York either before or after an incident during which the F.B.I. whisked him away and strip-searched him for being a possible subversive, or at least he thinks it was the F.B.I., he's apparently not sure now — and neither was I by that point about the chronology or much else, he was talking so fast.
"I asked what she wanted," he explained. "She said, 'To be your slave.' "
What else was he supposed to do?
His studio, in the attic of the house where his mother lived, includes lots of books, a stash of Barbie dolls, mannequin legs, a plastic gun, a portrait of Beethoven and, sitting under a window like a homemade Duchamp, a disconnected toilet. An old friend, Robert Walter, with whom Mr. Ungerer has worked for years on the museum and other projects, had laid out a spread of wine and croissants. Like doting relatives, they pressed a box of local chocolates on their visitor. A copy of that day's Libération newspaper, which included a review of a show of Mr. Ungerer's work in Paris, rested in Mr. Walter's lap.
Gangly in cable-knit sweater, with a mop of white hair and yellow teeth, Mr. Ungerer resembled an Irish fisherman on holiday. "With three words," he said, holding up three fingers, "I can deflate any English aristocrat: 'Are you Irish?' " He loves wordplay, crossword puzzles, dialects, accents, and clearly enjoys acting the outsider: an Alsatian in France, an Irishman in Britain, a European in America, an agnostic with a somewhat unfortunate weakness for Jewish jokes, a rake devoted to children.
"He is too intellectual for the job" was his response to the question I finally managed about Frédéric Mitterrand, the French culture minister in hot water. Mr. Ungerer also defended President Nicolas Sarkozy as a pragmatist who wanted to shake up a stuffy French system, and he calculated that Mr. Polanski had already paid for his crimes, but added that he finds nothing more horrific and unacceptable than pedophilia. A devoted children's book author, he's the longtime European good-will ambassador for children for a reason, he emphasized, mentioning volumes he has done lately on the Holocaust and other historical subjects for young readers.
Then he was on to Americans' fondness for guns, the sheep his sons raise on the family farm, his landlady on West 72nd Street back in the late 1950s who turned out to own a notorious brothel (his nostalgia for America, though oddball, runs deep) and "double thinking," which he claimed was the medical term for a condition that causes his mind to bounce around like a pinball.
Sadly, I had a train to catch. He feigned disappointment at losing an American audience for his reminiscences about America. Then, as if to himself, he said melancholy is useless. People are melancholy about good memories because they are past, he said, and melancholy about bad memories, which haunt them.
That seemed to make him melancholy. He smiled and opened the door to the gray, rainy afternoon.

http://www.nytimes.com/2009/10/15/arts/design/15abroad.html?ref=design

Glimpses of Solar System's edge
By Jason Palmer
Science and technology reporter, BBC News

The first results from Nasa's Interstellar Boundary Explorer (Ibex) spacecraft have shown unexpected features at our Solar System's edge.



Ibex was launched nearly one year ago to map the heliosphere, the region of space defined by the extent of our Sun's solar wind.

Ibex's first glimpses show that the heliosphere is not shaped as many astronomers have believed.

A series of papers in the journal Science outlines the results.

Our Solar System is whipping around the centre of the galaxy. Just like a hand held out of a moving car, the Solar System feels a "wind" of particles from the region between our star and its nearest neighbours.

At the same time, the solar wind - a constant stream of fast-moving particles in all directions - blows outwards from the Sun.

The boundary at which the incoming and outgoing particles are at equivalent pressures, known as the heliopause, defines the heliosphere - the "bubble" in space generated by our own Sun's exhalations.

True shape

The true extent and shape of the heliosphere has been a subject of debate for more than half a century. Until now, the best clues came from the two Voyager spacecraft, which are believed to have passed through the heliopause at two different distances.

INTERSTELLAR BOUNDARY EXPLORER (IBEX)
- Completes a large, elliptical orbit around the Earth
- Measures uncharged atoms that enter the Solar System from the interstellar medium
- Can detect hydrogen, helium, and oxygen moving at a wide range of speeds through the Solar System
- Results should explain how interstellar magnetic fields form our heliosphere

Through a process known as "charge exchange" at the heliosphere's edge, fast-moving neutral or uncharged particles are created, and it is these energetic neutral atoms or ENAs that the Ibex spacecraft aims to measure.

It orbits the Earth in a vast ellipse, gathering incoming ENAs flying back from the heliopause at a range of speeds.

What a number of researchers have found is that the flow of the ENAs is uneven, with a significantly higher flow in a "ribbon" across the sky.

"The Ibex results are truly remarkable, with emissions not resembling any of the current theories or models of this never-before-seen region," said lead researcher Dr David McComas of the Southwest Research Institute in New Mexico.

"We expected to see small, gradual spatial variations at the interstellar boundary. However, Ibex is showing us a very narrow ribbon that is two to three times brighter than anything else in the sky."

Near miss

These concentrations of incoming particles were just missed by the Voyager spacecraft, Dr McComas explained.

"The most astounding feature in the Ibex sky maps - the bright narrow ribbon - snakes through the sky between the Voyager spacecraft, where it remained completely undetected until now," he said.

Further measurements were made by the Cassini spacecraft orbiting Saturn. It too has a "camera" that can capture incoming neutral atoms, and also observed a ribbon-shaped region across the sky, but from ENAs moving at slightly different speeds.

What is clear is that the heliosphere is not shaped like a comet, as previously thought, with a head pointed at the oncoming interstellar medium and a tail of matter trailing behind.

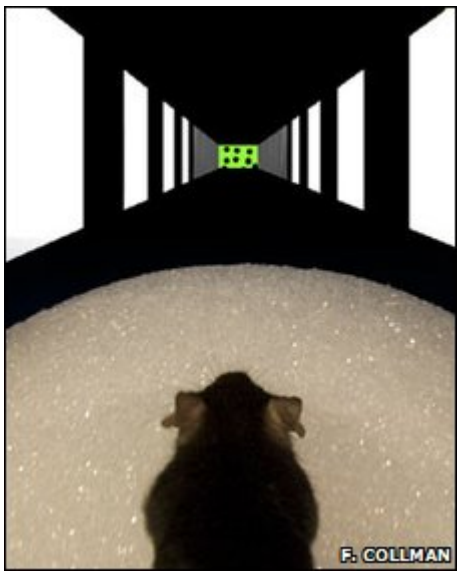
The research groups agree that the magnetic field interactions at the heliopause have as-yet undetermined effects on the overall shape. But the exact shape, and the forces that cause it, are still a matter of debate between the teams.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8309179.stm

Published: 2009/10/15 18:13:28 GMT

Virtual maze 'maps' mouse memory
By Victoria Gill
Science reporter, BBC News

With the help of mice scampering through a virtual maze, scientists have taken recordings from inside individual brain cells, or neurons.



The researchers report in the journal Nature how they recorded from cells in the brain's memory centre.

These neurons fired in a rhythmic pattern that could be related to the animal's location.

They hope their technique will help discover how neuronal activity forms new memories and affects behaviour.

In the virtual reality system, the mice were able to run around while their heads were kept relatively still. This enabled the scientists to measure continuously from one neuron.

The team, led by David Tank from Princeton University in New Jersey, US, took their recordings from "place cells".

These are neurons in the brain's hippocampus, which is considered to be the centre of memory formation.

Place cells "fire" when an animal is in a particular position within its environment, so neuroscientists hope to fathom their role in navigation, learning and memory.

Previously, scientists have studied the cells using extracellular electrodes - tiny wires placed next to the neurons.

"That tells you about their activity, but not about how that activity is generated," explained Professor Tank.

He and his colleagues used a technique that allowed them to clamp on to a single neuron and record the activity inside it.

Floating in space

The scientists took recordings from inside the mouse's brain as it scuttled through the maze.

In reality, the mouse remained almost stationary as it walked on the surface of a floating ball suspended on a cushion of air.

"This is easy for the mouse to walk and run on - [it's] just like an activity wheel," said Professor Tank.

In moving the ball, by walking and running around, the mouse controlled its own movement through the maze.

"[It] got treats at each end of the maze," said Professor Tank.

"The mouse ran down a corridor and when it got to the end it would get a treat. If it wanted another one, it had to turn around and run to the other end."

This free movement was crucial, because the place cells fired, or became active, at certain points along the corridor.

The points at which they fire are known as the "place fields".

"The bursts of firing [of groups of place cells] have a particular rhythm - like a clock," said Professor Tank.

" **You could alter an environment as the mouse is walking through it** "
David Tank, Princeton University

The study revealed that this rhythm changed "in a systematic way" as the mouse moved through the place field.

"So by looking at this timing, you can tell where the mouse is," Professor Tank explained.

This timing can be thought of a a type of code based on timing that is somehow translated into a memory.

Describing the wider significance of the work Professor Tank said: "There is still debate about what place cells are.

"Are they a fundamental part of brain circuitry for navigation? Or are they involved in something more general like... the ability to remember a sequence of events."

Professor Tank described how the virtual reality system could give neuroscientists the tools they needed to address these questions.

"One of the things about virtual reality," he said, "is that you can make manipulations that you can't in the real world. You could alter an environment as the mouse is walking through it [and see how the cells respond]."

Dr Rosamund Langston, a neuroscientist from the Norwegian University of Science and Technology in Trondheim described the work as "a huge technical achievement."

Dr Langston, whose work is focused on learning and memory, was not involved in this study.

She added: "This is an impressive leap forward for neuroscientists at both the cellular and systems level."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8308537.stm

Published: 2009/10/15 17:26:05 GMT

Banana marks seed bank milestone

By Rebecca Morelle
Science reporter, BBC News

An international seed bank has reached its target of collecting 10% of the world's wild plants, with seeds of a pink banana among its latest entries.

The wild banana, *Musa itinerans* , is a favourite of wild Asian elephants.

Seeds from the plant, which is under threat from agriculture, join 1.7 billion already stored by Kew's Millennium Seed Bank partnership.

The project has been described as an "insurance strategy" against future biodiversity losses.

The seed bank partnership, which involves more than 120 organisations in 54 countries, is now aiming to collect and conserve seeds from a quarter of the Earth's flowering plant species by 2020.

All the seeds are kept both in their country of origin and in Royal Botanic Gardens Kew's premises at Wakehurst Place, West Sussex, where they are stored in underground vaults that are kept at -20C.

The plant material is dried, cleaned and sorted, ensuring only the finest specimens make it into the giant freezers. There, the cold and arid conditions keep the seeds in pristine condition for anywhere between a few years to thousands of years, depending on the species.

The aim is that each seed stored in the bank can be regrown, should the need arise.

The wild banana plant from China was selected as the "10% species" by the bank's international collaborators because it fulfilled a number of conservation criteria.

Janet Terry, the seed processing manager at the bank, said: "It was chosen because it is representative of what the whole project is all about - it is endemic, endangered and it is an economic species.

"And of course, everybody loves a banana."

Musa itinerans becomes the 24,200th species to have been stored in the seed bank.

The 10% target was set when the Wakehurst Place facility was completed in 2000.

At that time, it was estimated that there were 242,000 plant species in the world, although more recently it is thought that there might be 300,000.

Professor Stephen Hopper, director of the Royal Botanic Gardens, Kew, told BBC News: "In the next phase, we want to secure another 15%, so by 2020 we will have a quarter of the world's seeds banked in both the country of origin and Wakehurst Place.

"And a major focus is going to be a considerable expansion in the sustainable use of seeds for human benefit."

The researchers will be focusing on food security, biodiversity loss and climate change.

Professor Hopper added: "The thing that has changed over this 10-year period is a much more acute awareness of climate change as a threatening process, as well as the many others that impact on plant life.

"And the seed bank, as an insurance strategy, is a good sensible way of keeping your options open for the future."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8305456.stm

Published: 2009/10/15 05:03:48 GMT

'No post-jab paracetamol' advice

Giving paracetamol to babies after vaccinations as a precaution against fever may lower the effectiveness of the immunisation, say researchers.

A trial of 450 infants having vaccines found that paracetamol doses over the next 24 hours did indeed reduce fever.

However, the Czech researchers also found a significantly lower vaccine response with the painkiller.

A UK doctor said the Lancet study backed advice not to use medicines in children without good cause.

Study leader Professor Roman Prymula said paracetamol was sometimes given prophylactically to allay parents fears of high fever in children after a vaccination.

" **Giving paracetamol before or after vaccines is not to be encouraged because firstly it has little benefit and secondly this preliminary data suggests it may do harm** "
Dr David Elliman, Great Ormond Street Hospital

But the trial, which included children having routine immunisations and booster vaccines, found that the practice may actually do more harm than good.

Half of the children in the study - who were having vaccines against pneumococcal disease, Haemophilus influenzae type b, diphtheria, tetanus, whooping cough, hepatitis B, polio, and rotavirus - were given three paracetamol doses every six to eight hours for the next 24 hours, while the other half did not.

It found that 42% of the children in the paracetamol group ended up having a temperature over 38C after initial vaccines, compared with 66% of children in the non-treatment group, with similar findings for booster vaccines.

But when the researchers looked at vaccine response they found lower levels of antibodies in those who had received paracetamol, suggesting the resulting immunity prompted by the vaccine was not as good.

Interferes with immunity

It is thought this is the first time such an effect has been shown and the researchers said one explanation could be that the paracetamol interferes with the response of immune cells to the vaccine.

"The clinical relevance of these immunological findings is unknown and needs further assessment," Professor Prymula wrote.

"Prophylactic administration of [paracetamol] at the time of vaccination should nevertheless no longer be routinely recommended without careful weighing of the expected benefits and risks."

Dr David Elliman, a child immunisation expert at Great Ormond Street Hospital, said he did not know how common the practice of giving paracetamol after vaccination was but he always advised parents it was unnecessary.

He added the finding about reduced immunity was very interesting and novel.

"My advice would be if the child has a fever, don't always assume it's down to the vaccine - are you happy there isn't another explanation.

"But if the child is otherwise well they probably don't have anything else wrong with them and you need to question whether they really need their fever brought down.

"Giving paracetamol before or after vaccines is not to be encouraged because firstly it has little benefit and secondly this preliminary data suggests it may do harm."

Professor Aine McKnight from Barts and the London School of Medicine and Dentistry said the effect was probably only seen when paracetamol was given as a precaution at the time of vaccination and would be unlikely to reduce the potency of a vaccine when given afterwards in response to a fever.

"More research will be required to uncover the full effect that this reduction might have on the protection given by vaccination.

"If we can learn why paracetamol has this negative effect on antibody production we may be able to improve current and future vaccines."

A Department of Health spokeswoman said: "Some children may develop a mild fever following vaccination.

"Department of Health advice is that infant paracetamol or ibuprofen can be given to a child to treat a fever.

"The findings of this study do not contradict this advice."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8308786.stm

Published: 2009/10/16 00:44:28 GMT

Foetal kick charts 'inaccurate'

Foetal kick charts, used to determine if a pregnancy is progressing well, are inaccurate and should be discontinued, according to Irish researchers.

The charts are used by around 5% of doctors in the UK but are more common in the Republic of Ireland and the US.

Researchers from Cork University say the charts rely on the mother's perceptions and may lead to miscounts of a baby's movements.

They recommend checking the foetal heart rate instead.

'Anxiety'

The research published in the journal, The Obstetrician and Gynaecologist, says a reduction of foetal movements causes concern and anxiety for both the mother and her doctor.

REASONS FOR REDUCED MOVEMENTS
- Foetal death
- Foetal sleep
- Foetal anaemia
- Failure of placenta
- Increased maternal weight
- Location of placenta
- Smoking
- A busy mother who is not concentrating on foetal activity

Mothers usually report feeling the baby move from 20 weeks into the pregnancy and should then feel some sort of movement every day right up to the birth.

Around 15% of pregnancies are assessed in hospitals because the mother is concerned that her baby is not moving well.

Decreased movements for more than 24 hours could indicate that the baby is unwell or has a number of conditions including severe growth restriction.

Lack of guidelines

The researchers from Cork University College Maternity Hospital carried out an anonymous online questionnaire of around 100 Irish obstetricians and found that only a third had a clinical practice guideline for dealing with reduced foetal movements.

In the UK, 70% of obstetricians have these guidelines.

Dr Julia Unterscheider, who led the research, said foetal kick charts did not compare well to more modern methods such as measuring the foetal heart rate with a cardiotocograph (CTG) and ultrasound.

She said: "We suggest that a careful history and examination together with a CTG are used to confirm foetal wellbeing.

"Ultrasound evaluation is recommended when babies are at and beyond their due date, or when examination of the mother's abdomen suggest that the baby is small.

"Kick charts, which are in use in many maternity units worldwide, are of no benefit to reducing poor outcomes in low-risk pregnant women - a mother's subjective perception of diminished movements is a better predictor of problems."

Pat O'Brien, of the Royal College of Obstetricians and Gynaecologists, welcomed the study and said it was important to monitor the babies movements: "It's like an early warning, nine out of 10 times there won't be anything wrong."

He said: "You sometimes can't feel them because you are too active and I tell mothers if it gets to the middle of the afternoon and you still can't feel anything, find some place quiet.

"Sit down and concentrate on the babies' movements.

"Push the baby around gently and if you are still worried come up to the hospital.

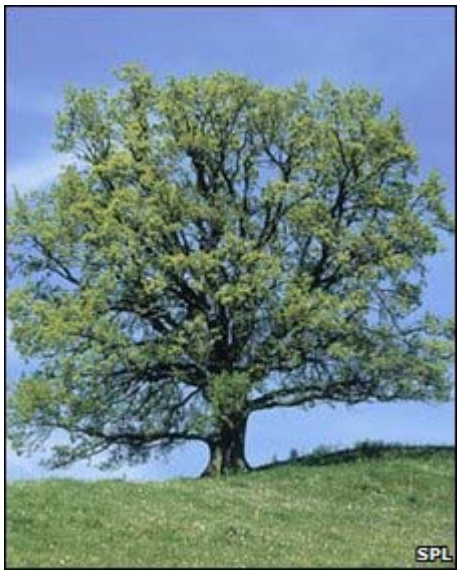
"Don't tell yourself to sleep on it and see what it's like in the morning - come straight up."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8309701.stm

Published: 2009/10/16 00:33:37 GMT

Green spaces 'improve health'

There is more evidence that living near a 'green space' has health benefits.



Research in the Journal of Epidemiology and Community Health says the impact is particularly noticeable in reducing rates of mental ill health.

The annual rates of 15 out of 24 major physical diseases were also significantly lower among those living closer to green spaces.

One environmental expert said the study confirmed that green spaces create 'oases' of improved health around them.

The researchers from the VU University Medical Centre in Amsterdam looked at the health records of 350,000 people registered with 195 family doctors across the Netherlands.

Only people who had been registered with their GP for longer than 12 months were included because the study assumed this was the minimum amount of time people would have to live in an environment before any effect of it would be noticeable.

Health impact

The percentages of green space within a one and three kilometre (0.62 and 1.86 miles) radius of their home were calculated using their postcode.

On average, green space accounted for 42% of the residential area within one kilometre (0.62 miles) radius and almost 61% within a three kilometre (1.86 miles) radius of people's homes.

DISEASES THAT BENEFIT MOST FROM GREEN SPACES
- Coronary heart disease
- Neck, shoulder, back, wrist and hand complaints
- Depression and anxiety
- Diabetes
- Respiratory infections and asthma
- Migraine and vertigo
- Stomach bugs and urinary tract infections
- Unexplained physical symptoms

And the annual rates for 24 diseases in 7 different categories were calculated.

The health benefits for most of the diseases were only seen when the greenery was within a one kilometre (0.62 miles) radius of the home.

The exceptions to this were anxiety disorders, infectious diseases of the digestive system and medically unexplained physical symptoms which were seen to benefit even when the green spaces were within three kilometres of the home.

The biggest impact was on anxiety disorders and depression.

Anxiety disorders

The annual prevalence of anxiety disorders for those living in a residential area containing 10% of green space within a one kilometre (0.62 miles) radius of their home was 26 per 1000 whereas for those living in an area containing 90% of green space it was 18 per 1000.

For depression the rates were 32 per 1000 for the people in the more built up areas and 24 per 1000 for those in the greener areas.

" **At least part of this 'oasis' effect probably reflects changes in air quality** "
Professor Barbara Maher, Lancaster Environment Centre

The researchers also showed that this relation was strongest for children younger than 12.

They were 21% less likely to suffer from depression in the greener areas.

Two unexpected findings were that the greener spaces did not show benefits for high blood pressure and that the relation appeared stronger for people aged 46 to 65 than for the elderly.

The researchers think the green spaces help recovery from stress and offer greater opportunities for social contacts.

They say the free physical exercise and better air quality could also contribute.

Dr Jolanda Maas of the VU University Medical Centre in Amsterdam, said: "It clearly shows that green spaces are not just a luxury but they relate directly to diseases and the way people feel in their living environments."

"Most of the diseases which are related to green spaces are diseases which are highly prevalent and costly to treat so policy makers need to realise that this is something they may be able to diminish with green spaces."

Professor Barbara Maher of the Lancaster Environment Centre said the study confirmed that green spaces create oases of improved health around them especially for children.

She said: "At least part of this 'oasis' effect probably reflects changes in air quality.

"Anything that reduces our exposure to the modern-day 'cocktail' of atmospheric pollutants has got to be a good thing."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8307024.stm

Published: 2009/10/15 14:19:33 GMT

Scientists Discover Protein Receptor For Carbonation Taste

Sparkling water. (Credit: iStockphoto/Jesus Ayala)

ScienceDaily (Oct. 16, 2009) — In 1767, chemist Joseph Priestley stood in his laboratory one day with an idea to help English mariners stay healthy on long ocean voyages. He infused water with carbon dioxide to create an effervescent liquid that mimicked the finest mineral waters consumed at European health spas. Priestley's man-made tonic, which he urged his benefactors to test aboard His Majesty's ships, never prevented a scurvy outbreak. But, as the decades passed, his carbonated water became popular in cities and towns for its enjoyable taste and later as the main ingredient of sodas, sparkling wines, and all variety of carbonated drinks.

Missing from this nearly 250-year-old story is a scientific explanation of how people taste the carbonation bubbling in their glass. In this week's issue of the journal *Science*, researchers at the National Institute of Dental and Craniofacial Research (NIDCR), part of the National Institutes of Health, and their colleagues from the Howard Hughes Medical Institute at the University of California, San Diego (UCSD) report that they have discovered the answer in mice, whose sense of taste closely resembles that of humans.

They found that the taste of carbonation is initiated by an enzyme tethered like a small flag from the surface of sour-sensing cells in taste buds. The enzyme, called carbonic anhydrase 4, interacts with the carbon dioxide in the soda, activating the sour cells in the taste bud and prompting it to send a sensory message to the brain, where carbonation is perceived as a familiar sensation.

"Of course, this raises the question of why carbonation doesn't just taste sour," says Nicholas Ryba, Ph.D., a senior author of this study and an NIDCR scientist. "We know that carbon dioxide also stimulates the mouth's somatosensory system. Therefore, what we perceive as carbonation must reflect the combination of this somatosensory information with that from taste."

A somatosensory system transmits sensory information within the body from protein receptors to nerve fibers and onward to the brain, where a sensation is perceived. Common sensory information includes taste, touch, pain, and temperature.

Ryba added that the taste of carbonation is quite deceptive. "When people drink soft drinks, they think that they are detecting the bubbles bursting on their tongue," he said. "But if you drink a carbonated drink in a pressure chamber, which prevents the bubbles from bursting, it turns out the sensation is actually the same. What people taste when they detect the fizz and tingle on their tongue is a combination of the activation of the taste receptor and the somatosensory cells. That's what gives carbonation its characteristic sensation."

Although some chefs might disagree, food does not tickle the taste buds that line the upper surface of the tongue, roof of the mouth, and upper esophagus. Rather the salt in a pretzel or the sugars in a chocolate drop bind to matching taste receptor cells clustered in our taste buds.

Scientists believe that our sense of taste generates only a limited palate of distinct qualities: the familiar sweet, sour, salty, bitter and savory tastes. Much of the flavor of food (the "tickling of taste buds") comes from a combination of this taste information with input from other senses like touch and smell.

Over the past decade, there has been tremendous progress in identifying the basis for detection of the five major taste qualities. Indeed, the laboratories of Charles Zuker, Ph.D., a senior author of this study from UCSD, and Ryba have previously teamed up to identify the receptor proteins and cells responsible for sweet, bitter, and savory taste and the receptor cells for sour detection. But can our sense of taste detect other flavors?

Recent work from a number of groups has suggested taste buds might detect other qualities, such as fat and metallic tastes. It also indicated that the gas carbon dioxide induces strong responses in taste nerves. The body senses carbon dioxide on many levels – in the somatosensory system (including touch and pain), smell, and in the brain and blood to control respiration. But how it is detected in taste was quite unclear.

This prompted Jayaram Chandrashekar, Ph.D., lead author of the study and a scientist at UCSD, to explore the taste of carbonation. Together with David Yarmolinsky and Lars von Buchholtz, Ph.D., co-authors of the paper, he discovered that the enzyme called carbonic anhydrase 4 is selectively expressed on the surface of sour taste receptor cells.

Carbonic anhydrase 4, or CA-IV, is one of a family of enzymes that catalyzes the conversion carbon dioxide to carbonic acid, which rapidly ionizes to release a proton (acid ion) and a bicarbonate ion (weak base). By so doing, carbonic anhydrases help to provide cells and tissues with a buffer that helps prevent excessive changes in pH, a measure of acidity.

The scientists found that if they eliminated CA-IV from the sour-sensing cells or inhibited the enzyme's activity, they severely reduced a mouse's sense of taste for carbon dioxide. Thus CA-IV activity provides the primary signal detected by the taste system. As CA-IV is expressed on the surface of sour cells, Chandrashekar and co-workers concluded that the enzyme is ideally poised to generate an acid stimulus for detection by these cells when presented with carbon dioxide.

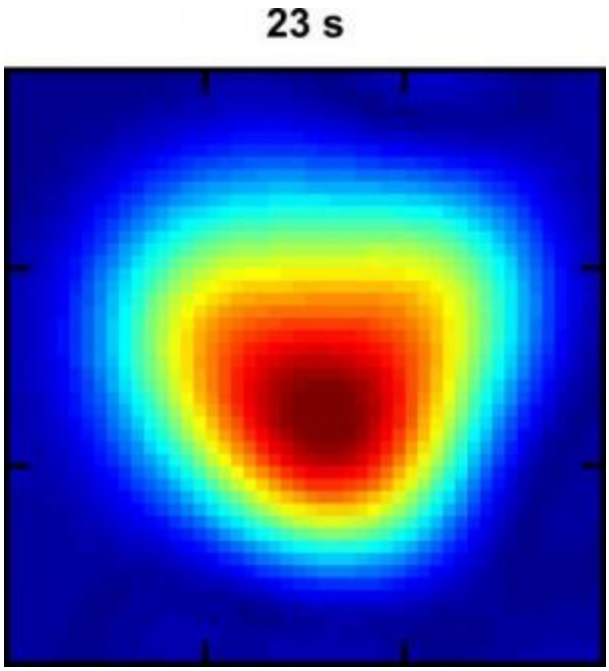
Why do mammals taste carbonation? The scientists are still not sure if carbon dioxide detection itself serves an important role or is just a consequence of the presence of CA-IV on the surface of the sour cells, where it may be located to help maintain the pH balance in taste buds. As Ryba says, "That question remains very much open and is a good one to pursue in the future."

The article is titled "The Taste of Carbonation." The authors are Jayaram Chandrashekar, David Yarmolinsky, Lars von Buchholtz, Martyn Goulding, William Sly, Nicholas J. P. Ryba, and Charles S. Zuker.

Adapted from materials provided by NIH/National Institute of Dental and Craniofacial Research, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/10/091015141510.htm#

Hyper-SAGE Boosts Remote MRI Sensitivity



This Hyper-SAGE image of xenon dissolved in water flowing through a phantom lung shows the intensity of the MRI signal 23 seconds into the process. The warm colors (red, orange and yellow) represent a stronger signal than the cool colors. (Credit: Image courtesy of Xin Zhou)

ScienceDaily (Oct. 16, 2009) — A new technique in Magnetic Resonance Imaging dubbed "Hyper-SAGE" has the potential to detect ultra low concentrations of clincal targets, such as lung and other cancers. Development of Hyper-SAGE was led by one of the world's foremost authorities on MRI technology, Alexander Pines, a chemist who holds joint appointments with the Lawrence Berkeley National Laboratory (Berkeley Lab) and the University of California, Berkeley.

The key to this technique is xenon gas that has been zapped with laser light to "hyperpolarize" the spins of its atomic nuclei so that most are pointing in the same direction.

"By detecting the MRI signal of dissolved hyperpolarized xenon after the xenon has been extracted back into the gas phase, we can boost the signal's strength up to 10,000 times," Pines says. "It is absolutely amazing because we're looking at pure gas and can reconstruct the whole image of our target. With this degree of sensitivity, Hyper-SAGE becomes a highly promising tool for in vivo diagnostics and molecular imaging."

MRI is a painless and radiation-free means of obtaining high quality three-dimensional tomographical images of internal tissue and organs. It is especially valuable for optically opaque samples, such as blood. However, the application of MRI to biomedical samples has been limited by sensitivity issues. For the past three decades, Pines has led an on-going effort to find ways of enhancing the sensitivity of MRI and its sister technology, nuclear magnetic resonance (NMR) spectroscopy. Hyper-SAGE, the latest development, represents a significant new advance for both technologies, according to Xin Zhou, a member of Pines' research group.

"Hyper-SAGE is a totally novel way to amplify a solvated xenon MRI/NMR signal in that instead of a chemical process, which is what previous signal enhancement techniques relied upon, it is a physical process," says Zhou. "Because gas can be physically compressed, the density of information-carrying polarized gas in our detection chamber can be much greater than the density of an information-carrying

solution. This means we can detect MRI signals from concentrations of molecules many thousands of times smaller than can be detected with conventional MRI."

Zhou is the first author on a paper that is now available online in the Proceedings of the National Academy of Sciences (PNAS). The paper is entitled: "Hyperpolarized Xenon NMR and MRI Signal Amplification by Gas Extraction." Co-authoring the paper with Zhou and Pines was Dominic Graziani. All hold joint appointments with Berkeley Lab's Materials Sciences Division and UC Berkeley's Chemistry Department, where Pines serves as the Glenn T. Seaborg Professor of Chemistry.

So Powerful and Yet so Weak

The great contradiction about MRI/NMR spectroscopy is that for being two of the most powerful tools we have today for studying the chemical composition and structure of a sample, they are based on a stunningly weak signal. Both depend upon atomic nuclei that have an unpaired proton or neutron. Such nuclei spin on an axis like miniature tops, giving rise to a magnetic moment - meaning the nuclei act like magnets with a north and south pole. When exposed to an external magnetic field, these spinning "bar magnets" attempt to align their axes along the lines of magnetic force. Since the alignment is not exact, the result is a wobbling rotation, or "precession," that's unique to each type of atom.

If, while exposed to the magnetic field, the precessing nuclei are also hit with a radiofrequency pulse, they will absorb and re-emit energy at specific frequencies according to their rate of precession (NMR). When the rf pulse is combined with magnetic field gradients a spatially encoded signal is produced that can be detected and translated into three-dimensional images (MRI).

