Infoteca's E-Journal

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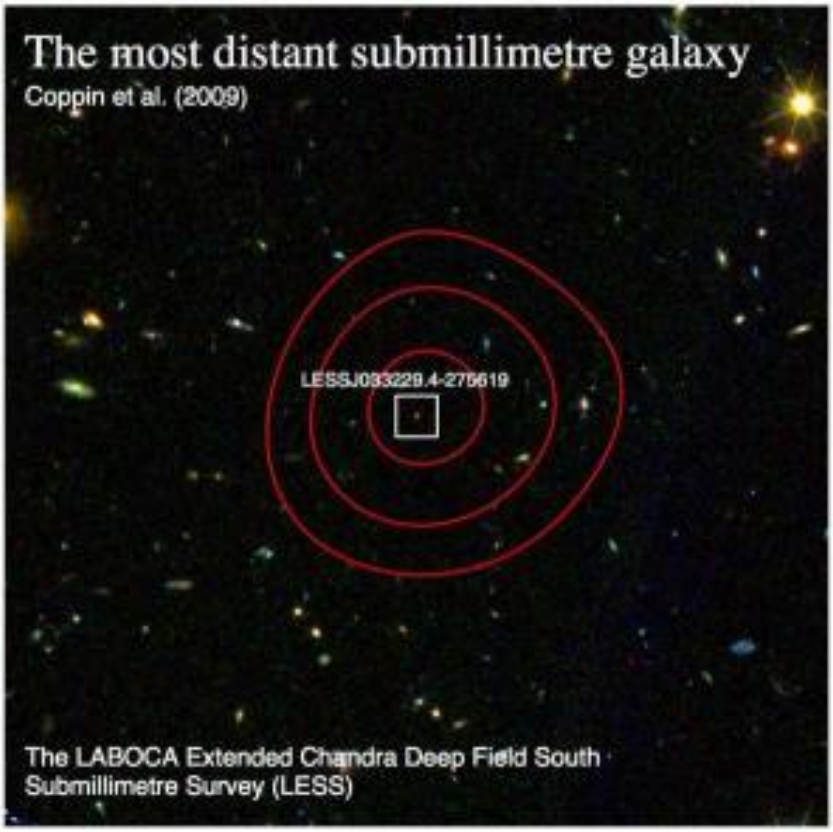
Dusty Galaxies From Early Universe In Throes Of Intense Burst Of Star Formation



The image shows the most distant submillimetre galaxy discovered by the LESS collaboration. The main image shows a wide 3-colour optical image from the NASA/ESA Hubble Space Telescope (HST), overlaid by the contour map from the LESS survey made using the LABOCA submillimetre camera. Higher resolution radio and NASA Spitzer Space Telescope mid-infrared data have pinpointed the source of the submillimetre emission to the optical galaxy indicated by a box. The observed energy output of the galaxy measured as a function of wavelength is plotted in the inset, showing that most of the energy is being emitted in the far-infrared and submillimetre from dust-reprocessed starlight. Using spectroscopic data from the Keck telescope on Hawaii and the ESO VLT in Chile, the light travel time to the object is 12 billion years, meaning we are seeing it as it was just over 1 billion years after the Big Bang. (Credit: K. Coppin / the LESS collaboration)

ScienceDaily (Apr. 25, 2009) — An international team of astronomers, undertaking a survey with a new submillimetre camera, have discovered more than a hundred dusty galaxies in the early Universe, each of which is in the throes of an intense burst of star formation. One of these galaxies is an example of a rare class of starburst, seen just one billion years after the Big Bang.

In her presentation on Wednesday 22nd April at the European Week of Astronomy and Space Science conference, team leader Dr. Kristen Coppin of Durham University will discuss the new results and how they may present a direct challenge to our current ideas of how galaxies formed.

The team (known as the LESS collaboration) used the new Large Apex Bolometer Camera (LABOCA) camera on the Atacama Pathfinder Experiment (APEX) telescope sited in the Atacama Desert in Chile to make a map of the distant galaxies in a region of the sky called the Extended Chandra Deep Field South. These galaxies are so far away that we see them as they appeared billions of years ago. LABOCA is sensitive to light at wavelengths just below 1mm (submillimetre radiation), and is able to find very dusty and very luminous galaxies at very early times in the history of the Universe. These submillimetre

galaxies represent massive bursts of star formation associated with the early formation of some of the most massive galaxies in the present-day Universe: giant elliptical galaxies.

For many years it has been thought that these giant elliptical galaxies formed most of their stars at very early times in the Universe, within the first billion years after the Big Bang. However, very few examples of these very distant and very bright dusty sources have been found in submillimetre surveys, until the LESS collaboration completed their survey of a Full Moon-sized patch of sky in the southern hemisphere constellation of Fornax. Their survey is the largest and deepest of its kind in submillimetre radiation and reveals over a hundred galaxies that are forming stars at a prodigious rate.

Working with their new map, the team identified one of the submillimetre sources as being associated with a star forming galaxy which is seen just 1 billion years after the Big Bang. This remarkable galaxy shows the signatures of both intense star formation and obscured black hole growth when the Universe was only 10 percent of its current age. Dr. Coppin and the LESS team suggest that there could be far more submillimetre galaxies lurking at these early times than had previously been thought. Dr Coppin comments, "The discovery of a larger number of such active galaxies at such an early time would be at odds with current galaxy formation models".

The team's results will appear in a forthcoming edition of *Monthly Notices of the Royal Astronomical Society*.

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2. Coppin, K.E.K., Smail, I., Alexander, D.M., Weiss, A., Walter, F., Swinbank, A.M., Greve, T.R., Kovacs, A., De Breuck, C., Dickinson, M., Ibar, E., Ivison, R.J., Reddy, N., Spinrad, H., Stern, D., Brandt, W.N., Chapman, S.C., Dannerbauer, H., van Dokkum, P., Dunlop, J.S., Frayer, D., Gawiser, E., Geach, J.E., Huynh, M., Knudsen, K.K., Koekemoer, A.M., Lehmer, B.D., Menten, K., Papovich, C., Rix, H.-W., Schinnerer, E., Wardlow, J.L., van der Werf, P.P. **A Submillimetre Galaxy at z=4.76 in the LABOCA Survey of the Extended Chandra Deep Field South**. *MNRAS*, 2009; (in press) [link]

Adapted from materials provided by Royal Astronomical Society (RAS). Original article written by Robert Massey.
http://www.sciencedaily.com/releases/2009/04/090422085832.htm

Adding Walnuts To Good Diet May Help Older People Improve Motor And Behavioral Skills

Adding a moderate, but not high, amount of walnuts to an otherwise healthy diet may help older individuals improve performance on tasks that require motor and behavioral skills. (Credit: iStockphoto/Alex Bramwell)

ScienceDaily (Apr. 25, 2009) — Adding a moderate, but not high, amount of walnuts to an otherwise healthy diet may help older individuals improve performance on tasks that require motor and behavioral skills, according to an animal model study by Agricultural Research Service (ARS)-funded scientists. Walnuts contain polyphenols and other antioxidants and essential fatty acids.

The study was conducted by researchers with the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA) at Tufts University in Boston, Mass.

Neuroscientist James Joseph, psychologist Barbara Shukitt-Hale and coauthors Lauren Willis and Vivian Cheng reported the study in the British Journal of Nutrition. They are with the HNRCA's Neuroscience Laboratory. ARS is the principal intramural scientific research agency of the U.S. Department of Agriculture.

The aging brain undergoes many changes that can result in altered or impaired neuronal functioning. Such disruption can be attributed in part to alterations in "synaptic plasticity," or the ability of the connections between neurons to change in strength and function, and also by increased oxidative damage to neural tissue. In aged rodents, these impairments are seen as poor performance on age-sensitive tests of balance, coordination, and "spatial" working memory.

For the study, weight-matched, aged rats were randomly assigned to one of four diet groups. For eight weeks, the rats were fed special chow mixes that contained either 2 percent, 6 percent or 9 percent walnuts-or no walnuts-before undergoing motor and memory tests. For comparison, the 6 percent walnut study diet is equivalent to a human eating 1 ounce, or about 7 to 9 walnuts, a day. That counts as both a 2-ounce equivalent from the "meat and beans group" and 2 teaspoons toward a daily allowance of dietary oil, as described at MyPyramid.gov.The study found that in aged rats, the diets containing 2 percent or 6 percent walnuts were able to improve age-related motor and cognitive shortfalls, while the 9 percent walnut diet impaired reference memory. Walnuts, eaten in moderation, appear to be among other foods containing polyphenols and bioactive substances that exhibit multiple effects on neural tissue, according to the researchers.

Adapted from materials provided by USDA/Agricultural Research Service.

http://www.sciencedaily.com/releases/2009/04/090419201207.htmAnimals That Seem Identical May

Be Completely Different Species

Lumbriculus variegatus worm. (Credit: Image courtesy of University of Gothenburg)

ScienceDaily (Apr. 24, 2009) — Animals that seem identical may belong to completely different species. This is the conclusion of researchers at the University of Gothenburg, Sweden, who have used DNA analyses to discover that one of our most common segmented worms is actually two types of worm.

The result is one of many suggesting that the variety of species on Earth could be considerably larger than we thought.

"We could be talking about a large number of species that have existed undiscovered because they resemble other known species," says Professor Christer Erséus.

The segmented worms that were studied by Christer Erséus, doctoral student Daniel Gustavsson and their American colleague, are identical in appearance. From the very first time that they were described, they have been treated as the same species, and they are also found together in freshwater environments in North America, Sweden and the rest of Europe.

But when the researchers examined the worms using advanced methods for DNA analysis, they discovered that they were in fact two different species. Both species of worm differ in one of the examined genes by 17 percent, which is twice as much as the equivalent difference between humans and chimpanzees.

The research results, which are being published in the journal *Molecular Phylogenetics and Evolution*, could have major consequences. For example, the worms are frequently used for laboratory testing around the world, to examine the effects of environmental toxins.

"Different species have different characteristics. If it emerged that these two species differ in terms of their tolerance towards certain toxins, then it could be difficult to make comparisons between different studies," says Christer Erséus.

And as this advanced DNA technology is tested increasingly within various animal groups, it could, according to Christer Erséus, mean that our perception of the earth's biodiversity may need to be revised.

"There could be ten times as many species in total, compared with what we previously thought," he says.

The new species of worm has not yet been given a name, since researchers have not yet decided which of the two will keep the old name, *Lumbriculus variegatus*.

Journal reference:

1. Daniel R. Gustafsson, David A. Price, Christer Erséus. **Genetic variation in the popular lab worm Lumbriculus variegatus (Annelida: Clitellata: Lumbriculidae) reveals cryptic speciation**. *Molecular Phylogenetics and Evolution*, 2009; 51 (2): 182 DOI: 10.1016/j.ympev.2008.12.016

Adapted from materials provided by University of Gothenburg.

http://www.sciencedaily.com/releases/2009/04/090422121858.htm

Alarming Increase In Drug-affected Newborns

ScienceDaily (Apr. 24, 2009) — A new Australian study has found that the number of newborns suffering serious drug withdrawal symptoms is now more than 40 times higher than in 1980.

The research, published in the latest edition of the international journal *Pediatrics*, also found that these infants were at greater risk of neglect and of being taken into care.

The data analysis revealed that of 637195 live births in Western Australia between 1980 and 2005, 906 were diagnosed with Neonatal Withdrawal Syndrome. For every year, there was an average 16.4% increase in children born with the syndrome.

Report co-author, Professor Fiona Stanley from Perth's Telethon Institute for Child Health Research, said the study identified a range of factors that should assist with the early identification of children at risk.

"It is clear that if we are to reduce the number of these children suffering from abuse and neglect, then there is a need to start working with their mothers before these babies are born, and ideally, pre-conception," Professor Stanley said.

"Our data show that the majority of the mothers had already had contact with hospitals for mental health and substance use issues which suggests there could have been numerous opportunities to intervene to prevent unplanned pregnancy and provide intensive support with antenatal care and substance abuse treatment."

"A multidisciplinary team that includes obstetricians, social workers, drug and alcohol workers, and welfare workers is required to case manage and support the women through the complex issues that they face. However it is imperative that this support continues long term."

Professor Stanley said the increase in babies suffering NWS reflected the overall rise in substance abuse within the community and the increased recognition of NWS by health professionals. While this study was in WA, it is likely that it reflects a national trend.

"We now have the situation where 4 babies out of every 1000 births are born suffering the effects of illicit drugs -- that is over 1000 newborns per year in Australia. This has serious implications for the child, the family and the whole community and is an issue that must be tackled well before these children suffer potential harm."

The study was made possible by a groundbreaking agreement by the Western Australian Government Departments of Health and Child Protection that allowed health and welfare records to be linked and the de-identified information given to researchers for analysis.

The research was supported by an Australian Research Council Linkage Project Grant.

Adapted from materials provided by Telethon Institute for Child Health Research.

http://www.sciencedaily.com/releases/2009/04/090423100821.htm

Rake's Progress

By SAM TANENHAUS

HOW IT ENDED

New and Collected Stories

By Jay McInerney

331 pp. Alfred A. Knopf. $25.95

"How It Ended: New and Collected Stories" assembles much of the short fiction Jay McInerney has written over the course of a career now approaching three decades' duration. The better part of "Model Behavior: A Novel and Stories" is included, along with the story that grew into his Salingerian first novel, "Bright Lights, Big City," as well as "Smoke," which introduced Russell and Corrine Calloway, the Manhattan couple-with-everything whose marital vicissitudes animate McInerney's two most ambitious novels, "Brightness Falls" and its sequel, "The Good Life." Short stories "often turned out to be warm-up exercises," McInerney confides in a preface. "There's psychological as well as practical value in using one as a sketch for a novel; the idea of undertaking a narrative of three or four hundred pages, which might consume years of your life, is pretty daunting." As it unfolds a synoptic map of McInerney's literary progress from the 1980s (downtown clubs, New Wave music, cocaine) to the 2000s (Upper East Side lairs, "The Sopranos," pastoral detox spas), "How It Ended" implicitly proposes an apologia pro vita sua of an author often tagged as a kind of Lizard Lounge act, his repertoire limited to reports on Manhattan hedonism — particularly in the 1980s and '90s, when for the entitled few the borough was a den of iniquitous pleasures and McInerney himself a bleary-eyed magnet for tabloid photojournalists and eavesdropping waiters doubling as anonymous tipsters.

In fact, McInerney has been throughout a productive artist — this is his 10th book and his eighth work of fiction — and also a diligent one, who has steadily refined his craft and rigorously deepened his subjects and themes.