Obtaining an MRI signal from a sample depends upon the spins of its precessing nuclei being polarized so that an excess point either "up" or "down." MRI's inherent weakness stems from the fact that the natural excess of up versus down spins for any typical population of atomic nuclei in a sample is only about one in 100,000. For this reason, conventional MRI techniques are designed to detect nuclei that are highly abundant in tissue, usually the protons in water. In addition, clinicians use contrasting agents to induce detectable changes in the MRI signal from a sample that can reveal the presence of anomalies. However, the sensitivity is usually too low for molecular imaging, which is needed in cancer detection, for example, where the earliest detections generally produce the most favorable outcomes.

Enter Hyper-SAGE

Pines and his research group have developed numerous ways of increasing the sensitivity of MRI technology and expanding its applicability. Previous work showed that xenon, an inert gas whose nuclei naturally feature a tiny degree of spin polarization, can be hyperpolarized with laser light to produce a population of xenon atoms in which nearly five out of every 10 nuclei - instead of one out of every 100,000 - produce an MRI signal. Pines and his group also showed that xenon can be incorporated into a biosensor and linked to specific proteins or other biological molecules to produce spatial images of a chosen molecular or cellular target.

The new technique, Hyper-SAGE, for "hyperpolarized xenon signal amplification by gas extraction," offers other major advantages over conventional MRI/NMR techniques in addition to a signal that is up to 10,000 times stronger than previous signals, according to Zhou.

"Xenon gas has an intrinsically long relaxation time, greater than 45 minutes, which means the signal lasts long enough for us to collect all the encoded information, which in turn can enable us to detect specific targets, such as cancer-related proteins, at micromolar or parts per million concentrations," he says. "Also, Hyper-SAGE utilizes remote detection, meaning the signal encoding and detection processes are physically separated and carried out independently. This is a plus for imaging the lung, for example, where the signal of interest would occupy only a small portion of the traditional MRI signal receiver."

In their *PNAS* paper, Zhou, Graziani and Pines describe the successful testing of the Hyper-SAGE technique on a pair of membranes that mimicked the function of the lungs. Hyper-polarized xenon was dissolved in solution in one membrane to mimic inhalation, and was then extracted as a gas for detection from the other membrane to represent exhalation.

Explains Zhou, "In a clinical setting, a patient would inhale the hyperpolarized xenon gas which would be dissolved in the blood and allowed to flow into the body and brain. The exhaled xenon gas would then be collected and its MRI signal would be detected. Used in combination with a target-specific xenon biomolecular sensor, we should be able to study the gas-exchange in the lung and detect cancerous cells at their earliest stage of development."

This research was supported by the U.S. Department of Energy's Office of Science, through its Basic Energy Sciences programs.

Journal reference:

1. Zhou et al. **Hyperpolarized xenon NMR and MRI signal amplification by gas extraction**. *Proceedings of the National Academy of Sciences*, 2009; 106 (40): 16903 DOI: 10.1073/pnas.0909147106

Adapted from materials provided by DOE/Lawrence Berkeley National Laboratory.

http://www.sciencedaily.com/releases/2009/10/091009204035.htm#

Rocket Design Fires International Interest

Student James Arkwright making a section of the rocket motor at Kingston University. (Credit: Image courtesy of Kingston University)

ScienceDaily (Oct. 16, 2009) — A rocket motor which can be fired safely and observed at close range has helped a Kingston University engineer secure his place in a prestigious international space competition. James Arkwright, from Morecambe in Lancashire, came up with the educational tool as part of his university degree. The 25-year-old has now being asked to present his idea to experts at the International Astronautical Congress in Korea this month.

Arkwright, who has spent the past five years studying aerospace engineering and astronautics at Kingston University, in South West London, designed the 50-centimetre-tall, portable motor. It will help engineering students, academics and researchers learn more about the mechanics of a rocket. Made out of graphite, steel and acrylic it shows students – from school age to degree level – how fuel burns in a rocket's combustion chamber and allows them to watch it at close quarters.

The model is known as a hybrid rocket – a type now being used for vehicles intended for space tourism. It uses a gaseous oxidizer: nitrous oxide and a solid fuel: acrylic – a common household plastic. As the acrylic burns, pressure increases in the chamber to produce thrust. "It's a bit like when you turn a hosepipe on and the force pushes back on your hand," Arkwright said. "The heat inside the rocket reaches approximately 3,000 degC, so we've had to design something which can contain this heat and pass a number of safety tests."

There was still not much known about the new hybrid type of rocket, senior lecturer in aerospace engineering and astronautics Dr Barnaby Osborne said. Arkwright's design had the potential to help researchers learn how to make such rockets safer and more efficient. "Although many private companies carry out similar tests to the ones James has been doing, their results are often commercially sensitive and kept under lock and key," Dr Osborne said. "This means researchers can use it to monitor performance and analyse how different types of fuels perform," Dr Osborne added. This area of research was becoming more popular since the first privately-funded, rocket-powered aircraft Space Ship One programme, he said. "The motor will allow engineering students and researchers of the future carry out tests which ultimately have the possibility to transform rocket design."

The design will also help primary school children to get involved in engineering, according to Arkwright, who plans to showcase it to an audience at Kingston Grammar School. "School-aged children don't always know why engineering is so important, so it is good to be able to give them real demonstrations which help bring our work to life," he said. "Hopefully this could encourage more young children to think about a career in engineering."

Arkwright is now hoping to impress judges in Korea before pursuing a career in aerospace. “Being asked to represent the UK is a tremendous honour,” he said. “The preparation for the competition has been tough, but I jumped in with both feet. I’m very excited to be showing it to the world’s experts.”

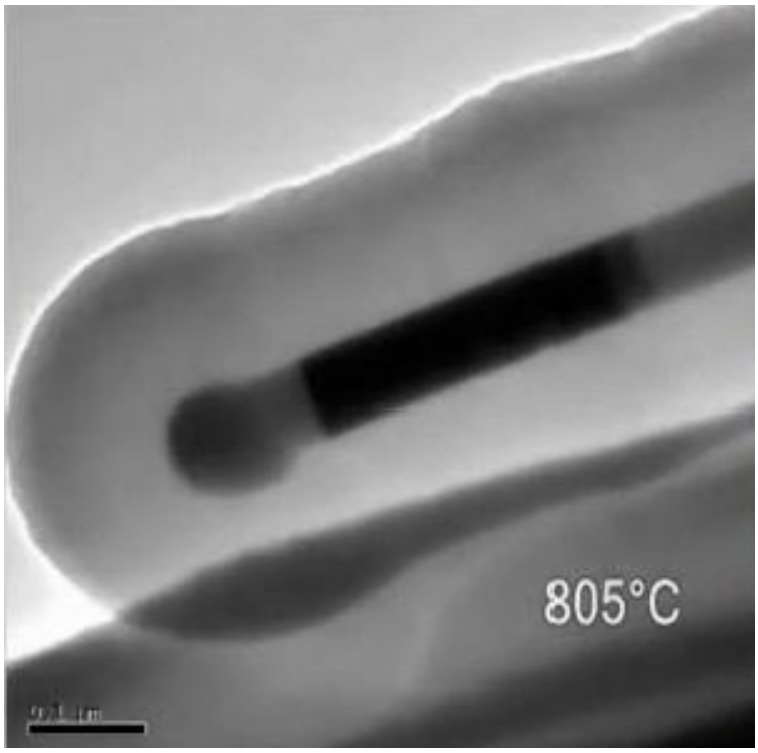
It is the fifth time a Kingston student has been selected to take part in the International Astronautical Congress undergraduate competition. Last year Victoria Lowe represented Kingston, before taking up a graduate-training position at the European Space Agency. Alison Gibbings, from the class of 2007, clinched silver in the competition and then went on to work on ExoMars, Europe’s mission to explore the Red Planet. The trio followed Kingston student Flis Holland who took part in the competition in 2005 and Peter Rickmers who scooped the gold medal in 2004.

Dr Chris Welch, a principal lecturer in astronautics and space systems at Kingston University, said Arkwright’s selection was an excellent achievement. “James has done extremely well and follows in the footsteps of Kingston graduates who have gone on to great things in aerospace,” he said. “Kingston University is continuing to produce high-calibre graduates who can compete on the world stage year after year.”

Adapted from materials provided by Kingston University, via AlphaGalileo.

http://www.sciencedaily.com/releases/2009/10/091002124823.htm#

Tiniest Test Tube Experiment Shows Reaction Of Melting Materials At Nano Scale



Still image from a video of the nano test tube experiment conducted in the lab of Brian Korgel, professor in the Department of Chemical Engineering at The University of Texas at Austin. The gold is shown moving up the length of a germanium nanowire, which was encased in a carbon nano test tube, at high temperature. The image has been magnified 100,000 times and the video's speed has been greatly increased. (Credit: Image courtesy of University of Texas at Austin)

ScienceDaily (Oct. 16, 2009) — Researchers at The University of Texas at Austin have conducted a basic chemistry experiment in what is perhaps the world's smallest test tube, measuring a thousandth the diameter of a human hair.

The nano-scale test tube is so small that a high-power electron microscope was required to see the experiment.

Made from a thin shell of carbon, the test tube was stuffed with a thread-like crystal (a nanowire) of germanium with a tiny particle of gold at its tip.

The researchers heated the test tube and watched as the gold melted at the end of the nanowire, much like any solid crystal heated above its melting temperature in a glass test tube.

"The experiment is relatively simple," said chemical engineer Brian Korgel, whose laboratory conducted it. "Essentially, we observe well-known phenomena, like melting, capillarity and diffusion, but at a much, much smaller scale than has been possible to see before."

Such experiments provide new fundamental insights about how nanomaterials behave, and might be used to create new technologies, from better solar cells to unprecedentedly strong yet light-weight materials to higher performance optical displays and computing technologies.

Korgel and graduate students Vincent Holmberg and Matthew Panthani conducted the experiment, which was reported in the Oct. 16 edition of *Science*.

During the experiment, the nanowire melted as the temperature rose, but its shape was retained because the carbon test tube maintained its shape.

"In these very small structures, the phase behavior (like its melting temperature, etc.) can be different than bulk materials and can be size-dependent," Korgel said. "Therefore, if the structure changes when the phase change happens, then the result becomes very difficult to interpret and in fact, may not even represent the true behavior of the system."

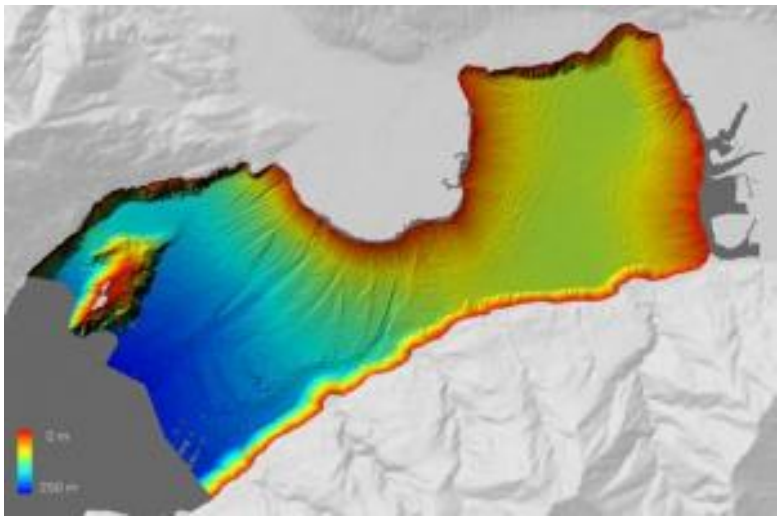
The carbon test tube, however, provided a rigid container for studying what happens when materials are heated and melted at the nanoscale.

Funding for the research came from the Robert A. Welch Foundation and the National Science Foundation. Holmberg received support from the Fannie and John Hertz Foundation and the National Science Foundation for a Graduate Research Fellowship.

Adapted from materials provided by University of Texas at Austin.

http://www.sciencedaily.com/releases/2009/10/091015141503.htm#

Secrets Of The Lake Floor Of Lake Maggiore



Lake floor of the Lake Maggiore (Swiss part). (Credit: Image courtesy of EAWAG)

ScienceDaily (Oct. 16, 2009) — Topographical surveys of Swiss lake floors have never been performed in such detail before now. With the aid of a sophisticated sonar system, the Swiss Federal Institute of Aquatic Science and Technology Eawag can produce three-dimensional images which show channels and other structures at the bottom of Lake Maggiore with centimetre-scale accuracy.

Flavio Anselmetti, a limnogeologist, is highly enthusiastic: topographical surveys of Swiss lake floors have now been performed in unprecedented detail. On a 2-week excursion in May, a team of Eawag scientists aboard the research vessel Thalassa criss-crossed the Swiss part of Lake Maggiore, using special sonar equipment to scan the lake floor. Although this method has been employed for some time by coastal states to produce bathymetric charts of the seabed, in Switzerland it has only been used in a pilot project. So far, parts of Lakes Lucerne and Geneva have been surveyed, and now it was the turn of Lake Maggiore.

Using modern sonar equipment, in contrast to conventional echo sounders, it is possible to determine a large number of depth points with each measurement. Depth values can thus be calculated for each square metre of the lake floor, and the data can then be processed to produce three-dimensional images. The images now available even reveal underwater cables or – as in the delta of the Verzasca river off Tenero – small craters from which methane is released.

Fascinating historical insights

Researchers can use these precise records to trace the historical development of the lake. It is striking, for example, that while no lake floor channel can now be seen on the slopes of the Maggia delta, such channels are visible in the vicinity of former river mouths near Ascona. This allows conclusions to be drawn concerning the frequency and composition of sediment deposits from the Maggia river. It is also notable that, unlike the Maggia, the Ticino and Verzasca rivers do not form fan-shaped deltas; instead, their deposits extend westward into the lake along an almost straight line.

Two lakes 1000 years from now?

Particularly evident from the new charts is the fact that, sooner or later, the Maggia delta will cut off the uppermost part of the lake. The toe of the delta which has advanced as far as the foot of the Gambarogno is already higher than the floor of the eastern part of the lake. It is, however, difficult to say how long it

will be before the lake off San Nazzaro is replaced by a river: "That certainly won't happen in the next 500 years," says Anselmetti.

Risk management and monitoring

As well as providing answers to questions about the lake's history, the new images can help to predict future events: in areas where deposits are now visible on steep slopes, underwater landslides could be triggered by a future earthquake, giving rise to a tsunami-like wave. In addition, the charts can be used to monitor sediment deposition in lakes, since alterations in flow regimes associated with climate change will also lead to changes in sediment transport and deposits. Initially, however, the Eawag scientists intend to investigate individual structures even more closely. They are focusing, for example, on the small, round depressions observed in the northern part of the Ticino/Verzasca delta. These pockmarks are a sign of gas seepage in this area. Anselmetti comments: "I don't think the methane gas can be usefully exploited, but the seeps do indicate where the slope could become unstable."

The possible applications of precise bathymetric images are wide-ranging. One conceivable application is the monitoring of underwater gravel extraction at river mouths. On Lake Lucerne, where similar charts have been produced by Eawag researchers, interest has been expressed by archaeologists hoping to uncover evidence of settlements from earlier periods, when lake water levels were lower. Enquiries have also been received from the army as to whether the new method could possibly be used to pinpoint dumped munitions.

Swisstopo among the sponsors

The latest survey is part of a pilot project involving Eawag and the University of Geneva. It was made possible with technical support from the Geological Survey of Norway and from the University of Ghent in Belgium. Financial support was originally provided by swisstopo (Federal Office of Topography), the Federal Office for the Environment, and the Federal Department of Defence, Civil Protection and Sport. The reasons for swisstopo's interest are clear: to date, the depth contours shown for lakes on official maps have generally been based on soundings taken in some cases a hundred years ago. The new bathymetric relief map is several orders of magnitude more accurate than the contours on 1:25,000 maps.

Adapted from materials provided by EAWAG: Swiss Federal Institute of Aquatic Science and Technology, via AlphaGalileo.

http://www.sciencedaily.com/releases/2009/10/091006104055.htm#

200,000-year-old Cut Of Meat: Archaeologists Shed Light On Life, Diet And Society Before The Delicatessen

A bone from the Qesem Cave showing irregular cutmarks. (Credit: Photo by Dr. Mary Stiner)

ScienceDaily (Oct. 15, 2009) — Contestants on TV shows like Top Chef and Hell's Kitchen know that their meat-cutting skills will be scrutinized by a panel of unforgiving judges. Now, new archaeological evidence is getting the same scrutiny by scientists at Tel Aviv University and the University of Arizona.

Their research is providing new clues about how, where and when our communal habits of butchering meat developed, and they're changing the way anthropologists, zoologists and archaeologists think about our evolutionary development, economics and social behaviors through the millennia.

Presented in the *Proceedings of the National Academy of Sciences*, new finds unearthed at Qesem Cave in Israel suggest that during the late Lower Paleolithic period (between 400,000 and 200,000 years ago), people hunted and shared meat differently than they did in later times. Instead of a prey's carcass being prepared by just one or two persons resulting in clear and repeated cutting marks — the forefathers of the modern butcher — cut marks on ancient animal bones suggest something else.

Different rules of the game

"The cut marks we are finding are both more abundant and more randomly oriented than those observed in later times, such as the Middle and Upper Paleolithic periods," says Prof. Avi Gopher of TAU's Department of Archaeology. "What this could mean is that either one person from the clan butchered the group's meat in a few episodes over time, or multiple persons hacked away at it in tandem," he interprets. This finding provides clues as to social organization and structures in these early groups of hunters and gatherers, he adds.

Among human hunters in the past 200,000 years, from southern Africa to upstate New York or sub-arctic Canada, "there are distinctive patterns of how people hunt, who owns the products of the hunt, how carcasses are butchered and shared," Prof. Gopher says. "The rules of sharing are one of the basic organizing principles of hunter-gatherer cultures. From 200,000 years ago to the present day, the patterns of meat-sharing and butchering run in a long clear line. But in the Qesem Cave, something different was happening. There was a distinct shift about 200,000 years ago, and archaeologists and anthropologists may have to reinterpret hunting and meat-sharing rituals."

Meat-sharing practices, Prof. Gopher says, can tell present-day archaeologists about who was in a camp, how people dealt with danger and how societies were organized. "The basic logic of butchering large animals has not changed for a long time. Everyone knows how to deal with the cuts of meat, and we see cut marks on bones that are very distinctive and similar, matching even those of modern butchers. It's the more random slash marks on the bones in Qesem that suggests something new."

Where's the beef?

The Qesem Cave finds demonstrate that man was at the top of the food chain during this period, but that they shared the meat differently than their later cousins. The TAU excavators and Prof. Mary Stiner of the University of Arizona (Tucson) hypothesize that the Qesem Cave people hunted cooperatively. After the hunt, they carried the highest-quality body parts of their prey back to the cave, where the meat was cut using stone-blade tools and then cooked on the fire.

"We believe this reflects a different way of butchering and sharing. More than one person was doing the job, and it fits our expectations of a less formal structure of cooperation," says Prof. Gopher. "The major point here is that around 200,000 years ago or before, there was a change in behavior. What does it mean? Time and further excavations may tell."

Qesem, which means "magic" in Hebrew, was discovered seven miles east of Tel Aviv about nine years ago during highway construction. It is being excavated on behalf of TAU's Department of Archaeology by Prof. Avi Gopher and Dr. Ran Barkai in collaboration with an international group of experts. The cave contains the remains of animal bones dating back to 400,000 years ago. Most of the remains are from fallow deer, others from wild ancestors of horse, cattle, pig, and even some tortoise. The data that this dig provides has been invaluable: Until now there was considerable speculation as to whether or not people from the late Lower Paleolithic era were able to hunt at all, or whether they were reduced to scavenging, the researchers say.

Journal reference:

1. Mary C. Stiner, Ran Barkai, Avi Gopher. **Cooperative hunting and meat sharing 400-200 kya at Qesem Cave, Israel**. *Proceedings of the National Academy of Sciences*, 2009; 106 (32): 13207 DOI: 10.1073/pnas.0900564106

Adapted from materials provided by American Friends of Tel Aviv University.

http://www.sciencedaily.com/releases/2009/10/091014111547.htm

Improved Diet And Exercise Alone Unlikely To Cure Obstructive Sleep Apnea In Obese Patients

ScienceDaily (Oct. 15, 2009) — A study in the Oct. 15 issue of the *Journal of Clinical Sleep Medicine* found that while a strict diet and exercise program may benefit obese patients with mild to moderate obstructive sleep apnea (OSA), it is unlikely to eliminate the condition.

Results show improvement in typical OSA symptoms including snoring, daytime sleepiness, impaired vigilance, poor quality of life and mood after the completion of a 16-week diet and exercise program. Weight loss was significant, with an average loss of 12.3 kg (about 27 pounds), representing 12.9 percent of baseline total body weight. Although weight loss reduced the average apnea-hypopnea index (AHI) by 25 percent from 24.6 to 18.3 breathing pauses per hour of sleep, the change was not statistically significant.

Principal investigator Maree Barnes, MBBS, sleep medicine practitioner and senior research fellow at the Institute for Breathing and Sleep at Austin Hospital in Victoria, Australia, said that the exercise program resulted in improved fitness and muscle strength, which is important in obese OSA patients; however, diet and exercise alone should not be relied upon to treat the condition.

"Although there was some improvement in sleep disordered breathing, it was not seen in all patients and was not proportional to the degree of weight loss," said Barnes.

Twelve consecutive patients from the Institute for Breathing and Sleep who were newly diagnosed with OSA were included in the cohort study, and 10 completed the program. Participants had mild to moderate OSA, were obese with an average body mass index (BMI) of 36.1, were heavy snorers, had no significant comorbidities and were able to exercise. Participants had an average age of 42 years, and nine of 12 were female.

An initial evaluation was performed to assess sleep disordered breathing, cardiovascular risk factors, and neurobehavioral function prior to and following completion of the 16-week program. The program used a proprietary low-energy diet (Optifast®), and subjects participated in a hospital-based exercise schedule that included both aerobic and resistance training supervised by a physiologist and a physiotherapist. Subjects also completed questionnaires to assess subjective sleep quality, mood and quality of life.

One year after beginning the program participants were contacted by mail and asked about their current weight, ongoing exercise and diet, and whether they thought it would have been beneficial to have had a structured follow-up program. All but one participant who completed the program had regained some weight, but five of the 10 participants were able to independently maintain weight loss of at least seven percent. All participants said they had maintained an exercise program but that regular face-to-face contact would have assisted with ongoing adherence to a low-energy diet.

The AASM's "Clinical Guideline for the Evaluation, Management and Long-term Care of Obstructive Sleep Apnea in Adults" recommends weight loss for all overweight OSA patients. However, weight loss should be combined with a primary treatment for OSA because of the low success rate of dietary programs and the low cure rate by dietary approach alone. The AASM recommends positive airway pressure (PAP) therapy as the treatment of choice for all severity levels of OSA.

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

http://www.sciencedaily.com/releases/2009/10/091015084547.htm#

Survey Data Supports Rapid Ice Loss: Largely Open Arctic Seas In Summer Within 10 Years

The Arctic Ocean sea ice is thinning, new data show, supporting the emerging thinking that the Ocean will be largely ice-free during summer within a decade. (Credit: Martin Hartley www.martinhartley.com)

ScienceDaily (Oct. 15, 2009) — New research, released by the Catlin Arctic Survey and WWF, provides further evidence that the Arctic Ocean sea ice is thinning, supporting the emerging thinking that the Ocean will be largely ice-free during summer within a decade.

The Catlin Arctic Survey, completed earlier this year, provides the latest ice thickness record, drawn from the only survey capturing surface measurements conducted during winter and spring 2009.

The data (1), collected by manual drilling and observations on a 450-kilometre route across the northern part of the Beaufort Sea (2), suggests the survey area is comprised almost exclusively of first-year ice.

This is a significant finding because the region has traditionally contained older, thicker multi-year ice. The average thickness of the ice-floes measured 1.8 metres, a depth considered too thin to survive the next summer's ice melt. (4)

These findings have been analysed by the Polar Ocean Physics Group (3) at the University of Cambridge, led by Professor Peter Wadhams, one of the world's leading experts on sea ice cover in the North Pole region.

"With a larger part of the region now first year ice, it is clearly more vulnerable," said Professor Wadhams. "The area is now more likely to become open water each summer, bringing forward the potential date when the summer sea ice will be completely gone."

Wadhams continued: "The Catlin Arctic Survey data supports the new consensus view -- based on seasonal variation of ice extent and thickness, changes in temperatures, winds and especially ice composition -- that the Arctic will be ice-free in summer within about 20 years, and that much of the decrease will be happening within 10 years."

"That means you'll be able to treat the Arctic as if it were essentially an open sea in the summer and have transport across the Arctic Ocean."

According to the scientists who have studied the data, the technique used by the explorers to take measurements on the surface of the ice has the potential to help ice modellers to refine predictions about the future survival or decline of the ice.

Catlin Arctic Survey expedition leader Pen Hadow commented: "This is the kind of scientific work we always wanted to support by getting to places in the Arctic which are otherwise nearly impossible to reach for research purposes. It's what modern exploration should be doing. Our on-the-ice techniques are helping scientists to understand better what is going on in this fragile ecosystem."

At the unveiling of the results in London, Dr. Martin Sommerkorn from WWF International Arctic Programme, which partnered with the Survey, said: "The Arctic sea ice holds a central position in our Earth's climate system. Take it out of the equation and we are left with a dramatically warmer world."

"Such a loss of Arctic sea ice cover has recently been assessed (5) to set in motion powerful climate feedbacks which will have an impact far beyond the Arctic itself – self perpetuating cycles, amplifying and accelerating the consequences of global warming. This could lead to flooding affecting one-quarter of the world's population, substantial increases in greenhouse gas emissions from massive carbon pools and extreme global weather changes" Dr. Sommerkorn said.

"Today's findings provide yet another urgent call for action to world leaders ahead of the UN climate summit in Copenhagen this December to rapidly and effectively curb global greenhouse gas emissions, with rich countries committing to reduce emissions by 40% by 2020."

Notes:

1. More than 6,000 measurements and observations from the expedition were used in the analysis. ("Verification of Catlin Arctic Survey Surface Observation Techniques, N. P. Toberg, P. Wadhams, Polar Ocean Physics Group, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, October 2009)
2. The survey began on March 1st 2009 at 81.83ºN 129.97ºW and ended after 73 days on May 7th at 85.45ºN 124.84ºW.
3. The Polar Ocean Physics Group is part of the Department of Applied Mathematics and Theoretical Physics, University of Cambridge.
4. The average (mean) thickness of the total ice cover when incorporating the rougher, compressed ridges of ice increased to 4.8m. Pressure ridges contain a large amount of ice below the surface.
5. Reduced ice cover will lead to more greenhouse gases being released from the vast store of carbon currently locked in the frozen Arctic region. Arctic permafrost soils store twice as much carbon as in the atmosphere, and there is more carbon stored as methane hydrates in the frozen arctic seafloors than in all of Earth's proven reserves of coal, oil and natural gas combined. The warming of the Arctic Ocean surface waters, resulting from more sea ice loss, will accelerate melting of the Greenland Ice Sheet, speeding up global sea level rise. Patterns of northern hemisphere ocean and weather will change, affecting access to natural resources, and food production.

Adapted from materials provided by Catlin Arctic Survey.

http://www.sciencedaily.com/releases/2009/10/091015203837.htm#

Some Color Shades Offer Better Protection Against Sun's Ultraviolet Rays

When choosing clothing to protect against the sun's harmful ultraviolet rays, people should consider blue or red colors rather than yellow. A new study shows that these darker colors, when applied to cotton fabrics, tend to have better UV absorption. (Credit: iStockphoto)

ScienceDaily (Oct. 15, 2009) — Economy-minded consumers who want protection from the sun's harmful ultraviolet (UV) rays — but rather not pay premium prices for sun-protective clothing — should think blue and red, rather than yellow. Scientists in Spain are reporting that the same cotton fabric dyed deep blue or red provide greater UV protection than shades of yellow. Their study could lead to fabrics with better sun protection.

Ascensión Riva and colleagues explain that the color of a fabric is one of the most important factors in determining how well clothing protects against UV radiation. Gaps, however, exist in scientific knowledge about exactly how color interacts with other factors to influence a fabric's ability to block ultraviolet protection factor (UPF).

The scientists describe use of computer models that relate the level of UV protection achieved with three fabric dyes to their effects in changing the UPF of fabrics and other factors. In doing so, they dyed cotton fabrics in a wide range of red, blue, and yellow shades and measured the ability of each colored sample to absorb UV light.

Fabrics with darker or more intense colors tended to have better UV absorption. Deep blue shades offered the highest absorption, while yellow shades offered the least. Clothing manufacturers could use information from this study to better design sun-protective clothing, the scientists indicate.

Journal reference:

1. Ascensin Riva, Ins Algaba, Montserrat Pepi, Remedios Prieto. **Modeling the Effects of Color on the UV Protection Provided by Cotton Woven Fabrics Dyed with Azo Dyestuffs**. *Industrial & Engineering Chemistry Research*, September 23, 2009 DOI: 10.1021/ie9006694

Adapted from materials provided by American Chemical Society, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/10/091014130708.htm#

Bosses Who Feel Inadequate Are More Likely To Bully

New research finds that bosses who feel incompetent are more likely to bully their employees. (Credit: iStockphoto/Vasko Miokovic)

ScienceDaily (Oct. 15, 2009) — Bosses who are in over their heads are more likely to bully subordinates. That's because feelings of inadequacy trigger them to lash out at those around them, according to new research from the University of California, Berkeley, and the University of Southern California.

In a new twist on the adage "power corrupts," researchers at UC Berkeley and USC have found a direct link among supervisors and upper management between self-perceived incompetence and aggression. The findings, gleaned from four separate studies, are published in the November issue of the journal *Psychological Science*.

With more than one-third of American workers reporting that their bosses have sabotaged, yelled at or belittled them, the new study challenges previous assumptions that abusive bosses are solely driven by ambition and the need to hold onto their power.

"By showing when and why power leads to aggression, these findings are highly relevant as abusive supervision is such a pervasive problem in society," said Nathanael Fast, assistant professor of management and organization at USC and lead author of the study.

During role-playing sessions, study participants who felt their egos were under threat would go so far as to needlessly sabotage an underling's chances of winning money. In another test, participants who felt inadequate would request that a subordinate who gave a wrong answer to a test be notified by a loud obnoxious horn, even though they had the option of choosing silence or a quiet sound.

Researchers did not rate participants by an objective measure of competency, but by their self-reported level of competency. This allowed them to investigate how feelings of self-worth are tied to workplace behavior.

"Incompetence alone doesn't lead to aggression," said Serena Chen, associate professor of psychology at UC Berkeley and co-author of the study. "It's the combination of having a high-power role and fearing that one is not up to the task that causes power holders to lash out. And our data suggest it's ultimately about self-worth."

Alternately, Chen said, participants who got ego boosts by scoring high in a leadership aptitude test or who recalled an incident or principle that made them feel good about themselves did not react with aggression.

That said, flattery may not be the best way to soothe a savage boss, the study points out: "It is both interesting and ironic to note that such flattery, although perhaps affirming to the ego, may contribute to the incompetent power holder's ultimate demise — by causing the power holder to lose touch with reality," the study concludes.