"How It Ended" reminds us how impressively broad McInerney's scope has been and how confidently he has ranged across wide swaths of our national experience. It reminds us too that for all the many literary influences he has absorbed, McInerney's contribution — and it is a major one — is to have revitalized the Irish Catholic expiatory tradition of F. Scott Fitzgerald and John O'Hara, with its emphasis not only on guilt but also on shame: on sins committed and never quite expunged, always in open view of the sorrowing punitive clan. Even the most alienated characters in McInerney's universe remain tethered, or chained, to others. He is preoccupied with the many varieties of the strangling embrace, whether felt by star-struck political hirelings reduced to pimping for a philandering senator ("My Public Service"), Irish-American brothers locked in competitive mother-love ("The Madonna of Turkey Season") or a Bible Belt couple whose sexual dysfunction degrades them into sick rituals of voyeurism ("Invisible Fences").

In "Con Doctor," a drug-addicted physician, Kevin McClarty, exiled from Chicago to a generic Southeastern city and still wobbly after rehab, penitently administers to inmates in a high-security prison, and at night repairs to the walled-in "community" where he cohabits with a local clothier, herself a recovering alcoholic, brassy and voluptuous. "She looked like someone who would be dating a pro athlete, or a guy with a new Ferrari who owned a chain of fitness centers," McInerney writes. In bed with her, McClarty "feels simultaneously that he is slumming and sleeping above his economic station." The wit is mordant, the language honed, the status calibration elegantly exact — and it all enriches the fatalistic mood.

McInerney's gifts have never been in question. He possesses the literary naturalist's full tool kit: empathy and curiosity, a peeled eye and a well-tuned ear, a talent for building narratives at once intimate and expansive, plausible and inventive. His sentences, vivid but unshowy, exhibit the same strengths he once identified in Fitzgerald's; they are "sophisticated without being superior, conspiratorial without the gossip's malice."

All this was present from the outset, as was McInerney's romantic attraction to soured glamour. The oldest entry in the new collection, "In the North-West Frontier Province," eerily predicts our current postterrorist age. It is a glimpse of hell, set in the parched hilly borderlands between Afghanistan and Pakistan, where a global ménage of young dead-enders have converged in search of drugs and thrills. "Pathan tribesmen with Enfield rifles strapped over their shoulders and bandoliers of ammunition wrapped around their baggy shirts" patrol the local bazaar and menacingly enforce "the code of tribal honor, blood relation and vendetta" even as they broker heroin sales and calculate their odds of exploiting strung-out Western women.

One evening the American protagonist dines with an Australian primed for fresh adventure after two years in Outback opal mines. "He had a dry, brick-red tan against which his green eyes and the gaudy opal pendant on his chest glistened. Over kebabs he told Trey, who hadn't asked, that he was in Landi Kotal to score hash oil. He was going to swallow it in condoms," and then excrete the drug back in Sydney. "Trey felt obliged to tell him that it was an old trick and that people had died in the bargain; any residual alcohol that hadn't been boiled off in the processing of the oil would eat through the condoms, and once that happened it was permanent deep space."

The Australian is smilingly dismissive. "Trey had left him licking chili sauce from his cracked lips and yesterday had seen the opal pendant for sale at a stall in the bazaar," clipped from its owner's corpse. The tone and atmosphere are derivative (Hemingway, Graham Greene, Robert Stone), but the aura of danger is convincingly sustained.

The story was written at Syracuse University, where McInerney, after being fired from The New Yorker's fact-checking department, had enrolled in fiction workshops, his teachers Raymond Carver and Tobias Wolff, both masters of compressed narrative. McInerney submitted "In the North-West Frontier Province" to The Paris Review, at the time a generously wide gateway for young fiction writers. The editor, George Plimpton, liked it — not enough to publish but enough to phone the author and ask for something else. McInerney promptly extruded, in a single all-night session, he says, "It's Six A.M. Do You Know Where You Are?" an evocation of the downtown Manhattan club scene, later expanded into the novel "Bright Lights, Big City" (1984), which deservedly made its 29-year-old author famous: the wounded, smart-aleck wit, the imagistic depiction of 1980s Manhattan, in transition from "Taxi Driver" dilapidation to "Wall Street" opulence.

Once again McInerney created a picture of hell — actually two alternating hells, held in clever counterpoise, one the staid, venerable magazine where the unnamed 24-year-old protagonist distractedly labors in a continual panic of low-paid drudgery, the other the night-town of bars and clubs where he seeks escape, the "Bolivian marching powder" he sniffs less a stimulant than a sedative against fresh humiliations. Jilted by his wife, a model, he thrashes in alternating comic torments of rage and grief and envisions a photo caption in The New York Post: "Sexually Abandoned Hubby Goes Berserk."

Each generation needs its Manhattan novel, and many ache to write it. But it was McInerney who succeeded — through the inspiration of the present-tense, second-person voice, the vehicle of false insinuating intimacy twinned with coolly ironic deflation. "You have this desire to prove that you can have as good a time as anyone, that you can be one of the crowd," the narrator intones in weary condescension, like a therapist bored by his patient. "You will learn to compound happiness out of small increments of mindless pleasure." What seems a coming-of-age story becomes instead a case study of acute narcissism, the universal condition of young male literary aspirants. The second-person narration flowed so easily because McInerney was lampooning all those other self-conscious, self-absorbed young novelists whose every "he" was really an "I." Thus: "You thought of yourself in the third person: He arrived for his first interview in a navy blue blazer. He was interviewed for a position in the Department of Factual Verification, a job which must have seemed even then to be singularly unsuited to his flamboyant temperament. But he was not to languish long among the facts."

A quarter-century after its publication, "Bright Lights, Big City" remains the sharpest and funniest of the many reprises of "The Catcher in the Rye": the unhappy young footloose hero whose flaunted small miseries camouflage deeper unacknowledged ones; the suffocating pretensions of adults who enforce the tribal code with sadistic glee. Summoned by his boss after hilariously botching a nightmare fact-checking assignment, the hero knows what's coming:

"You try to alleviate the terror by thinking how ridiculous her French braids look, like spinnakers on a tugboat. You suspect that deep down she enjoys this. She's been looking forward to it for a long time. 'Do you realize just how serious this is?' she demands. 'You have endangered the reputation of this magazine. We have built a reputation for scrupulous accuracy with regard to matters of fact. Our readers depend on us for the truth.'

You would like to say, Whoa! Block that jump from facts to truth, but she is off and running."

That the novel's vision of the literary life was ultimately sentimental only compounded the charm, though some found its commercial success disorienting, even distressing. "But if McInerney was at first more a cultural phenomenon, or symptom, than a literary one, his books are worth attention," the critic Thomas R. Edwards allowed in 1996. The attention was assumed to be a surprise because the two phenomena couldn't coexist. But they had coexisted in Fitzgerald, and in Salinger too. Both were "voices of a generation." So is McInerney. He was the first novelist born in the 1950s who throttled the demon of "belatedness," in Harold Bloom's term. For Bloom "anxiety" is exerted by the intimidating weight of literary forebears. McInerney and his contemporaries felt that, of course. They also felt the belatedness of having grown up in the Vietnam period but come of age just when its rebellions were being commodified by the unleashed market forces of the Reagan years. Many novelists were struggling to make sense of this barometric change. But McInerney got there first. It is one reason his prose seems so free of self-consciousness and of mannerism, and at once postmodern and naturalistic. Firmly anchored in his time, he confidently projects from his own experiences. "I'd largely avoided the drug culture of the '70s," the narrator of the title story in "How It Ended" relates, "but even I could remember when drugs were viewed as the sacraments of a vague liberation theology or, later, as a slightly risky form of recreation. But in this era the romance of drug dealing was a hard sell."

The only relief from the hard sell is fellowship, re-entry into the bruising embrace of the clan — usually not one's lineal kin but the company of kindred spirits. "The capacity for friendship is God's way of apologizing for our families," McInerney writes in his novel "The Last of the Savages," his most sustained attempt to sort through the 1960s. Its narrator hungers to be "one of the crowd." All McInerney's characters do. This is why his notations of status, though as sharp as Tom Wolfe's, feel much warmer, conspiratorial but free of malice. He erases rather than imposes anthropological distance. And it is why the many casual couplings in his fiction often seem conjugal, reunions rather than transgressions. In "The Good Life," McInerney's elegiac post-9/11 novel, published in 2006, Corrine Calloway meets an appealing man amid the rubble of the World Trade Center aftermath. Much would seem to separate them. He has reaped millions on Wall Street and has a fashion-plate wife. Corrine is a full-time mother married to an underpaid book editor. But the two become lovers, conjoined by "a certain

tribal sense of identity, affinities of background and education that weren't supposed to matter anymore, at this leveling moment."

The leveling was the handiwork of the pious Afghan warlords, or their spiritual descendants, whom McInerney had chillingly described 20 years before. But McInerney knows every moment is a leveling exercise, or threatens to become one, and that "the code of tribal honor" is often exacted most ruthlessly within the clan. In "The Good Life," a 14-year-old caught having sex in her bedroom tells her father she's simply trying to fit in with the herd at her exclusive prep school, whose hazing rituals are the 21st-century edition of the tortures that helped edge Holden Caulfield over the brink. "It's all about belonging to a tribe and not getting pushed out into the jungle," she explains, "where you starve to death and the hyenas eat you."

I have spoken with Jay McInerney at most four or five times. The occasion I remember best is the first. It was in October 1998. I was an editor at The Times's Op-Ed page, and I asked McInerney to write about the latest Wall Street convulsion. He seemed well suited to the task. No one else grasped so surely the fatal delusions of the "hard sell." In "Bright Lights, Big City," he had presciently guessed that "the new writing will be about technology, the global economy, the electronic ebb and flow of wealth." And he had explored the intricacies of the 1987 junk bond crash in "Brightness Falls." McInerney submitted an essay that accused the financial wizards of historical ignorance and unseemly greed. Some of the culprits were his friends, but his analysis was unsparing. "For those who weren't content with a mere 30 percent return on capital, hedge funds came along and made greenmail seem like a piker's game," McInerney wrote. "Nobody knew how they worked, but the nomenclature was reassuring: 'hedge fund' sounded like a conservative, cover-your-bets financial instrument. It rang totally '90s, just as 'junk bond,' from our '90s perspective, sounds so perfectly, vulgarly '80s. I mean, what did those clowns at Drexel Burnham expect?"

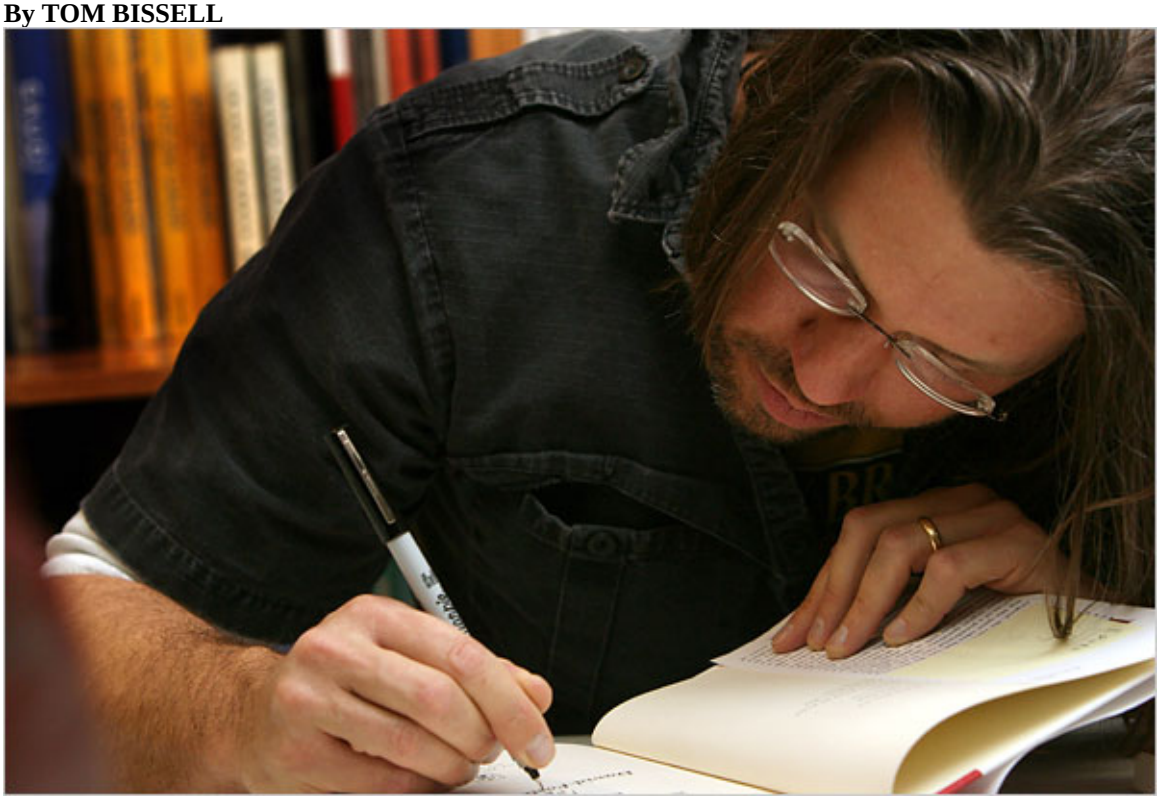
I showed the essay to the Op-Ed editor, Katy Roberts, as alert a reader as I've known. She stared at the computer in silence and then pronounced the essay letter-perfect. However, The Times's standards of propriety required that one word be changed. McInerney wasn't happy about it — in fact he fumed a bit — but he understood. "Clowns" was our compromise. He'd written "bastards."

Sam Tanenhaus is the editor of the Book Review. His book "The Death of Conservatism" will be published in September.

http://www.nytimes.com/2009/04/26/books/review/Tanenhaus-t.html?8bu&emc=bua1

Great and Terrible Truths

By TOM BISSELL



In the autumn of 2005, an e-mail message with the unpromising subject header "Thought you'd like this!!!" landed in my in-box. The sender, a family friend, was an incurable forwarder of two-year-old John Kerry jokes, alerts for nonexistent computer viruses and poetry about strangers who turn out to be Jesus. This latest offering contained not the expected link to a YouTube video of yawning kittens but several dozen paragraphs of unsigned, chaotically formatted text. It bore this title: "Transcription of the 2005 Kenyon Commencement Address — May 21, 2005." Before I had reached the end of the first paragraph I believed I could identify the author. A quick search verified it: The commencement speaker for Kenyon College's graduating class of 2005 was, indeed, David Foster Wallace.

The novelist Richard Ford spoke at my college graduation; 13 years later, I can recall precisely nothing of what he said. Which does not mean it was bad. The commencement address — not quite an essay, more intimate than a speech — is a highly particular literary form. It is also a uniquely disposable one. Imagine you have written the greatest commencement address in history. What do you do with it, once it has been delivered? The answer: nothing. I wrote a rather nice one a few years ago for the graduating class of my hometown community college. Would anyone like to read it? I suspected as much. When the graduation caps are thrown into the air, the commencement address's only obvious utility is jettisoned along with them.

Wallace's address managed to avoid this fate not because it was great (though it was). He never published it and probably never would have. The address was saved, rather, thanks to the enterprising soul who transcribed it from video and posted it on the Internet, where, somehow, it came to the attention of my family friend — who would not have known David Foster Wallace if he fell on her. Thanks to the enthusiasm of people like her, and the magic of the cut-and-paste function, the address became a small sensation and must now rank high among the most widely read things Wallace ever wrote.

Wallace was often accused, even by his admirers, of having a weakness for what Nabokov once referred to as "the doubtful splendors of virtuosity." Standing before the graduates of Kenyon College, Wallace opted for a tonal simplicity only occasionally evident in the hedge mazes of his fiction. He spoke about the difficulty of empathy ("Think about it: There is no experience you've had that you were not at the

absolute center of"), the importance of being well adjusted ("which I suggest to you is not an accidental term") and the essential lonesomeness of adult life ("lords of our tiny skull-sized kingdoms, alone at the center of all creation"). Truthful, funny and unflaggingly warm, the address was obviously the work of a wise and very kind man. At the edges, though, there was something else — the faint but unmistakable sense that Wallace had passed through considerable darkness, some of which still clung to him, but here he was, today, having beaten it, having made it through.

I knew Dave Wallace well enough to have responded to the news of his suicide, in September 2008, with overwhelming grief, though I did not know him nearly well enough to have had any knowledge of his decades of depression. In my shock I sought refuge in the only oasis I could find: his work. While I knew no answers would be found there, I hoped that rereading Wallace would provide some vague, analgesic insight into his (then) unfathomable decision. Many others were doing the same, and a number of commentators pointed to a passage in Wallace's Kenyon College commencement speech, where he discusses "the old cliché about the mind being 'an excellent servant but a terrible master.' " Wallace goes on to say: "It is not the least bit coincidental that adults who commit suicide with firearms almost always shoot themselves in: the head. They shoot the terrible master."

"Transcription of the 2005 Kenyon Commencement Address — May 21, 2005" now has a proper title and colophon, This Is Water (Little, Brown, $14.99). In the book, the passage above has been gently elided, and it is not difficult to understand why. Any mention of self-annihilation in Wallace's work (and there are many: the patriarch of "Infinite Jest" is a suicide; Wallace's story "Good Old Neon" is narrated by a suicide) now has a blast radius that obscures everything around it. These are craters that cannot be filled. The glory of the work and the tragedy of the life are relations but not friends, informants but not intimates. Exult in one; weep for the other.

Over the last six months, at least, this is what I have been telling myself. For all the obvious extraliterary reasons, "This Is Water" is often an extremely painful reading experience, and in this opinion I cannot imagine I will be alone. When Wallace defines thinking as "learning how to exercise some control over how and what you think," when he describes his own mental "default setting" as one of selfishness and solipsism and despair and then explains that part of being an adult is developing the discipline "to care about other people and to sacrifice for them, over and over," and when he suggests that the "capital-T Truth" of life "is about making it to 30, or maybe even 50, without wanting to shoot yourself in the head," his intended audience of college graduates floats away, and the haunting, answerless questions crowd suffocatingly in. Whom, you wonder, was he really speaking to?

While some may question the decision to publish Wallace's address as a book — and its interior design of one sentence per page is not much of a rebuttal to that question — it would take a small, charred heart to find any impure motives here. Future readers of "This Is Water" will have less trouble reconciling what it says with what its author ultimately did, and they, I think, are the audience this book is meant for.

The terrible master eventually defeated David Foster Wallace, which makes it easy to forget that none of the cloudlessly sane and true things he had to say about life in 2005 are any less sane or true today, however tragic the truth now seems. "This Is Water" does nothing to lessen the pain of Wallace's defeat. What it does is remind us of his strength and goodness and decency — the parts of him the terrible master could never defeat, and never will.

Tom Bissell is the author, most recently, of "The Father of All Things: A Marine, His Son, and the Legacy of Vietnam."

http://www.nytimes.com/2009/04/26/books/review/Bissell-t.html?8bu&emc=bub1

Samurai Critic

By MARK FORD

OUR SAVAGE ART

Poetry and the Civil Tongue

By William Logan

346 pp. Columbia University Press. $29.50

"Our Savage Art," the latest installment in William Logan's prolonged and rumbustious assault on the state of American poetry, comes furnished with no fewer than nine epigraphs in which the phrase "savage art" appears. One of these is taken from the second chapter of James Fenimore Cooper's "Last of the Mohicans": an unsuspecting party of white travelers, including a pair of sisters, is passing through a gloomy forest unaware that they are being secretly observed by "a human visage, as fiercely wild as savage art and unbridled passions could make it." "A gleam of exultation," Cooper continues, "shot across the darkly painted lineaments of the inhabitant of the forest, as he traced the route of his intended victims, who rode unconsciously onward."

One can't help imagining Logan ripping open a freshly arrived Jiffy-Bag of review copies of slim volumes with a similar kind of exultant gleam shooting across his lineaments; and certainly many a poet over the last few decades must have felt a bit like one of Cooper's hapless heroines, tied to the stake, war whoops in the ears, a blurred, scalp-hungry tomahawk glinting in the sun, as they absorbed the bad news about their latest collection in one of the hilariously damning New Criterion verse chronicles in which the savage critic biannually vents his spleen.

Here, from "Our Savage Art," is a taste of Logan on the warpath: "The only way Ammons could have improved 'Ommateum' would have been to burn it"; "Almost everything Graham writes offers the swagger of emotion, pretentiousness by the barrelful and a wish for originality that approaches vanity — she's less a poet than a Little Engine that Could, even when it Can't"; or, on Billy Collins: "He's the Caspar Milquetoast of contemporary poetry, never a word used in earnest, never a memorable phrase. . . . If such poems look embarrassing now, what are they going to look like in 20 years?" The poems of the Nebraskan Ted Kooser come "slathered in sentiment like corn on the cob with butter," those of Gary Snyder are compared to "the disconnected thoughts of a man trying to make verse with magnets on a refrigerator door," while Anne Carson's are like "parlor games of extraordinary tedium." Reading a book by James Fenton is as bad as "chewing shoe-leather," and the verse of Sherod Santos makes Logan want to put his hand into the whirring blade of a lawn mower. The experience of working his way through a

particular Carolyn Forché long poem is one of "nearly unbearable agony" (not because it's harrowing but because it's so bad), while Tess Gallagher is pilloried as an "insufferable" drama queen whose poems are "so garrulous and windy" that "what's intended sincerely often seems grotesquely funny." The Pulitzer Prize-winning Franz Wright is characterized as "a sad-sack punk, a 50-year-old who . . . moans like a depressive teenager." The recent poetry of Paul Muldoon is so "full of artificial sweeteners, artificial colors" that it is "probably regulated by the F.D.A.," and even Muldoon's Nobel-crowned countryman, Seamus Heaney, is sternly warned that he's beginning to resemble "a faux Irish pub, plastic shamrocks on the bar, Styrofoam shillelaghs on the wall and green ale on tap."

Whatever you think of Logan — and most in the poetry business seem, unsurprisingly, to have pretty strong views about him — you can't accuse him of timidity, nor of trashing one tribe or style of poetry in order to promote another. Indeed the only contemporary poet really to emerge honored and medaled after the Logan tribunal has rendered its verdict is the somber and arcane British poet Geoffrey Hill, whose late, antidepressant-fueled burst of creativity inspires some of the most illuminating pages in this book. "More than any poet alive," Logan writes in a review of the collection "Without Title" (2006), "Hill has the pulse of English inside him, knowing like a lawyer all its loopholes and vagrancies." He vividly commends the recalcitrant cussedness of a poet willing to "coat every phrase with tar and dare the reader to grasp it," and the indifference of American publishers and American poetry-lovers to the encrusted densities and baroque allusiveness of Hill's formidably opaque late work is for Logan one more index of the rottenness of the current poetry scene.

His discussions of Hill are instructive, too, in revealing the extent to which Logan's critical sensibility is in thrall to a late-Romantic notion of the poet as defiant outsider or contrarian, heroically at odds with the fashions of the day. Certainly his own critical persona owes much to this model; in his introduction to this book he figures himself as a version of Diogenes, the austere ancient Greek philosopher who lived in a tub and despised all people and possessions. "A critic who does his job," Logan observes, "must be a good hater if he's to be a good lover, because if he likes everything he reads he likes nothing well enough."

The most obvious advantage of Logan's Diogenes-like approach to much of the contemporary poetry he writes about is that it transforms the normally rather stultifying genre of the poetry review into something more akin to a blood sport. Logan's hounding and slashing, parodying and chastising, make for what editors call good copy. Occasionally he exempts a passage, or a complete particular poem, from his mocking strictures, but in general one learns to expect — and even, in a slightly shameful way, like a member of the crowd at a Roman circus, to demand — the final turning of the emperor's thumb down, and the consigning of another poet to oblivion. Logan works as hard, in these reviews, as any stand-up comic or 18th-century satirist to unite critic and audience in a shared bond of ridicule. And yet, funny as many of his put-downs are, it is I think worth remembering that poets have always been easy game to their detractors, from Plato onward, and even good, original ones can be made to look silly by a well-briefed, cocksure, eloquent prosecutor, which Logan undoubtedly is.

Only time will tell if Logan's gift for spotting a loser is a trustworthy one, and he freely acknowledges that future generations may well view his demolitions of whomever in the same spirit that we now read Francis Jeffrey's ad hominem attack on Wordsworth or John Wilson Croker's sneering dismissal of a first volume by a jumped-up Cockney apothecarist, one John Keats. In general he is more respectful of the poets of the past that he chooses to write about, though readers of the Book Review will probably recall his withering indictment of Hart Crane and the outrage it ignited; both the review and his response to his critics are reprinted here.

Also included are fine essays on everyone's favorite poet, Elizabeth Bishop; on the letters of Robert Lowell; on the ineptly edited journals of Robert Frost; and on poetry inspired by what Bishop once called "the state with the prettiest name," Florida, where Logan teaches creative writing (the very thought is unnerving — his students must have skins like rhinos). The most interesting in the book to me was an essay making the case for a novelette in verse, "Guy Vernon," published in 1878 by an American poet I'd never heard of, one John Townsend Trowbridge. Here time seems to have erred, and Logan ably assumes a more honorable, or at least less controversial, aspect of the critic's task than that of scourging his peers: rescuing a lost masterpiece.

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http://www.nytimes.com/2009/04/26/books/review/Ford-t.html?8bu&emc=bua2

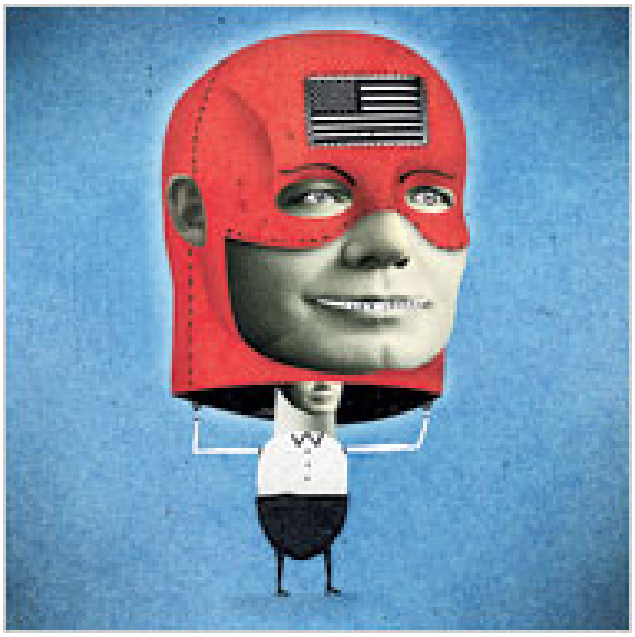
America Unmasked

By ROGER COHEN

THE MYTH OF AMERICAN EXCEPTIONALISM

By Godfrey Hodgson

221 pp. Yale University Press. $26



These are the worst of times for those who believe the United States has a special mission to further the moral and political emancipation of the world. Two intractable wars and the implosion of the nation's financial system have given a convincing impression of a great power in decline. The tarnishing of American ideals under former President George W. Bush has deepened a debacle offset only by the reaffirmation of American possibility in the identity of his successor. Equally diminished in the wreckage, it seems, is the American idea itself.

From the birth of what is now the world's oldest republic, the inspirational notion of the "city upon a hill" has resided somewhere deep in the American psyche. As Tom Paine put it, "The cause of America is in a great measure the cause of all mankind." The United States, in other words, was exceptional, not driven merely by the interests and ambitions of any nation scrambling for land and treasure, but summoned to ensure that, in Lincoln's words, "government of the people, by the people, for the people shall not perish from the earth." At the heart of American exceptionalism lies a messianic streak, the belief in a country with a global calling to uplift.

This is the idea that Godfrey Hodgson, a British author with wide experience of the United States and some of the feelings of a jilted lover about it, examines in his provocative new book, "The Myth of American Exceptionalism." As the title suggests, Hodgson is unconvinced about America's global mission. The United States, he writes, has become "just one great, but imperfect, country among others." More than skeptical, he is angry, dismayed by what he sees as the religious, self-righteous and rightist manipulation of a once ennobling idea. Hodgson argues that "what has been essentially a liberating set of beliefs has been corrupted over the past 30 years or so by hubris and self-interest into what is now a dangerous basis for national policy and for the international system."

It is impossible to dispute such "corruption." Rabid exceptionalism was evident during the election campaign last year as Republicans, their party intellectually exhausted, tried to garner a last flicker of political energy through the sort of damn-the-world, God-chose-us rage that helped carry Bush to victory in 2004. But Americans weren't buying exceptionalism anymore; they were more disposed to buy into European health care.

At this pivotal moment, Hodgson's book provides a useful, if sometimes repetitive, examination of what he calls America's "distorted and selective narrative of exceptional virtue." From the outset, he says, America was rather less exceptional than it imagined, given that the founding fathers were intellectual descendants of the Enlightenment, their progressive politics shaped by the likes of Locke, Hume, Montesquieu and Voltaire.

For all the differences between them, he suggests, "19th-century America and 19th-century Europe were essentially two parts of the same progressive, liberal capitalist civilization." Still, he grants that the American Revolution created the world's first large republic and "replaced divine right, and hereditary right, and customary legitimacy, with the supreme authority of the people." Curiously, it did so even as its leaders adopted what Hodgson calls the "thread of religious destiny in the pattern of American patriotism" — that taste for the language of redemption and salvation evident from Lincoln through Wilson to Reagan and Bush.