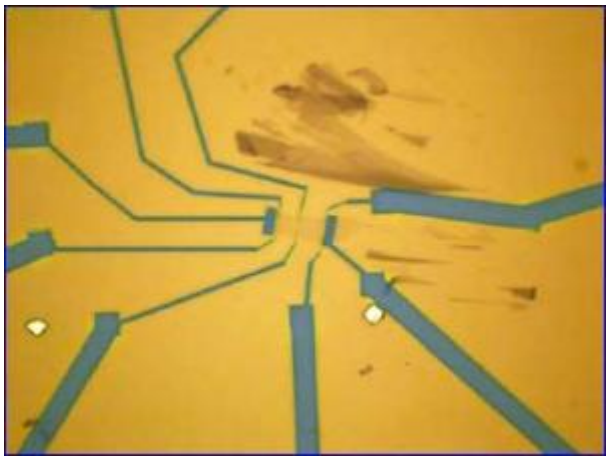
Journal reference:

1. Nathanael J. Fast, Serena Chen. **When the Boss Feels Inadequate: Power, Incompetence, and Aggression**. *Psychological Science*, 2009; DOI: 10.1111/j.1467-9280.2009.02452.x

Adapted from materials provided by University of California - Berkeley.

http://www.sciencedaily.com/releases/2009/10/091014102209.htm#

Interactions Between Massless Particles May Lead To Speedy, Powerful Electronic Devices



Graphene sample with electrodes, fabricated using electron beam lithography. (Credit: Adina Luican)

ScienceDaily (Oct. 15, 2009) — Rutgers researchers have discovered novel electronic properties in two-dimensional sheets of carbon atoms called graphene that could one day be the heart of speedy and powerful electronic devices.

The new findings, previously considered possible by physicists but only now being seen in the laboratory, show that electrons in graphene can interact strongly with each other. The behavior is similar to superconductivity observed in some metals and complex materials, marked by the flow of electric current with no resistance and other unusual but potentially useful properties. In graphene, this behavior results in a new liquid-like phase of matter consisting of fractionally charged quasi-particles, in which charge is transported with no dissipation.

In a paper issued online by the journal *Nature* and slated for print publication in the coming weeks, physics professor Eva Andrei and her Rutgers colleagues note that the strong interaction between electrons, also called correlated behavior, had not been observed in graphene in spite of many attempts to coax it out. This led some scientists to question whether correlated behavior could even be possible in graphene, where the electrons are massless (ultra-relativistic) particles like photons and neutrinos. In most materials, electrons are particles that have mass.

"Our work demonstrated that earlier failures to observe correlated behavior were not due to the physical nature of graphene," said Eva Andrei, physics professor in the Rutgers School of Arts and Sciences. "Rather, it was because of interference from the material which supported graphene samples and the type of electrical probes used to study it."

This finding should encourage scientists to further pursue graphene and related materials for future electronic applications, including replacements for today's silicon-based semiconductor materials. Industry experts expect silicon technology to reach fundamental performance limits in a little more than a decade.

The Rutgers physicists further describe how they observed the collective behavior of the ultra-relativistic charge carriers in graphene through a phenomenon known as the fractional quantum Hall effect (FQHE). The FQHE is seen when charge carriers are confined to moving in a two-dimensional plane and are subject to a perpendicular magnetic field. When interactions between these charge carriers are sufficiently strong they form new quasi-particles with a fraction of an electron's elementary charge. The FHQE is the quintessential signature of strongly correlated behavior among charge-carrying particles in two dimensions.

The FHQE is known to exist in semiconductor-based, two-dimensional electron systems, where the electrons are massive particles that obey conventional dynamics versus the relativistic dynamics of massless particles. However, it was not obvious until now that ultra-relativistic electrons in graphene would be capable of exhibiting collective phenomena that give rise to the FHQE. The Rutgers physicists were surprised that the FHQE in graphene is even more robust than in standard semiconductors.

Scientists make graphene patches by rubbing graphite – the same material in ordinary pencil lead – onto a silicon wafer, which is a thin slice of silicon crystal used to make computer chips. Then they run electrical pathways to the graphene patches using ordinary integrated circuit fabrication techniques. While scientists were able to investigate many properties of the resulting graphene electronic device, they were not able to induce the sought-after fractional quantum Hall effect.

Andrei and her group proposed that impurities or irregularities in the thin layer of silicon dioxide underlying the graphene were preventing the scientists from achieving the exacting conditions they needed. Postdoctoral fellow Xu Du and undergraduate student Anthony Barker were able to show that etching out several layers of silicon dioxide below the graphene patches essentially leaves an intact graphene strip suspended in mid-air by the electrodes. This enabled the group to demonstrate that the carriers in suspended graphene essentially propagate ballistically without scattering from impurities. Another crucial step was to design and fabricate a probe geometry that did not interfere with measurements as Andrei suspected earlier ones were doing. These proved decisive steps to observing the correlated behavior in graphene.

In the past few months, other academic and corporate research groups have reported streamlined graphene production techniques, which will propel further research and potential applications.

Andrei's collaborators were Xu Du, now on faculty at Stony Brook University; Ivan Skachko, a post-doctoral fellow; Fabian Duerr, a master's student; and Adina Luican, a doctoral student. The research was supported by the Department of Energy, the National Science Foundation, the Institute for Complex Adaptive Matter and Alcatel-Lucent.

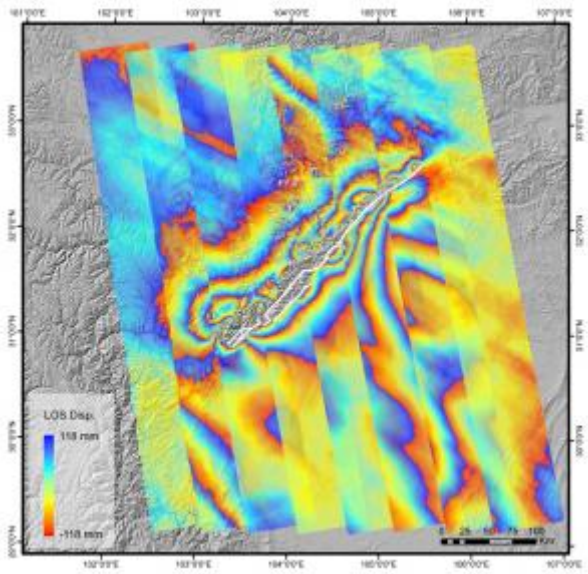
Journal reference:

1. Xu Du, Ivan Skachko, Fabian Duerr, Adina Luican & Eva Y. Andrei. **Fractional quantum Hall effect and insulating phase of Dirac electrons in graphene**. *Nature*, 2009; DOI: 10.1038/nature08522

Adapted from materials provided by Rutgers University.

http://www.sciencedaily.com/releases/2009/10/091014144722.htm#

Satellite Data Look Behind The Scenes Of Deadly Earthquake



An ALOS Phased Array type L-band Synthetic Aperture Radar (PALSAR) interferogram that shows the surface deformation associated with the 2008 Wenchuan earthquake. The white curves depict traces of fault surface breaks. ESA is supporting ALOS (Advanced Land Observing Satellite) as a 'Third Party Mission', which means ESA utilizes its multi-mission European ground infrastructure and expertise to acquire, process and distribute data from the satellite to its wide user community. (Credit: Jianbao Sun; ALOS data: JAXA)

ScienceDaily (Oct. 15, 2009) — Using satellite radar data and GPS measurements, Chinese researchers have explained the exceptional geological events leading to the 2008 Wenchuan Earthquake that killed nearly 90,000 people in China's Sichuan Province.

"One of the very fundamental issues for understanding an earthquake is to know how the rupture is distributed on the fault plane, which is directly related to the amount of ground shaking and the damage it could cause at the surface," said Dr Jianbao Sun of the Institute of Geology, China Earthquake Administration (IGCEA).

To learn this, Sun and Prof. Zhengkang Shen of IGCEA and Peking University's Department of Geophysics, and collaborators acquired two kinds of satellite radar data: Advanced Synthetic Aperture Radar (ASAR) data in C-band from ESA's Envisat satellite and Phased Array type L-band Synthetic Aperture Radar (PALSAR) data from Japan's ALOS satellite.

Applying a technique called SAR Interferometry (InSAR) on the data, the researchers produced a set of 'interferogram' images covering the entire coseismic rupture region and its vicinity. This interferometric map revealed the amount and scope of surface deformation produced by the earthquake.

"This is perhaps the very first time people have seen the complete deformation field produced by an earthquake on such a large scale," Sun said.

InSAR involves combining two or more radar images of the same ground location in such a way that very precise measurements – down to a scale of a few centimetres – can be made of any ground motion taking place between image acquisitions. Coloured interferograms usually appear as rainbow fringe patterns.

The researchers combined these SAR satellite data with GPS measurements and developed a model that shows fault geometry and rupture distribution of the Longmen Shan fault zone, a series of parallel faults

that run for about 400 km from southwest to northeast in the region. The earthquake that struck on 12 May last year produced a 240-km-long rupture along the Beichuan fault and a 72-km-long rupture along part of the Pengguan fault.

Studying the model, they were able to determine that the fault plane dips considerably to the northwest in the zone's southwest area and then rises up to a nearly vertical position in the zone's northeast.

They also learned that the direction of the motion along the fault changed, going from a thrust where upper layer rocks were pushed up and lower layer rocks pulled down, to a 'dextral faulting', where two parts of Earth's plates slide past each other. About a 7-metre slip, the greatest along the rupture, was detected on the Beichuan fault near Beichuan City, which was destroyed completely by the quake and suffered the highest number of casualties.

Another major finding was that the fault junctions (solid rock barriers that stop a quake from propagating from one segment to another), beneath the hardest-hit cities of Yingxiu, Beichuan and Nanba, failed to withstand the extraordinary energy released along the fault.

"These fault junctions are barriers, whose failures in a single event allowed the rupture to cascade through several fault segments, resulting in a major 7.9-earthquake," Shen explained. "Earthquakes across fault segments like this are estimated to happen about every 4000 years."

These new results were published this month in the journal Nature Geoscience, part of Nature magazine.

Following the quake, Sun and Shen worked closely with the 'Dragon 2' programme to coordinate SAR coverage of the seismic area. Dragon 2 is a joint undertaking between ESA and China's Ministry of Science and Technology that encourages scientists to use satellite data to monitor and understand environmental phenomena in China.

"The resulting Envisat SAR data acquired along an important track close to the epicentre turned out to be vital in constraining the southern part of the deformation field and helping explain the fault geometry and rupture distribution of the Pengguan fault, which would be difficult to resolve otherwise," Shen said.

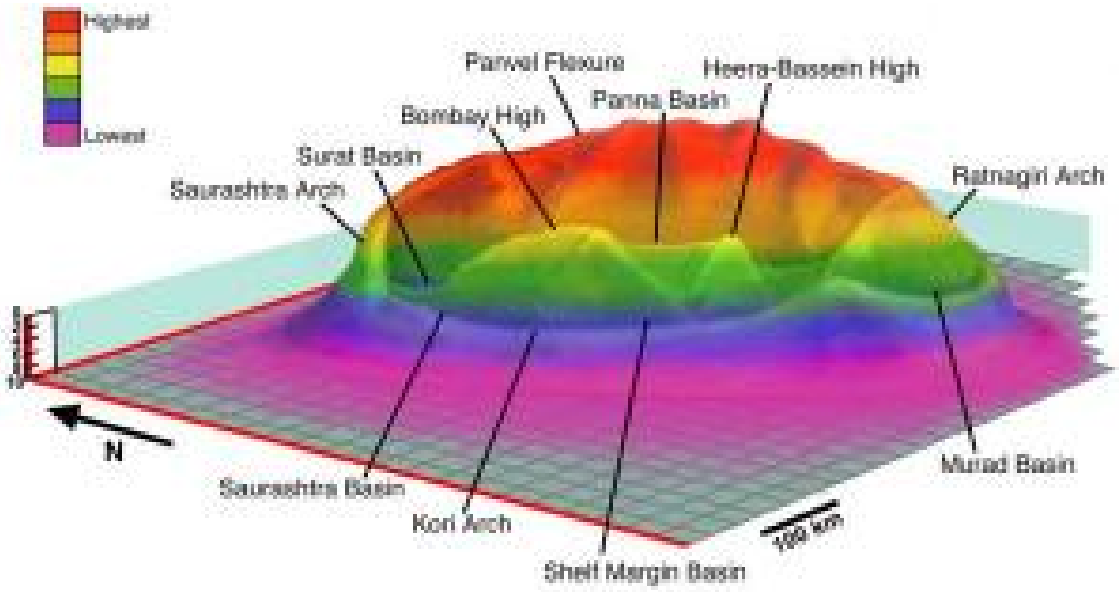
The scientists also hope the data will help to assess earthquake potential in the future.

"Under the coordination of Dragon 2, the SAR data acquired during this period will be used, along with GPS measurements, to reveal geophysical processes within the Longmen Shan fault zone and the lower crust and upper mantle, which will help us understand the earthquake and faulting mechanisms and hopefully shed light on future seismic risks in this area."

Adapted from materials provided by European Space Agency.

http://www.sciencedaily.com/releases/2009/10/091015094337.htm#

Giant Impact Near India -- Not Mexico -- May Have Doomed Dinosaurs



Three-dimensional reconstruction of the submerged Shiva crater (~500 km diameter) at the Mumbai Offshore Basin, western shelf of India from different cross-sectional and geophysical data. The overlying 4.3-mile-tick Cenozoic strata and water column were removed to show the morphology of the crater. (Credit: Image courtesy of Geological Society Of America)

ScienceDaily (Oct. 15, 2009) — A mysterious basin off the coast of India could be the largest, multi-ringed impact crater the world has ever seen. And if a new study is right, it may have been responsible for killing the dinosaurs off 65 million years ago.

Sankar Chatterjee of Texas Tech University and a team of researchers took a close look at the massive Shiva basin, a submerged depression west of India that is intensely mined for its oil and gas resources. Some complex craters are among the most productive hydrocarbon sites on the planet. Chatterjee will present his research at this month's Annual Meeting of the Geological Society of America in Portland, Oregon.

“If we are right, this is the largest crater known on our planet,” Chatterjee said. “A bolide of this size, perhaps 40 kilometers (25 miles) in diameter creates its own tectonics.”

By contrast, the object that struck the Yucatan Peninsula, and is commonly thought to have killed the dinosaurs was between 8 and 10 kilometers (5 and 6.2 miles) wide.

It's hard to imagine such a cataclysm. But if the team is right, the Shiva impact vaporized Earth's crust at the point of collision, leaving nothing but ultra-hot mantle material to well up in its place. It is likely that the impact enhanced the nearby Deccan Traps volcanic eruptions that covered much of western India. What's more, the impact broke the Seychelles islands off of the Indian tectonic plate, and sent them drifting toward Africa.

The geological evidence is dramatic. Shiva's outer rim forms a rough, faulted ring some 500 kilometers in diameter, encircling the central peak, known as the Bombay High, which would be 3 miles tall from the ocean floor (about the height of Mount McKinley). Most of the crater lies submerged on India's continental shelf, but where it does come ashore it is marked by tall cliffs, active faults and hot springs. The impact appears to have sheared or destroyed much of the 30-mile-thick granite layer in the western coast of India.

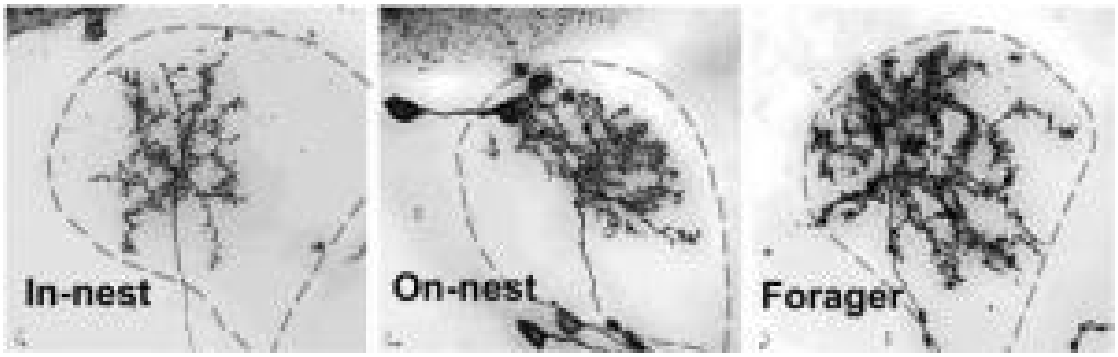
The team hopes to go India later this year to examine rocks drill from the center of the putative crater for clues that would prove the strange basin was formed by a gigantic impact.

"Rocks from the bottom of the crater will tell us the telltale sign of the impact event from shattered and melted target rocks. And we want to see if there are breccias, shocked quartz, and an iridium anomaly," Chatterjee said. Asteroids are rich in iridium, and such anomalies are thought of as the fingerprint of an impact.

Adapted from materials provided by Geological Society Of America.

http://www.sciencedaily.com/releases/2009/10/091015102246.htm#

Tiny But Adaptable Wasp Brains Show Ability To Alter Their Architecture



Photographs of brain neuron dendrite branches from paper wasps (Polybia aequatorialis). Typical neurons from each of the three main behavioral classes of workers are shown. Note the increasing dendrite branch length and complexity going from in-nest to foraging workers. The neurons were made visible using a technique called Golgi staining, which makes all of the complex branches of some neurons visible against a transparent background. The dashed outlines indicate the border of the brain region where these neurons' dendrites branch. This is where the neurons connect and receive information from other areas of the brain. (Credit: Courtesy of Sean O'Donnell / University of Washington)

ScienceDaily (Oct. 15, 2009) — For an animal that has a brain about the size of two grains of sand, a lot of plasticity seems to be packed into the head of the tropical paper wasp *Polybia aequatorialis*.

Researchers from the universities of Washington and Texas have found that the brain architecture of these wasps undergoes dramatic changes as they cycle through a sequence of specialized jobs during their lives. The scientists previously had discovered that parts of the brains of this wasp species enlarged as the animal engage in more complex tasks.

The new work describes how this happens as dendrites, or extensions from individual neurons, reach out to receive information from other brain cells and form a dense network of connections. These networks help the wasps integrate information from visual, olfactory and touch sensory systems.

"I was astounded when we found that some of the individual neurons had dendrites that were seven to eight millimeters long in a brain that is roughly the size of two grains of sand. That's packing a huge amount of computing power in a small amount of space," said Sean O'Donnell, a UW associate professor of psychology and co-author of the new study. "These animals live in a complicated world and individuals face challenges that require a lot of brain power."

Co-authors of the paper are Theresa Jones, a UT associate professor of psychology, and Nicole Donlan, a UT research associate.

"The architecture of the wasp brain is different from that in humans," said O'Donnell. "They evolved independently from us, but some of the problems they face are similar to ours because both of us are social animals. This gives researchers the opportunity to ask if there are similarities or differences in brain plasticity for social animals."

P. aequatorialis wasps live in colonies of 2,000 or more adults. The adult workers perform different jobs for the colony in a developmental sequence that is accompanied by behavioral changes as they age. They begin by performing tasks in the dim interior of the nest before moving outside where they work on the exterior of the nest. Finally, they leave the nest to forage for food and building materials for the colony and then find their way back to the nest. Each job change is accompanied by an increase in the complexity of the tasks.

The researchers found the biggest changes in brain neuron architecture occurred when the wasps shifted from working on the nest exterior to foraging.

"The forager brain is quite different. The neuron dendrite network is more complex and dense than for other job classes," said O'Donnell. "These brain changes seem to be a semipermanent way for the animals to deal with the cognitive challenges they are facing. Our earlier work showed that once workers change jobs they don't go back to previous tasks. It is plausible that they do not have the cognitive ability to do the old tasks."

He said the change in environment encountered by wasps as they develop is comparable to what people face over the course of a day. People wake up in the familiar environment of the home and family, but once they leave for home or school they face the tasks of driving a car or taking the bus in more complex environments where there are many unfamiliar people, traffic and a lot more stimulation.

Exactly what spurs the changes of the dendrite branches isn't known yet, but the researchers suspect increasing light levels outside the nest may trigger the some of changes in brain architecture. In a part of the brain that processes visual input, the neuron branches actually shrank during the on-nest phase of life, only to rebound to even greater size during the foraging phase. This shrinkage, or "pruning" of neuron branches may prepare the brain for later neuron growth to even larger sizes, perhaps also allowing new connections to form. These changes allow the wasps to function in a new environment that has different cognitive challenges.

The research was funded by the National Science Foundation and published in the online edition of the journal *Neurobiology of Learning and Memory*.

Journal reference:

1. Theresa A. Jones, Nicole A. Donlan, Sean O'Donnell. **Growth and pruning of mushroom body Kenyon cell dendrites during worker behavioral development in the paper wasp, Polybia aequatorialis (Hymenoptera: Vespidae)**. *Neurobiology of Learning and Memory*, 2009; 92 (4): 485 DOI: 10.1016/j.nlm.2009.06.007

Adapted from materials provided by University of Washington.

http://www.sciencedaily.com/releases/2009/10/091014144738.htm#

China's Acid Rain Control Strategy Offset By Increased Nitrogen Oxide Air Pollution

A new study urges China to take steps to reduce nitrogen emissions, which contribute to acid rain that can damage soil and plants like these trees. (Credit: Wikimedia Commons)

ScienceDaily (Oct. 15, 2009) — Scientists are reporting the first evidence that China's sharp focus on reducing widespread damage to soil by acid rain by restricting sulfur dioxide air pollution may have an unexpected consequence: Gains from that pollution control program will be largely offset by increases in nitrogen emissions, which the country's current policy largely overlooks.

The study, which suggests that government officials adapt to a more comprehensive pollution control strategy that includes a new emphasis on cutting nitrogen emissions, is scheduled for the Nov. 1 issue of ACS' Environmental Science & Technology.

Lei Duan and colleagues explain that China is trying to stop soil acidification by reducing sulfur dioxide pollution from electric power plant smokestacks. Those emissions cause acid rain, which in turn has made vast areas of farmland more acid and less productive. China's is striving for a 10 percent reduction in sulfur dioxide emissions by 2010, a policy that seems have had only a limited impact so far, the researchers say. However, China has paid little attention to pollution from nitrogen oxides, which also contribute to acid rain and soil contamination.

The scientists' analysis found that the benefits of sulfur dioxide reductions will almost be offset by increased nitrogen emissions. To control this problem, "China needs a multipollutant control strategy that integrates measures to reduce sulfur, nitrogen, and particulate matter," the article notes.

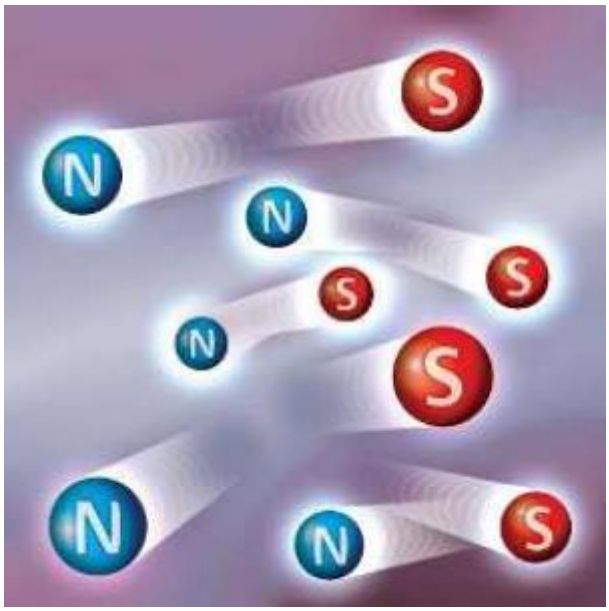
Journal reference:

1. Yu Zhao, Lei Duan, Jia Xing, Thorjorn Larssen, Chris P. Nielsen and Jiming Hao. **Soil Acidification in China: Is Controlling SO2 Emissions Enough?** *Environmental Science & Technology*, Nov. 1, 2009 [link]

Adapted from materials provided by American Chemical Society, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/10/091014122054.htm#

'Magnetricity' Observed And Measured For First Time



The magnetic equivalent of electricity in a 'spin ice' material: atom sized north and south poles in spin ice drift in opposite directions when a magnetic field is applied. (Credit: UCL/LCN)

ScienceDaily (Oct. 15, 2009) — A magnetic charge can behave and interact just like an electric charge in some materials, according to new research led by the London Centre for Nanotechnology (LCN).

The findings could lead to a reassessment of current magnetism theories, as well as significant technological advances.

The research, published in *Nature*, proves the existence of atom-sized 'magnetic charges' that behave and interact just like more familiar electric charges. It also demonstrates a perfect symmetry between electricity and magnetism – a phenomenon dubbed 'magnetricity' by the authors from the LCN and the Science and Technology Facility Council's ISIS Neutron and Muon Source.

In order to prove experimentally the existence of magnetic current for the first time, the team mapped Onsager's 1934 theory of the movement of ions in water onto magnetic currents in a material called spin ice. They then tested the theory by applying a magnetic field to a spin ice sample at a very low temperature and observing the process using muons at ISIS.

The experiment allowed the team to detect magnetic charges in the spin ice ($Dy_2Ti_2O_7$), to measure their currents, and to determine the elementary unit of the magnetic charge in the material. The monopoles they observed arise as disturbances of the magnetic state of the spin ice, and can exist only inside the material.

Professor Steve Bramwell, LCN co-author of the paper, said: "Magnetic monopoles were first predicted to exist in 1931, but despite many searches, they have never yet been observed as freely roaming elementary particles. These monopoles do at least exist within the spin ice sample, but not outside.

"It is not often in the field of physics you get the chance to ask 'How do you measure something?' and then go on to prove a theory unequivocally. This is a very important step to establish that magnetic charge can flow like electric charge. It is in the early stages, but who knows what the applications of magnetricity could be in 100 years time."

Professor Keith Mason, Chief Executive of STFC said: "The unequivocal proof that magnetic charge is conducted in spin ice adds significantly to our understanding of electromagnetism. Whilst we will have to wait to see what applications magnetricity will find in technology, this research shows that curiosity driven research will always have the potential to make an impact on the way we live and work. Advanced materials research depends greatly on having access to central research labs like ISIS allowing the UK science community to flourish and make exciting discoveries like this."

Dr Sean Giblin, instrument scientist at ISIS and co-author of the paper, added: "The results were astounding, using muons at ISIS we are finally able to confirm that magnetic charge really is conducted through certain materials at certain temperatures – just like the way ions conduct electricity in water."

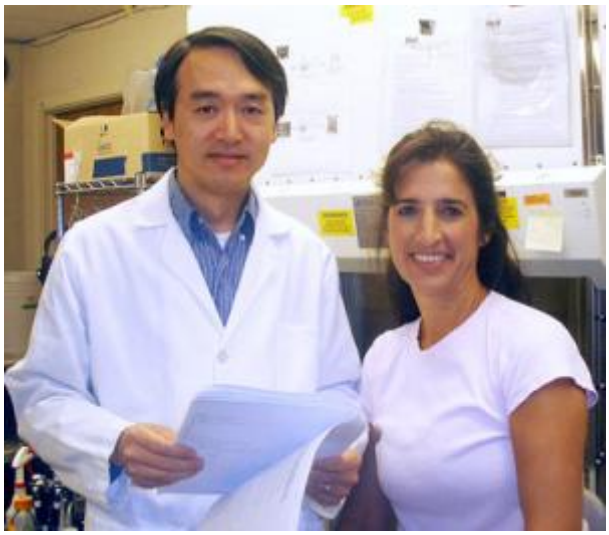
Journal reference:

1. S. T. Bramwell, S. R. Giblin, S. Calder, R. Aldus, D. Prabhakaran & T. Fennell. **Measurement of the charge and current of magnetic monopoles in spin ice**. *Nature*, 2009; 461 (7266): 956 DOI: 10.1038/nature08500

Adapted from materials provided by University College London.

http://www.sciencedaily.com/releases/2009/10/091015085916.htm#

Earlier Flu Viruses Provided Some Immunity To Current H1N1 Influenza, Study Shows



Researchers Zheng Xing, left, and Carol Cardona have identified a group of immunologically important sites on the virus that are also present in seasonal flu viruses that have been circulating for years. (Credit: UC Davis photo)

ScienceDaily (Oct. 15, 2009) — University of California, Davis, researchers studying the 2009 H1N1 influenza virus, formerly referred to as "swine flu," have identified a group of immunologically important sites on the virus that are also present in seasonal flu viruses that have been circulating for years. These molecular sites appear to result in some level of immunity to the new virus in people who were exposed to the earlier influenza viruses.

More than a dozen structural sites, or epitopes, in the virus may explain why many people over the age of 60, who were likely exposed to similar viruses earlier in life, carry antibodies or other type of immunity against the new virus, immune responses that could be attributed to earlier flu exposure and vaccinations.

Researchers Zheng Xing, a project scientist, and Carol Cardona, a veterinarian and Cooperative Extension specialist, both of the UC Davis School of Veterinary Medicine, report their findings online in the journal of *Emerging Infectious Diseases*. The report will appear in the November print edition of the journal, published by the Centers for Disease Control and Prevention.

"These findings indicate that human populations may have some level of existing immunity to the pandemic H1N1 influenza and may explain why the 2009 H1N1-related symptoms have been generally mild," Cardona said.

"Our hypothesis, based on the application of data collected by other researchers, suggests that cell-mediated immunity, as opposed to antibody-mediated immunity, may play a key role in lowering the disease-causing ability, or pathogenicity, of the 2009 H1N1 influenza," Xing added.

He noted that immune responses based on production of specific cells, known as cytotoxic T-cells, have been largely neglected in evaluating the efficacy of flu vaccinations. In this type of immune response, the T-cells and the antiviral chemicals that they secrete attack the invading viruses.

About 2009 H1N1 influenza

The 2009 H1N1 virus is a new strain of influenza that first appeared in the United States in April 2009. Early on, it was referred to as "swine flu" because it was genetically similar to influenza viruses that

normally occur in pigs in North America. Further study, however, revealed that the virus actually included genes from viruses found in birds and humans, as well as pigs.

At first, this H1N1 influenza virus apparently caused a high number of deaths among patients in Mexico and among people with certain pre-existing medical conditions. But as it has progressed to become a pandemic or geographically widespread virus, H1N1 has caused relatively mild symptoms and few deaths.

One hallmark of this new influenza virus, according to the Centers for Disease Control and Prevention, has been the presence of pre-existing antibodies against the virus in about one third of H1N1 2009 patients over the age of 60, a phenomenon that suggested some levels of immunity may have existed to the new pandemic H1N1 virus. The UC Davis research

To probe this phenomenon, the UC Davis researchers surveyed data from earlier studies of epitopes known to exist on different strains of seasonal influenza A. They found that these epitopes, present in other seasonal H1N1 influenza strains around the world and capable of triggering an immune response, were also present in the strains of H1N1 2009 that were found in California, Texas and New York.

Interestingly, although previous H1N1 viruses seem to have produced a protective antibody response in exposed people, these antibodies largely did not provide cross-protection for individuals infected with the H1N1 2009 strain of influenza. The researchers theorize that, rather than stimulating protective antibodies, the epitopes of the new H1N1 2009 virus produced an immune response by triggering production of cytotoxic T-cells, which boost a person's immune defenses by killing infected cells and attacking the invading viruses.

Humans can mount two types of immune responses. One type is produced when the invading virus triggers production of protective antibodies that circulate in the bloodstream, and the other type, described above, is known as a cell-mediated immune response. It is produced when the invading virus triggers the activation of cytotoxic T-cells, a process that helps clear the virus from the body. Evidence from earlier studies suggests that cytotoxic T-cell immune immunity can be caused by either an active viral infection or by vaccination against such a virus.