Hodgson's story follows two paths: the nation's, from exceptionalism to overreach and delusion, and his own, from a young Washington correspondent inspired by a "Great Society of racial equality and shared prosperity" to disillusionment. At times the individual narrative seems to overwhelm the national one. Long stretches of the book form a bitter litany and give it a sometimes grudging air.

Hodgson says, for example, that America's vast, new frontier distinguished the country from Europe and shaped its ideas of freedom, but then he feels compelled to add: "The collective American memory has underplayed the extent to which the westward expansion took place as a result of events in European history." Sure, the Louisiana Purchase was a fabulous real estate deal at the expense of the French, but how does that diminish the distinctive spirit of American individualism and enterprise that all the land helped forge?

The book is at its most convincing in tracing the distortions of the American idea in recent decades. The victorious end of the cold war left American power unrivaled, reinforcing the missionary impulse. Beginning with the conservative reaction to the counterculture of the 1960s, the country's politics veered rightward, feeding a mythology of American power. Working Americans lost out to their corporate masters and the unregulated financial engineers of Wall Street even as capitalism took "its place on the podium as an aspect of American exceptionalism almost equal with democracy." The culture wars saw the rise of a new Christian right intent on defending its conception of American values not only against metrosexual coastal cities but also against a death-penalty-deriding Canada and Europe. The result, Hodgson argues, is an America unique not for its virtue but for its failings and illusions.

The high number of its prison inmates is exceptional. The quality of its health care is exceptionally bad. The degree of its social inequality is exceptionally acute. Public education has gone into exceptional decline. The Americanization of the Holocaust and uncritical support for Israel have demonstrated an exceptional ability to gloss over uncomfortable truths, including broad American indifference to Hitler's genocide as it happened.

Some dubious assertions are offered in support of this excoriation, not least that Cuban health care is "as good as, or better than, the average in America." Everything from the fate of Native Americans to the paucity of United States foreign aid is invoked in the jeremiad's cause. But I don't want to cavil; this is a moment of painful American nemesis and it's captured well by Hodgson. Where I think he's wrong is in his apparent conviction that a sobered United States can and should become simply a nation among nations.

America was born as an idea, and so it has to carry that idea forward. It is in many ways the last ideological country on earth. We all know that India and China are rising, but we'd be hard pressed to say what they stand for. An American revival without its universalist embodiment of liberty, democracy, the rule of law and free enterprise seems to me impossible; the trick is in how that's done in an interconnected world where problems require joint action. Bombast is not the way. Careful listening is. President Obama, who has said he believes in American exceptionalism, albeit one based more on values than power, has set out to right many of the ills listed by Hodgson. His greatest challenge may lie in how to achieve reform without undermining the openness, appetite for change, work ethic, self-reliance and can-do optimism that any immigrant to these shores, and particularly a European one, recognizes as distinctively and essentially American. To succeed over time, I suspect, Obama may need to deploy a little less tough sobriety and a little more of the redemptive lexicon of exceptionalism that has brought Americans together in their belief in Lincoln's "last best hope of earth."

Roger Cohen is a columnist for The Times and The International Herald Tribune.

http://www.nytimes.com/2009/04/26/books/review/Cohen-t.html?8bu&emc=bua2

Another Incarnation

By PANKAJ MISHRA

THE HINDUS

An Alternative History

By Wendy Doniger

779 pp. The Penguin Press. $35

Visiting India in 1921, E. M. Forster witnessed the eight-day celebration of Lord Krishna's birthday. This first encounter with devotional ecstasy left the Bloomsbury aesthete baffled. "There is no dignity, no taste, no form," he complained in a letter home. Recoiling from Hindu India, Forster was relieved to enter the relatively rational world of Islam. Describing the muezzin's call at the Taj Mahal, he wrote, "I knew at all events where I stood and what I heard; it was a land that was not merely atmosphere but had definite outlines and horizons."

Forster, who later used his appalled fascination with India's polytheistic muddle to superb effect in his novel "A Passage to India," was only one in a long line of Britons who felt their notions of order and morality challenged by Indian religious and cultural practices. The British Army captain who discovered the erotic temples of Khajuraho in the early 19th century was outraged by how "extremely indecent and offensive" depictions of fornicating couples profaned a "place of worship." Lord Macaulay thundered against the worship, still widespread in India today, of the Shiva lingam. Even Karl Marx inveighed against how man, "the sovereign of nature," had degraded himself in India by worshipping Hanuman, the monkey god.

Repelled by such pagan blasphemies, the first British scholars of India went so far as to invent what we now call "Hinduism," complete with a mainstream classical tradition consisting entirely of Sanskrit philosophical texts like the Bhagavad-Gita and the Upanishads. In fact, most Indians in the 18th century knew no Sanskrit, the language exclusive to Brahmins. For centuries, they remained unaware of the hymns of the four Vedas or the idealist monism of the Upanishads that the German Romantics, American Transcendentalists and other early Indophiles solemnly supposed to be the very essence of Indian civilization. (Smoking chillums and chanting "Om," the Beats were closer to the mark.)

As Wendy Doniger, a scholar of Indian religions at the University of Chicago, explains in her staggeringly comprehensive book, the British Indologists who sought to tame India's chaotic polytheisms had a "Protestant bias in favor of scripture." In "privileging" Sanskrit over local languages, she writes, they created what has proved to be an enduring impression of a "unified Hinduism." And they found keen collaborators among upper-caste Indian scholars and translators. This British-Brahmin version of Hinduism — one of the many invented traditions born around the world in the 18th and 19th centuries — has continued to find many takers among semi-Westernized Hindus suffering from an inferiority complex vis-à-vis the apparently more successful and organized religions of Christianity, Judaism and Islam.

The Hindu nationalists of today, who long for India to become a muscular international power, stand in a direct line of 19th-century Indian reform movements devoted to purifying and reviving a Hinduism

perceived as having grown too fragmented and weak. These mostly upper-caste and middle-class nationalists have accelerated the modernization and homogenization of "Hinduism."
Still, the nontextual, syncretic religious and philosophical traditions of India that escaped the attention of British scholars flourish even today. Popular devotional cults, shrines, festivals, rites and legends that vary across India still form the worldview of a majority of Indians. Goddesses, as Doniger writes, "continue to evolve." Bollywood produced the most popular one of my North Indian childhood: Santoshi Mata, who seemed to fulfill the materialistic wishes of newly urbanized Hindus. Far from being a slave to mindless superstition, popular religious legend conveys a darkly ambiguous view of human action. Revered as heroes in one region, the characters of the great epics "Ramayana" and "Mahabharata" can be regarded as villains in another. Demons and gods are dialectically interrelated in a complex cosmic order that would make little sense to the theologians of the so-called war on terror.
Doniger sets herself the ambitious task of writing "a narrative alternative to the one constituted by the most famous texts in Sanskrit." As she puts it, "It's not all about Brahmins, Sanskrit, the Gita." It's also not about perfidious Muslims who destroyed innumerable Hindu temples and forcibly converted millions of Indians to Islam. Doniger, who cannot but be aware of the political historiography of Hindu nationalists, the most powerful interpreters of Indian religions in both India and abroad today, also wishes to provide an "alternative to the narrative of Hindu history that they tell."
She writes at length about the devotional "bhakti" tradition, an ecstatic and radically egalitarian form of Hindu religiosity which, though possessing royal and literary lineage, was "also a folk and oral phenomenon," accommodating women, low-caste men and illiterates. She explores, contra Marx, the role of monkeys as the "human unconscious" in the "Ramayana," the bible of muscular Hinduism, while casting a sympathetic eye on its chief ogre, Ravana. And she examines the mythology and ritual of Tantra, the most misunderstood of Indian traditions.
She doesn't neglect high-table Hinduism. Her chapter on violence in the "Mahabharata" is particularly insightful, highlighting the tragic aspects of the great epic, and unraveling, in the process, the hoary cliché of Hindus as doctrinally pacifist. Both "dharma" and "karma" get their due. Those who tilt at organized religions today on behalf of a residual Enlightenment rationalism may be startled to learn that atheism and agnosticism have long traditions in Indian religions and philosophies.
Though the potted biographies of Mughal emperors seem superfluous in a long book, Doniger's chapter on the centuries of Muslim rule over India helps dilute the lurid mythology of Hindu nationalists. Motivated by realpolitik rather than religious fundamentalism, the Mughals destroyed temples; they also built and patronized them. Not only is there "no evidence of massive coercive conversion" to Islam, but also so much of what we know as popular Hinduism — the currently popular devotional cults of Rama and Krishna, the network of pilgrimages, ashrams and sects — acquired its distinctive form during Mughal rule.
Doniger's winsomely eclectic range of reference — she enlists Philip Roth's novel "I Married a Communist" for a description of the Hindu renunciant's psychology — begins to seem too determinedly eccentric when she discusses Rudyard Kipling, a figure with no discernible influence on Indian religions, with greater interpretative vigor than she does Mohandas K. Gandhi, the most creative of modern devout Hindus. More puzzlingly, Doniger has little to say about the forms Indian cultures have assumed in Bali, Mauritius, Trinidad and Fiji, even as she describes at length the Internet-enabled liturgies of Hindus in America.
Yet it is impossible not to admire a book that strides so intrepidly into a polemical arena almost as treacherous as Israel-Arab relations. During a lecture in London in 2003, Doniger escaped being hit by an egg thrown by a Hindu nationalist apparently angry at the "sexual thrust" of her interpretation of the "sacred" "Ramayana." This book will no doubt further expose her to the fury of the modern-day Indian heirs of the British imperialists who invented "Hinduism." Happily, it will also serve as a salutary antidote to the fanatics who perceive — correctly — the fluid existential identities and commodious metaphysic of practiced Indian religions as a threat to their project of a culturally homogenous and militant nation-state.
Pankaj Mishra is the author of "An End to Suffering: The Buddha in the World" and "Temptations of the West: How to Be Modern in India, Pakistan, Tibet, and Beyond."

http://www.nytimes.com/2009/04/26/books/review/Mishra-t.html?8bu&emc=bua2

Malicious Intent

By LOUISE RICHARDSON

BLOOD AND RAGE

A Cultural History of Terrorism

By Michael Burleigh

Illustrated. 577 pp. Harper/HarperCollins Publishers. $29.99

Michael Burleigh's ambitious cultural history of terrorism is indeed suffused with blood and rage. The blood is provided in graphic, detailed, often nauseating descriptions of the vicious brutality of terrorists ranging from the Irish Fenians to Al Qaeda. The rage, on the other hand, is in the pen of the author, and it is equally wide ranging. Burleigh rages against terrorists and all their apologists: "unserious" academics, ineffably polite interrogators, colluding human rights lawyers and those scourges of the modern age, the multiculturalists.

Behind the blood and the rage, this is a learned and erudite book. Burleigh's broad survey provides detailed descriptions of many of the most important terrorist movements and the sociopolitical contexts in which they have operated since the mid-19th century. He seamlessly synthesizes vast amounts of historical material and provides often riveting accounts of terrorist atrocities and the literary and political environments where they took place. He treats Russian nihilists, European anarchists, Fenians of both the 19th- and 20th-century variety, Algerians, Palestinians, South Africans, the Italian Red Brigades, the German Red Army Faction and the Basque ETA before coming to his real interest, Islamic terrorism. A less ambitious author might have given his readers two books, as there is little direct connection between the various parts other than the unstated point that Islamic terrorism is just the most recent manifestation of an old phenomenon. The implication is that, like its precursors, it too will pass.

Burleigh is a respected historian widely known for his work on the Third Reich, and with "Blood and Rage" he has written a deeply idiosyncratic book. He provides no explanation for why he includes some terrorist organizations and not others; important groups like the Colombian FARC, the Shining Path of Peru and the Tamil Tigers of Sri Lanka receive little or no mention, nor do most other Latin American or Asian groups. Burleigh's interest remains Europe.

Neither does he have any time for defining terrorism. He concludes his book by forgoing any academic definition, substituting instead a heartbreaking account of the suffering of a victim of the July 7, 2005, attacks on the London underground — though the description could equally apply to anyone facing an unexpected death. Definitions are in fact useful in helping us decide what to include. Burleigh gives long accounts, for example, of the sabotage and guerrilla activities of the African National Congress and the assassination campaigns of the 19th-century anarchists while suggesting that these are not really acts of terrorism. He writes about them anyway.

Burleigh asserts the motive of terrorists to be the creation of a climate of fear "in order to compensate for the legitimate political power they do not possess." He may be right (though I don't think so), but in any event he would be more persuasive if he argued the point rather than asserting it. He insists that terrorists are "morally insane," whatever that means, and that they are driven by perceived slights or abstract grievances into hysterical rage. One does not have to be an apologist for terrorism to recognize that many of these grievances — occupation, political disenfranchisement, confinement in refugee camps — may be

quite concrete and far from slight. One has only to read the statements or listen to the audiotapes of terrorist leaders to detect more cold calculation than what Burleigh terms obsessional killing rage.
It is a great shame that Burleigh could not bring himself to provide sources for most of the remarkable material he presents. He derides academics for providing footnotes to "prove earnestness." In fact most academics provide footnotes because they don't presume that theirs is the last word on a subject and want to encourage their readers and their students to delve further. Not Burleigh.
At times his account is thoughtful and nuanced, as in his discussion of the role of torture in the French campaign in Algeria, but on other occasions he generalizes with breathtaking self-confidence. Speaking about a fifth of the world's population, he asserts that "Muslims liked to point out" and "Muslim girls toe the line at home" and "most Muslims do not seem to grasp the fact that." Sometimes he is quite funny, as when he compares Osama bin Laden to "superannuated rock stars" like Bono and Bob Geldof, though it is not always clear that he means to be.
To appreciate the virtues of this book (it is, in its way, an exceptional synthesis), one has to make a conscious and concerted effort to ignore the condescending tone, the incessant sneering, the unsupported assertions and the gross generalizations. Few escape Burleigh's ire. He describes Sartre as a "loathsome academic" at one point and an "aged useful idiot" at another. Foucault is a "silly Western intellectual." Chernyshevsky's utopian novel, "What Is to Be Done?," is "execrable," and liberal artists are idiots. He complains of "the sanctimonious ethos" of The New York Times and describes students at the London School of Economics as "Eurotrash and Americans doing 'Let's See Europe.' " There is certainly a lot of rage here, but quite what it has to do with terrorism is often hard to tell.
Clearly, Burleigh's hyperbole is designed to stamp out any shred of residual sympathy for terrorists. But at times, apparently, he's trying to be gratuitously offensive, as when he describes as "undiplomatic" the suggestion that all Jews be thrown into the sea, or says the undisciplined Black and Tans introduced "a certain indiscriminate vigor," or attributes the decline in the Protestant population of the Republic of Ireland to something approaching "ethnic cleansing."
On other occasions he seems unaware of his prejudices. This is particularly the case when it comes to his treatment of the crimes of women. The Russian nihilist Vera Figner became alienated from her husband "notwithstanding his having given up his career for her," while the German Gudrun Ensslin "used her fiancé to sire a son." Horrors! When he wants to ridicule Osama bin Laden, Burleigh cites a description of his having weak hands and a simpering smile "like a girl's."
In several instances, Burleigh seems to lose his critical faculties altogether in order simply to be offensive. Rather than arguing the quite reasonable point that the discrimination against Catholics in Northern Ireland under the Stormont government was not egregious and was better than the treatment of blacks in the American South, he writes: "Protestant friends of mine from Dungannon say that they often dated Catholic girls, who tended to be more feminine than the butch Unionists. Unlike the U.S. Deep South, they could do this without fear of being lynched." He then goes on to miss the point about the Catholic civil rights movement in Northern Ireland. For the first time Catholics were claiming rights within Northern Ireland rather than demanding the overthrow of the state, and it was the inflexible government's blindness to this opportunity — and the consequent emergence of violent republicanism — that had such tragic consequences for the province.
Having worked himself up into a red-hot rage in the course of his book over Islamic terrorism and its apologists in the British liberal elite, Burleigh ends with what is actually a reasoned analysis and with quite moderate prescriptions. He calls for more financing for public diplomacy, development aid, strengthening of democratic institutions and reliance on intelligence over armed force — prescriptions that are not that much different from those of the liberal elite he castigates. Had Burleigh written with less self-regard and with more regard for his readers, and had he written with less simplistic snideness and more of the sophisticated synthesis at which he excels, "Blood and Rage" could have been a very good book.
Louise Richardson, the principal and vice chancellor at the University of St. Andrews in Scotland, is the author of "What Terrorists Want."

http://www.nytimes.com/2009/04/26/books/review/Richardson-t.html?8bu&emc=bua2

Quiet Discomfort

By JOAN SILBER

ONCE THE SHORE

Stories

By Paul Yoon

270 pp. Sarabande Books. Paper, $15.95

In Paul Yoon's first story collection, "Once the Shore," characters move in a haunted stillness. A South Korean island is the setting, and residents either have jobs in modern tourism — waiter, hotel manager, gift-store owner — or persist in the traditional work of fishing, farming, diving. For better and worse, they lead lives of restraint and patience. A girl made unmarriageable by a limp (the result of a childhood stumble with her drunken father) explains her homebound life: "We keep each other company. We do our best." War and the attractions of a seaside resort bring visitors, with their own disturbances and demands; one of the best stories, set in 1947, involves an AWOL American soldier hiding in a village, while another features a veteran's widow from upstate New York re-evaluating half-truths.

Yoon's prose is spare and beautiful. He can describe the sea more ways than seem possible without losing freshness, and his characters' world is often quietly dazzling. Here's a group of farmers seeing a couple climb a forested hill: "They followed the paleness of two shirts, like candle flames moving along that rise of land. They watched as one would watch a flock of geese." Yoon's landscape often verges on the elemental. A woman whose young husband was conscripted into the Japanese military remembers: "They came for him riding horses. . . . They kicked her down and she hit her head against the base of a tree. Briefly she lost consciousness. When she woke, her eyes focused on the animals and their soft sighs, their white breaths. Hooves lifting, stamping the ground. Tremendous eyes. As if they had come from myth." The woman who recalls this is a "sea woman," a 66-year-old who has spent all her life diving into the water with a knife and a "cage tied with rope across her back" to bring back seafood to sell. She has a friendship with the lonely son of Japanese immigrants, who's lost an arm in a shark attack, and their bonds and small conflicts resonate in images of survival that resemble the connecting of a poem as much as the unfolding of a story.

Yoon's narratives face the interesting challenge of relying on characters who don't exactly believe in action. The sea woman, contemplating why she never remarried after the war, simply thinks, "A life was formed and she took it." While a number of people here are tormented by longing — an orphan is sure that more than one man is the lost boy she once took care of; a young girl keeps seeing a ghostly woman in the snow wearing a dress like her dead mother's — their yearnings result more in frustrated gestures than in actual drama.

Yet the beauty of these stories is precisely in their reserve: they are mild and stark at the same time. By mild I do not mean cozy. Harshness is always close at hand here, and no one is surprised by betrayals, thefts, brutal mistakes of war. Nor do the stories entirely lack acts of will. A couple whose son has probably been killed in a bombing test resolutely set off at sea to search for him. A child whose family farm has been sold tells the buyer's wife to go home. But even these resolves feel not altogether voluntary. Most of the collection's characters move through events with a resignation or forbearance rare in contemporary fiction. "Once the Shore" is the work of a large and quiet talent.

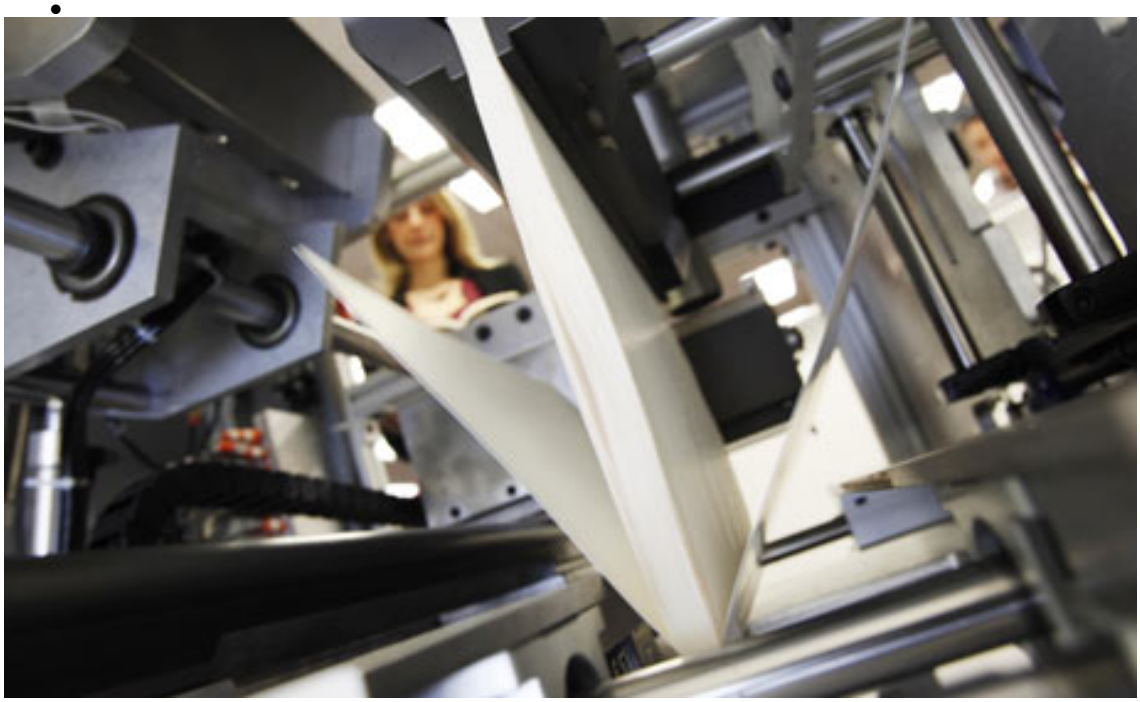
Joan Silber's most recent novel, "The Size of the World," will be issued in paperback in June. Her new book, "The Art of Time in Fiction," will be published this summer.

http://www.nytimes.com/2009/04/26/books/review/Silber-t.html?8bu&emc=bua2

Revolutionary Espresso Book Machine launches in London

Launching in London today, the Espresso Book Machine can print any of 500,000 titles while you wait

- **Alison Flood**
- guardian.co.uk, Friday 24 April 2009 00.05 BST
-



Quick reads ... The Espresso Book Machine. Photograph: David Parry/PA

It's not elegant and it's not sexy – it looks like a large photocopier – but the Espresso Book Machine is being billed as the biggest change for the literary world since Gutenberg invented the printing press more than 500 years ago and made the mass production of books possible. Launching today at Blackwell's Charing Cross Road branch in London, the machine prints and binds books on demand in five minutes, while customers wait.

Signalling the end, says Blackwell, to the frustration of being told by a bookseller that a title is out of print, or not in stock, the Espresso offers access to almost half a million books, from a facsimile of Lewis Carroll's original manuscript for Alice in Wonderland to Mrs Beeton's Book of Needlework. Blackwell hopes to increase this to over a million titles by the end of the summer – the equivalent of 23.6 miles of shelf space, or over 50 bookshops rolled into one. The majority of these books are currently out-of-copyright works, but Blackwell is working with publishers throughout the UK to increase access to in-copyright writings, and says the response has been overwhelmingly positive.

"This could change bookselling fundamentally," said Blackwell chief executive Andrew Hutchings. "It's giving the chance for smaller locations, independent booksellers, to have the opportunity to truly compete with big stock-holding shops and Amazon ... I like to think of it as the revitalisation of the local bookshop industry. If you could walk into a local bookshop and have access to one million titles, that's pretty compelling."

From academics keen to purchase reproductions of rare manuscripts to wannabe novelists after a copy of their self-published novels, Blackwell believes the Espresso – a Time magazine "invention of the year" – can cater to a wide range of needs, and will be monitoring customer usage closely over the next few months as it looks to pin down pricing (likely to be around the level of traditional books) and demand. It then hopes to roll it out across its 60-store network, with its flagship Oxford branch likely to be an early recipient as well as a host of smaller, campus-based shops.

The brainchild of American publisher Jason Epstein, the Espresso was a star attraction at the London Book Fair this week, where it was on display to interested publishers. Hordes were present to watch it click and whirr into action, printing over 100 pages a minute, clamping them into place, then binding, guillotining and spitting out the (warm as toast) finished article. The quality of the paperback was beyond dispute: the text clear, unsmudged and justified, the paper thick, the jacket smart, if initially a little tacky to the touch.

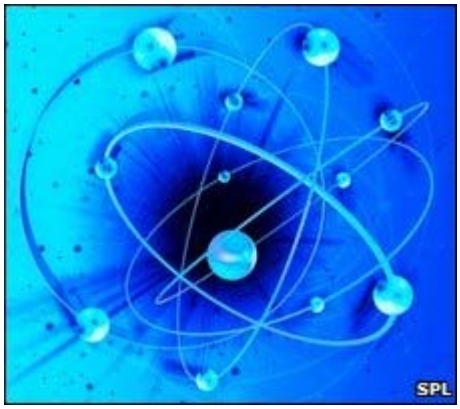
Described as an "ATM for books" by its US proprietor On Demand Books, Espresso machines have already been established in the US, Canada and Australia, and in the Bibliotheca Alexandrina in Egypt, but the Charing Cross Road machine is the first to be set up in a UK bookstore. It cost Blackwell some $175,000, but the bookseller believes it will make this back in a year. "I do think this is going to change the book business," said Phill Jamieson, Blackwell head of marketing. "It has the potential to be the biggest change since Gutenberg and we certainly hope it will be. And it's not just for us – it gives the ability to small independent bookshops to compete with anybody."

http://www.guardian.co.uk/books/2009/apr/24/espresso-book-machine-launches

World first for strange molecule

By Victoria Gill
Science reporter, BBC News

A molecule that until now existed only in theory has finally been made.



Known as a Rydberg molecule, it is formed through an elusive and extremely weak chemical bond between two atoms.

The new type of bonding, reported in Nature, occurs because one of the two atoms in the molecule has an electron very far from its nucleus or centre.

It reinforces fundamental quantum theories, developed by Nobel prize-winning physicist Enrico Fermi, about how electrons behave and interact.

The Rydberg molecules in question were formed from two atoms of rubidium - one a Rydberg atom, and one a "normal" atom.

The movement and position of electrons within an atom can be described as orbiting around a central nucleus - with each shell of orbiting electrons further from the centre.

" **It will be interesting to see what other fundamental physics we will be able to test with this approach** "
Helen Fielding, UCL

A Rydberg atom is special because it has one electron alone in an outermost orbit - very far, in atomic terms, from its nucleus.

Back in 1934 Enrico Fermi predicted that if another atom were to "find" that lone, wandering electron, it might interact with it.

"But Fermi never imagined that molecules could be formed," explained Chris Greene, the theoretical physicist from the University of Colorado who first predicted that Rydberg molecules could exist.

"We recognised, in our work in the 1970s and 80s, the potential for a sort of forcefield between a Rydberg atom and a groundstate [or normal] atom.

"It's only now that you can get systems so cold, that you can actually make them."

Right place, right time

Unimaginably cold temperatures are needed to create the molecules, as Vera Bendkowsky from the University of Stuttgart who led the research explained.

"The nuclei of the atoms have to be at the correct distance from each other for the electron fields to find each other and interact," she said.

"We use an ultracold cloud of rubidium - as you cool it, the atoms in the gas move closer together."

At temperatures very close to absolute zero - minus 273C - this "critical distance" of about 100nm (nanometres - 1nm = one millionth of a millimetre) between the atoms is reached.

When one is a Rydberg atom, the two atoms form a Rydberg molecule. This 100nm gap is vast compared to ordinary molecules.

"The Rydberg electron resembles a sheepdog that keeps its flock together by roaming speedily to the outermost periphery of the flock, and nudging back towards the centre any member that might begin to drift away," said Professor Greene.

Pushing this electron out to its lonely periphery - and make a Rydberg atom - requires energy.

"We excite the atoms to the Rydberg stage with a laser," explained Dr Bendkowsky.

"If we have a gas at the critical density, with two atoms at the correct distance that are able to form the molecule, and we excite one to the Rydberg state, then we can form a molecule."

This ultracold experiment is also ultra-fast - the longest lived Rydberg molecule survives for just 18 microseconds.

But the fact that the molecules can be made and seen confirms long-held fundamental atomic theories.

"This is a very exciting set of experiments," added Helen Fielding, a physical chemist from University College London.

"It shows that this approach is feasible, and it will be interesting to see what other fundamental physics we'll be able to test with it."

Prize-winning ideas

Professor Greene's prediction that Rydberg molecules could exist was inspired by another Nobel prize-winning piece of physics research.

When, in 1924 the Indian physicist Satyendra Nath Bose sent some theoretical calculations about particles to Albert Einstein, Einstein made a prediction.

He said that if a gas was cooled to a very low temperature, the atoms would all suddenly collapse into their "lowest possible energy state", so they would be almost frozen and behave in an identical and predictable way.

In a sense this is analagous to when a gas suddenly condenses into drops of liquid.

When scientists reached the goal of Bose-Einstein condensation, by cooling and trapping alkali atoms, Professor Greene realised that ultracold physics could be used to form molecules that simply would not exist in any other conditions.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8013343.stm

Published: 2009/04/23 10:54:33 GMT

Milk protein clue to big babies

Breast milk has less protein than formula, which could be why bottle-fed babies grow faster, a study suggests.