Implications for avian influenza

The researchers note that about 80 percent of the epitopes found in seasonal influenza and flu vaccine viruses are also present in the highly pathogenic H5N1, or avian influenza, virus. They suggest that these epitopes may have protected some individuals infected with the highly pathogenic H5N1 virus through cytotoxic T-cell immunity.

However, the H5N1 virus rapidly reproduces itself and spreads so quickly within vital organs that the body may not be able to launch protective immunity, thus accounting for the high fatality rate of avian influenza.

Furthermore, only a fraction of the human population can recognize the specific epitopes necessary to cause the appropriate protective immune response, which may explain why the H1N1 2009 virus, as well as avian influenza, may vary in severity from person to person.

Xing and Cardona propose that immunity acquired from seasonal influenza or flu vaccinations may provide partial protection for patients infected with the avian influenza virus due to the shared epitopes essential for cytotoxic T-cell immunity.

This is supported by statistics from the World Health Organization indicating that there have been fewer avian influenza infections in people 40 years and older than there were in people under that age, and that

the fatality rate of avian influenza was just 32 percent in the older age group but 59 percent in the younger group.

The researchers, therefore, suggest that repeated exposure to seasonal influenza viruses or flu vaccinations may have resulted in cytotoxic T-cell immunity to avian influenza, and that the same type of immunity may also have developed in people exposed to the H1N1 virus.

Funding for this study was provided by grants from the Department of Homeland Security's National Center for Foreign Animal and Zoonotic Disease Defense, and by the UC Davis Center for California Food Animal Health.

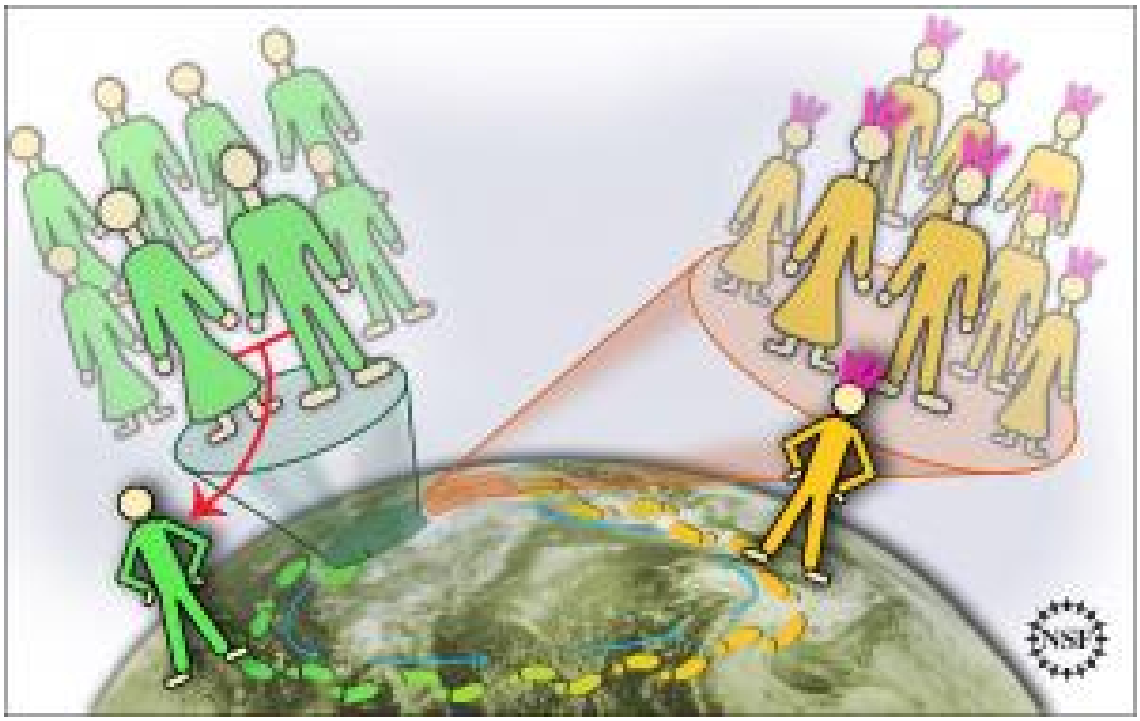
Journal reference:

1. Z. Xing and C.J. Cardona. **Preexisting Immunity to Pandemic (H1N1) 2009**. *Emerging Infectious Diseases*, 2009; DOI: 10.3201/eid1511.090685

Adapted from materials provided by University of California - Davis.

http://www.sciencedaily.com/releases/2009/10/091014144736.htm#

Culture Is More Important Than Genes To Altruistic Behavior In Large-scale Societies



In this schematic representation, garb is a proxy for social behavior. Researchers have found that in groups with diasporas, behavior is not necessarily genetically handed down, but rather it is something culturally absorbed. Immigrants to a new culture tend to "do as Romans do" after assimilating. (Credit: Zina Deretsky, National Science Foundation)

ScienceDaily (Oct. 15, 2009) — Socially learned behavior and belief are much better candidates than genetics to explain the self-sacrificing behavior we see among strangers in societies, from soldiers to blood donors to those who contribute to food banks.

This is the conclusion of a study by Adrian V. Bell and colleagues from the University of California Davis in the Oct. 12 edition of *Proceedings of the National Academy of Sciences*.

Altruism has long been a subject of interest to evolutionary social scientists. Altruism presents them with a difficult line to argue: behaviors that help unrelated people while being costly to the individual and creating a risk for genetic descendants could not likely be favored by evolution: at least by common evolutionary arguments.

The researchers used a mathematical equation, called the Price equation, that describes the conditions for altruism to evolve. This equation motivated the researchers to compare the genetic and the cultural differentiation between neighboring social groups. Using previously calculated estimates of genetic differences, they used the World Values Survey (whose questions are likely to be heavily influenced by culture in a large number of countries) as a source of data to compute the cultural differentiation between the same neighboring groups. When compared they found that the role of culture had a much greater scope for explaining our pro-social behavior than genetics.

In applying their results to ancestral populations, the World Values Survey was less useful. But ancient cultural practices, such as exclusion from the marriage market, denial of the fruits of cooperative activities, banishment and execution happen now as they did then. These activities would have exerted strong selection against genes tending toward antisocial behavior, and presumably in favor of genes that

predisposed individuals toward being pro-social rather than anti-social. This would result in the gene-culture coevolution of human prosocial propensities.

Bell is currently continuing his research in Tonga, where he is planning through ethnography to estimate statistically what social learning behaviors people have in general that may explain the distribution of cultural beliefs across the Tongan Islands. He is developing a survey instrument that will help capture people's cultural beliefs and measure the effect of migration on the similarities and differences between populations.

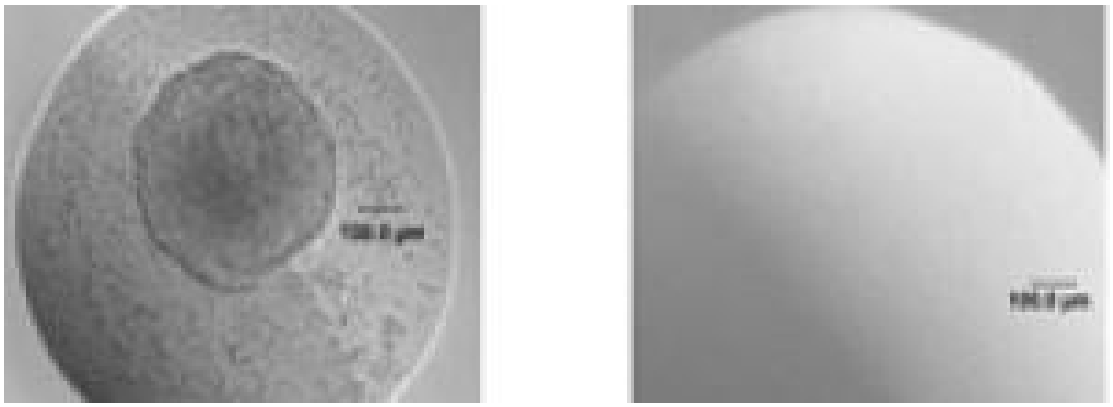
Journal reference:

1. Adrian V. Bell, Peter J. Richerson, and Richard McElreath. **Culture rather than genes provides greater scope for the evolution of large-scale human prosociality**. *Proceedings of the National Academy of Sciences*, 2009; DOI: 10.1073/pnas.0903232106

Adapted from materials provided by National Science Foundation.

http://www.sciencedaily.com/releases/2009/10/091012230456.htm#

Researchers Identify Workings Of L-form Bacteria



"Fried egg" L-form bacteria (left) versus "classic" bacteria. (Credit: Image courtesy of Johns Hopkins University Bloomberg School of Public Health)

ScienceDaily (Oct. 15, 2009) — Researchers at the Johns Hopkins Bloomberg School of Public Health have for the first time identified the genetic mechanisms involved in the formation and survival of L-form bacteria.

Their findings are described in a study published October 6 in the journal *PLoS ONE*.

L-form bacteria, which were first discovered in the 1930s, are morphological variants of classical bacteria that lack a cell wall. Under specialized growth conditions L-form bacteria are capable of forming a typical "fried egg" colony, which resembles a fried egg rather than the smooth appearance of a classic bacteria colony. These bacteria are believed to form in response to cell wall stress from certain antibiotics or the body's immune attack, and are suspected to be associated with antibiotic-resistant and persistent infections, as well as certain diseases."Our study provides new insight about the molecular basis of L-form bacteria, which was not previously known," said Ying Zhang, MD, PhD, senior author of the study and professor in the Bloomberg School's W. Harry Feinstone Department of Molecular Microbiology and Immunology. "These findings establish the framework for future research on how the identified genes and pathways interact leading to L-forms. They also have important implications for understanding the emergence of antibiotic resistance and bacterial persistence and for developing new drugs and vaccines targeting such persistent L-form bacteria for improved infection control."According to Zhang, L-form bacteria are difficult to study because their biology and the circumstances favoring the transition of classical bacteria into L-forms are not fully understood. In addition, specialized culture conditions are required for study. Most research on L-form bacteria was largely abandoned in the 1980s before modern molecular tools could be applied, but renewed interest in L-form bacteria has recently emerged.

For the study, Zhang and colleagues William Glover, a graduate student at the Bloomberg School, and Yanqin Yang, a senior program analyst with the Johns Hopkins School of Medicine, conducted a genome-wide gene expression analysis of L-form colonies of E. coli bacteria. They identified interesting stress genes and pathways that overlap with persisters and biofilm bacteria. Furthermore, the authors carried out mutant screens and identified three groups of mutants with varying degrees of defect in L-form bacteria formation or survival compared to classic colonies of E. coli. Mutants that showed complete lack of L-form growth belonged to pathways related to cell envelope stress, DNA repair, iron regulation and outer membrane biogenesis. The mutants could be restored to L-form growth by their respective wild type genes, confirming their role in L-form formation or survival.

Adapted from materials provided by Johns Hopkins University Bloomberg School of Public Health.

http://www.sciencedaily.com/releases/2009/10/091013105811.htm#

Noncorrectable Vision Problems Associated With Shorter Lifespan In Older Adults

ScienceDaily (Oct. 15, 2009) — Visual problems that cannot be corrected are associated with increased risk of death among individuals between the ages of 49 and 74, and all visual impairments may be associated with the risk of death in older adults, according to a report in the October issue of *Archives of Ophthalmology*, one of the JAMA/Archives journals.

Visual impairment has been associated with a higher risk of death as well as factors that may lead to increased death such as unintentional injury, depression, lower body mass index (BMI), reduced walking speeds, increased risk of falls, self-reported difficulty in physical activity, cardiovascular disease, dementia and cancer, according to background information in the article. "Correction for these 'confounders' has been found to attenuate the association between visual impairment and mortality, but the mechanisms behind the association between visual impairment and mortality remain to be determined."

Michael J. Karpa, M.B.B.S., B.Sc., of Westmead Millennium Institute, Sydney, Australia, and colleagues used data from the Blue Mountains Eye Study, which examined visual impairment in 3,654 participants age 49 and older between 1992 and 1994 and after five and ten years, to evaluate the relationship between visual impairment and death risk among older individuals.

At baseline, participants with noncorrectable visual impairment were more likely to be female, age 75 and older and underweight. Those with correctable visual impairment were more likely to be age 75 and older, but had no difference in proportions of women or BMI.

Thirteen years after baseline, 1,273 participants had died. A higher risk of dying was associated with noncorrectable visual impairment, with a stronger association for participants younger than age 75. The analyses "revealed greater effects of noncorrectable visual impairment on mortality risk, with both direct and indirect effects," the authors write. "Of mortality risk markers examined, only disability in walking demonstrated a significant indirect pathway for the link between visual impairment and mortality."

"In conclusion, this study reaffirms that visual impairment is associated with an increased risk of all-cause mortality," the authors write. "Disability in walking may represent an important indirect pathway to mortality for persons with visual impairment, and adjusting for this factor in statistical analysis may overadjust for the indirect effect of visual impairment on mortality risk. The impact of visual impairment on mortality may in fact be greater than that reported from previous studies that have used traditional statistical models."

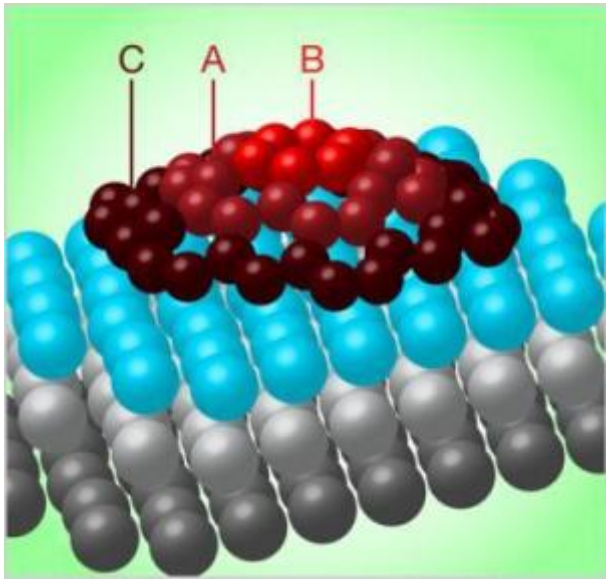
Journal reference:

1. Michael J. Karpa; Paul Mitchell; Ken Beath; Elena Rochtchina; Robert G. Cumming; Jie Jin Wang. **Direct and Indirect Effects of Visual Impairment on Mortality Risk in Older Persons: The Blue Mountains Eye Study**. *Arch Ophthalmol*, 2009; 127 (10): 1347-1353 [link]

Adapted from materials provided by JAMA and Archives Journals.

http://www.sciencedaily.com/releases/2009/10/091012230447.htm#

Growing Geodesic Carbon Nanodomes



Carbon atoms form dome structures on iridium substrates, en route to forming larger scale graphene sheets. (Credit: Image courtesy of Alan Stonebraker)

ScienceDaily (Oct. 15, 2009) — Researchers analyzing the assembly of graphene (sheets of carbon only one atom thick) on a surface of iridium have found that the sheets grow by first forming tiny carbon domes. The discovery offers new insight into the growth of graphene layers and points the way to possible methods for assembling components of graphene-based computer circuits.

Paolo Lacovig, Monica Pozzo, Dario Alfè, Paolo Vilmercati, Alessandro Baraldi, and Silvano Lizzit at institutions in Italy, the UK and USA report their discovery in a paper appearing October 12 in the journal *Physical Review Letters*.

The researchers' spectroscopic study suggests that graphene grows in the form of tiny islands built of concentric rings of carbon atoms. The islands are strongly bonded to the iridium surface at their perimeters, but are not bonded to the iridium at their centers, which causes them to bulge upward in the middle to form minuscule geodesic domes. By adjusting the conditions as the carbon is deposited on the iridium, the researchers could vary the size of the carbon domes from a few nanometers to hundreds of nanometers across.

Investigating the formation of graphene nanodomes helps physicists to understand and control the production of graphene sheets. In combination with methods for adjusting the conductivity of graphene and related materials, physicists hope to replace electronics made of silicon and metal with tiny, efficient carbon-based chips.

Jorge Sofo and Renee Diehl (Penn State University) highlight the graphene nanodome research in a Viewpoint in the October 12 issue of *Physics.*

Adapted from materials provided by American Physical Society, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/10/091012084212.htm#

Adults with autism 'cast adrift'

Adults with autism in England are often not being diagnosed or supported properly, MPs say.

The Commons' Public Accounts Committee said the lack of understanding about the condition among GPs and social care staff was a key problem.

But MPs also attacked the arrangements in place to oversee the transition from child to adult services which led to people being "cast adrift".

The government said a new strategy for autism would be published next year.

There are about 400,000 adults in the country with the condition, split evenly between those with a learning disability, sometimes known as low-functioning, and those without one, known as high functioning.

" **Adults with autism are being left to fend for themselves with all the consequences this has for their access to further education, benefits or employment and for their mental health** "
Edward Leigh, committee chairman

While children are often supported through the school system, adults require a very different network of help.

They will often need concerted and individual support across health, social care, housing, education and employment.

But the cross-party group of MPs said this was not happening.

They blamed the poor transitional services being run by local Connexions services, which provide integrated services for 16 to 24-year-olds.

Such services were often unaware of the needs of their clients, the report said.

There was also a basic lack of data on the number of adults needing help.

Just a fifth of local authorities and their NHS partners were aware of the numbers with low-functioning autism, while only 12% had details of those with the high-functioning form.

The MPs also identified a weakness in diagnostic services. It is estimated that GPs see two adult patients with undiagnosed autism in each six-month period, but previous research has shown eight in 10 GPs felt they needed extra training and guidance on the condition.

Less than a third of areas commissioned specialist diagnostic services to pick up those cases not identified in childhood, the report added.

Committee chairman Edward Leigh said: "Adults with autism are being left to fend for themselves with all the consequences this has for their access to further education, benefits or employment and for their mental health."

Discrimination

Mark Lever, chief executive of the National Autistic Society, said: "The government cannot possibly ignore the recommendations of this influential group of MPs.

"Adults with autism have been telling us for some time that they are frequently misunderstood and discriminated against, whether it's trying to get a diagnosis, a job or access to health and social care.

"Thousands are experiencing serious mental health difficulties as a result and just 15% are currently in full-time paid employment.

"This has profound consequences for individuals, families and the wider economy."

A Department of Health spokesperson said measures were lined up to improve services for people with autism, along with research into the prevalence of autism among adults.

"Together this will help create a new approach which directly reflects the needs of people with autism and their families and will drive up standards of services.

"We will consider the detailed recommendations and make our formal response in due course."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8305692.stm

Published: 2009/10/14 23:27:07 GMT

Complete retirement 'bad for you'

Giving up work completely on retirement could be bad for your health, US research suggests.

The study of 12,189 people found retirees who take on temporary or part-time work have fewer major diseases, and function better day to day.

The findings were significant even after considering people's physical and mental health before retirement.

The University of Maryland study appears in the Journal of Occupational Health Psychology.

The researchers examined data on 12,189 people, who were aged 51-61 at the beginning of the study.

" **All the evidence suggests that if your mental wellbeing is depleted it will affect you physically** "
Professor Cary Cooper University of Lancaster

The participants were interviewed every two years over a six-year period beginning in 1992 about their health, finances, employment history and work or retirement life.

The researchers registered only medical conditions which had been clinically diagnosed, and took account of factors such as sex, education level and financial wealth.

Mental health

The participants also completed a basic mental health questionnaire.

The findings showed that people who took on post-retirement jobs that were related to their previous careers reported better mental health than those who fully retired.

However, no similar boost to mental health was found in people who worked in jobs outside their career speciality after retirement.

The researchers believe this may be because retirees who take jobs not related to their career field may need to adapt to a different work environment and, therefore, become more stressed.

Also, the results showed that retirees with financial problems were more likely to work in a different field after they officially retire.

Temporary or part-time work after retirement was defined as bridge work.

Researcher Dr Mo Wang said: "Rather than wanting to work in a different field, they may have to work.

"In such situations, it's difficult for retirees to enjoy the benefits that come with bridge employment."

The researchers suggest that, when possible, retirees carefully consider their choice of post-retirement employment.

Dr Kenneth Shultz, who also worked on the study, said: "Choosing a suitable type of bridge employment will help retirees transition better into full retirement and in good physical and mental health."

Professor Cary Cooper, an occupational health psychologist at the University of Lancaster, said: "All the evidence suggests that if your mental wellbeing is depleted it will affect you physically.

"Conversely, if you are more positive mentally you are going to be much more robust and active.

"And if you continue working after retirement often your status remains similar to that you experienced during your career, and as a result your self-esteem and sense of wellbeing will be enhanced."

However, Professor Cooper said that sometimes making a clean break from a stressful job could be a good thing.

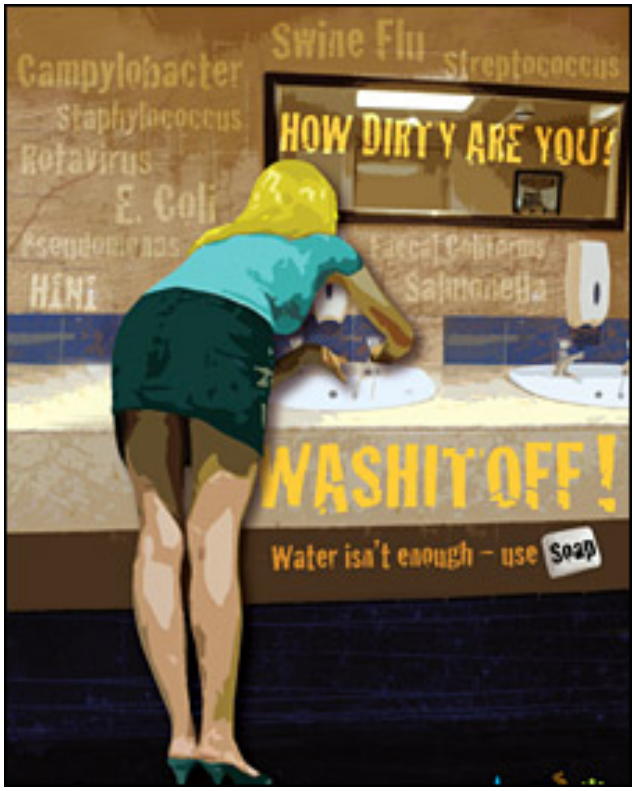
In that instance, he said, the key was to ensure that you had hobbies to keep you active.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8307750.stm

Published: 2009/10/14 17:43:21 GMT

Shame 'boosts hand-washing rate'

People are more likely to wash their hands when they have been shamed into it, research suggests.



A London School of Hygiene And Tropical Medicine team used sensors to examine the reactions to hygiene messages displayed in service station toilets.

The message which produced the highest rate of hand-washing was "Is the person next to you washing with soap?".

The American Journal of Public Health study stresses hand washing is the best way to stop the spread of disease.

It can combat the transmission of major global killers such as diarrhoeal disease and flu, as well as hospital-acquired infections such as Clostridium difficile.

However, researcher Robert Aunger said: "It's difficult to know what kind of message is most effective at changing this everyday behaviour, so it's important to experimentally test what works best in a real setting.

"That way you can save money and make sure your programme will be effective prior to rolling out any public health campaign at great expense."

Gender split

In total, 250,000 people were counted using the toilets and their use of soap was monitored by on-line sensors.

Only 32% of men washed their hands with soap. For women, the figure was nearly twice as high, at 64%.

A variety of messages, ranging from "water doesn't kill germs, soap does" to "don't be a dirty soap dodger", were flashed onto LED screens at the entrance of the toilets.

The effects of the messages on behaviour were measured.

The message "Is the person next to you washing with soap?" boosted rates of hand-washing with soap by 11% in women and 12% in men.

The researchers suggested people were most sensitive to the idea that others were watching their behaviour.

Mrs Gaby Judah, who led the study, said: "What other people think - what is deemed to be acceptable behaviour - is probably a key determinant in shaping behaviour.

"It was interesting to see that, for men, the more people there were in the toilet, the more likely they were to wash their hands with soap."

Dr Valerie Curtis, director of the London School's hygiene centre, said: "It is very embarrassing to be thought of as dirty by others, even by strangers.

"That's why we expected it to work, but not that it would be the best way of getting people to hand-wash."

There were differences in behaviour by gender, with women responding to reminders, while men tended to react best to messages that invoked disgust, for example "soap it off or eat it later".

The study is released on Global Hand-washing Day, designed to raise awareness of the fact that good hand hygiene can play a significant role in helping to cut disease.

Dr Curtis said: "Hand-washing is one of the most effective interventions in preventing disease, especially in developing countries where over 1.5m kids a year die from diarrhoeal disease.

"Hand-washing with soap could prevent half these deaths-saving a million lives a year."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8305670.stm

Published: 2009/10/14 23:41:22 GMT

The Song Decoders

By ROB WALKER

On first listen, some things grab you for their off-kilter novelty. Like the story of a company that has hired a bunch of "musicologists," who sit at computers and listen to songs, one at a time, rating them element by element, separating out what sometimes comes to hundreds of data points for a three-minute tune. The company, an Internet radio service called Pandora, is convinced that by pouring this information through a computer into an algorithm, it can guide you, the listener, to music that you like. The premise is that your favorite songs can be stripped to parts and reverse-engineered.

Some elements that these musicologists (who, really, are musicians with day jobs) codify are technical, like beats per minute, or the presence of parallel octaves or block chords. Someone taking apart Gnarls Barkley's "Crazy" documents the prevalence of harmony, chordal patterning, swung 16ths and the like. But their analysis goes beyond such objectively observable metrics. To what extent, on a scale of 1 to 5, does melody dominate the composition of "Hey Jude"? How "joyful" are the lyrics? How much does the music reflect a gospel influence? And how "busy" is Stan Getz's solo in his recording of "These Foolish Things"? How emotional? How "motion-inducing"? On the continuum of accessible to avant-garde, where does this particular Getz recording fall?

There are more questions for every voice, every instrument, every intrinsic element of the music. And there are always answers, specific numerical ones. It can take 20 minutes to amass the data for a single tune. This has been done for more than 700,000 songs, by 80,000 artists. "The Music Genome Project," as this undertaking is called, is the back end of Pandora.

Pandora was founded in Oakland a decade ago, and for much of the intervening time has lived a precarious existence (the founders spent one three-year stretch working without salaries while they scrambled for investors). But thanks in part to the popularity of the Pandora iPhone app, its fortunes have lately improved. It has attracted 35 million listeners and claims about 65,000 new sign-ups a day (more than half from mobile-device users). About 75 companies are working Pandora into a variety of gizmos and gadgets and Web platforms. The business model relies largely on advertising, and its founder, Tim Westergren, says Pandora will very likely turn its first profit in the fourth quarter of this year.

However things play out for Pandora as a business, its approach is worth understanding if you're interested in the future of listening. It's the "social" theories of music-liking that get most of the attention these days: systems that connect you with friends with similar tastes, or that rely on "collaborative filtering" strategies that cross-match your music-consumption habits with those of like-minded strangers. These popular approaches marginalize traditional gatekeepers; instead of trusting the talent scout, the radio programmer or the music critic, you trust your friends (actual or virtual), or maybe just "the crowd." Pandora's approach more or less ignores the crowd. It is indifferent to the possibility that any given piece of music in its system might become a hit. The idea is to figure out what you like, not what a market might like. More interesting, the idea is that the taste of your cool friends, your peers, the traditional

music critics, big-label talent scouts and the latest influential music blog are all equally irrelevant. That's all cultural information, not musical information. And theoretically at least, Pandora's approach distances music-liking from the cultural information that generally attaches to it.

Which raises interesting questions. Do you really love listening to the latest Jack White project? Do you really hate the sound of Britney Spears? Or are your music-consumption habits, in fact, not merely guided but partly shaped by the cultural information that Pandora largely screens out — like what's considered awesome (or insufferable) by your peers, or by music tastemakers, or by anybody else? Is it really possible to separate musical taste from such social factors, online or off, and make it purely about the raw stuff of the music itself?

Tim Westergren is a familiar type: the musician who was not as successful as he might have been and concluded that the system is flawed because it underrates talented people who deserve a bigger audience. He played in bands that never quite took off and for a time worked as a film-score composer. It was that job — a "methodical, calculating form of composition," he says — that led him to dwell on the way music works and forced him to decode the individual taste of whatever director had hired him. He says he was getting pretty good at this. "So I thought I'd try to codify it," he says.

Rangy and bright-eyed at 43, Westergren comes off more like the head of a fan club than an erstwhile rock star. The only time he seems annoyed is when he's talking about how some unpopular musicians are unfairly overlooked — or how some popular ones are unfairly maligned. Pandora is, in effect, a response to both of those problems.

He founded his company with two tech-and-business-savvy pals in the start-up-friendly year of 1999. Back then it was called Savage Beast Technologies, and the early (not exactly farsighted) business model involved listening kiosks in record stores. Eventually the company got new financing, beefed up the executive team and landed on using its genome as the engine of an Internet radio service "that plays only music you like."

Pandora went online in 2005 and looked much as it does today. When you arrive at the site, you're invited to type in the name of an artist, or a specific song. Let's say you type in "These Foolish Things," by Stan Getz. The Pandora genome looks for something it judges to have a similar infrastructure — like, when I tried recently, "I Don't Know Why," by Don Byas.

This is Pandora's first guess at a song you will like, based on upon its analysis of the song you picked. You can simply let it play; click a "thumbs down" icon to try another song; or give it a thumbs up if you want Pandora's algorithm to know this was a particularly good choice. You can also click to learn why the song was chosen: you don't get a full breakdown but rather a kind of thumbnail summation. In this case the Byas tune was chosen "because it features swing influences, a leisurely tempo, a tenor-sax head, a tenor-sax solo and acoustic-piano accompaniment."

If you click a lot, the idea is that Pandora's algorithm adjusts, squaring your taste with the genome's database. There are other ways to tweak things — adding more songs to a "station" for the system to scrutinize, creating different stations based on other artists or songs, telling the service not to play a given song for a while. (This happens on a station-specific basis: whatever preferences I express on a station based on "My Sharona" would not affect the songs on, say, my Yanni station.)

Relying on advertising revenue — visual ads on its site as well as occasional audio ads interspersed between songs on your stations — means that much depends on Pandora's genome doing a good-enough job to keep people listening. (There's also a "premium" ad-free service for $36 a year, and Pandora makes a small commission if you click through its site to buy a song on iTunes or Amazon.com, but it's primarily an ad-driven business.) Its biggest expense is the licensing fee it pays to publishers and performers; the performance fee, paid to an entity called SoundExchange, which distributes royalties to artists, is equal to something like 50 percent of Pandora's revenue. When you start a station with a specific song, that song isn't the first thing you hear, because this would an entail an "on demand" license, which costs even more.

By way of Pandora's Twitter feed, I issued a call for users who not only listened to the service a lot but also felt that it had had some kind of impact on their listening tastes. Summer Sterling, a 21-year-old senior at Washington and Lee University in Lexington, Va., often starts by typing in well-known bands like the Dixie Chicks, and that has led her to music by groups she had never heard of but now loves, like the Weepies. Stephanie Kessler, a 24-year-old M.B.A. student in St. Louis, started by typing in K T Tunstall and has found her way to Waylon Jennings and David Allan Coe.

Aashay Desai, a 25-year-old computer engineer, has become a "very meticulous" user, building some 30 stations and paying for Pandora's premium service, which offers better sound quality and more features.