There has been concern that formula-fed babies, who tend to be bigger, are "programmed" to store fat and so have a higher risk of childhood obesity.

The international study of 1,000 babies, published in the American Journal of Clinical Nutrition, suggests protein levels in formula should fall.

But UK manufacturers said action had already been taken to cut levels.

Measures

The study was carried out in Belgium, Italy, Germany, Poland and Spain on babies born between 2002 and 2004.

Parents were recruited to take part in the first few weeks of their babies' lives.

A third were given a low protein content formula milk (around 2g per 100kcal), a third had a formula with a higher level of protein (3-4g per 10kcal), while the rest were breast-fed during their first year.

" **Limiting the protein content of infant and follow-on formula can normalise early growth and might contribute greatly to reducing the long-term risk of childhood overweight and obesity** "
Professor Berthold Koletzko, Study author

To qualify as breast-fed, babies had to be either exclusively given breast milk, or have a maximum of three bottles per week.

The infants were all then followed up to the age of two with regular weight, height and body mass index measurements taken.

At the age of two, there was no difference in height between the groups, but the high protein group were the heaviest.

The researchers suggest lower protein intakes in infancy might protect against later obesity.

The children are being followed up further to see whether those given the lower protein formulas have a reduced risk of obesity later on.

Changes needed?

Professor Berthold Koletzko, from the University of Munich, Germany, and who led the study, said: "These results from the EU Childhood Obesity Programme underline the importance of promoting and supporting breastfeeding because of the long-term benefits it brings.

"They also highlight the importance of the continual development and improvement in the composition of infant formula.

"Limiting the protein content of infant and follow-on formula can normalise early growth and might contribute greatly to reducing the long-term risk of childhood overweight and obesity."

But writing in the American Journal of Nutrition, Dr Satish Kalhan of the Case Western Reserve University in Cleveland, US, said: "On the basis of these data, should we consider prescribing low protein formula to infants? "The answer most likely is a categorical no."

A spokesman for the UK's Infant and Dietetic Food Association said companies had already reduced protein levels to well below those mentioned in the study.

She added: "The scientific evidence reviewing the role of infant formula in the development of obesity in later life is unclear.

"Most studies in this area are short-term and very few look at the long-term effect into adulthood."

But she added: "Clearly further research is required and this is an area we follow closely to ensure that the product we represent are based on generally accepted scientific evidence."

New infant growth charts, to be introduced in the UK this summer, have been changed so they relate more closely to the growth patterns of breast-fed babies.

Existing charts are based on a 1970s study into the growth patterns of formula-fed babies, and many breast-fed babies fall short - often causing concern to their parents and to health visitors.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8014282.stm

Published: 2009/04/23 23:42:23 GMT

World's major rivers 'drying up'

By Matt McGrath
BBC environment reporter

Water levels in some of the world's most important rivers have declined significantly over the past 50 years, US researchers say.

They say the reduced flows are linked to climate change and will have a major impact as the human population grows. The only area with a significant increase in water flows was the Arctic due to a greater snow and ice melting.

The study was published in the American Meteorological Society's (AMS) Journal of Climate.

Rainfall patterns 'altered'

From the Yellow river in northern China to the Ganges in India to the Colorado river in the United States - the US scientists say that the major sources of fresh water for much of the world's population are in decline. The researchers analysed water flows in more than 900 rivers over a 50-year period to 2004.

They found that there was an overall decline in the amount of water flowing into the world's oceans. Much of the reduction has been caused by human activities such as the building of dams and the diversion of water for agriculture. But the researchers highlighted the contribution of climate change, saying that rising temperatures were altering rainfall patterns and increasing rates of evaporation. The authors say they are concerned that the decline in freshwater sources will continue with serious repercussions for a growing global population. While some major rivers, including the Brahmaputra in South Asia and the Yangtze in China, have larger water flows, there is concern that the increased volume comes from the melting of glaciers in the Himalayas. This means that in future these rivers might decline significantly as the glaciers disappear.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/americas/8011497.stm

Published: 2009/04/21 23:00:54 GMT

Sugary drinks 'worsen vomit bug'

Parents are making children suffering from vomiting and diarrhoea more sick by giving them flat coke and lemonade, experts say.

The National Institute for Health and Clinical Excellence said it was a myth that sugary drinks could help ease bouts of gastroenteritis.

Instead, NICE said bad cases of stomach bugs in children under five needed to be treated with rehydration drinks.

The NHS advisers said prompt action was needed to avoid hospital admission.

NICE made the warning as part of guidance it has produced on the treatment of gastroenteritis in children in England and Wales.

" **The idea that flat coke and lemonade helps is just a myth. In fact, it can make it worse, but unfortunately people are still using them** "
Dr Stephen Murphy, of the National Institute for Health and Clinical Excellence

Half of all children under five will develop vomiting and diarrhoea over the course of the year.

Up to a fifth will end up seeing a health professional about the illness with nearly 40,0000 children a year ending up in hospital because of problems related to dehydration.

NICE believes some of the most serious cases could be avoided if parents and GPs followed the best advice.

Consultant paediatric gastronenterologist Dr Stephen Murphy, who chaired the panel drawing up the guidance, said: "The idea that flat coke and lemonade - or fruit juices for that matter - helps is just a myth. In fact, it can make it worse, but unfortunately people are still using them.

"Severe cases of diarrhoea and vomiting leading to dehydration need treating with oral rehydration solution immediately."

He said the combination of sugar and salt in rehydration drinks was the key to helping the body absorb fluids, whereas the likes of coke and lemonade had too much sugar.

NICE has produced a checklist for parents to assess whether their children are dehydrated.

Signs

The key signs are altered responsiveness, sunken eyes, pale or mottled skin and cold extremities.

If they are, set amounts of oral rehydration solution should be given over the course of four hours.

The amount of solution to be given varies depending on the child, but for the average one-year-old it would be half-a-litre, the guidance said.

After that, it is important that children are encouraged to eat food again, NICE said.

The guidance is also aimed at doctors and gives advice on when to carry out further tests and when and how to administer intravenous rehydration fluid.

Mother-of-three Narynder Johal, who acted as a patient representative for NICE, said the guidance was much needed as parents were often left frustrated by the advice given to them.

"I have often been very concerned when my children have had diarrhoea and vomiting and have not always received consistent advice on how to best manage the condition."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8010346.stm

Published: 2009/04/22 00:46:51 GMT

Mystery Of Horse Domestication Solved?

Wild horses running in the desert mountains of Kazakhstan. (Credit: iStockphoto/Maxim Petrichuk)

ScienceDaily (Apr. 24, 2009) — Wild horses were domesticated in the Ponto-Caspian steppe region (today Russia, Kazakhstan, Ukraine, Romania) in the 3rd millennium B.C. Despite the pivotal role horses have played in the history of human societies, the process of their domestication is not well understood.

In a new study published in the scientific journal *Science*, an analysis by German researchers from the Leibniz Institute for Zoo and Wildlife Research, Berlin, the German Archaeological Institute, the Humboldt University Berlin, the Max Planck Institute of Evolutionary Anthropology, Leipzig, in cooperation with American and Spanish scientists, has unravelled the mystery about the domestication of the horse.

Based on ancient DNA spanning the time between the Late Pleistocene and the Middle Ages, targeting nuclear genes responsible for coat colorations allows to shed light on the timing and place of horse domestication. Furthermore the study demonstrates how rapid the number of colorations increased as one result of the domestication. As well, it shows very clearly that the huge variability of coloration in domestic horses which can be observed today is a result of selective breeding by ancient farmers.

Our modern human societies were founded on the Neolithic revolution, which was the transformation of wild plants and animals into domestic ones available for human nutrition. Within all domestic animals, no other species has had such a significant impact on the warfare, transportation and communication capabilities of human societies as the horse.For many millennia, horses were linked to human history changing societies on a continent-wide scale, be it with Alexander the Great's or Genghis Khan's armies invading most of Asia and Eastern Europe or Francis Pizarro destroying the Inca Empire with about 30 mounted warriors. The horse was a costly and prestigious animal in all times, featured in gifts from one sovereign to another as a nobleman's mark.

Journal reference:

1. Arne Ludwig, Melanie Pruvost, Monika Reissmann, Norbert Benecke, Gudrun A. Brockmann, Pedro Castaños, Michael Cieslak, Sebastian Lippold, Laura Llorente, Anna-Sapfo Malaspinas, Montgomery Slatkin, and Michael Hofreiter. **Coat Color Variation at the Beginning of Horse Domestication**. *Science*, 2009; 324 (5926): 485 DOI: 10.1126/science.1172750

Adapted from materials provided by Forschungsverbund Berlin e.V. (FVB), via AlphaGalileo.

http://www.sciencedaily.com/releases/2009/04/090423142541.htm

Soft Hardware For A Flexible Chip

ScienceDaily (Apr. 24, 2009) — Technology is struggling to meet demands for high-performance, specialised computing systems. A European consortium is responding with a new kind of reconfigurable chip that is both efficient and flexible.

Computers are everywhere, from washing machines to medical body scanners, from MP3 players to air traffic control systems. Yet as these specialised 'embedded systems' become ever-more common, the technology is struggling to keep up with the demand for computing power.

Pressure is coming mainly from high-performance applications that need to process huge amounts of data in a short time. Examples include digital video processing, telecoms, and military applications.

"This kind of equipment needs high computing performance for signal processing and for making decisions," says Philippe Bonnot of Thales Research and Technology who is coordinating the MORPHEUS project. "But the solutions are not as efficient as we would like."

The challenge is to design embedded systems that are both efficient and flexible. A normal microprocessor is cheap and flexible and can be used for many applications, but with power consumption at around 100 watts it is not an efficient use of energy and cannot be used in a confined space.

On the other hand, a circuit designed specifically for one application, known as an ASIC, can be extremely efficient but totally inflexible. For that reason, they are very expensive to design and manufacture.

"Another type of device, called an FPGA [field-programmable gate array], is a partial solution but difficult to use in practice because of the hardware programming skills required," Bonnot says.

The EU-funded MORPHEUS project, which includes big manufacturers of embedded systems such as Thales, Thomson, Alcatel-Lucent, STMicroelectronics and Intracom, is exploring a new approach.

Having your cake and eating it

"We tried to solve all these problems by merging a processor with reconfigurable units embedded in the same component," says Bonnot. "We think we can both have the flexibility and the efficiency."

Reconfigurable hardware can be programmed to connect itself in many different ways. When a new application is required, the hardware can be modified just as a piece of software can be altered to do a different job.

"The reconfigurable technology makes specific solutions possible. You can design exactly what you need so you are efficient, but it's reconfigurable so you can reuse the component for another application."

Several different types of reconfigurable building blocks have been integrated into the chip to increase the range of possible applications.

"The flexibility we have in the chip is even higher because we inserted an operating system which can modify the configurations of the building blocks at run-time," Bonnot explains. "So, during execution, we can modify the functions that are implemented in the reconfigurable units."

This design means that the chip is more complex to program but the project has developed a set of programming tools to help.

A design company would be able to take a MORPHEUS chip and configure it to do exactly what a customer requires. It would have the advantages of an ASIC but would be cheaper as it could be manufactured in large numbers.

Prototype chip

Applications examined in the project include professional video processing, broadband wireless access systems, network routing applications, and many defence and security systems such as 'smart' cameras. The chips could also have wide application in multimedia, communication, instrumentation and robotics. What these applications all have in common is a need for intensive data processing in real time and in a compact space.

Early in 2009, partner STMicroelectronics produced the first prototypes of the MORPHEUS chip. It contains 97 million transistors and is expected to consume no more than one watt of power.

The chip will be integrated into several application boards for testing by the larger industrial partners. Video and network applications will be a priority. "It will be interesting to see if this new approach can really attract the interest of our companies," says Bonnot. "It's almost a new kind of paradigm."

He expects there will be several modifications to the prototype before it can be considered for commercialisation. In the meantime, the SMEs in the project may be able to market one of the reconfigurable units and a compiler.

There is still more to do. Bonnot points out that the silicon technology used in the chip is several years old. "We only used 90 nanometre technology," he says. "So with more aggressive technology we could get some better results – we could put more units on to the chip and we could have a higher clock frequency."

The MORPHEUS project, which received funding from the EU's Sixth Framework Programme for research, is being presented at the DATE09 conference in Nice on 21 April.

More information is available at: http://www.morpheus-ist.org/

Adapted from materials provided by ICT Results, via AlphaGalileo.

http://www.sciencedaily.com/releases/2009/04/090422121945.htm

Clouds: Lighter Than Air But Laden With Lead

Cirrus clouds (also known as ice clouds) form high in the atmosphere. Their formation may be affected by lead generated from human activities. (Credit: Courtesy of National Weather Service/Jim Lee)

ScienceDaily (Apr. 24, 2009) — By sampling clouds -- and making their own -- researchers have shown for the first time a direct relation between lead in the sky and the formation of ice crystals that foster clouds. The results suggest that lead generated by human activities causes clouds to form at warmer temperatures and with less water. This could alter the pattern of both rain and snow in a warmer world.

The lead-laden clouds come with a silver lining, however. Under some conditions, these clouds let more of the earth's heat waft back into space, cooling the world slightly. Atmospheric lead primarily comes from human sources such as coal.

The international team of researchers reported their results in the May issue of Nature Geoscience. The collaboration included researchers from institutions in the United States, Switzerland and Germany.

"We know that the vast majority of lead in the atmosphere comes from man-made sources," said atmospheric chemist Dan Cziczo of the Department of Energy's Pacific Northwest National Laboratory and study author. "And now we show that the lead is changing the properties of clouds and therefore the balance of the sun's energy that affects our atmosphere."

Globe Trotting for Lead

Scientists first attempted to goad rain from the sky with silver and lead iodide in the 1940s. Since then, researchers have known that lead can pump up the ice crystals in clouds. But daily human activities also add lead to the atmosphere. The top sources include coal burning, small airplanes flying at the altitude where clouds form, and construction or wind freeing lead from the ground. Cziczo and colleagues wanted to know how lead from these sources affects clouds.

To find out, the researchers collected air from high atop a mountain peak on the Colorado-Wyoming border. In their high altitude lab, they created artificial clouds from the air in a cloud chamber about the size of a small refrigerator. Half of the ice crystals they plucked from the synthetic clouds, they found, contained lead.

The team then collected a dollop of real cloud atop a mountain in Switzerland. About half of those ice crystals also contained lead. But finding lead in an incriminating position doesn't mean it causes ice crystals.

To determine whether lead causes ice crystals and clouds to form, the team turned to a lab in Germany that houses a cloud chamber three stories tall, as well as a smaller chamber in Switzerland. They created dust particles that were either lead-free or contained one percent lead by weight, which is about what scientists find in the atmosphere. They put these dust particles into the chambers and measured the temperature and humidity at which point ice nucleated around the dust.