Aside from his hard rock/metal station, he has a "metalcore" station that's "a little more aggressive," as well as a "polyrhythm metal station" that is probably his "most aggressive." He has also built an R&B station and a trance station; more recently he discovered Django Reinhardt, whom he used as the basis for a gypsy jazz station.

Others, of course, are not impressed by the genome's results. Someone passed along to me a harsh assessment by Bob Lefsetz, whose popular Lefsetz Letter critiques pretty much every aspect of the contemporary music business. "I tried and rejected it," he wrote. "Was flummoxed when a Jackson Browne station I created delivered a Journey song. Huh? . . . Jackson is music for the mind, Journey is music for the MINDLESS!"

Jonathan McEuen told me he heard about Pandora a couple of years ago and started using it immediately, "with the goal of breaking whatever algorithm they had." A devoted music fan and a musician himself, McEuen says he did not believe an online service could understand what sort of music he would like and introduce him to new artists based on some deconstruction of his listening tastes. "You can't just reduce it to a bunch of numbers," he recalls thinking. "This is a romantic, emotional thing," and Pandora's approach to it "can't work."

He has changed his mind. A 28-year-old clinical neuroscience researcher at the University of Pennsylvania, he's a listener who lacks the time to keep up with music news the way he did while amassing hundreds of CDs as a student. Sometimes he runs Pandora as background music; sometimes he's more engaged, using it as a way to learn about contemporary classical and opera — and as a result has become a fan of the music of a young composer named Eric Whitacre. "I don't know how else I would have found out about it," he says. "Except through the exhaustive process of making new friends on the Internet. Which is something I'm kind of loath to do."

What I didn't hear Pandora users talk about was the Genome Project; many didn't really know about it. They cared about the music Pandora served up, period. But I wanted to know what was behind that music.

Nolan Gasser was the primary shaper of the lexicon that could reconcile Westergren's genome metaphor with something a computer could evaluate. Gasser, an actual musicologist, wrote a doctoral thesis that dealt with close analyses of Renaissance composition. "I really needed to know what made that music tick," he recalls. That systematic study flowed well into his work with Westergren — although they started with 20th-century pop, not Renaissance vocal music. First every piece is broken down into large-scale aspects of music: melody, harmony, rhythm, form, sound (meaning instrumentation and, if necessary, voice), and in many cases the text, meaning lyrics. Each of these broader categories might have 10, 30, 50 elements.

"We have a number of characteristics for vocals," he continues. "Is it a smooth voice, is it a rough, gravelly voice, is it a nasally voice?" Similar questions are evaluated for every instrument. The upshot was about 250 "genes" for every song in the original pop-rock version of the "genome."

Gasser also helped develop the training mechanisms to make sure the analysts are consistent about more subjective matters — like how "emotionally intense" that Stan Getz solo is. (It's a 4 out of 5, in the genome's view.) The test that candidates take involves being able to pick out, quickly and by ear, harmonic structures, melodic organization and other musical elements. The indoctrination that follows revolves around examples. (You think that vocal gets a 5 on the gravelly scale? Here's Tom Waits. Is it that gravelly?)

Recently I sat in as several of Pandora's song deconstructors gathered in a small conference room to talk about Indian music. Pandora listeners have been asking for Indian music for a while, but adding it to the service hasn't been a simple matter. A new genre must arrive in a big batch — about 3,000 pieces of music — because Pandora's algorithm needs lots of choices to be able to recommend something similar-sounding. And all of it has to be pulled apart first. This entails squaring the very different structures of Indian music with Pandora's "genome" data points.

Over the previous six weeks or so, the Pandora analysts listened to 650 Indian pieces, and the session I observed was a refresher course. Steve Hogan, who oversees Pandora's analyst squad, had given a half-dozen of its members the same two songs to analyze. The first was "Raga Ahir Bhairav," recorded by Bismillah Khan in 1955. But the analysts had not been given this cultural information; all they had for the assignment was the music and their ears. Hogan played a snippet and pointed to Kurt Kotheimer, a bass player who often gigs around the Bay Area.

Kotheimer consulted his listening notes: "Flat second, major third, perfect fourth, perfect fifth, major sixth, flat seventh." Everybody nodded: that's the tone set, which helps identify the particular raga, one of 25 new "genes" added to Pandora's algorithm to accommodate this variety of non-Western music. Based

on the beat, everyone agreed that this raga was set in Teentaal, with a 16-beat rhythmic cycle often heard in North Indian classical music; it's now in the genome too. But that was the easy part, apparently.
They moved on to vocals, and Alan Lin, a violinist, ticked off the scores he came up with for things like rhythmic intensity and the relative exoticism of the melody scale. "I actually put exotic at 3.5," he said. This prompted Sameer Gupta — a percussionist and an expert on Indian music who was weighing in by speakerphone from New York — to lead a brief discussion of how to think about melody and exoticism in this context. Seven or eight scores related to melody, and then about the same number for harmony. ("A 5 for drone," one analyst announced.) More scores related to form. Tempo. The timbre of the reeds. When Gupta gave his score for riskiness on the percussion — a 3.5 — Lin did a sort of fist pump: "Yes!" Evidently he'd scored it the same way, meaning progress toward properly fitting Indian music into the Music Genome Project. Things went on like this for a while. "Even if you have a solo violin with a tabla, you're still going to have monophony," Gupta remarked at one juncture. "I just wanted to point that out." It was hard to believe there was a business riding on this kind of conversation.
But while some of the genes involve expert, subjective judgment, they aren't qualitative in the most traditional sense: there's no rating that allows an analyst to conclude that a vocal or a sax solo is simply lousy. What Pandora's system largely ignores is, in a word, taste. The way that Gasser or Westergren might put this is that it minimizes the influence of other people's taste. Music-liking becomes a matter decided by the listener, and the intrinsic elements of what is heard. Early on, Westergren actually pushed for the idea that Pandora would not even reveal who the artist was until the listener asked. He thought maybe that structure would give users a kind of permission to evaluate music without even the most minimal cultural baggage. "We're so insecure about our tastes," he says.
While his partners talked him out of that approach, Westergren maintains "a personal aversion" to collaborative filtering or anything like it. "It's still a popularity contest," he complains, meaning that for any song to get recommended on a socially driven site, it has to be somewhat known already, by your friends or by other consumers. Westergren is similarly unimpressed by hipster blogs or other theoretically grass-roots influencers of musical taste, for their tendency to turn on artists who commit the crime of being too popular; in his view that's just snobbery, based on social jockeying that has nothing to do with music. In various conversations, he defended Coldplay and Rob Thomas, among others, as victims of cool-taste prejudice. (When I ran Bob Lefsetz's dismissal of Pandora by him, he laughed it off, and transitioned to arguing that Journey is, actually, a great band.)
He likes to tell a story about a Pandora user who wrote in to complain that he started a station based on the music of Sarah McLachlan, and the service served up a Celine Dion song. "I wrote back and said, 'Was the music just wrong?' Because we sometimes have data errors," he recounts. "He said, 'Well, no, it was the right sort of thing — but it was Celine Dion.' I said, 'Well, was it the set, did it not flow in the set?' He said, 'No, it kind of worked — but it's Celine Dion.' We had a couple more back-and-forths, and finally his last e-mail to me was: 'Oh, my God, I like Celine Dion.' "
This anecdote almost always gets a laugh. "Pandora," he pointed out, "doesn't understand why that's funny."
By the time the Genome Project got under way, the idea of taking music apart and evaluating it by its acoustic elements was not actually new. "Machine listening" was pioneered in various university settings, often by people who had the exact same problem with collaborative filtering's reliance on social data that Westergren has. Machine listening basically involves teaching computers to assess sound (or really, waveforms representing sound) into something resembling the way that humans hear it, with the goal of eliminating living, breathing listeners from the evaluation process completely.
Like collaborative filtering, machine listening can deal with a lot of data quickly. And when Westergren was trying to raise a second round of financing after the dot-com bust, most everyone involved in the business of music and technology had come to believe that any recommendation system needed to be able to handle millions of songs, instantly. A bunch of musicians sitting around discussing the finer points of drone and monophony wouldn't cut it. "Everybody thought it was ridiculous," Westergren agrees. He gave something like 350 pitches to venture capitalists over three years. "Most investors could not get over this idea that we were using humans." But to Westergren, there were elements of music that machine listening just couldn't capture — like the emotionality of a Getz solo. So yes, he wants listeners to experience new music on the basis of the music and not the influence of other people — but to do it right, people have to analyze the music.
Whatever the algorithmic equation, of course, there's a listener on the other end who is much harder to decode. What you want to hear can depend on your mood, or whether you're listening at work or in a

nightclub. Context affects any cultural product, but music is different from, say, books or movies. Even a casual listener hears many thousands of songs; and to love a song is to take it in — whether attentively or as background music — over and over. Mick Jagger was once asked what makes a tune a classic, and the co-author of "(I Can't Get No) Satisfaction" replied, "Repetition." And yet, even the most conservative listener knows the feeling of hearing a hit single once too often. Maybe because music is so ubiquitous, we respond to it almost like food: sometimes we want to try the new restaurant, sometimes the comfort of a familiar favorite dish.

Still, are all these listener-specific factors really enough to explain what music we like, and why? "Music is an inherently social experience," argues David Goodman, the president of CBS Interactive Music Group, which includes the popular Last.fm Internet radio service. Last.fm's social-networking model revolves largely around this idea. "The way in which you experience music by sharing, by storytelling, being part of a community. Last.fm is built on what is organic to music."

Ali Partovi, the C.E.O. of iLike, makes a related point. Used as an application on Facebook and similar sites, iLike bills itself as a "social music-discovery service" and claims more than 50 million registered users. There's a huge difference, Partovi argues, between "this computer thinks you'll like this song" and "your friend thinks you'll like this song — even if it's the same song." The problem with a computer reading waveforms is that it "has no common sense," summarizes Mike McCready, a founder of a company called Music Xray, a digital-music business for entertainment companies and artists. "It doesn't take into consideration whether the artist is just starting out or they're at the pinnacle of their career, it doesn't take into consideration what they wore to the Grammys or who they're dating or what they look like or what their age is. You have to factor all of this stuff in."

And why is that? Surely no one consciously says, "My cool friends like the new Jack White, so I'll memorize the lyrics and pretend to like it, too, for sociocultural reasons." Yet the research about how listeners link musical taste (at least at a genre level) and identity is extensive. Surely that's one reason so much of digital music culture is devoted to opportunities to "share" your taste: the endless options for posting playlists, recommending songs, displaying what you are listening to now, announcing your favorite artists.

Maybe the more vivid illustration of social influence on listening habits isn't in what we share but in what we obfuscate. Last.fm, for example, publishes a chart listing the songs that its users most frequently delete from their public listening-stream data. The guilty pleasure Top 10 is dominated by the most radio-ready pop artists — Katy Perry's "I Kissed a Girl," several tracks by Lady Gaga. The service iLike compiles similar data on the most "suppressed" songs its users listen to in secret; Britney Spears figures prominently. Apparently even listeners who can set aside certain cultural information long enough to enjoy something uncool would just as soon their friends didn't know. Maybe even in our most private listening moments, what our peers think matters.

Much attention has been focused in the last few years on studying music-liking at the brain level. Daniel Levitin, a neuroscientist (and musician) has been one of the high-profile thinkers in this area, by way of his popular books "This Is Your Brain on Music" and "The World in Six Songs." One of his central themes is that pretty much all humans are wired to enjoy music, and he says he believes musicality is even important to the evolution of the species.

But when you start talking about individuals, instead of humanity in general, universals are a lot harder to come by. Much depends on culture. The emotions expressed in many of those ragas that Pandora's experts are presently decoding, for instance, are lost on the typical Westerner. Just as we're hard-wired to learn a language, but not to speak English or French, our specific musical understanding, and thus taste, depends on context. If a piece of music sounds dissonant to you, it probably has to do with what sort of music you were exposed to growing up, because you were probably an "expert listener" in your culture's music by about age 6, Levitin writes.

The cliché that our musical tastes are generally refined in our teens and solidify by our early 20s seems largely to be true. For better or worse, peers frequently have a lot to do with that. Levitin recalled to me having moved at age 14 and falling in with a new set of friends who listened to music he hadn't heard before. "The reason I like Queen — and I love Queen — is that I was introduced to Queen by my social group," he says. He's not saying that the intrinsic qualities of the music are irrelevant, and he says Pandora has done some very clever and impressive things in its approach. But part of what we like is, in fact, based on cultural information. "To some degree we might say that personality characteristics are associated with, or predictive of, the kind of music that people like," he has written. "But to a large degree

it is determined by more or less chance factors: where you went to school, who you hung out with, what music they happened to be listening to."

Pandora's approach to listening violates at least three pieces of conventional digital-music wisdom: it rejects the supremacy of social-data taste communities; it shrugs off the assumption that contemporary listeners must have instant on-demand access to any single song; and, most striking, it rejects what many observers see as a given, which is that music consumers are fundamentally motivated by access to the most massive pool of songs possible. Slacker.com, a rival Internet-radio service, says its library contains about 2.5 million songs. Spotify, the European music streaming service, expected to be available in the U.S. by early next year, is generating enormous buzz because of it offers free, on-demand access to more than 5 million tunes.

Pandora's 700,000-song library sounds puny by comparison. And yet the service has millions of devoted listeners. Why? One answer, perhaps, involves the ways that the genome, quietly, doesn't really screen out sociocultural information. For instance, its algorithms are tweaked by genre, and the inclusion of genes for "influence" ("swing" or "gospel," for example) brings in factors that aren't strictly about sound. And Pandora's algorithm does adjust if, for instance, users routinely thumbs-down a particular song under similar circumstances, meaning the genome's acoustic judgment can at times be trumped by crowd taste.

But the biggest cultural decision of all may be the one that also happens to guide Westergren's response to the issue of scale: how, exactly, does a given piece of music get into Pandora's system anyway? Pandora claims to add about 10,000 songs a month to its library. The "curation" of Pandora, in effect, falls to Michael Zapruder, another musician who has found himself working for a tech company. Zapruder ended up as Pandora's curator because he had a habit of identifying holes in the service's collection. Eventually he was told to fill all the gaps he could. "I had a field day," he recalls; he'd stroll through record stores, buying every single Johnny Cash CD or every tango disc available, plus anything that looked interesting. He paid attention to users' suggestions. Somebody wrote in to say that Pandora needed to improve its jazz-trombone selection; somebody else complained about the dearth of barbershop-quartet music. He took care of it. He has beefed up the Latin-music and the J-pop catalog. The major acquisition project right now is Afrobeat, because by far the biggest failed search is Fela Kuti. Zapruder is in the midst of this research but knows that as this new batch of music comes online, "we're going to get educated by our listeners."

Every Tuesday he looks at the New Music Tipsheet, which lists a few hundred new tracks in a typical week. He scrutinizes the Billboard and CMJ charts. He hears directly from a wide array of distributors, from indie-focused Revolver Records to big shots like Universal Music Group. In addition to what is simply sent to Pandora (by labels, artists, P.R. firms), the company buys hundreds of CDs a month, as well as electronica and hip-hop downloads, acquired from sites like Beatport. Every month, hundreds of bands send songs, and Zapruder does his best to get onto Pandora what he figures his listeners want to hear. Still, the labor-intensive genome simply can't absorb it all.

Westergren maintains that catalog size receded as a problem at around the 300,000-song mark. Since passing that, he says, the number of "missed" searches has declined markedly, so the great majority of people who come to the site and type in an artist or song name get a proper introduction to the Pandora system. But the more surprising part of Westergren's response is his claim that he isn't worried about compiling the biggest possible catalog. "This may seem counterintuitive," he told me, "but we struggle more with making sure we're adding really good stuff." That sounds like a rather subjective, cultural judgment — shouldn't the listener decide what's good, based purely on the genome's intrinsics-of-music guidance? Well, there's no question that Westergren is a champion of the unheard music that gets marginalized by sociocultural judgments. But even he has standards.

Rob Walker writes the Consumed column for the magazine and is the author of "Buying In: The Secret Dialogue Between What We Buy and Who We Are."

http://www.nytimes.com/2009/10/18/magazine/18Pandora-t.html?_r=1&th&emc=th

Southern Discomfort
By DAN HALPERN

Here is an example of how Padgett Powell's mind works. His friend Michael Costello, a Vietnam vet, once told him a funny story about a bar fight Costello got into, in 1967, while he was in infantry training. This past summer, Powell decided he wanted to hear the story again, so we drove out to Costello's house, in North Florida, about an hour northwest of Powell's home in Gainesville, for a visit. The story went like this:

One night at a bar in Columbia, S.C., Costello and some of his buddies got into it with the joint's regulars, white guys, riled up over the presence of one of the soldiers, a black G.I., in their bar. Because they were outnumbered, another of the G.I.'s, a big Louisiana boy named Kiloq, suggested to the locals that they choose someone in their group for Kiloq to fight and leave it at that. This was judged acceptable. As he left his beer at the bar, Kiloq pulled his upper teeth out of his mouth, put them in his pocket and said to Costello, "You know, down where I'm from, I ain't exactly considered white myself."
Kiloq won. This was not judged acceptable. One of the regulars stabbed Costello with a broken beer bottle. In the ensuing free-for-all, Costello ended up with the guy in a headlock and, hoping to avoid a riot, said to him, "Let's just stop this, let's just stop this!" The guy in the headlock continued to try to lacerate Costello, and so Costello finally threw the guy to the ground and jumped up and down on his face for a while until the G.I.'s managed to extricate themselves and flee.
The way Powell remembered it went like this: Once, in Columbia, S.C., his friend Costello got in a fight, but Costello didn't want to fight, and so when he managed to get the guy in a headlock, he started talking to him, and walking him all around, trying to calm him down, walking and talking, through the night to the next morning and into the day, until he had walked all over the city of Columbia, Powell said, "with a guy in a headlock for 24 hours."
Fiction, Powell once wrote, is taking strange truths and making them into less-strange lies. Here the relative levels of strangeness might be debatable. But in Powell's world strange truths do seem to manifest themselves regularly. When I arrived to visit him this summer at his house in the woods, he was engaged in a furious war against the local raccoons, which had murdered 17 of his 18 chickens. Powell, who is 57, thick-chested and muscular, had come home from a trip to Morocco to find the neighbor he left in charge — a shoeless machinist Powell paid to build the coops and safeguard the birds — gone AWOL, having taken Powell's truck, leaving only a note, written on the back of a receipt for $70 of cheap liquor, asking for some money from Powell's teenage daughter. All that was left for Powell to do was to revenge himself on the raccoons. So now he was trapping them nightly. But unable to shoot an animal trapped in a

cage, he had failed to execute the first two he caught, and when I showed up he was girding himself to shoot his latest capture, a shifty-looking, smallish specimen, and be done with it, but he was dithering a bit and growing annoyed with himself that he had enough N.R.A. in him to feel he should have no sympathy for the thing but then also enough NPR in him to hesitate.

All of which sounded a bit like a strange truth ripe for transformation, and a lot like the sort of things that happen in his books. Wonderful, strange, outrageous things: one woman uses her umbrella to fence with lizards in her garden; another feeds a pet alligator golf balls. Maybe, someday, there will be a Powell book with a guy who walks around with another guy in a headlock for 24 hours. Except that for a while, it looked a little bit like there might be no more Powell books.

TWENTY-FIVE YEARS ago things looked very different. The publication of Powell's first novel, "Edisto," in 1984, occasioned a reception almost like a coronation. The comic chronicle of Simons Everson Manigault — a linguistically precocious 12-year-old assigned by his mother to gather material in preparation for literary greatness — "Edisto" was a finalist for the National Book Award. It was also one of Time magazine's five best fiction books of the year and exuberantly reviewed across the country. Walker Percy said it reminded him of "The Catcher in the Rye" — except, he said, "it's better." The book was excerpted in The New Yorker, won Powell a Whiting Award and a Rome Prize and got him a job teaching fiction writing at the University of Florida, and to this day it often appears on various critics' best-of lists.

Since then, Powell has published six more books, each increasingly unorthodox, and the wider approbation has declined proportionally. This shift began subtly, and initially, at least, didn't do much to hurt his reputation: after his first few books, USA Today could still name him among the "most lavishly praised . . . of his generation." In part, that's because Powell is a master of voice, a generator of absolutely particular, original, hilarious human sounds. His landscape, stretching typically from Florida up to South Carolina and over to Texas, is populated by white and black people, poor and middle-class people, sane and insane people, truckers and housewives, roofers and shrimpers and life-insurance salesmen. He takes stereotypes — the wise chorus of black men on the corner, the strong Southern woman — plays them perfectly, then turns them upside down. The books are almost always funny, variously profane and cacklingly belligerent. He has a rare ear for dialect and dialogue, a dedication to new ways of making words jump and dance and catch fire.

What Powell does with language and sound, with timing, rhythm and cadence, is a thing of strange precision. Here is the simple opening of the title story of his third book, from 1991, a collection called "Typical," in which the narrator, John Payne, a laid-off steelworker, looks at his life and concludes he is an unpleasant person of little worth:

Yesterday a few things happened. Every day a few do. My dog beat up another dog. He does this when he can. It's his living, more or less, though I've never let him make money doing it. He could. Beating up other dogs is his thing. He means no harm by it, expects other dogs to beat him up — no anxiety about it. If anything makes him nervous, it's that he won't get a chance to beat up or be beaten up. He's healthy. I don't think I am.

That unerring feel for the right beat has never left him. But Powell's interest in an A to B to C progression undeniably has. In his novel "Mrs. Hollingsworth's Men," published in 2000, a lady begins writing a shopping list, which, as she writes, transforms itself into a demented, hilarious collage of the Confederacy, the New South, lost and found love between a husband and wife, and the spaces in between. The book begins:

Mrs. Hollingsworth likes to traipse. Her primary worry is thinning hair, though this has not happened yet. She enjoys a solidarity with fruit. She is wistful for the era in which hatboxes proliferated, though a hatbox is not something even her grandmother may have owned. More probably what she wants is hatboxes themselves, without the era or the hats. But the proud, firm utility of the hatbox requires a hat and an era for its dignity; otherwise it is a relic. She does not want relics. Her husband is indistinct.

Whatever it is that Powell is making, it most certainly does not qualify as a relic. "At the moment American fiction is kind of dull, frankly," Barry Hannah, the reigning grand old man of Southern fiction, told me recently. "I don't know who else is adding to it besides Padgett. Very few people are bringing something new. He is." But as Powell's books grew into a more and more aggressive rejection of the prevailing currents of literary fiction, abandoning any kind of easily identifiable narrative strand, critics began to relegate him to the dread world of experimental fiction, accusing him of playing games with style at the cost of emotional substance.

And so, Powell's work, though no relic, was beginning to look like a hatbox unsuited for the current climate in American fiction. With critics — and readers — deserting him in greater and greater numbers, Powell found himself practically unpublishable. Powell's last book came out in 2000, and the two collections of stories he wrote over this last decade failed to find houses willing to print them. He began to claim he was retired.

THIS MONTH, Powell's retirement ended. His new novel, "The Interrogative Mood," is not exactly a return to traditional narrative, however. It is composed entirely of questions, each asked of the reader by an unnamed interrogator, creating a welter of seemingly idle inquiries that begin to revise and repeat and distort themselves. Sometimes the novel sounds like a personality test: "Can you cook? Can you fight? Can you lie?" Sometimes it sounds somewhat less like one: "Have you ever heard of the sexual practice of setting a person's buttocks on fire and quickly spanking out the fire?"

Not exactly a book designed to satisfy the deserters. But Powell has plenty of experience working from the margins. He was born John Padgett Powell Jr. in 1952, the eldest of three brothers, and spent much of his childhood moving around Florida with his family. His father worked mostly in trucking and labor contracting, which accounted for the constant moves; in 1968, with Powell about to enter his junior year of high school, he moved the family to Florence, S.C. After a childhood of perennially being the new kid — he says he went to 17 different schools through 12th grade — Powell stayed in South Carolina after high school, on a scholarship to the College of Charleston, where he got D's in his English classes and graduated with a degree in chemistry. But he also wrote what would form the basis of his first book: sketches by an alter ego, Scruff Taurus — supposed to be the product of an affair between a black jazz singer and Norman Mailer — detailing Taurus's adventures in beating up members of the English department.

After Powell left South Carolina for a graduate program in chemistry at the University of Tennessee, which he quit by the end of the first semester, he ended up in Houston, where, he said, "I became a wino — I mean a laborer. They're all winos. We were winos." This turned into an eight-year career as a roofer all over Texas. But the Taurus stuff was always in the back of his mind, and in 1980, desperate and dead-ended, he applied to the University of Houston's writing program with 40 pages of what would be "Edisto." A version of the Taurus character remained in the novel, though now in a secondary role as a modernized, biracial update of Mark Twain's Jim to go with the protagonist's breathless, hyperverbal Huck.

At the University of Houston, Powell found a heavyweight mentor: Donald Barthelme, then a superstar of postmodernist fiction. Barthelme did some light editorial work on the manuscript and arranged for his agent to take Powell on, but their friendship, and the effect he had on Powell, was much more important than the practical help he offered. "I'm doing what I'm doing now because I met Donald Barthelme and subsequently lost part of my mind — my original literary mind," Powell has said. "Barthelme's aesthetic, as I grasped it, got me tired of a certain pedestrian storytelling, whether for good or for ill." But this impatience with the predictable did not also mean an impatience with emotion. "We have wacky mode," Powell remembers Barthelme saying to his class, a writing workshop Powell was taking. "What must wacky mode do?" The students, clueless, stayed quiet. Barthelme said, "Break their hearts."

ON THE DAY he was steeling himself to kill the third raccoon, I came to meet Powell at his house, a two-story Victorian that sits about half a mile down a dirt driveway. We were headed an hour northeast to the St. Johns River, where we intended to do some mullet fishing. The house sits on 10 acres of woodland he bought in 1992 with his wife, the poet Sidney Wade (they divorced in 2005), just to the south and east of Gainesville's city limits, where the population is predominantly African-American and mostly poor. When I told him where I was staying — on the west side of town — he wrote to me, explaining how to find him: "I am far east (black side). You are in the proper zone."

Powell has a congenital allergy to proper zones. He doesn't fit in them very well. He has taught at the University of Florida for 25 years but claims to be disinclined to talk too much about what he calls "literary hogwash." He would prefer to go fishing or shooting or boating. He knows what makes a quality knife a quality knife and has strong opinions about college football. He has great affection for dogs and snakes and alligators and has kept the first two as pets. Gators, he claims, are just what you'd get if you could mate a dog and a snake — not really dangerous, though you do have to watch out for the tail.

But he doesn't necessarily fit in anywhere outside the university either. As his friend Costello put it: "Powell likes to do a lot of the same things redneck guys like to do. Drink beer, hang out and fish, barbecue pigs. But among that group of guys, he'd never fit in. Anywhere he is, he doesn't fit in."

On the river, we set up off a bridge by the highway, where 10 or 12 men and women already had their lines out. But there were no mullet biting off the bridge. “Before, them mullets was jumping,” one guy, a big dude with a worm, a four-inch-long white grub, hanging off his lip, told us.
“And what happened?” Powell said.
“Now they ain’t,” he said. So we headed over to the county pier.
“This is where that conversation took place in ‘Edisto,’ with Wheat and Lilly,” Powell said. “Word for word.” In the scene he was talking about, Simons takes Taurus to fish for mullet; on the pier, a woman named Lilly is needling a guy, Buckwheat, who was supposed to bring cold beer on his bike:
“This beer kissy hot!” She looks for Wheat, who’s still doddering. “Kissy hot! Buckwheat!”
Wheat’s almost remounted and he makes the several pedals necessary to pull up behind Lilly.
“You so slow, no wonder your wife left you,” she shouts at the river.
“She din’ leave me,” Wheat says. “She died.”
“The ultimate leff,” Lilly says, and they howled, all the ladies. Even Wheat giggled.
“Those were their actual names, too, the real people who I took that bit from,” Powell said. “I might have done myself a favor if I’d given Buckwheat a different name in the book. But that’s how it goes.”
That’s how it does go: the strange truths of Powell’s place sometimes seem made perfectly and exactly for him, both in language and in substance. In 1998, Powell wrote that the “literature of the South is full of people running around admitting or denying their whippedness,” that “finally that is the key — the people have been whipped, and whipped good.” For Powell, there can be integrity in that defeat — and integrity in the denial of it too. Later, having driven south to go boating on the Ocklawaha River, we met an old, old man, craggy and bent, spittle on his face, half there in some ways but talking a blue streak about what damming the river had done to it. “Pops wasn’t looking too good,” Powell said, after we’d set off down the river. “I think he’s dead but still talking.” But there was something admiring about the way he said it.
Powell dares you to risk defeat with him. He creates spaces for the reader to come in and play, not directions from afar about what to feel and think. In “The Interrogative Mood,” the seemingly random questions begin to shape themes and obsessions, until, sneakily, the book has created a portrait of both the questioner and the questioned, a picture of longing and loneliness and nostalgia. “Are your emotions pure?” “Can you love, still? Did you ever love?” “How did we go so wrong?” For each reader the portrait will vary — and without answers, it can fail entirely. What Powell does that most writers don’t dare anymore is to risk that failure.
But in all that daring there is still the desire, as Barthelme said, to break their hearts. During my visit, Powell had been loath to defend himself from any criticisms, mostly happy to confess that if the stories had broken no hearts it was probably their own fault — that he’d just failed. But now, back from fishing, having caught no mullet and gearing up, finally, to shoot the raccoon, whose carcass he’d promised to the fisherman with the worm in his mouth, Powell said: “If you do what you mean to, if you ever can, that will come out on the page. But if you go around saying anything that seems preposterous is bad, that anything that doesn’t look the way it’s supposed to look is false and heartless — well, I think, I think — I think you do lose something.”
Dan Halpern last wrote for the magazine about bull riding.

http://www.nytimes.com/2009/10/18/magazine/18powell-t.html?ref=magazine

Phys Ed: Does Exercise Boost Immunity?

By Gretchen Reynolds

Marc Romanelli/Getty Images

Two recent experiments hit rather close to home at this time of year. In the first, published last year in the journal Brain, Behavior, and Immunity, researchers divided mice into two groups. One rested comfortably in their cages. The other ran on little treadmills until they were exhausted. This continued for three days. The mice were then exposed to an influenza virus. After a few days, more of the mice who'd exhausted themselves running came down with the flu than the control mice. They also had more severe symptoms.

In the second experiment, published in the same journal, scientists from the University of Illinois and other schools first infected laboratory mice with flu. One group then rested; a second group ran for a leisurely 20 or 30 minutes, an easy jog for a mouse; the third group ran for a taxing two and a half hours. Each group repeated this routine for three days, until they began to show flu symptoms. The flu bug used in this experiment is devastating to rodents, and more than half of the sedentary mice died. But only 12 percent of the gently jogging mice passed away. Meanwhile, an eye-popping 70 percent of the mice in the group that had run for hours died, and even those that survived were more debilitated and sick than the control group.

Is this good news or bad? This is a particularly relevant question as two important human events converge: the peaking of the fall marathon and other sports seasons and the simultaneous onset of the winter cold and flu term. Scientists are diligently working to answer that question, perhaps because they are as interested as the rest of us in avoiding or lessening the severity of colds and the flu. The bulk of the new research, including the mouse studies mentioned, reinforce a theory that physiologists advanced some years ago, about what they call "a J-shaped curve" involving exercise and immunity. In this model, the risk both of catching a cold or the flu and of having a particularly severe form of the infection "drop if you exercise moderately," says Mary P. Miles, PhD, an associate professor of exercise sciences at Montana State University and the author of an editorial about exercise and immunity published in the most recent edition of the journal Exercise and Sport Sciences Review. But the risk both of catching an illness and of becoming especially sick when you do "jump right back up" if you exercise intensely or for a prolonged period of time, surpassing the risks among the sedentary. (Although definitions of intense exercise vary among researchers, most define it as a workout or race of an hour or more during which your heart rate and respiration soar and you feel as if you are working hard.)

Why exercise should affect either your susceptibility to catching an illness or how badly a particular bug affects you is still unclear. But it does appear that intense workouts and racing suppress the body's immune response for a period of time immediately after you've finished exercising and that "the longer the duration and the more intense" the exercise, "the longer the temporary period of immunosuppression lasts — anything from a few hours to a few days has been suggested," says Nicolette Bishop, an associate professor of sport and exercise sciences at Loughborough University and the author of a review article about exercise and immunity published in January.

A telling new study, published in August in the Journal of Strength and Conditioning Research, looked at cellular markers of immune system activity in the saliva of twenty-four, Spanish, professional soccer players, before and after a strenuous, 70-minute match. Before play, the saliva of most of the players showed normal levels of immunoglobulins, substances that help to fight off infection. Afterward, concentrations of saliva immunoglobulins in many of them had fallen dramatically.

If scientists aren't sure yet why intense exercise temporarily depresses the immune system, however, they seem to be closer to understanding why, once you've caught a bug, intense exercise can make the symptoms and severity worse. In work at the University of Illinois, reported last month in the journal Exercise and Sport Sciences Review, some of the same scientists who'd studied mice and flu looked at just what was going on inside the cells of the affected animals. They found that the leisurely jogging rodents showed signs of a very particular immune response to the flu. In general, and this is true in both mice and men, says Jeffrey A. Woods, a professor of kinesiology and community health at the University of Illinois and one of the scientists involved, viruses evoke an increase in what are called T1-type helper immune cells. These T1-helper cells induce inflammation and other changes in the body that represent a first line of defense against an invading virus. But if the inflammation, at first so helpful, continues for too long, it becomes counterproductive. The immune system needs, then, at some point to lessen the amount of T1-mediated inflammatory response, so that, in fighting the virus, it doesn't accidentally harm its own host. The immune system does this by gradually increasing the amount of another kind of immune cell, T2-helper cells, which produce mostly an anti-inflammatory immune response. They're water to the T1 fire. But the balance between the T1- and T2-helper cells must be exquisitely calibrated.

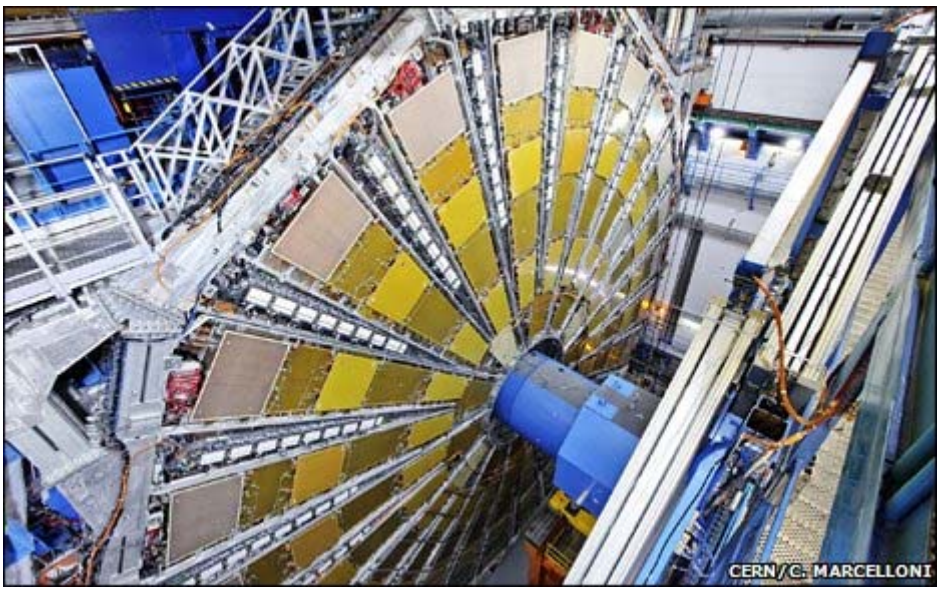
In the mice at the University of Illinois, moderate exercise subtly hastened the shift from a T1 response to a T2-style immune response — not by much, but by just enough, apparently, to have a positive impact against the flu. "Moderate exercise appears to suppress TH1 a little, increase TH2 a little," Woods says. On the other hand, intense or prolonged exercise "may suppress TH1 too much," he says. Long, hard runs or other workouts may shut down that first line of defense before it has completed its work, which could lead, Woods says "to increased susceptibility to viral infection." So, if you have just completed a strenuous 20-mile training run and have, in consequence, a depressed immune response, avoid colleagues who are sniffling. Wash your hands often. "I would recommend everyone get the annual influenza vaccination and the new H1N1 vaccination," Woods says. But if all of that has been for naught and you now feel the early stirrings of sickness, "listen to your body and be prudent in your exercise decisions," Woods says. In general, moderate exercise, such as a leisurely jog or walk, may prop up your immune response and lessen the duration and severity of a mild infection, but be honest about your condition. "If you don't feel well, especially if you have fever or body aches, I would recommend stopping daily exercise until you are recovered," Woods says. "It is okay to exercise if you have a simple head cold or congestion — in fact, it may improve the way you feel. I would avoid heavy, prolonged exercise with a head cold, though," since it can unbalance that important T1 and T2-helper cell response.

And take comfort in the results of the most recent study to look at actual, practicing marathoners. In it, 1,694 runners at the 2000 Stockholm Marathon informed researchers about any colds or other infectious illness they developed in the three weeks before or three weeks after the race. Nearly one-fifth of the runners fell ill during that time period. That's higher than the rates in people generally, but it still means that the overwhelming majority of runners didn't get sick.

http://well.blogs.nytimes.com/2009/10/14/phys-ed-does-exercise-boost-immunity/?ref=magazine

LHC gets colder than deep space
By Paul Rincon
Science reporter, BBC News

The Large Hadron Collider (LHC) experiment has once again become one of the coldest places in the Universe.



All eight sectors of the LHC have now been cooled to their operating temperature of 1.9 kelvin (-271C; -456F) - colder than deep space.

The large magnets that bend particle beams around the LHC are kept at this frigid temperature using liquid helium.

The magnets are arranged end-to-end in a 27km-long circular tunnel straddling the Franco-Swiss border.

The cool-down is an important milestone ahead of the collider's scheduled re-start in the latter half of November.

" **It's a bit like firing knitting needles from across the Atlantic and getting them to collide half way** "
James Gillies, director of communications, Cern

The LHC has been shut down since 19 September 2008, when a magnet problem called a "quench" caused a tonne of liquid helium to leak into the LHC tunnel.

After the accident, the particle accelerator had to be warmed up so that repairs could take place.

The most powerful physics experiment ever built, the Large Hadron Collider will recreate the conditions just after the Big Bang. It is operated by the European Organization for Nuclear Research (Cern), based in Geneva.

Two beams of protons will be fired down pipes running through the magnets. These beams will travel in opposite directions around the main "ring" at close to the speed of light.

At allotted points around the tunnel, the proton beams cross paths, smashing into one another with cataclysmic energy. Scientists hope to see new particles in the debris of these collisions, revealing fundamental new insights into the nature of the cosmos.

Awesome energy

The operating temperature of the LHC is just a shade above "absolute zero" (-273.15C) - the coldest temperature possible. By comparison, the temperature in remote regions of outer space is about 2.7 kelvin (-270C; -454F).

The LHC's magnets are designed to be "superconducting", which means they channel electric current with zero resistance and very little power loss. But to become superconducting, the magnets must be cooled to very low temperatures.

For this reason, the LHC is innervated by a complex system of cryogenic lines using liquid helium as the refrigerant of choice.

No particle physics facility on this scale has ever operated in such frigid conditions.

But before a beam can be circulated around the 27km-long LHC ring, engineers will have to thoroughly test the machine's new quench protection system and continue with magnet powering tests.

Particle beams have already been brought "to the door" of the Large Hadron Collider. A low-intensity beam could be injected into the LHC in as little as a week.

This beam test would involve only parts of the collider, rather than the whole "ring".

Officials now plan to circulate a beam around the LHC in the second half of November. Engineers will then aim to smash low-intensity beams together, giving scientists their first data.

The beams' energy will then be increased so that the first high-energy collisions can take place. These will mark the real beginning of the LHC's research programme.

Collisions at high energy have been scheduled to occur in December, but now look more likely to happen in January, according to Cern's director of communications James Gillies.

Feeling the squeeze

Dr Gillies said this would involve delicate operation of the accelerator.

"Whilst you're accelerating [the beams], you don't have to worry too much about how wide the beams are. But when you want to collide them, you want the protons as closely squeezed together as possible.

He added: "If you get it wrong you can lose beam particles - so it can take a while to perfect. Then you line up the beams to collide.

"In terms of the distances between the last control elements of the LHC and the collision point, it's a bit like firing knitting needles from across the Atlantic and getting them to collide half way."

Officials plan a brief hiatus over the Christmas and New Year break, when the lab will have to shut down.

Although managers had discussed working through this period, Dr Gillies said this would have been "too logistically complicated".

The main determinant in the decision to close over winter were workers' contracts, which would have needed to be re-negotiated, he said.

An upgraded early warning system, or quench protection system, should prevent incidents of the kind which shut the collider last year, officials say.

This has involved installing hundreds of new detectors around the machine.

Cern has spent about 40m Swiss Francs (£24m) on repairs following the accident, including upgrades to the quench protection system.

Paul.Rincon-INTERNET@bbc.co.uk

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8309875.stm

Published: 2009/10/16 13:46:02 GMT

Warning over fibroids treatment

UK doctors say a treatment for heavy periods caused by fibroids can seriously harm a subsequent pregnancy.

An Elizabeth Garrett Anderson Hospital study looked at the outcomes of 215 pregnancies following uterine artery embolisation (UAE) treatment.

The researchers found much higher rates of miscarriage, caesareans and heavy bleeding after delivery, and call for caution in recommending the treatment.

The study appears in the journal, The Obstetrician and Gynaecologist.

UAE has been available as a treatment in the UK since 1995.

Pregnancy problems

The doctors pulled together the data from five small studies carried out in the UK, Czech Republic and Canada.

Fibroids are small, benign lumps of smooth muscle in the womb.

THE UAE TECHNIQUE
- A catheter or thin tube is inserted into the blood vessels in the groin which lead up to the womb
- A gel is injected
- This sets and blocks some of the blood vessels supplying the womb
- Fibroids shrink

Sometimes, because of their number, size and location, they cause heavy period pain or difficulty in getting pregnant and treatment is needed.

Doctors at the Elizabeth Garrett Anderson Hospital say as many as 40% of women of reproductive age have fibroids.

They found that the risk of miscarriage following UAE was 35% compared with a rate in untreated women of 10 to 15%.

The incidence of caesarean sections was much higher at 67% compared with a normal rate of 20 to 25%.

And bleeding after delivery was more than twice as common at 14% compared with 5%.

The babies tended to be smaller and they were more likely to present in an awkward position.

'Increase awareness'

Ertan Saridogan, who led the research, said although a large number of women had already undergone the procedure, there had been relatively little study of its long-term effects.

He said: "We do not offer it as a first-time treatment, but, for some women, surgery and other treatments do not work.

"We want to increase awareness of the pitfalls of this widespread procedure.

"I hope this will inform women before they make their decisions, so they can make an informed choice - they've been going at it blindly without realising what it might imply for their future pregnancies."

Henry Annan, from the Royal College of Obstetricians and Gynaecologists, said he agreed that care should now be taken in recommending the treatment.

"A proper randomised controlled trial of this procedure would take many years - it's important that patients should have some idea of the pros and cons of all the various treatments for fibroids."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8310263.stm

Published: 2009/10/16 23:01:50 GMT

Bracelets 'useless' in arthritis

Copper bracelets and magnetic wrist straps are useless for relieving pain in people with arthritis, say University of York researchers.

In the first tightly controlled trial to look at both alternative therapies, there was no benefit to their use for pain or stiffness.

All 45 patients tested a copper bracelet, two different magnetic wrist straps, and a demagnetised version.

An arthritis charity said people should not waste their money on the therapies.

Study leader Stewart Richmond, a research fellow in the Department of Health Sciences, said there had only been one other randomised controlled trial - comparing the treatment with placebo - on copper bracelets and that was done in the 1970s.

" **Although there is a big public appetite for non-drug treatments from arthritis patients, we would not encourage them to spend a lot of money on products for which there is very little scientific evidence** "
Jane Tadman, Arthritis Research Campaign

The market - particularly in magnetic devices which can cost £25 and £65 for the wrist straps - is worth billions of dollars worldwide.

In the trial, 45 people aged 50 or over, who were all diagnosed as suffering from osteoarthritis wore each of the four devices in a random order over a 16-week period.

They were all ineffective in terms of pain, stiffness and physical function, the researchers reported in the journal Complementary Therapies in Medicine.

Placebo effect

"It appears that any perceived benefit obtained from wearing a magnetic or copper bracelet can be attributed to psychological placebo effects," said Mr Richmond.

"People tend to buy them when they are in a lot of pain, then when the pain eases off over time they attribute this to the device.

"However, our findings suggest that such devices have no real advantage over placebo wrist straps that are not magnetic and do not contain copper."

He said the marketing of the devices was often to vulnerable elderly people.

Jane Tadman from the Arthritis Research Campaign said although many people with arthritis wore copper bracelets, there was no current research that supports their use.

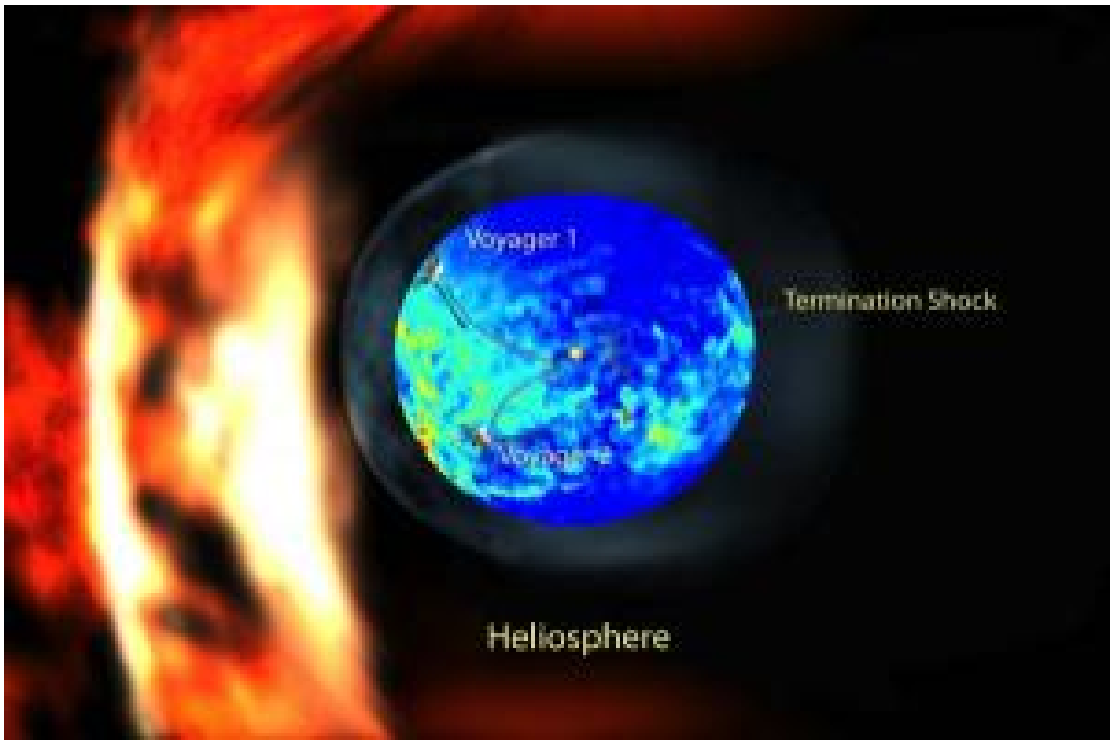
"Although there is a big public appetite for non-drug treatments from arthritis patients, we would not encourage them to spend a lot of money on products for which there is very little scientific evidence," she added.

The charity is in the process of compiling a report on the effectiveness of complementary therapies and arthritis.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8310792.stm

Published: 2009/10/16 11:52:19 GMT

New View Of The Heliosphere: Cassini Helps Redraw Shape Of Solar System



Images from the Ion and Neutral Camera (INCA), part of the Magnetospheric Imaging Instrument on NASA's Cassini spacecraft, suggest that the heliosphere may not have the comet-like shape predicted by existing models. The instrument imaged a population of hot particles that resides just beyond the boundary of where the solar wind collides with the interstellar medium, forming a termination shock. (Credit: JHU Applied Physics Laboratory)

ScienceDaily (Oct. 18, 2009) — In a paper published Oct. 15 in *Science*, researchers from the Johns Hopkins Applied Physics Laboratory (APL) present a new view of the region of the sun's influence, or heliosphere, and the forces that shape it. Images from one of the Magnetospheric Imaging Instrument's sensors, the Ion and Neutral Camera (MIMI/INCA), on NASA's Cassini spacecraft suggest that the heliosphere may not have the comet-like shape predicted by existing models.

"These images have revolutionized what we thought we knew for the past fifty years; the sun travels through the galaxy not like a comet but more like a big, round bubble" said Stamatios Krimigis, principal investigator for MIMI, which is orbiting Saturn. "It's amazing how a single new observation can change an entire concept that most scientists had taken as true for nearly fifty years."

As the solar wind flows from the sun, it carves out a bubble in the interstellar medium. Models of the boundary region between the heliosphere and interstellar medium have been based on the assumption that the relative flow of the interstellar medium and its collision with the solar wind dominate the interaction. This would create a foreshortened "nose" in the direction of the solar system's motion, and an elongated "tail" in the opposite direction.

The INCA images suggest that the solar wind's interaction with the interstellar medium is instead more significantly controlled by particle pressure and magnetic field energy density.

"The map we've created from INCA's images suggests that pressure from a hot population of charged particles and interaction with the interstellar medium's magnetic field strongly influence the shape of the heliosphere," says Don Mitchell, MIMI/INCA co-investigator at APL.

Since entering into orbit around Saturn in July of 2004, INCA has been mapping energetic neutral atoms near the planet, as well as their dispersal across the entire sky. The energetic neutral atoms are produced by energetic protons, which are responsible for the outward pressure of the heliosphere beyond the interface where the solar wind collides with the interstellar medium, and which interact with the magnetic field of the interstellar medium.

"Energetic neutral atom imaging has demonstrated its power to reveal the distribution of energetic ions, first in Earth's own magnetosphere, next in the giant magnetosphere of Saturn and now throughout vast structures in space—out to the very edge of our sun's interaction with the interstellar medium," says Edmond C. Roelof, MIMI/INCA co-investigator at APL.

Researchers from University of Arizona, Tucson, Southwest Research Institute, and University of Texas at San Antonio contributed to the article. The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. JPL, a division of the California Institute of Technology in Pasadena, manages the Cassini-Huygens mission for NASA's Science Mission Directorate, Washington. The Cassini orbiter was designed, developed and assembled at JPL. The Magnetospheric Imaging Instrument was developed by APL.

More information on the Cassini mission is available at: http://www.nasa.gov/cassini, http://saturn.jpl.nasa.gov and on the Magnetospheric Imaging Instrument Web site at http://sd-http://www.jhuapl.edu/CASSINI.

Journal reference:

1. S. M. Krimigis, D. G. Mitchell, E. C. Roelof, K. C. Hsieh, and D. J. McComas. **Imaging the Interaction of the Heliosphere with the Interstellar Medium from Saturn with Cassini**. *Science*, 2009; DOI: 10.1126/science.1181079

Adapted from materials provided by Johns Hopkins University.

http://www.sciencedaily.com/releases/2009/10/091016101807.htm

Tackling Typhoid: First High-throughput Analysis Of Every Salmonella Typhi Gene

Researchers have used next-generation sequencing to look at the need for every S. Typhi gene in a single experiment. (Credit: David Goulding, Wellcome Trust Sanger Institute)

ScienceDaily (Oct. 18, 2009) — For the first time, researchers are able to look at the need for every gene in a bacterial cell in a single experiment. The new method will transform the study of gene activity and the search for weaknesses in bacterial armouries.

Using a newly developed, next-gen sequencing method, a team established which genes Salmonella Typhi needs to survive and which are more of a luxury. The results and the method will be a boon to scientists tackling bacterial disease, allowing them to capitalize on the abundance of genomic sequence data from next-generation sequencing technologies.

Every year 22 million people are infected and 220,000 die from infection with S. Typhi. It is a special threat in the developing world, in areas with poor sanitation or a lack of clean drinking water.

The team were able to look at almost all the genes in S. Typhi and showed that it needs only 356 genes for survival: 4162 genes were not essential. Knowing which genes are essential to the survival of pathogens, researchers can seek treatments to target those genes.

"We developed a new method that is ten times more powerful than any previous technique," says Sanger Institute graduate student Gemma Langridge, one of the first authors on the paper, published in *Genome Research*. "By combining transposon-induced mutagenesis – a method whereby small chunks of cut-and-paste DNA sequence are inserted into the genome effectively disabling individual genes – and high-throughput sequencing, we have been able to determine which genes are essential for the survival of S. Typhi and which are non-essential."

"Crucially, our new method allows us to achieve all this in just a single experiment."

Using the novel method, which the team have named TraDIS (Transposon Directed Insertion site Sequencing), they inserted transposons into the S. Typhi genome to generate more than one million mutants. They then grew the bacteria and used next-generation sequencing to directly identify 370,000 insertion sites in the S. Typhi genome – an average of more than 80 insertion sites per gene. Previous methods produce only a few mutations per gene.

If a transposon inserts into an essential gene, the gene is silenced and that mutant cell will not grow and it – and the transposon insert – will be absent from the mutant pool. By sequencing DNA from the entire pool – approximately 1 million mutants in total – the team were able to identify genes in which no transposon insertions had been detected.

In a single experiment using the TraDIS method, the team were able to determine whether or not 99.6% of the S. Typhi genes are essential to its survival.

"Sequencing centres such as ours can produce vast amounts of genomic data at a pace unimaginable just a few years ago," explains Professor Julian Parkhill, Director of Sequencing and head of Pathogen Genomics at the Sanger Institute. "One of our aims is to develop high-throughput research methods that can exploit this explosion of genetic data, to ensure these resources can be used effectively. We can now discover which of all the genes in an organism are essential to its survival or required for growth under special conditions, such as infection. Our new TraDIS method will make a dramatic difference to the ability to carry out such genome-wide research."

Importantly, the team applied the method to a clinical problem by looking at how S. Typhi might survive in humans. Typhoid can be spread by carriers who, without showing symptoms, act as reservoirs, storing the bacterium in the gallbladder and passing it to others. The most famous such carrier was Typhoid Mary, who worked in the food industry in the US and spread typhoid fever without exhibiting any symptoms herself.

But, bacteria cannot survive in the fairly hostile environment of the gall bladder unless they are tolerant to bile – the fatty fluid secreted by the gall bladder. Looking at genes involved in bile resistance, allows us to see which genes are essential for helping S. Typhi persist in a carrier.

"We grew the bacteria in ox bile to pick out genes required for bile tolerance," says Keith Turner, Sanger Institute investigator and a senior author on the paper. "We found 169 genes involved in bile tolerance – many of these had not been suspected before and more than 30 are genes not characterized at all.

"Using TraDIS, we have highlighted several possible new targets for treatment that would pick on S. Typhi's need to survive in the gall bladder."

For the first time, it is possible to paint a comprehensive picture of essential, advantageous or burdensome genes in many phases of the bacterial life cycle, to determine functions necessary to support them throughout their entire disease cycle. Such a picture is important for discovery of new targets for treatment.

This elegant new method exemplifies how high-throughput research allows scientists to determine systematically the function of or requirement for individual genes in a single experiment, opening the door for similar analyses of other pathogenic genomes in the future.

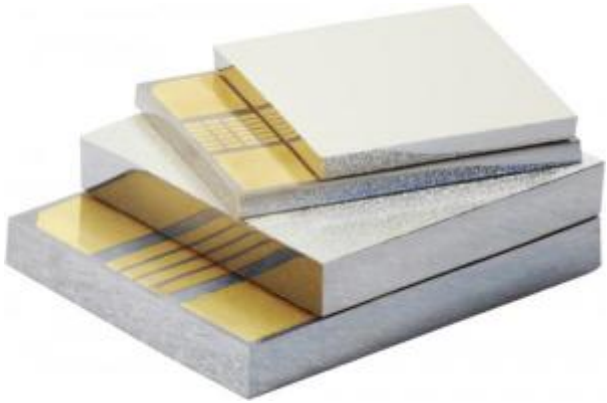
Journal reference:

1. Langridge G C, Phan M-D, Turner D J et al. **Simultaneous assay of every Salmonella Typhi gene using one million transposon mutants**. *Genome Research*, 2009; DOI: 10.1101/gr.097097.109

Adapted from materials provided by Wellcome Trust Sanger Institute, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/10/091016094039.htm

Energy-autonomous Sensors Find Dents And Cracks In Aircraft



Energy-autonomous sensors. (Credit: Image courtesy of Fraunhofer-Gesellschaft)

ScienceDaily (Oct. 18, 2009) — Aircraft maintenance will be easier in future, with sensors monitoring the aircraft skin. If they discover any dents or cracks they will send a radio message to a monitoring unit. The energy needed for this will be obtained from temperature differences.

If a bird collides with a plane the consequences can be fatal, not only for the creature itself. The impact can deform the structure of the aircraft fuselage, causing stresses in the material which can later turn into cracks. In future, sensors in the aircraft skin will detect such damage at an early stage and simplify maintenance and repair work. The sensors are light – they don't need any cables or batteries. They draw their energy from the temperature difference between the outside air (about minus 20 to minus 50 degrees Celsius) and the passenger cabin (about 20 degrees Celsius). Because there are no batteries to change, the sensors can be located at inaccessible places on the aircraft.EADS Innovation Works heads the development consortium. Researchers at the Fraunhofer Institute for Physical Measurement Techniques IPM in Freiburg are developing the energy supply system for the sensors. "We use thermoelectric generators, developed in cooperation with Micropelt GmbH, and adapt them so that they work efficiently," explains Dr. Dirk Ebling, scientist at the IPM. Thermoelectric materials are semiconductors which generate electric power under the influence of a temperature difference. If a number of these thermoelectric elements are connected in series, enough energy is produced to power small sensors as well as a radio device transmitting the measurement results to a central unit. "We are also optimizing the heat flow," the research scientist continues. A key question is how to couple the thermoelectric generator to the warm and cold environments so that it transports enough heat. To obtain the answer the scientists set up a climate chamber in which the temperature profile of the aircraft fuselage is simulated.

The first optimized prototypes have already been built. Development of a prototype of the entire system including the sensor, thermoelectric generator, energy storage device, charging electronics and signal transmission module is scheduled for completion in about three years' time, hopefully enabling the system to enter series production.

The applications for energy-autonomous sensors are numerous. In automobiles they could help to reduce weight by removing the need for heavy cable assemblies. They would also be useful in old buildings, where they could be easily affixed to walls e.g. to monitor dampness. Their use in the medical sector is feasible too. A sensor system integrated in a running shirt could monitor an athlete's pulse during training, and hearing aids could obtain their energy from body heat.

Adapted from materials provided by Fraunhofer-Gesellschaft.

http://www.sciencedaily.com/releases/2009/10/091001095612.htm

Increasing Severity Of Bicycle Injuries Leads To Concerns About Cycling Infrastructure

Adequate infrastructure may not be in place to protect cyclists from serious injury according to surgeons. (Credit: iStockphoto/Vicente Barcelo Varona)

ScienceDaily (Oct. 17, 2009) — Record-high gasoline prices, the slowdown in the economy, and increasing environmental sensitivity are leading more people to bike to work or for play. But an adequate infrastructure may not be in place to protect cyclists from serious injury according to surgeons who presented a new study on the issue during a scientific paper session at the 2009 Clinical Congress of the American College of Surgeons.

The researchers found that the severity of injury and hospital length-of-stay for bicycle injuries at one trauma center has increased significantly over the past 11 years. Despite the wide-spread attention paid to the importance of wearing helmets, helmet use did not change during the time period of the study, and more than 33 percent of 329 bicycle injury victims had a significant head injury. Even more alarming, the number of chest injuries increased by 15 percent and abdominal injuries rose three-fold over the last five years. "We were astounded by that data," said Jeffry Kashuk, MD, FACS, associate professor of surgery at the University of Colorado School of Medicine and senior attending surgeon at the Rocky Mountain Regional Trauma Center at Denver Health Medical Center, Denver. "We're talking about injured spleens and livers, internal bleeding, rib fractures, and hemothorax [blood in the chest]. Those kinds of injuries are reflected by an increase in injury severity score," he added.

The study was conducted in Denver, which has one of the most well-developed bicycle path networks in the country. "Denver is very much a bicycle community. If we are seeing an increase in injuries in a metropolitan area that has fairly mature bike infrastructure from the standpoint of bike pathways, there's reason for concern about what's happening in metropolitan areas that don't have that level of maturity. There seems to be a significant increase nationally in the use of the bicycle for urban transportation. If our data is a microcosm of what is going on nationally, we may be on the cusp of an injury epidemic," Dr. Kashuk said.

Researchers at the University of Colorado hope to obtain funding so they can expand the study nationally and generate data that will support better safety standards and raise community awareness about the lack of cycling infrastructure. "On a local and national level, people need to be aware of the fact that a push for bike transportation for the sake of health, the environment, and lower transportation costs has real potential to raise medical costs because our infrastructure may not be ready for it," Dr. Kashuk said. "Look at all the safety factors that have been incor-porated in automobiles and streets and highways. If even a percentage of that kind of investment went into safety vis-a-vis bike paths and community infrastructure, we would protect people from major injury."

Zachary Hartman, BA; Ernest E. Moore, Jr., MD, FACS; Walter L. Biffl, MD, FACS; Catherine C. Cothren, MD, FACS; Jeffrey L. Johnson, MD, FACS; Carlton C. Barnett, Jr., MD, FACS; and Angela Sauaia, MD, participated in the study.

Adapted from materials provided by American College of Surgeons, via Newswise.

http://www.sciencedaily.com/releases/2009/10/091016141400.htm

How an emerging technology could threaten civility

by Jamais Cascio

Filtering Reality

IMAGE CREDIT: GLUEKIT

HERE'S A STARTLING vision for the next decade: two familiar online phenomena converge in an emerging technological arena to strike a fatal blow to American civil society.
The emerging technology, called "Augmented Reality," enables users to see location-specific data superimposed over their surroundings. Long a staple of science fiction, it's trickling into the real world through the iPhone and similar ultrasmart mobile phones. With AR applications such as Layar, the smart phone displays what its camera sees, with information about nearby buildings and shops, travel directions, even notes and "tags" left by other users in that location. Although AR now relies on handheld devices, electronics makers like Sony are working on systems that you wear like sunglasses, making augmented vision more immersive.