They found that lead changed the conditions under which clouds appeared. The air didn't have to be as cold or as heavy with water vapor if lead was present.

"Most of what nucleates clouds are dust particles," said Cziczo. "Half of the ones we looked at had lead supercharging them."

Leaden Clouds, Cooler Climes

To investigate what this might mean for the earth's climate, the researchers simulated the global climate with either lead-free dust particles floating around, or with either 10 percent or all of them containing lead.

The computer simulation showed that the clouds they looked at -- typically high, thin clouds -- formed at lower altitudes and different locations in the northern hemisphere when lead was present in dust particles. This will probably affect precipitation, said Cziczo.

"In our atmosphere, lead affects the distribution and density of the kinds of clouds we looked at," said Cziczo, "which might then affect where and when rain and snow fall."

Clouds at lower altitudes let more of the earth's heat, or so-called longwave radiation, escape out to space. So lead-triggered clouds could partly offset global warming due to greenhouse gases.

But that doesn't mean lead in the atmosphere will simply cool the planet, said Cziczo, since they looked at only one type of cloud. Cloudy skies are far more complicated than their wispy image lets on.

"This work highlights how complex these interactions between lead and water vapor and temperature are," said Cziczo. "They're not as simple as greenhouse gases."

Future work will look at the type of lead and how much is needed to affect clouds and precipitation, as well as the atmospheric distribution of the metal dust.

This research was supported by the Atmospheric Composition Change the European Network for Excellence, ETH Zurich, the German Research Foundation, and Pacific Northwest National Laboratory directed research funding.

Journal reference:

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Adapted from materials provided by DOE/Pacific Northwest National Laboratory.

http://www.sciencedaily.com/releases/2009/04/090419133839.htm

Using Combinatorial Libraries To Engineer Genetic Circuits Advances Synthetic Biology

ScienceDaily (Apr. 24, 2009) — Streamlining the construction of synthetic gene networks has led a team of Boston University researchers to develop a technique that couples libraries of diversified components with computer modeling to guide predictable gene network construction without the back and forth tweaking.By applying engineering principles to biological systems where a set of components can evolve into networks that display desired behaviors – known as synthetic biology -- , has led to new opportunities for biofabrication, drug manufacturing -- even potential biofuels.

And while there have been notable successes, the basic process of building and assembling a predictable gene network from bio-molecular parts remains a major challenge that is often frustrating. The time-consuming tweaking phase often requires many months of swapping out different chemical inputs, RNA regulators and promotors before the sought -after network is realized.In a paper published online this week in *Nature Biotechnology*, the research team, led by James J. Collins, BU professor of biomedical engineering, focused on ways to speed up the construction process by assembling a library of 20 versions of two gene promotors and a simple synthesis technique to create component libraries for synthetic biology. Each version covered a wide range gene expression. With the activity levels calculated from the component libraries, the scientists turned to a computer model and designed and built a basic gene circuit to predict how fluorescent protein expression varied with levels of promoter-inhibiting chemicals.

Using the same simulation, for the simple gene circuit the researchers went the next step with a genetic timer, a more complicated circuit. However, computer simulation, on its own, was unable to predict the behavior of this timing circuit. They then built a representative genetic timer using a promoter from each of their libraries and, over time, tracked its behavior. Based on information from one network, the research team was able to calibrate their model and achieve accurate predictions from all the other possible network combinations. These timers, the study notes, are effectively genetic toggle switches.

One last test of these genetic timers was to assemble and test one in yeast, which could accurately time yeast sedimentation -- a process that can be applied to biotechnology and some popular brewed beverages."The phenotype is crucial in industrial beer, wine and bioethanol fermentation, as it allows for easy removal of yeast sediments after all the sugars have been converted to ethanol," the paper noted.

The researchers concluded that their method using combinatorial libraries to engineer genetic circuits moves the "tweaking" from the back-end of gene network engineering to the front-end.

"Projects undertaken with this approach will help accelerate synthetic biology by yielding many more components for the community," the paper concludes, noting the need for extensive characterization of each component is eliminated or substantially reduced.

"Our work also provides an accessible method for introducing predictable, controlled variability to networks, a feature that is increasingly becoming desirable as synthetic biology enters its second decade."

The research paper, "Diversity-based, Model-Guided Construction of Synthetic Gene Networks with Predicted Functions," was authored by Tom Ellis and Xiao Wang, both post doctoral students at Boston University's Center for BioDynamics and Center for Advanced Biotechnology and Collins.

Journal reference:

1. Ellis et al. **Diversity-based, model-guided construction of synthetic gene networks with predicted functions**. *Nature Biotechnology*, 2009; DOI: 10.1038/nbt.1536

Adapted from materials provided by Boston University.

http://www.sciencedaily.com/releases/2009/04/090422121902.htm

Plants Absorb More Carbon Dioxide Under Polluted Hazy Skies

Plants absorbed carbon dioxide more efficiently under the polluted skies of recent decades than they would have done in a cleaner atmosphere. (Credit: iStockphoto/George Clerk)

ScienceDaily (Apr. 23, 2009) — Plants absorbed carbon dioxide more efficiently under the polluted skies of recent decades than they would have done in a cleaner atmosphere, according to new findings published this week in *Nature.*

The results of the study have important implications for efforts to combat future climate change which are likely to take place alongside attempts to lower air pollution levels.

The research team included scientists from the Centre for Ecology & Hydrology, the Met Office Hadley Centre, ETH Zurich and the University of Exeter.

Lead author Dr Lina Mercado, from the Centre for Ecology & Hydrology, said, "Surprisingly, the effects of atmospheric pollution seem to have enhanced global plant productivity by as much as a quarter from 1960 to 1999. This resulted in a net 10% increase in the amount of carbon stored by the land once other effects were taken into account."

An increase in microscopic particles released into the atmosphere (known as aerosols), by human activities and changes in cloud cover, caused a decline in the amount of sunlight reaching the Earth's surface from the 1950s up to the 1980s (a phenomenon known as 'global dimming').

Although reductions in sunlight reduce photosynthesis, clouds and atmospheric particles scatter light so that the surface receives light from multiple directions (diffuse radiation) rather than coming straight from the sun. Plants are then able to convert more of the available sunlight into growth because fewer leaves are in the shade.

Scientists have known for a long time that aerosols cool climate by reflecting sunlight and making clouds brighter, but the new study is the first to use a global model to estimate the net effects on plant carbon uptake resulting from this type of atmospheric pollution.

Co-author Dr Stephen Sitch from the Met Office Hadley Centre (now at the University of Leeds) said, "Although many people believe that well-watered plants grow best on a bright sunny day, the reverse is true. Plants often thrive in hazy conditions such as those that exist during periods of increased atmospheric pollution."

The research team also considered the implications of these findings for efforts to avoid dangerous climate change. Under an environmentally friendly scenario in which sulphate aerosols decline rapidly in the 21st century, they found that by cleaning up the atmosphere even steeper cuts in global carbon dioxide emissions would be required to stabilize carbon dioxide concentrations below 450 parts per million by volume.

Co-author Professor Peter Cox of the University of Exeter summed up the consequences of the study, "As we continue to clean up the air in the lower atmosphere, which we must do for the sake of human health, the challenge of avoiding dangerous climate change through reductions in CO_2 emissions will be even harder. Different climate changing pollutants have very different direct effects on plants, and these need to be taken into account if we are to make good decisions about how to deal with climate change."

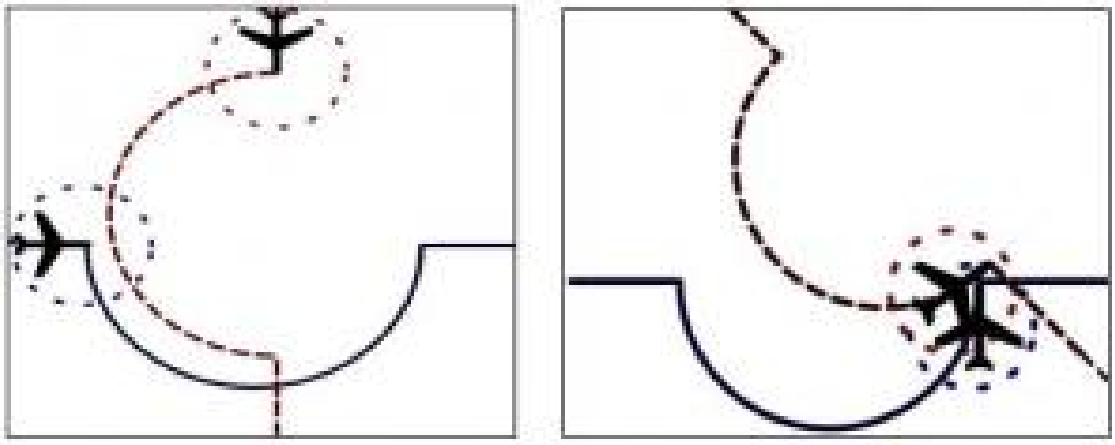
Journal reference:

1. Lina M. Mercado, Nicolas Bellouin, Stephen Sitch, Olivier Boucher, Chris Huntingford, Martin Wild & Peter M. Cox. **Impact of changes in diffuse radiation on the global land carbon sink**. *Nature*, 2009; 458 (7241): 1014 DOI: 10.1038/nature07949

Adapted from materials provided by Natural Environment Research Council, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/04/090422132829.htm

Method For Verifying Safety Of Computer-controlled Devices Developed



A roundabout maneuver is one method for automated crash avoidance systems to prevent aircraft collisions; each pilot is directed to turn right and circle left until each plane can resume its original course (left). But a verification method developed by Carnegie Mellon University researchers found that in some cases (right) the roundabout maneuver fails to prevent collision. This defect has since been corrected. (Credit: Image courtesy of Carnegie Mellon University)

ScienceDaily (Apr. 23, 2009) — Researchers at Carnegie Mellon University's School of Computer Science have developed a new method for systematically identifying bugs in aircraft collision avoidance systems, high-speed train controls and other complex, computer-controlled devices, collectively known as cyber-physical systems (CPS).

The approach, developed by University Professor of Computer Science Edmund M. Clarke and Andre Platzer, assistant professor of computer science, already has detected a flaw in aircraft collision avoidance maneuvers —since corrected — that could have caused mid-air collisions. It also has verified the soundness of the European Train Control System. Ultimately, the method could be used on other cyber-physical systems, such as robotic surgery devices and nano-level manufacturing equipment.

"Engineers increasingly are relying on computers to improve the safety and precision of physical systems that must interact with the real world, whether they be adaptive cruise controls in automobiles or machines that monitor critically ill patients," Clarke said. "With systems becoming more and more complex, mere trial-and-error testing is unlikely to detect subtle problems in system design that can cause disastrous malfunctions. Our method is the first that can prove these complex cyber-physical systems operate as intended, or else generate counterexamples of how they can fail using computer simulation."

In the case of aircraft collision avoidance systems, for instance, Platzer and Clarke used their method to analyze so-called roundabout maneuvers. When two aircraft are on rapidly converging paths, one technique for avoiding collisions is for the system to order each pilot to turn right and then circle to the left until the aircraft can safely turn right again to resume their original paths. It's as if the aircraft are following a large traffic circle, or rotary, in the sky. But analysis by the Carnegie Mellon researchers identified a counterexample: when aircraft approach each other at certain angles, the roundabout maneuver actually creates a new collision course that, in the few seconds remaining before their paths cross, the pilots might not have time to recognize.

Like Model Checking, a method pioneered by Clarke that today is the most widely used technique for detecting and diagnosing errors in complex hardware and software design, the new method analyzes the logic underlying the system design, much as a mathematician uses a proof to determine that a theorem is correct. Clarke shared the 2007 A.M. Turing Award, generally considered the computer science equivalent of the Nobel Prize, for his role in developing Model Checking.

A crucial difference, however, is that Model Checking can examine every possible state of a discrete finite-state system, such as a new circuit design for a computer chip; that's not possible for a CPS that must interact with the infinitely variable real world. Even if the differential equations that govern these systems can be solved — and they often can't — it usually is impossible to use the results to predict the behavior of the system, Platzer said. Instead, he and Clarke have developed algorithms that decompose the systems until they produce differential invariants — mathematical descriptions of parts of the system that always remain the same. These differential invariants, in turn, can be used to prove the global logic of the CPS.

"When the system design is sound, as we found in the case of the European control system for train traffic or the repaired flight controller, our method can provide conclusive proof," Platzer said. Likewise, when flaws exist, the method reliably generates counterexamples. "Finding the counterexamples is actually the easy part," he added. "Proving that they are fixed is hard."

The demand for methods that can prove a CPS or hybrid system operates as intended will only increase as these systems become more numerous and more crucial for everyday life, Platzer said. "Bugs in complex cyber-physical systems like cars, aircraft, chips or medical devices are expensive to fix and may endanger human life," he explained. "In transportation, the percentage of development cost spent on design and testing new control software is already well above 50 percent and is steadily rising."

The National Science Foundation (NSF) has identified the design and verification of CPS as a key area of research. The increasing use of robotic devices, the growth of sensor networks, the proposed creation of a "smart grid" for delivering electrical power, a greater reliance on automated war fighting and growing use of efficient, "zero-net-energy" buildings are all examples of a growing reliance on computer control systems that are tightly coupled to physical systems. This work was sponsored, in part, by the NSF and the German Research Council.

Adapted from materials provided by Carnegie Mellon University.

http://www.sciencedaily.com/releases/2009/04/090420121333.htm

Origins Of Maya Blue In Mexico

Maya Blue pigment used in a mask. (Credit: Wikimedia Commons. Public Domain Image.)

ScienceDaily (Apr. 23, 2009) — The ancient Maya civilisation used a rare type of clay called "palygorskite" to produce Maya blue. Combining structural, morphological and geochemical methods, Spanish researchers have defined the features of palygorskite clay on the Yucatan Peninsula in Mexico. These findings will make it possible to ascertain the origin of the materials used to produce this pigment, which survives both time and chemical and environmental elements.

A Spanish research team has traced the route followed by the Maya to obtain palygorskite clay, one of the basic ingredients of Maya Blue. "Our main objective was to determine whether the Maya obtained this clay from one place in particular," co-author of the study Manuel Sánchez del Río, a physicist at the European Synchrotron Radiation Facility in Grenoble (France), told SINC.

The team, including Mercedes Suárez, from the Geology Department of the University of Salamanca and Emilia García Romero, from the Universidad Complutense in Madrid, analysed various samples of palygorskite clay on the Yucatan Peninsula to compare them to samples from other places. The results are available in the latest edition of Archaeometry.

Palygorskite clay has been used in Mesoamerica since ancient times. Numerous data suggest the Maya were aware of its properties and, what is more, this clay was closely related to socio-cultural aspects of the Mayan culture.