Here's where the first familiar online phenomenon shows up: spam. Nearly every communication method we invent eventually conveys unwanted commercial messages. AR systems will be used for spam too, whether via graffiti-like tags, ads that pop up when you look too long at a shop, or even abstract symbols stuck to a wall or worn on a shirt that, when viewed through an AR system, turn into 3-D animations.

Fortunately, just as Web browsers have pop-up blockers, AR systems will filter spam. Moreover, they'll likely be able to filter out *physical* ads, too, such as billboards—a capability that many opponents of visual clutter will find deliriously attractive.

This technology will have plenty of social uses, of course. Facial-recognition technology is improving, and would be a welcome addition to a personal AR system. Imagine never forgetting a face, and always being able to recognize a friend-of-a-friend on the street. And because the systems are linked to the Internet, once AR recognized someone, you could easily pull up his or her online footprint, such as a Facebook page.

This brings us to the second familiar online phenomenon: political polarization. On the Internet, the stark division between Red America and Blue America is reflected in the political information each side chooses to consume. The social-network analyst Valdis Krebs discovered that people who buy political books on Amazon.com cluster into divergent camps, with little overlap in the books they read. That dynamic also applies to political blogs and news sites.

Conceivably, users could set AR spam filters to block any kind of unpalatable visual information, from political campaign signs to book covers. Parents might want to block sexual or violent images from their kids' AR systems, and political activists and religious leaders might provide ideologically correct filters for their communities. The bad images get replaced by a red STOP, or perhaps by signs and pictures that reinforce the desired worldview.

Did I mention that the "wrong" people can get replaced too?

After California's Prop 8 ban on gay marriage passed, opponents of the measure dug up public records of donors supporting the ban, and linked that data to an online map. Suddenly, you could find out which of your neighbors (or the businesses you frequent) were so opposed to gay marriage that they donated to the cause. Now imagine that instead of a map, those records were combined with an AR system able to identify faces.

You don't want to see anybody who has donated to the Palin 2012 campaign? Gone, their faces covered up by black circles. You want to know who exactly gave money to the 2014 ban on SUVs? Easy—they now have green arrows pointing at their heads.

You want to block out any indication of viewpoints other than your own? Done.

This will not be a world conducive to political moderation, nor one where differing perspectives get along comfortably. It won't take a majority of people using these filters to poison public discourse; imagine this summer's town-hall screamers on constant alert, wherever they go. Yet this world will be the unintended consequence of otherwise desirable developments—spam filters, facial recognition, augmented reality—that many of us will find useful.

The knee-jerk answer would be to ban such reality filters, but a ban could be easily circumvented. The harder answer, but ultimately the correct one, would be to strengthen our society's ability to tolerate diverse viewpoints—to encourage not muddy centrism, but a basic ability to hear out, and to see, fellow citizens with a measure of respect.

http://www.theatlantic.com/doc/200911/augmented-reality

Houses of the Future

by Wayne Curtis

Four years after the levee failures, New Orleans is seeing an unexpected boom in architectural experimentation. Small, independent developers are succeeding in getting houses built where the government has failed. And the city's unique challenges—among them environmental impediments, an entrenched culture of leisure, and a casual acquaintance with regulation—are spurring design innovations that may redefine American architecture for a generation.

A STURDY BIKE IS a good way to get around the Lower Ninth Ward in New Orleans. The roads are still pretty rough, the distances between places tend to be too long to walk and too short to drive, and on a bike you can easily stop and chat with the residents who have returned. I moved to New Orleans about a year after Hurricane Katrina, and I've ridden my bike out here every month or two to see how the rebuilding has been faring. Also, I've heard that Brad Pitt likes to bike around when he's in town. Folks tell me he's a pretty regular guy. "Brad was here yesterday," a woman sitting on the front steps of her new and very modern house told me one day last fall. "He was talking to everyone, just checking things out."

He has a lot to check out, as it happens. Next to the levee along the Mississippi River sits the experimental "project house" of Global Green, a nonprofit Pitt has been working with that's trying to replace homes lost in the flood with energy-efficient ones. From there, it takes about 10 minutes to bike to the northern edge of the Ninth Ward, where the Industrial Canal flood wall collapsed in August 2005. Along the way you pass shotgun houses in various stages of repair and disrepair; Fats Domino's home,

from which he was rescued; and a large sculpture of empty chairs commemorating the hundreds who died in the storm. As you get closer to the failed flood wall, the land becomes more open and rural-looking, and the blackbirds grow louder. Only concrete steps standing in front of concrete slabs suggest the community that existed before the rushing waters erased it.

And then, suddenly, amid heroically overgrown lawns, you see a cluster of modern, colorful, and modestly sized homes, looking like a farm where they grow houses for *Dwell* magazine. These are the fruits to date of Pitt's other project, Make It Right New Orleans. New Orleanians refer to these homes collectively as "the Brad Pitt Houses," which gives them the pleasing ring of an ambitious public-housing project from the post–World War II years. But Pitt's ambitions are not merely utilitarian. He hopes to offer displaced residents affordable, cutting-edge, radically green homes designed by name-brand architects like Thom Mayne and Frank Gehry. And he seems to be succeeding.

Four years after Katrina, the rebuilding of New Orleans is not proceeding the way anyone envisioned, nor with the expected cast of characters. (If I may emphasize: Brad Pitt is the city's most innovative and ambitious housing developer.) But it's hard to say what people *were* expecting, given the magnitude of the disaster and the hopes raised in the weeks immediately following. Seventeen days after the storm, President George W. Bush stood in Jackson Square and promised: "We will stay as long as it takes to help citizens rebuild their communities and their lives."

The terms *we*, *as long as it takes*, and *help* turned out to be fairly elastic. The Federal Emergency Management Agency shuttered its long-term recovery office about six months later, after a squabble with the city over who would pay for the planning process. Since then, depending on whom you talk to, government at all levels has been passive and slow-moving at best, or belligerent and actively harmful at worst. Mayor Ray Nagin occasionally surfaces to advertise a big new scheme (a jazz park, a theater district), about which no one ever hears again. A new 20-year master plan and comprehensive zoning ordinance was being ironed out early this summer, but it remains subject to city-council approval. A post-Katrina master plan has been under discussion since before the floodwaters were pumped out.

In the absence of strong central leadership, the rebuilding has atomized into a series of independent neighborhood projects. And this has turned New Orleans—moist, hot, with a fecund substrate that seems to allow almost anything to propagate—into something of a petri dish for ideas about housing and urban life. An assortment of foundations, church groups, academics, corporate titans, Hollywood celebrities, young people with big ideas, and architects on a mission have been working independently to rebuild the city's neighborhoods, all wholly unconcerned about the missing master plan. It's at once exhilarating and frightening to behold.

"If you look at the way ants behave when they're gathering food, it looks like the stupidest, most irrational thing you've ever seen—they're zigzagging all over the place, they're bumping into other ants. You think, 'What a mess! This is never going to amount to anything,'" says Michael Mehaffy, the head of the Sustasis Foundation, which studies urban life and sustainability and has worked with neighborhood organizations here. "So it's easy to look at New Orleans at the grassroots level and wonder, What's going on here?' But if you step back and look at the big picture, in fact it's the most efficient pattern possible, because all those random activities actually create a very efficient sort of discovery process."

This process is unfolding in a city where the effects of environmental disregard—from disappearing wetlands to rising temperatures to encroaching seas—seem more palpable by the day, and where *sustainability* seems less like an annoying buzzword and more like a moral imperative. Add to this the sudden collapse of the credit and real-estate markets last year, and the fleeting yet unnerving flirtation with $5-a-gallon gasoline the year before, and one could be forgiven for seeing a cosmic convergence taking shape.

The architectural historian James Marston Fitch wrote more than a half century ago that great leaps forward in architecture occur when three factors—theory, material, and technique—come into alignment under the pressure of social change. Such "golden moments of equilibrium," as he called them, are "brief

in time, special in character, delicate in balance." He noted that such moments produced the Crystal Palace, the Brooklyn Bridge, and the Eiffel Tower.

We may be in one of those moments now, with notions of modern design, advances in green materials, and the technical imperatives of sustainability all converging toward a great leap in urban architecture. The architecture writer Andrew Blum has asked whether the Brad Pitt Houses could "become for the single-family green house what Seaside was for New Urbanism or Pacific Palisades was for California Modernism"—that is, a project that recasts the possible for the next generation of architects and developers. As seems fitting for such a moment, most of the construction projects under way in New Orleans are informed by seemingly conflicting strands of utopianism. But their designers are coming to some common, and edifying, conclusions.

This summer, I visited five of the new houses. I sat on their porches—New Orleans's original green technology, offering shade in summer and shelter during deluges, connecting the home with the street—and I considered a city in flux.

409 ANDRY STREET

The front porch of the Global Green project house has an agreeable geometric purity—it's supported by two chopstick-thin columns angled outward on one side, and a shading screen of horizontal wood slats on the other. The porch roof slices at a slight downward angle into a narrow, two-story, pea-green shoebox, which looks as if its solar-paneled lid is being lifted by an unseen hand. Save for two nearly identical houses under construction next door, it resembles nothing else in the neighborhood, which consists of older shotguns and ranch houses.

Mike Lopez was sitting on the porch when I stopped by. He's the construction manager for Global Green, and he's been living in the house since it was completed more than a year ago. Today, it's mostly used as an eco-housing laboratory and visitor center, but eventually a displaced Lower Ninth Ward resident will move in. Until then, Lopez is figuring out what works and what doesn't. (Humidity-triggered bathroom fans, good; a grass roof in subtropical sun, not so good.) This knowledge has already come in handy for the houses next door, and will also inform some of the design when the group breaks ground on an 18-unit green apartment building later this year.

Shortly after Katrina, Matt Petersen, Global Green's president and CEO, met Pitt at a Clinton Global Initiative meeting in New York City. They got to talking about New Orleans. Pitt, as readers of celebrity profiles know, is nutty for architecture. He has tinkered with models in Frank Gehry's studio, bought and restored Craftsman-style bungalows in Southern California, co-authored a book on a historic home, and been asked to help design an eco-hotel in Dubai. Regarding architecture, Pitt once told Oprah, "I'm really gay about the whole thing." When he filmed *Interview With the Vampire* in New Orleans years ago, he developed an abiding fondness for the place. Peterson and Pitt came up with an idea to stage an architectural competition for a model green house. Pitt put up some money and agreed to serve as the jury chairman, and Global Green acquired a 1.2-acre tract in the Holy Cross neighborhood of the Lower Ninth Ward. The competition attracted 125 entries from around the world. A young architectural team from New York called Workshop/apd won, and Global Green set about building its design.

The resulting house is a fine example of what you might call the Better Living Through Modern Green Design strain of utopianism, whose adherents argue that contemporary design and technology will conspire to free us from our grim, polluted past and usher in an era of efficiency and cleanliness. And I have to say, it's an appealing future. Several days a week, the Global Green house opens for tours, and it's hard not to marvel at all the applied ingenuity, from the dual-flush toilets—number one gets a spritz, number two more hydraulic vigor—to the "green screen" of Carolina jasmine being trained to shade the south wall, to the thousand-gallon cistern intended to supply captured rainwater for toilet-flushing and plant care . The house is designed to be "net zero" energy-wise—that is, it produces as much electricity as it consumes each year. The utility closets are filled with the synapses that control the house's hi-tech appendages, and downstairs near the door is a touch-screen panel—the "Lucid Building Dashboard"—that monitors its brain waves like an EKG. It seemed to me every bit as marvelous as Disney's old House of the Future, but with reclaimed wood rather than white plastic.

1631 TENNESSEE STREET

Rosemary and Lloyd Griffin's front porch is low and broad, wrapping around two sides of their house and giving it a contemporary Creole-Caribbean feel. Their roof, a shiny steel pyramid lined with solar panels, looks slightly askew, like the Tin Man's hat. Rental cars roll slowly down the street, car windows descend, cameras emerge. A sign reading PRIVATE RESIDENCE has been hammered into the front lawn to keep the curious at bay—visitors occasionally mistake the house for a pavilion at some sort of world's fair and walk right in. Mrs. Griffin tells me she doesn't mind all the gawkers and the picture-taking. "I thank God for this," she said, nodding at her new house. "This is something to be excited about."

The Global Green project, it turned out, was just the beginning for Pitt. After Katrina he moved his family to New Orleans to film *The Curious Case of Benjamin Button* (and bought an 1830s mansion in the French Quarter). He saw the slow progress of the city's rebuilding firsthand and, looking to do more, picked up the phone.

"I got a call one day out of the blue from Brad Pitt," says architect Bill McDonough. McDonough is the co-author, with the chemist Michael Braungart, of *Cradle to Cradle*, an influential manifesto calling for manufactured products and building materials that can be fully reused when they no longer serve their initial purpose. Pitt liked his thinking. "He'd read *Cradle to Cradle* and asked me if I wanted to do something together in New Orleans."

McDonough said yes. So did others who got the call, including Graft, an architecture firm based in Los Angeles, and Cherokee Gives Back, a North Carolina–based foundation. Together, they established Make It Right, with the goal of constructing 150 new houses in the hard-hit area near the ruptured Industrial Canal flood wall—enough housing to feel like a neighborhood, they figured, as well as to entice additional investment along nearby streets. Pitt put up $5million, as did the philanthropist and movie producer Steve Bing. They've since raised enough to build about a hundred houses. Pitt contacted a group of noted architectural firms and asked them to contribute designs. Thirteen did, including Kieran Timberlake, Pugh + Scarpa, Adjaye Associates, MVRDV, and Morphosis. (Seven more firms have since signed on.)

The architects were given conditions hammered out in part during community meetings, some of which Pitt attended, where displaced residents described their vision of a new neighborhood. Among the criteria that emerged: use the city's existing narrow lots (that is, no aggregating lots and building large complexes—rumors had circulated after Katrina that Donald Trump wanted to buy the whole Lower Ninth); elevate houses out of the way of future flooding and include rooftop access to simplify rescue; feature prominent porches or front stoops for socializing; and use materials that are tough enough to survive hurricanes but that also approach "cradle to cradle" reusability. The standard house was to be 1,200 square feet, have three bedrooms and two baths, and cost no more than $150,000. Homeowners would pay what they could, and the foundation would help with the rest. In the meantime, Make It Right started working with Lower Ninth families to clear up property-title issues (historically, many New Orleanians have acquired houses without paperwork showing a clean line of ownership), and to help with insurance settlements, payments from the federally funded Road Home program, and new financing.

The firms presented their preliminary designs for feedback. The people of the Lower Ninth voiced some displeasure—in particular, they didn't care for the flat roofs favored by modern designers. "A lot of residents said they looked like FEMA trailers," said Steven Bingler, the founder of Concordia, a New Orleans architecture-and-planning firm, which designed the house selected by the Griffins. "Don't get me wrong—they were really hip. But the residents said: 'A house has a sloped roof.'"

As the process unfolded—with designers bouncing their ideas off the people who would actually have to live in their creations—Bingler sensed a welcome shift in his style-obsessed profession. "Community has to be the new titanium," he said.

Two houses drew extra attention. Thom Mayne's house was designed to float out of harm's way in a flood. (Mayne's prototype was built by architecture students at UCLA, then trucked to New Orleans and

reassembled.) And the Dutch firm MVRDV proposed a high-concept V-shaped house that looked not unlike the houses that had collapsed after Katrina. It's the only design not yet selected by a homebuyer.

Green high-design utopianism is virulent at Make It Right, as at Global Green, and all the houses feature sophisticated systems to achieve net-zero energy use. At an open house last year, a Make It Right organizer insisted that I go down and watch the electric meter running backward as solar energy coursed back into the grid. I stood around with a few others, murmuring appreciatively, as if witnessing a high-tech voodoo ceremony.

New residents undergo training on the operation of their homes, and receive a thick technical notebook and a smaller user's manual. They also get a dedicated phone number to call with problems; at the other end, a staffer will troubleshoot or send out a technician. I suggested to Tom Darden, the project's executive director, that this didn't seem to have much in the way of real-world application. But he shrugged and said it was part of the plan. Make It Right's mission includes testing new approaches and discarding those that fail, a luxury few for-profit developers can afford.

Biking through the neighborhood recently, I was heartened to hear all the hammering and sawing along Tennessee Street—the raspy calls of blackbirds in the overgrown lots of the Lower Ninth are woeful and melancholy. With nearly 20 Make It Right houses occupied or under construction, a certain critical mass was forming. But I had to wonder: Why the need to cluster so many boisterous structures side by side? Any one of these homes would make for a striking neighborhood landmark, but together they just make noise, like an orchestra of timpani. But I suppose it's churlish to raise aesthetic concerns. BRAD PITT FOR MAYOR T-shirts are not uncommon around town. And people marvel at what Pitt has accomplished where so many others have failed, even if they admit, in a footnote, that the houses aren't their style.

"What we call historic design arose out of necessity," said Darden, "and that's happening again."

3428 DAUPHINE STREET

Not everybody is so circumspect. "Oh, it's all bullshit," Andres Duany said to me last fall, when I brought up Make It Right. "The high design? That has nothing to do with reality. That's just architectural self-indulgence."

Duany, it may come as no surprise, subscribes to another utopian worldview. He is a co-founder of the Congress for New Urbanism, and a persistent advocate for traditional small-town design. A generation ago, Duany and his wife, Elizabeth Plater-Zyberk, designed the landmark village at Seaside, Florida, and made a seemingly historic beach town suddenly materialize on an empty stretch of seacoast. (It was the setting for the movie *The Truman Show*.) He built his reputation in part on his porches; at Seaside, all houses were required to have them, to encourage community interaction.

The porch at 3428 Dauphine Street—in the historic Bywater neighborhood, just across the Industrial Canal from the Lower Ninth—is not very Duany-esque. It's more like a small deck, accessible only from the living room and enclosed by a tall wood-plank fence. This is a bit odd, since Duany designed it, but in a historically blue-collar neighborhood of stoops rather than porches, it makes contextual sense.

Duany has been involved with the rebuilding since just days after Katrina, most recently as part of Cypress Cottage Partners, a group that was awarded $74.5million by the state to come up with alternatives to the much-loathed FEMA trailer. The idea was to build prototype villages in communities along the Gulf Coast and see how they work. But the search for sufficiently large building lots has been fraught with headaches, so in the meantime Duany went ahead and built the Bywater houses on an empty corner lot with the help of an investor, in part to learn about how to build quickly and efficiently in New Orleans.

What resulted was a pair of duplexes, variations of what are locally called shotgun doubles. The houses, painted champagne yellow and olive khaki, have gables facing the street and, across the facade, an overhang that shields doors and windows against rain and sun. Duany's overhangs, compared with the

ones on older houses in the neighborhood, are placed a bit too high, like someone wearing pants cinched near his chest. But they add a touch of grace to the streetscape, and without them the houses would look as if they were wearing no pants at all.

These homes illuminate the Your Elders Knew Best strain of utopianism, whose adherents argue that historic neighborhoods are sacred texts from which one can learn, provided the language in which they were written is accurately translated. The future and its fancy technology distract from what's really important: building human-scale environments with houses that quietly add to the conversation of the street, rather than yodeling and preening. Duany has largely succeeded in weaving his new homes into the block. One can bike past without noticing them, as I first did. As he explained in a neighborhood-association newsletter, "It is our hope that at least some parts of New Orleans can be rebuilt in the style to which its residents are accustomed—and not as a version of an Alabama trailer park or a suburb of Venice Beach, California."

Duany is sometimes (and unfairly) likened to a monk laboriously transcribing the texts of the ancients without contributing new ideas for a new time. But style wasn't what irked him when I brought up the Make It Right project. It was the whole way New Orleans was approaching rebuilding.

"When I originally thought of New Orleans, I was conditioned by the press to think of it as an extremely ill-governed city, full of ill-educated people, with a great deal of crime, a great deal of dirt, a great deal of poverty," said Duany, who grew up in Cuba. "And when I arrived, I did indeed find it to be all those things. Then one day I was walking down the street and I had this kind of brain thing, and I thought I was in Cuba. Weird! And then I realized at that moment that New Orleans was not an American city, it was a Caribbean city. Once you recalibrate, it becomes the best-governed, cleanest, most efficient, and best-educated city in the Caribbean. New Orleans is actually the Geneva of the Caribbean."

Duany said that many of the shotgun houses in New Orleans were built by the fathers and grandfathers of people living in them today, and few of them meet building codes. But no one worries about paying mortgages or insurance. "The situation is that the housing is essentially paid off, and it allows people to accumulate leisure," he said. "What's special about New Orleans is that it's the only place in the United States where you can have a first-rate urban life for very little money." What happened after Katrina, Duany said, was that FEMA and others came to town with detailed requirements for record-keeping and property titles, then insisted on stringent building codes that would make all the houses hurricane-proof. This might seem like common sense, he said, but it's "essentially unworkable for a Caribbean city."

So the central problem, according to Duany: "All the do-goody people attempting to preserve the culture are the same do-gooders who are raising the standards for the building of houses, and are the same do-gooders who are giving people partial mortgages and putting them in debt," he said. "They have such a profound misunderstanding of the culture of the Caribbean that they're destroying it. The heart of the tragedy is that New Orleans is not being measured by Caribbean standards. It's being measured by Minnesota standards."

As an alternative, Duany argues for "opt-out zones" for some of the hardest-hit areas, including the Lower Ninth. Within these zones, residents could rebuild their homes the way the city was originally constructed: by hand, incrementally, and unencumbered by what Duany calls "gold-plated" building regulations or bank requirements. Such zones exist in rural areas, he says, but haven't been tested in an urban context. He suggested that the money spent on the Better Living Through Modern Green Design homes would be far better spent on a widespread, low-cost self-building program. "The deal is, you can hammer something together any old way, but you won't have debt. That should be an option. Carrying debt requires a great deal of employment, which undermines a culture of leisure. The key is self-building," he told me, and added that it might arise somewhere else in the city, perhaps among the Latino construction workers who arrived on the heels of the storm. "It always emerges."

3105 LAW STREET

From his front porch, Mingko Aba can look across the street to the house where he was born 59 years ago. Actually, he's looking slightly downward at it, because his new house is built about five feet up, on

piers. He also has a pretty good vantage point for seeing the progress in his Upper Ninth Ward neighborhood, which flooded but was spared the tsunami that swept homes off their foundations across the canal in the Lower Ninth after the levee broke.

Aba rode out Katrina at home, clambering up to his roof when the water reached his ceiling. The next day, a neighbor came with a boat that had drifted by, and the pair helped ferry other stranded people to the top floor of a church, and then went looking for groceries. They picked pink grapefruit and blood oranges from the upper branches of Aba's citrus trees, and at a flooded corner store, they discovered that packaged food has an unadvertised advantage: it's airtight and bobs to the surface.

After spending three years in Alabama, Aba came back for his brother's funeral and decided it was time to rebuild. On a neighbor's suggestion, he contacted Build Now, a nonprofit founded in 2007 that helps homeowners navigate the whole process, from arranging to demolish your old house, to finding financing for the new one, to the actual construction.

Aba's new home, which he moved into earlier this year, is just 14 feet wide, but it has a restrained grandeur, like a miniature Greek temple on a mount. On the outside, with its rectangular columns and tall triangular pediment, it's all but indistinguishable from the Greek Revival shotgun houses found on narrow lots throughout the city's older neighborhoods.

The historic design is not by accident. William Monaghan, the architect and developer who founded Build Now, is another representative of the utopianism that sees salvation in the architectural grammar of a historic city. "There's a place for everything, and it's great that people are doing all kinds of design, but I wanted to fit in with the neighborhood character," he said. "I didn't want to try to get somebody to move back to New Orleans and make all those decisions and sink all that money into something, and then say, 'Oh yes, and you also have to be challenged by unfamiliar architecture.'"

Monaghan, who grew up in New Orleans and is now based in New York, had been appalled at the city's anemic rebuilding efforts during his visits home after Katrina. So he founded a nonprofit with the slogan "Build new. Build high. Build now." The idea was to provide one-stop shopping for traditional, reasonably priced homes for the displaced. Complete houses, including appliances, begin at about $100,000, without land or foundation work.

Monaghan set out to create eight prototype homes based on classic New Orleans styles. "Having lived there so long, I thought I knew everything," he said. "I'm an architect, I've done a lot of historic preservation work. I thought I'd just design some houses that look like New Orleans houses."

That proved trickier than he'd thought. He explored the city with tape measure in hand, conducting a sort of architectural phrenology to figure out the proportions and details that make New Orleans houses so New Orleans—the depths of the porches, the sizes of the pediments, the angles of the hip roofs, the ratios of height to width. It turned out that while these measurements tended to be quirky and irregular, they made a lot of sense for the culture and climate of New Orleans. For instance, almost every old house has tall ceilings that allow residents to live below the worst of the summer heat. Single shotgun cottages lack hallways, allowing for efficient cross-ventilation in every room. And many center-hall cottages use transoms to make the walls porous and keep the air moving. "You sort of take this stuff for granted," Monaghan said, "but it's a tremendous environmental response."

Monaghan built a model house and started staging community events, like crawfish boils, to get the word out. People found him; they've contracted for 16 homes to date, and Monaghan has since designed six new models based on requests from buyers.

The great appeal of Build Now is its utter simplicity. Recreating a home from the past seems a needed balm for this wounded city. Where Duany seems to want to harness his projects to a broader crusade, Monaghan's mission is more straightforward: build houses that New Orleanians have shown, through a process of architectural natural selection spanning more than a century, that they love.

"What we're learning is that these traditions are not just fashions," said Michael Mehaffy of Sustasis. "They're rooted in the real adaptive evolution of a place."

2036 SEVENTH STREET

URBANbuild Prototype 04 in New Orleans's Central City neighborhood was completed last spring. You might pass Duany's or Monaghan's homes without noticing them. Not this one. It's a gleaming white box sitting flush against two streets on a corner lot, hung with large sliding panels of polycarbonate plastic. It looks like the package in which one of the Victorian shotguns nearby was delivered, and the sheer incongruity of the thing made me laugh when I first saw it. But loitering on the back porch—basically a deep rectangular cut taken out of one corner of the box—I found it impossible not to feel part of the neighborhood, perhaps more so than at any of the other new houses I'd visited.

This is one of four homes developed since Katrina by the URBANbuild studio at the Tulane School of Architecture. (The third house was featured in a reality-TV series on the Sundance Channel last year.) Some 25 students worked to design and build it; electrical, plumbing, HVAC, and drywall work were contracted out. Standing on a crime-racked block of the city, it has the feel of guerrilla architecture, built in defiance of its surroundings.

The students started with the concept of sliding plastic panels, which, in theory, will withstand the pummeling of a hurricane. They then took some of the common architectural vocabulary of New Orleans—shutters, porch, front stoop—and distilled them to their essential elements, adding exaggerations of scale and splashes of color (the segments of the box cut away for the stoop and porches are painted lime green). Even so, the house is practical, like a cabinet from IKEA—when not locked into position for hurricanes, the panels can be moved around for privacy, or to shade the porches from sun.

"We're trying to get the students to be inventive, creating ideas that maybe other people can mimic," says Byron Mouton, the Tulane professor who directs the studio. All of the houses are aggressively contemporary in style. Reaction has been divided among residents: in general, the older generation hates them, and younger folks think they're fly.

Scott Bernhard, director of the Tulane City Center, which has worked with URBANbuild and other community projects at Tulane, defended the style. "To me, it's respectful of the old buildings to be attentive to scale or urban pattern, but it's not respectful of those old buildings to imitate," he said. "In some ways, imitation and mockery are too close together. To us, having a gabled roof at the front of the building is far less important than engaging the street."

Two years ago, at a conference on traditional building held at the New Orleans convention center, the architect and New Urbanist Steve Mouzon asked a crowd of contractors and architects to think about a basic point. "The very core of sustainability," he said, "can be found in a simple question: 'Can it be loved?'"

All those solar panels from the first eco-boom in the 1970s, and those clunky, angular houses they sat atop? Most are demolished and gone. "The carbon footprint of a building is meaningless once its parts are carted off to a landfill in a generation or two," Mouzon told the crowd. The rebuilding of New Orleans by the people who love it, he suggested, may provide the most lasting green lesson of all.

New Orleans remains a traumatized city: 65,000 homes still sit unoccupied, the population is still down by about a quarter, rents are up by 40 percent, and violent crime is endemic. But the strong and enduring interest in rebuilding here—and the steady trickle of residents moving back, along with the unabated flow of volunteers coming to help out—shows that it is a place people care deeply about. That fact should not be overlooked.

Consider that Habitat for Humanity has nearly completed its high-profile Musicians' Village in the Upper Ninth Ward, including a cluster of 72 attractive, small, traditional-style homes conceived by the New Orleans natives Branford Marsalis and Harry Connick Jr. And that another New Orleanian, the actor Wendell Pierce, has established a nonprofit with plans to build hundreds of environmentally friendly

homes in badly flooded Pontchartrain Park, where he grew up. In nearby Gentilly, Project Home Again, founded by Barnes& Noble Chairman Leonard Riggio, has put up $20million to build elevated bungalows for former residents, and the Episcopal Diocese of Louisiana has funded the construction of 21 low-cost modern shotguns in Central City.

Meanwhile, the city's 270 or so neighborhood associations, once little more than social clubs dabbling in the occasional crime-watch program, have become increasingly sophisticated in the language of rebuilding and partnering with outside experts—whether from charities, the business world, or even Hollywood. This isn't exactly the bottom-up self-building that Andres Duany envisions. But neither is it Robert Moses–style planning from on high. A community-driven, middle-out planning style has emerged, and the kind of housing it seems to favor fuses smart modern design with the city's traditional notions of space, leisure, and community. As with jazz, gumbo, and some remarkable cocktails, this style illustrates the city's talent for crafting extraordinary things from the ordinary stuff it has at hand.

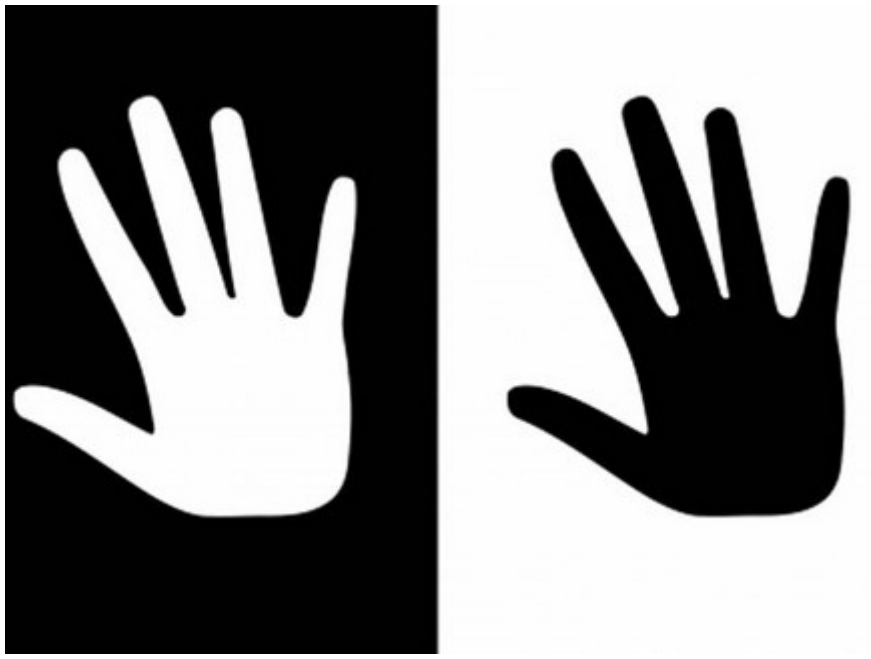
New Orleans can offer plenty of lessons in green living—and it could have before the storm, had anyone asked. How to build beautiful small houses on narrow lots. How to build compact, walkable neighborhoods. How to adapt buildings to the environment, with deep porches and high ceilings and small, leafy yards. These are the things that people loved about New Orleans—and they're the things that architects interested in sustainable design most want to build right now. The past here has much to inform the future, not just for New Orleans, but for an entire country that needs to rethink the way it designs its cities and homes. New Orleans won't be rushed—it never is—but the chances are good that whatever results here will be loved.

http://www.theatlantic.com/doc/200911/curtis-architecture-new-orleans

When Black and White Aren't Black and White

Two psychologists show that our concepts of morality and sin are mentally associated with lightness and darkness, with potentially troubling implications for criminal justice.

By: Lee Drutman | October 18, 2009



Morality and sin are mentally associated with lightness and darkness, researchers show, with potentially troubling implications for criminal justice.stockxpert.com

Quick! What color is sinfulness? What about moral purity?

If you're like most people, you naturally see sinfulness as tinged in black, while moral purity comes through in soft whites. And if you are the kind of person who really values cleaning products, or, for some reason, you were just thinking about immorality, the mental coloration of these abstract concepts is even stronger. So demonstrates doctoral student Gary D. Sherman and professor Gerald L. Clore, both of the University of Virginia Psychology Department, in a recent article from *Psychological Science*.

But why? Is this just a product of conditioning? Or is this something deep-seated within human psychology? And if so, why should purity and sinfulness be tinted in black and white, as opposed to, say, green and orange or any color at all? And moreover, if it is deep-seated, is there anything we could or should do about it, especially in places like courtrooms where immorality is on everyone's mind and might impair the ability of jurors to be impartial?

To understand why abstract concepts like these might be associated with colors at all requires an understanding of how the mind processes abstract concepts. Almost 30 years ago, George Lakoff and Mark Johnson developed the idea of "grounded metaphors," which suggests that since our mind can only experience the world through sensory information, abstract concepts can only be understood using metaphors based on sensory experiences. So, for example, status is represented as being up or being down, and it's always better to be on top.

"The only way we can think abstractly is by having something concrete to liken it to," explained Clore.

In 2004, he co-authored an article with North Dakota State psychology professors Brain P. Meier and Michael D. Robinson that examined the extent to which goodness and lightness and evil and darkness were linked in people's brains, building on this idea of grounded metaphors.

"You can think of primordial associations with lightness being safety and darkness being danger," said Clore. "And you can see this if you look at all world religions."

They found that college undergraduates were quicker and better at identifying words as positive or negative when the positive words were in white and the negative words were in black (as opposed to the other way around), indicating that there was indeed some deep connection. (The premise of such a test, called a Stroop effect test, is that if words are naturally associated with one color, the brain will have a more difficult time processing them when they are in another color.)

But when asked to identify the word's font color as black or white instead of its positive-negative dimension, participants had no trouble. This part was a bit surprising, and suggested a bit of a puzzle. It seemed that the color made it harder to identify the words, but the words didn't make it any more difficult to identify the color. Why?

A few years later, Clore and Sherman had an idea. Clore had previously thought that there are actually three separate ways the mind evaluates things as good or bad. One is how it affects personal goals. (For example: It's good to be healthy, but bad to be sick.) A second is based on taste (Fudge ice cream is good; Pistachio ice cream is bad). A third is whether it is right or wrong, moral or immoral.

But moral and immoral are abstract concepts, and so the mind needs a grounded metaphor. And it seems the metaphor we use is pure versus impure. "It's this notion of pollution and contamination, white and black, and you can't let anything near the white, because one drop of black paint in the white paint and you get it gray," said Clore.

Sherman added: "In the physical world the idea of keeping aware of a source of disease or contagion is important, and we understand that impurities are dark and that light surfaces can help detect impurities."

So Clore and Sherman went back and re-analyzed the 2004 data to test what would happen if instead of looking at color identification speed for all positive and negative words, they just looked at words relating to morality or immorality. They found if they limited their analysis to that particular subset, there was indeed a statistically significant effect.

Next, the researchers wanted to see if they could strengthen the effect by priming participants to think about immorality. First, they administered the color identification test with moral and immoral words. Then they asked the participants to hand-copy a very short first-person story about a workplace incident. Half the stories had ethical endings and half had unethical endings. Then they issued the color identification test again.

For those who had little trouble with the color identification initially, exposure to the unethical story made it harder to identify word color when it didn't match the moral/immoral dimension of the word. "This shows you can bring this out in people," said Sherman. "We were struck how easily it could be moved around."

But even more interesting was that for those who struggled more with the identification in the first test, priming immorality made these participants better at naming the color. This was a bit puzzling.

Clore believes that for those already thinking about immorality, becoming even more attuned to it helped bring it to consciousness, where it could be controlled.

"If you make something obvious, people appear to be able to regulate it," he said. "What we find with emotion is that if you make something really salient, people are better at making proper discrimination. By making it salient, people got rid of it."

Sherman and Clore also conducted a third study, in which they asked people to rate several consumer products, some of which were cleaning products. Those who ranked cleaning products most highly turned out to be the individuals who had the hardest time identifying the colors when they didn't match the moral dimension of the words. (Elsewhere, researchers have shown that physical cleanliness is psychologically linked to concerns for moral purity, something that has been called the "Macbeth effect," referring to Lady Macbeth's obsessive hand washing). This further confirmed the mental association of white and black with moral purity/impurity.

In publishing their findings, the authors were sensitive about its implications for explaining or even justifying racism against darker-skinned people. They worried that it could be misinterpreted as showing that black equals immorality.

"The important thing is that our notion about impurity and blackness did not originate with notions of race," said Clore. "But once you have black and white apparent in skin tones and you also have them in a moral/immoral context, it can become a compelling metaphor."

"The basic research was not about race," added Sherman. "And if race did not exist, we think this would still exist. But its existence does bring to mind potential connections to race."

Sherman also added that historically, race has often been determined by the one-drop rule, and "one drop of blood has been related to the impurity-contamination idea."

Still, there are potentially important implications for race. Since the research shows that the mental association of light/pure and dark/sin is likely to be strongest when ideas of immorality are on the mind, this could impair the impartiality of jurors in criminal cases.

"In a context where the morality and impurity metaphor is alive, such as in the courtroom, that reinforces the association," said Clore. "Surely it is no simple accident that it is harder for a black man to get off than a white man to get off, and the punishment is harsher for black defendants than for white defendants. I think it's a combination of salience, what's accessible, and the moral frame."

Though there are ways to counter this effect by calling attention to it (as one of the studies demonstrated), Clore said that one effect of pointing out people's sources of bias is that it "makes people bend over backwards the other way ... you're just as likely to make them try hard to overcompensate. Things can be malleable in the domain of emotions." In other words, a mind free of subtle bias in one direction or another is very hard to obtain.

Clore said he would be exploring this awareness effect more in the future, and both researchers said they would be expanding the tests to explore whether the effects were the same across different races (most participants in the first round of studies were white college students), as well as across different cultures, countries and religions, to see whether the results would remain as black and white as they first appeared.

http://www.miller-mccune.com/culture_society/when-black-and-white-aren%E2%80%99t-black-and-white-1490?utm_source=Newsletter79&utm_medium=email&utm_content=1020&utm_campaign=newsletters

Guidance from Above on Food Insecurity

An American-led famine early warning system uses satellite technology to predict where best to stave off future starving in the rest of the world.

By: Arnie Cooper | October 17, 2009

A famine early warning system, led by the U.S., uses technology to predict and prevent starvation and malnutrition around the world.stockxchange.com

When Kenya's twice-yearly rainy seasons failed to materialize in early 2007, the shortfall plunged a quarter of the country's 39 million inhabitants, some 10 million people, into food insecurity — the state when food, or access to it, isn't available. Beyond the drought, the world financial crisis has led to a doubling in basic market commodity prices — a big problem in a country that needs to import grain and livestock as it is.

Compounding the crisis, said local meteorologist Gideon Galu, is a lack of quantifiable information. "In this area we have a very sparse observational network of meteorological and climatological data." Fortunately, satellite technology can fill in the gaps to help those suffering on the ground.

In fact, this situation could have led to devastating famine if it weren't for FEWSNET, the Famine Early Warning Systems Network. Funded by U.S. Agency for International Development, the $20 million-a-year network collaborates with international organizations and American institutions like the U.S. Geological Survey, the National Oceanic and Atmospheric Administration and NASA to provide information on emerging food security threats in 23 countries.

Galu, who works as a FEWSNET regional scientist in the Nairobi office, said that for Kenya, the system helps fill in the gaps in both analytical approaches and data sets lacking for the dry pastoral regions of his country. Along with Somalia and Ethiopia, these places comprise FEWSNET's primary "hotspots." Other target areas include Central America, Haiti and Afghanistan. (Beginning next year, FEWSNET will add Mongolia, India, North Korea, Malaysia and Indonesia to the list.)

But no matter where it operates, the goal is the same: to supply locally based analysts with a combination of satellite imagery and the latest climate computer models so they can conduct "targeted livelihoods-based assessments" that provide information about how a typical household produces and consumes food, earns and spends its income (including assets) and how it manages these resources in good and bad years to enhance its food security.

History of FEWSNET

Close to 70 million people died of famine in the 20th century, and it was a particularly awful crisis — the drought-fueled, 1984-1985 food crisis in west, east and southern Africa — that saw FEWSNET's precursor, the Famine Early Warning System, created. (That famine also spawned pop-culture responses like Live Aid benefit concert and USA for Africa's *We Are the World* charity single.)

Molly Brown, a research scientist at NASA, said that beyond the hundreds of thousands who perished, millions of people were affected in the region for years afterward through mass migrations and disrupted development.

"The only food in the market was 10 times or more its usual price — no one had the money to purchase it," she noted. "What's more, aid was slow in coming and highly inadequate due to the lack of information systems that linked conditions in those countries to international aid organizations."

An illustration of how poorly equipped the aid community was at dealing with the issue is offered by Gary Eilerts, the USAID program manager for FEWSNET, recounting the bad old days before the network. "There were reports coming in from western Sudan and other places saying that people were starving. And when people responsible here for responding asked where exactly they should send the goods, they were told ‘western Sudan, of course.' Peter McPherson, the AID administrator at the time was shocked to see how little specific information there was about where in western Sudan there was famine."

Back then, the main "early warning" consisted of national-level indicators like "cereal balance" (food available from all sources nationally, divided by the number of people). Unfortunately, this was hardly enough information to present a comprehensive picture of what was really going on.

Today, FEWSNET digs much deeper by conducting village-level field work to gather first-hand accounts of household income, expenditure patterns, which are analyzed against both local economic growth and global market trends as well as health and conflict issues.

Also in the mix, various indexes derived from NOAA satellite imagery that provides real-time data for food security analysts. This includes the "normalized difference vegetation index," which tracks the amount and vigor of vegetation by assessing photosynthesis levels. "Rainfall estimation" imagery uses infrared data from the European Union's Meteosat weather satellites, rain gauge reports and microwave satellite observations to compare current rainfall with historical precipitation trends.

And though remote sensing is only part of what FEWSNET does, since the economies of many of these countries are dominated by food production, reliable and quantifiable weather and soils data are critical. Drought not only reduces a farm family's ability to make a living, it also affects how much they can hope to eat. If they're unable to grow enough food to sustain themselves, they're forced to purchase it at prices up to 10 times higher than normal. Perhaps more importantly, besides presenting a far more accurate picture of a country or region's food security, this hard data also serve to motivate governments and food donors to respond to impending crises.

Eilerts offered an example of acting before the crisis fully bloomed: "USAID food aid was recently sent toward the Horn of Africa where we now expect another long and difficult period of food insecurity and rising malnutrition."

FEWSNET alerts can also help food aid organization decide when not to send help, which happened recently in Afghanistan where high food prices were stressing household budgets of the poor. "Looking ahead, FEWS saw a high likelihood of a very good Afghan wheat harvest this summer, which has now come to pass," Eilerts said.

Complicating Factors
Much has changed during the past 20 years thanks to the globalization of food markets and technological innovations, but Brown and Eilerts both agree that today's food insecurity is less a problem of environmental conditions than the money to afford to buy what's in the market. It's known as "food access," a concept developed by Nobel Prize-winning economist Amartya Sen. Beyond access, there's "food availability" in a given region and "food utilization," the ability to actually get the nutrition in that food and turn it into energy at the individual level.

Complicating all of this is political instability resulting from incompetent and hostile regimes.

Said Brown, "When we have droughts here in Virginia where I live, no one is food insecure because we have a functioning government that provides safety nets like welfare and insurance. In places like Niger, the government is extremely tiny and totally incapable of providing those safety nets, so when you have a weather crisis, you get famine because of the context in which it occurs."

An equally daunting problem: the climate fluctuations brought on by global warming. According to Brown, because FEWSNET was designed in the late '80s and early '90s, the objective was to use the data to restore local areas to "normal" conditions. "There are places like Somalia, which haven't had a government in 18 years. Every year, it gets less rainfall because of climate change, so the question is how can [we] even think of returning that kind of situation to normal since there is no normal."

This has caused FEWSNET's team members to rethink the program's approach to food assistance. Instead of restoring systems to pre-crisis conditions, FEWSNET will look to advance an area to become more sustainable and resistant. "It doesn't make sense to save people's lives and have to come back next year and do it again," said Brown.

The Future
One tool in preventing that is more sophisticated technology.

Despite advances in remote monitoring, Brown says soil moisture measurements are very poor. That's why FEWSNET is anxiously awaiting a new satellite called SMAP — for Soil Moisture Active & Passive — to launch in 2012. A combined radiometer and high-resolution radar, it will be able to penetrate the tree canopy and yield high-resolution images of how moist the ground is to as deep as 30 centimeters below the surface, data critical for both farmers and the food aid community. Three years later, the Deformation Ecosystem Structure and Dynamics of Ice mission will provide height information of the vegetation canopy. It will help FEWSNET determine the location of crop fields for better monitoring and provide another tool for assessing the impact of climate change.Despite the importance of remote-sensing data, as the meteorologist Galu suggests, one must separate scientific data (merged with livelihood data) from response time and kind. In Kenya, FEWSNET has played a decisive role in getting the government to address the current crisis. Just last month [on Aug. 18] it launched a multimillion-dollar initiative to replace "rain-fed agriculture" with a more efficient and reliable irrigation-based system.

Says Galu, "I do not wish to say that FEWSNET takes sole credit, but it has been part of the process of needs assessment and recommendations."

http://www.miller-mccune.com/science_environment/guidance-from-above-on-food-insecurity-1480?utm_source=Newsletter79&utm_medium=email&utm_content=1020&utm_campaign=newsletters

Watching You In the Loo

In honor of Global Handwashing Day, we examine the hygiene of public restroom users and what motivates them to wash up.

- By: Joan Melcher | October 15, 2009

Handwashing rates between men surveyed and women varied widely, with women twice as likely to wash their hands.Tilaneseven / Flickr

With influenza season in full course, it's good to have scientific researchers on top of a major factor relating to flu spread — handwashing.

A study by British researchers asks who is doing it and why?

This matters greatly in designing a program to change behavior — think swine flu's spread — and the London School of Hygiene and Tropical Medicine understands that. It released the results of a study published in the *American Journal of Public Health* to coincide with today's second annual Global Handwashing Day.

Researchers did reconnaissance on 250,000 people who used restrooms at a service station in England from July through September.

The subjects were greeted by messages on LED screens at the entrance to the restrooms that encouraged handwashing, using suggestions from various "behavior domains" such as knowledge of risk (Water doesn't kill germs, soap does), status/identity (Don't be a dope, wash with soap), disgust (Soap it off or eat it later) and norms/affiliation (Is the person next to you washing with soap?).

The effects of the messages on behavior were measured in incidences of handwashing captured through soap-dispensing sensors, with the results stored on a computer.

We would give this study an A for ingenuity as well as thoroughness. So, what washed up?

Handwashing rates between men surveyed (108,000 restroom uses) and women (90,000 restroom uses) varied widely, with women twice as likely to wash their hands (64 percent) as men (32 percent). Are we surprised? (Only that men used the bathroom more ...)

Motivation varied between the genders, with women more motivated by knowledge activat ion, positive control and knowledge of risk and men more motivated by disgust.

Even researchers were a little taken aback.

They noted that women "have a higher disgust sensitivity than men" but speculated that women do respond to disgust, however, they respond more strongly to knowledge-based messages or the mention of germs than to disgust-based messages.
Hmmmm.

There was some common ground — a message both genders seemed to respond to and at higher incidence than other messages: "Is the person next to you washing with soap?" Researchers found handwashing increased when more than one person was in the restroom, with a slightly higher increase among the men.

Overall finding: Call it what you may — peer pressure, shame, wanting to be part of the norm — people wash their hands more when under some sort of surveillance — from their fellow humans.

So, although the United St ates is not among the 73 countries around the world participating in Global Handwashing Day, Americans might tip their hats to the British, who have identified social factors likely to be effective in increasing that all-important handwashing.

Getting the Message

The mechanics of motivation have been a fertile field for *Miller-McCune*. For example, while disgust may work with handwashing, keep the disgust to the verbal, not the visual. Graphic anti-methamphetamine and ominous or graphic anti-smoking ads don't do the trick as well as less abrasive messages, for example. And information-only messages meant to reduce the number of abortions also fare poorly, it seems. Of course, should the message be couched in a sitcom or hourlong drama, these messages may get a bit more play. And lest you feel too much like a lab rat, who you are determines how you react, as does where you come from

And remember, President Obama has asked us to do it. He won't be watching, but someone else may be.

http://www.miller-mccune.com/health/watching-you-in-the-loo-1541?utm_source=Newsletter79&utm_medium=email&utm_content=1020&utm_campaign=newsletters

Greywater Dominoes

As Californians start looking seriously at using greywater for home irrigation, all roads — or pipes — lead to Art Ludwig.

- By: Ben Preston | October 13, 2009

Art Ludwig has been researching and designing the uses and impacts of greywater for nearly 20 years.Lara Cooper

Art Ludwig's outdoor bathroom.Lara Cooper

In the mountains above Santa Barbara, Calif., streams run nearly dry for much of the year. The one running through an area known as the San Marcos Trout Club, however, is a bit different. Even in the dry heat of summer, deep pools of cool water swirl in their sandstone basins as it wends through the little nook on its way to the ocean.

For Art Ludwig, founder of Oasis Design — a family-run ecological design company covering everything from water delivery and disposal to permaculture — the spot is more than just a peaceful getaway and outdoor office near his home; it provides inspiration when he is cooking up ecological solutions and designing small-scale water systems. "Most of what I've learned has been synthesized in the wilderness," he said. "The most ecological solution is the most economical."

Finding enough fresh water has always been a challenge for lawmakers and engineers alike in the arid American West. With an ever-increasing population and dwindling mountain snowpack — the spring melts of which supply the lion's share of water to Western rivers — water resources have become stretched thin.

According to the National Drought Mitigation Center's Drought Monitor, most Western states are currently experiencing drought conditions of varying severity, and have been for most of the past decade. While in the past those who guide policy have relied upon creative outsourcing by water officials, overtaxed reservoirs and river systems have caused them to look more toward conservation as a way to ensure that their constituents continue to receive clean, reliable water at their taps.

Although nothing new, diverting greywater — water from washing machines, showers and sinks containing far less bacteria than the funky brew toilets and kitchen sinks emit — for irrigation has become one of the primary tools in a growing arsenal of conservation methods being examined. Although concern has been raised about the health effects of using greywater to water plants, the California Department of Public Health does not have any cases of greywater-related contamination on record.

"The most dangerous thing you can do with greywater is stir a bunch of feces into it and overload a septic or sewer system," said Ludwig, adding that sewage treatment systems operating over capacity often dump untreated effluent into waterways.

Already in place in Arizona, New Mexico, Texas, Montana, Nevada and other Western states, standards spelling out how best to use water were also passed by the California Building Standards Commission on Aug. 4. Although California state Sen. Alan Lowenthal had already developed a set of greywater standards, a fourth year of statewide drought prompted the California Department of Housing and Community Development to push for emergency greywater standards at the Building Standards Commission.

"The reason we did the emergency standards is because in February, [Gov. Arnold Schwarzenegger] declared a drought situation and directed departments to do whatever they could to enable water conservation," said Doug Hensel, deputy director of Housing and Community Development. The result was an intense series of meetings with stakeholder groups that helped shape the standards that were finally adopted in August. "The average person wouldn't know that much about [installing greywater systems], so we made [the standard] kind of like a recipe to follow."

By all accounts a vast improvement over the limited standards California had before this year, Ludwig nonetheless looked to Arizona's laissez-faire greywater rules — in place since 2001 — calling it the model to emulate. The desert state's user-friendly two-page brochure makes it easy for homeowners to figure out how to use greywater safely, without impinging upon how they go about designing their systems.

Ludwig also advised New Mexico officials when they adopted standards similar to Arizona's in 2003.

"Every site is different, and so are people's [water usage] habits," said Daniel Wilson, a Santa Barbara-based landscape designer who has begun installing greywater diversion systems in conjunction with fruit tree planting. Despite California's relatively late entry into simplified greywater regulation, some 1.7 million greywater systems are already installed in homes across the state —there are nearly 8 million nationwide — and until recently, only 200 of them were legally permitted.

"It [was] an abstinence-only greywater system. It pushed people to do it illegally," said Ludwig, who stressed that while permitting is unnecessary for simple diversion systems, standards are important to ensure proper use and installation.

His Web site notes the difficulty of challenging the status quo and remaining street legal — on one page he writes: "The more ecologically you live, the more illegal it is." And for that reason he provides both code-friendly information for prospective practitioners and a series of ideas for making end-runs around recalcitrant bureaucrats.

"State guidelines were very complicated and turned a lot of people off. People found that the standards were too difficult to deal with," said Laura Allen, a member of Oakland-based Greywater Action, a group heavily involved in the stakeholder process that got California's revised standards off the ground.

Now, as in many other Western states, California homeowners with greywater systems diverting washing machine effluent to irrigate onsite trees do not require a permit. This is where Ludwig and others experienced in building greywater systems come in, providing vast informational resources for existing

and would-be greywater users. Not as simple as collecting laundry water in a bucket to pour on a garden, only certain types of plants — mostly fruit trees and flowers, but not vegetables such as carrots and lettuce — can benefit from greywater irrigation.

It also requires that homeowners, if they weren't already doing so, use biodegradable laundry soap, as traditional soaps would harm the plants. "As long as you're using the right products, [greywater irrigation] makes a lot of sense," said Allen, who has been using greywater on her kiwi and apricot trees and berry bushes for a decade.

On the whole, greywater use seems to have attracted a passionate group of individuals, and a wealth of information is available for both do-it-yourselfers and those who are simply curious.

When it comes to greywater, all roads on the information highway lead to Ludwig, who has been researching and designing the uses and impacts of greywater for nearly 20 years.

"Greywater is part of a system that would allow us to exist on 90 percent less resources," he said, explaining that his work reflects a belief that water use is connected to a number of other things, including energy use and ocean water quality. Transporting water over hundreds of miles and even pumping it over a mountain range, the State Water Project is California's single most prolific user of energy, consuming about three percent of all the electricity used in the state, by EPA estimates. (The National Resources Defense Council puts that figure significantly higher, at 20 percent).

"This issue lies across the fault line of two world views. One is build it up to code and it's ok, and the other is to look at water depletion and climate change as well — the big picture," Ludwig said.

In a dilapidated trailer next to their house, Ludwig and his college-age daughter, Maya, usually aided by an intern or two, work tirelessly to compile videos, pictures, and new data for their seemingly endless Web site. From the mountainside vantage point of these cramped quarters — which are perennially cluttered with charts, official documents, and the odd bowl of fruit — the distant Pacific Ocean is visible through a couple of small windows, reminding them how connected everything really is.

http://www.miller-mccune.com/science_environment/greywater-dominoes-1533?utm_source=Newsletter79&utm_medium=email&utm_content=1020&utm_campaign=newsletters

A More Efficient Europe Is Not a U.S. of Europe

The recent ratifications of the Lisbon Treaty do not mean we can expect things like an EU army or unified foreign policy, argues Berlin-based journalist David Francis.

- By: David Francis | October 14, 2009

Many believe ratification of the Lisbon Treaty will allow the EU to become a single force in international affairs, but don't count on it.William Murphy / Flickr

The recent ratification of the Lisbon Treaty in Ireland brings the European Union one step closer to an overhaul of the way things work in Brussels. Once the treaty takes effect (and, despite some bellyaching from the Czechs, it most likely will), the EU will be governed by a new legal framework meant to streamline the decision-making and legislative processes. A European president will be elected, individuals will be appointed to negotiate on behalf of the entire EU, and the European Parliament will work hand in hand with national governments to make policy.

Many here believe that the treaty will finally allow the EU, as a single entity, to take a powerful and more forceful role in international affairs.

Change in Brussels is much needed. EU business moves at a snail's pace, slowed by an overly burdensome bureaucracy. The EU's legislative process is extraordinarily difficult to understand. Even EU insiders have a hard time explaining how policy is made. One member of Parliament from England I spoke with last year likened the EU's law-making process to a dentist appointment: an all-together unpleasant experience no one looks forward to.

However, if academics and journalists here are to be believed, formal adoption of the Lisbon Treaty will transform the EU into a dynamic actor in 21st-century international relations. Thorsten Benner and Stephan Mergenthaler, EU experts at the Global Public Policy Institute in Berlin, have called for the creation of a European army, a seat for the EU at the G-20 and a more unified European front, with Germany and its strong economy at the lead.

Reporters and commentators across the continent are speculating that former British Prime Minister Tony Blair will be elected EU president, giving the post instant name recognition and credibility in diplomatic circles.

However, many of these hopes are simply unrealistic. An EU army might be raised, and a president will be elected, but EU history dictates that their roles would be poorly defined and lack power. Time and time again in recent years, and to the disappointment of many European continentalists, the major players within the EU have made clear that national interests will always come before European interests. The passage of the Lisbon Treaty does nothing to change this.

Three cases clearly illustrate the importance of national issues over the greater good of Europe. The first is the series of gas disputes between Ukraine and Russia. Russia's energy monopoly Gazprom and Ukraine have been fighting over energy prices for years. Before 2006, none of these disputes directly affected Western Europe.

That year, Ukraine, as the major transit country for Russian natural gas supplies to Europe, began to siphon off gas meant for European countries when Russia cut supplies to Ukraine. Western European countries, including Germany, saw their gas supplies drop. Realizing its vulnerability to Russia and Ukraine, Brussels began to panic. German Chancellor Angela Merkel went as far as to call for a common European Union energy policy to dilute vulnerability to Russian energy and garner negotiating leverage.

However, just as Merkel was calling for a common policy, the German government was approving the Nord Stream pipeline, which would run directly from Russia under the Baltic Sea into Germany, bypassing all Eastern European transit countries. The pipeline, once completed sometime in the next decade, will make Germany heavily reliant on Russian energy for decades. Berlin and Moscow argue that a pipeline that feeds energy directly into Germany eliminates transit risks associated with countries like Ukraine.

Members of the European Union in Eastern Europe were and remain strongly opposed to the pipeline, as they believe it makes them more vulnerable to "pipeline politics," or Russia's ability to affect political outcomes by using energy as leverage (An article in the Oct. 13 *New York Times* provides evidence of this divide).

Over the last three years, these realities have tainted European reactions to the Ukraine-Russia disputes. Western European countries like France and Italy, which have negotiated individual agreements with Russia to supply energy, side with Russia. Eastern European countries, whose role in energy transit will be minimized once the Western European pipelines are completed, side with Ukraine. In this situation, national interests are clearly the primary motivator. European interests are rarely, if ever, mentioned.

Another incident that illustrated the importance of national interests over European interests was the 2008 war between Russia and Georgia. In the immediate aftermath of the war, the EU was united in its condemnation of what was widely perceived as Russia's asymmetrical use of force. However, just months after a unified condemnation of Russia, the EU member states were divided by national concerns. Germany, which has deep business ties with Russia, called for a normalization of relations between the EU and Moscow. Eastern European nations, on the other hand, said Russia's actions in Georgia proved that Moscow is willing to use force to reassert its Soviet-era sphere of influence.

Lastly, the recent sale of General Motors-subsidiary Opel has exposed fractures in European Union economic unity. Merkel lobbied hard for GM to sell Opel, which employs more than 50,000 people in Europe — with the majority of those workers in Germany — to a Canadian consortium that would save German jobs and benefit the struggling Russian auto industry. However, these benefits are likely to come at the expense of jobs in Spain, Belgium and the United Kingdom, countries that are now threatening to ask the EU competition committee to determine if Merkel's lobbying for her preferred deal violated EU regulations.

In each of these three cases, EU member states' national interests have been the determining factor in how they have acted on the international stage. Membership in the EU was a secondary consideration at best. This has been the prevailing European reality since the end of the Cold War. In a multipolar world, individual European nations are pulled in a number of different directions by a number of factors that prevent them from having one, true, unified European interest.

Ratification of the Lisbon Treaty will do little to change this. Great Britain is not likely to abandon the pound and adopt the Euro if Tony Blair is elected European president. Germany is no more likely to send troops to Afghanistan under a European flag than it is a German one. And Poland's energy insecurities are unlikely to disappear because the European Parliament is more closely working with national governments to make policy.

Instead, once the Lisbon Treaty is ratified, the European Union should focus on the core competencies it has developed in the last 20 years and assert itself in areas where national leadership is lacking. For instance, the EU has had great success fostering free trade among member states and fostering economic growth in Western Europe. The EU should concentrate on extending these successes to members in Central and Eastern Europe, where economic growth has been tepid.

Expansion of economic growth across the Eurozone would help the EU to maintain its place as the world's largest exporter of goods. This is one instance in which a common EU policy benefits members; the EU as a whole has much more leverage in trade negations than any single European country. The new EU president should work to grow the EU's global market share and improve its global brand.

In addition, the EU has had humanitarian successes. The European Community Humanitarian Aid Office has provided hundreds of millions of dollars in emergency aid over the years. What the EU lacks, however, is the capacity to engage in long-term humanitarian aid projects. The EU president, in conjunction with the parliament and its streamlined policymaking regulations, should work to create an EU entity that can confront long-term aid challenges.

Lastly, the European Union should work on improving border security. Its efforts to secure borders are led by FRONTEX, a security and intelligence apparatus meant to complement and coordinate member state border security efforts. However, since its creation in 2004, the group has faced numerous criticisms, ranging from accusations that it failed to consider asylum requests to a lack of transparency to charges of ineffectiveness. Improving FRONTEX's operation and management should be a top priority, as member states' efforts to stop illegal immigration are increasingly piecemeal and often uncoordinated.

A standing army, a credible head of state and a consistent foreign policy are all important to the success of a nation. However, they are not necessary for the success of the EU. What is important to its success is the continuance of trade, economic, humanitarian and immigration policies that simultaneously advance national and European interests. The EU president, be it Blair or someone else, should work to continue these successes and not waste EU resources on the work of nations.

http://www.miller-mccune.com/politics/a-more-efficient-europe-1538?utm_source=Newsletter79&utm_medium=email&utm_content=1020&utm_campaign=newsletters