"Present day native communities on the Yucatan Peninsula are familiar with and use palygorskite clay for a variety of purposes, ranging from making candles on All Saints' Day and household and artistic pottery to remedies for mumps, stomach and pregnancy pains and dysentery," Sánchez del Río explained to SINC. Nowadays, modern pharmacology uses clays like palygorskite to produce anti-diarrhoea medicine, a remedy the Maya began to use more than a thousand years ago.

However, palygorskite was mostly used to make the Maya blue pigment, which is produced by mixing indigo, an organic dye obtained from the plant of the same name, with a base of palygorskite clay. The resulting compound is extraordinarily resistant to chemical and environmental elements.

Archaeological sites

The researchers found samples of high-purity palygorskite clay in several locations on the Yucatan Peninsula, in a 40 km radius of the well-known Maya archaeological site of Uxmal. Some of these locations are well documented, but others have been discovered for the first time during this expedition.

The fact that this clay was abundant among the samples collected confirms that the mineral is common on the peninsula.

Crystal-chemical analysis then enabled researchers to obtain the formula for the composition of Mayan palygorskite clay: (Si7.96Al0.07)O20 (Al1.59Fe3+0.20Mg2.25) (OH)2 (OH2)4Ca0.02Na0.02K0.04 4(H20).

These results will be useful for studying archaeological remains with Maya blue and to determine whether the palygorskite clay used in the pigment was taken from Uxmal or the surrounding area.

Maya Blue was invented between the 6th and the 8th Century and can be found in sculptures, fresco paintings, codices and pre-Columbian decorations across Mesoamerica, from the Gulf of Mexico to the Pacific Ocean. It was used during the colonial period to paint frescos in churches and convents. Maya blue was rediscovered in 1931 and scientists were baffled by the stability and persistence of this colour found on objects dating back to pre-Columbian times.

This thousand-year-old pigment, which has proven immune to the passage of time, erosion, biodegradation and modern solvents, is considered the forerunner of modern hybrid materials, compounds of organic and inorganic design with interesting properties for use in high technology.

Adapted from materials provided by Plataforma SINC, via AlphaGalileo.

http://www.sciencedaily.com/releases/2009/04/090420085049.htm

A Warm TV Can Drive Away Feelings Of Loneliness And Rejection

New research suggests that illusionary relationships with the characters and personalities on favorite TV shows can provide people with feelings of belonging, even in the face of low self esteem or after being rejected by friends or family members. (Credit: iStockphoto/Gregor Inkret)

ScienceDaily (Apr. 23, 2009) — Not all technology meets human needs, and some technologies provide only the illusion of having met your needs.

But new research by psychologists at the University at Buffalo and Miami University, Ohio, indicates that illusionary relationships with the characters and personalities on favorite TV shows can provide people with feelings of belonging, even in the face of low self esteem or after being rejected by friends or family members.

The findings are described in four studies published in the current issue of the *Journal of Experimental Social Psychology*.

"The research provides evidence for the 'social surrogacy hypothesis,' which holds that humans can use technologies, like television, to provide the experience of belonging when no real belongingness has been experienced," says one of the study's authors, Shira Gabriel, Ph.D., UB assistant professor of psychology.

"We also argue that other commonplace technologies such as movies, music or interactive video games, as well as television, can fulfill this need."

Shira's co-authors are Jaye L. Derrick, Ph.D., postdoctoral associate and adjunct instructor of psychology at UB, and Kurt Hugenberg, Ph.D., assistant professor of psychology at Miami University.

The first study, of 701 undergraduate students, used the Loneliness Activities Scale and the Likelihood of Feeling Lonely Scale to find that subjects reported tuning to favored television programs when they felt lonely and felt less lonely when viewing those programs.

Study 2 used essays to experimentally manipulate the belongingness needs of 102 undergraduate subjects and assess the importance of their favored television programs when those needs were stimulated. Participants whose belongingness needs were aroused reveled longer in their descriptions of favored television programs than in descriptions of non-favored programs, the study found.

Study 3 of 116 participants employed the Rosenberg Self-Esteem Scale, the Positive and Negative Affect Schedule and an eight-item measure of feelings of rejection to find that thinking about favored television programs buffered subjects against drops in self-esteem, increases in negative mood and feelings of rejection commonly elicited by threats to close relationships.

Study 4 asked 222 participants to write a 10-minute essay about their favorite television program, and then to write about programs they watch "when nothing else is on," or about experiencing an academic achievement. They were then asked to verbally describe what they had written in as much detail as possible.

After writing about favored television programs, the subjects verbally expressed fewer feelings of loneliness or exclusion than when verbally describing either of the two control situations (essays about programs watched when nothing else is on, academic achievement). This is evidence, say the researchers, that illusionary or "parasocial" relationships with television characters or personalities can ease belongingness needs.

It remains an open question, say the researchers, whether social surrogacy suppresses belongingness needs or actually fulfills them, and they acknowledge that the kind of social surrogacy provoked by these programs can be a poor substitution for "real" human-to-human experience.

"Turning one's back on family and friends for the solace of television may be maladaptive and leave a person with fewer resources over time," says UB's Derrick, "but for those who have difficulty experiencing social interaction because of physical or environmental constraints, technologically induced belongingness may offer comfort."

The University at Buffalo is a premier research-intensive public university, a flagship institution in the State University of New York system and its largest and most comprehensive campus. UB's more than 28,000 students pursue their academic interests through more than 300 undergraduate, graduate and professional degree programs. Founded in 1846, the University at Buffalo is a member of the Association of American Universities.

Journal reference:

1. Jaye L. Derrick, Shira Gabriel, Kurt Hugenberg. **Social surrogacy: How favored television programs provide the experience of belonging**. *Journal of Experimental Social Psychology*, 2009; 45 (2): 352 DOI: 10.1016/j.jesp.2008.12.003

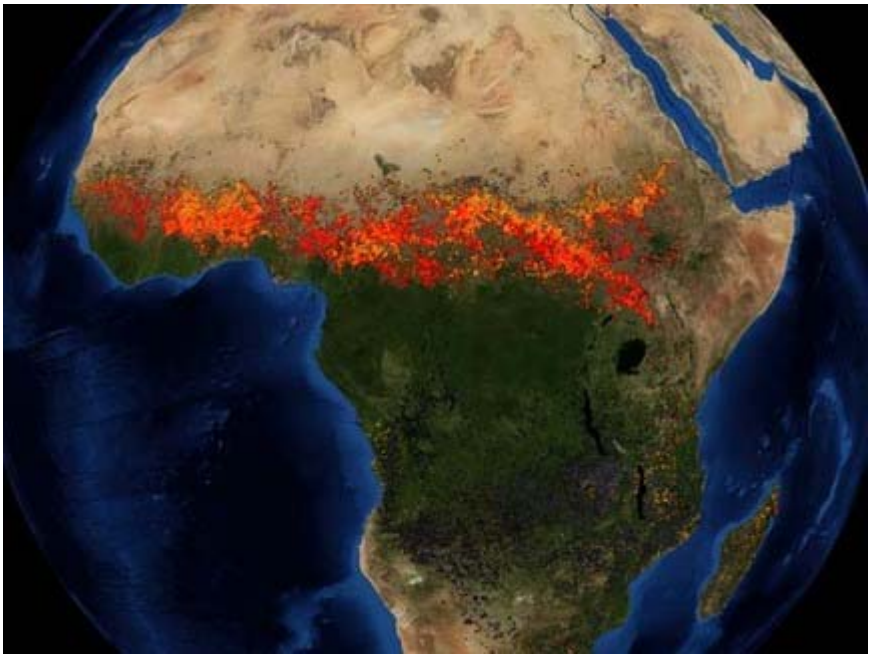
Adapted from materials provided by University at Buffalo.

http://www.sciencedaily.com/releases/2009/04/090422103730.htm#

'Deforest Fires' Fan Global Warming

By: Michael Todd

David Bowman and Jennifer Balch discuss their own fieldwork, man's often inept management of fire, the faster tempo of wildland fires and "Smokey the Bear blowback."



Fire looks to be one big contributor to global warming — not directly through its heat, although in some barely discernable way that certainly adds to warmth, but by what it does to the planet's landscape.

A new study that appeared in the April 24 edition of the magazine *Science* suggests that as much a fifth of mankind's carbon dioxide emissions in the industrial era can be traced to intentionally burning down forests. That doesn't include burning firewood to heat your hut, and it doesn't count wildfires (even those from arson or controlled burns gone awry).

And those intentional fires help create the feedback loop that fosters unintentional fires like the wildfires that char Australia or the Western U.S. each summer. Beyond the release of carbon dioxide, "landscape fires" of all stripes incinerate carbon-storing plants and pump sunshine-absorbing soot into the global atmosphere.

And so the vicious circle is described thusly: "These deforestation-related fires contribute substantially to the global burden of greenhouse gases, and the associated global warming that they will cause is projected to increase extreme fire weather, leading to further spikes of carbon emissions."

Despite this, fire really hasn't factored into comprehensive examinations of climate change, argue the authors of the *Science* paper — led by David Bowman of the University of Tasmania and Jennifer Balch of the National Center for Ecological Analysis and Synthesis at the University of California, Santa Barbara.

"Progress in understanding fire on Earth has been hampered by cultural aversions to accepting fire as a

fundamental global feature and disciplinary parochialism," they write in calling for a more sophisticated understanding, both technologically and psychologically, of fire's role in climate change. "... Such an integrated perspective is necessary and timely, given that a diversity of fragmented research programs have identified the pervasive influences of fire on the Earth system."

"It's not new information," Balch said of the paper itself, "but it's been fragmented. What we've done is pull all these threads together to state the obvious."

Shadow Life Form

A conversation with Bowman suggests the ambitions of the paper — "Fire in the Earth System" — barely fit its four pages of narrative. The work of 22 authors, ranging from physicists, epidemiologists and ecologists to cultural historians, the paper aims to push beyond the "fire community" to present landscape fire into a central position in the earth sciences — "it demands that we think about its history."

The phenomenal output of the greenhouse gas carbon dioxide that the paper traces to intentional burning is the hook, Bowman stated bluntly, but the overriding message is that fire has been a "shadow life form" on Earth that predates civilization by 420 million years — when the first plants started popping up on land.

Fire, he said, has been a potent force for evolution ever since. "I like to say 'fire is the one Darwin dropped,'" Bowman said, reflecting on the naturalist's visit to fire-configured island of Tasmania on the same trip that landed him on the Galapagos. "He saw everything he needed to see, but he didn't get it."

While the ecological landscape in Hobart in Tasmania actually requires routine visits by fire to thrive, the paper suggests the Earth itself evolved in part by growing up alongside fire. "Earth is an intrinsically flammable planet owing to its cover of carbon-rich vegetation, seasonally dry climates, atmospheric oxygen, and widespread lightning and volcano ignitions," it reads.

As Balch said, "Earth is a fire planet. Fire is what happens when you have carbon burn, an ignition source, and a hot and dry climate. And we are a fire species. But part of what is tricky for people is that we use fire very imperfectly — we don't control it."

And so that's why fire has such a major influence now on accelerating climate change: Humans have unleashed what they thought was something tamed only to discover it remained feral.

Fire has been part of the human toolkit for between 50,000 and 100,000 years, with reliable evidence of at least occasional human use going back hundreds of thousands of years earlier. Once hunter-gathers with fire became agriculturalists with fire, the record shows they started using fire to shape their surroundings, through slash-and-burn efforts, to manage wildlife or to permanently take land from the forests for cities and fields.

"Assuming that deforestation and fire are synonymous — and we do — fire is the cheapest and easiest way to replace forest with pasture or crop land," said Balch. Those fires produce greenhouse gases and put soot in the atmosphere, but in some cases they also change the land's reflectiveness — its albedo — from dark forest to brighter snowfields or pastures. In addition, inefficient burning often left lots of carbon still rooted, often literally, in the ground. Some estimates even see the cooling from albedo canceling out the heating from soot in the air.

That canceling out is taken as a given in naturally occurring wildfires, Balch said of the paper's estimates. "We assume that all other types of fires are in equilibrium. That's why we focus on deforestation fires, because they are outside the norm."

The Hard Part

There was also a practical reason to focus on deforestation fires, Bowman said. It was something that could be figured out, even if the effort might prove tortuous. Describing the meeting on fire where the *Science* paper was born, the idea arose to calculate the contribution fire might be making to the warming

of the atmosphere.

Such a calculation, with a billion or so cook fires every night, wildfires, deforestation fires and others in the mix, "would be devilishly complicated for a climate model," Bowman recalled the thinking. "That's going to be really, really hard. Maybe we just use deforestation fire." He summed up the consensus. "Intentional deforestation fire - that is something we do know, a clearly described domain, with an historical certainty and an historical precedent."

The starting point for the data gathering was the Industrial Revolution, circa 1750, which is also the starting point for many other examinations of greenhouse gases and climate change.

As it stands, the authors estimate that all sources of fire, from hut warming to ginormous peat fires in Indonesia, emit an amount of carbon dioxide equal to half that from the burning fossil fuels, the traditional villain in climate change scenarios.

But lots of unknowns and perhaps unknowables remain, and the authors acknowledge that this paper is but a first stab at the issue, "a first estimate, a crucial step in quantifying and recognizing the issue," Balch said. "What we are calling for is a complete treatment of fire in the next generation of climate models and an acknowledgement that fire is, and has been, an important actor for a very long time."

“We all know that climate affects fire," said Bowman, "but we're only now realizing that fire affects climate. Fires are blindingly obvious, but their effects on the Earth's systems (are) deeply subtle, and humans have the interesting possibility that they're part of the feedback.

"That's the scary bit, that if we seriously disturb that equilibrium ... then we have the capacity for feedback. And that plays into the climate projections that we're using, that we're debating right now, may, sadly, be an underestimate."

http://www.miller-mccune.com/science_environment/deforest-fires-fan-global-warming-1161

A History in the Making

By: Joan Melcher

The renowned American-Indian writer, historian, theologian, professor and activist Vine Deloria Jr. once posed a question: "Did they ever think of asking the Indians?" Deloria was referring to the Indian Reorganization Act of 1934, administered from the top down, like so many programs that have charted the course of Indian life in the United States. But he could have been talking about just about any encounter Indians have had with the federal government.

It's surprising just how little is known — or understood — about American Indians beyond the Hollywood stereotype of noble savage and the sociological portrait of a people victimized. The continent's first inhabitants have lived an almost unrecorded life. As their numbers have been diminished by conquest, epidemic, intermarriage and a host of social ills, a record of their history also has been put in peril.

But that process may be changing in Montana, where Julie Cajune, a teacher, curriculum designer and member of the Confederated Salish-Kootenai Tribe, is gathering the histories of Montana's 12 recognized tribes as part of a groundbreaking initiative to include American Indians in the state's history and the educational system that teaches it. The effort began when Montana became the first state in the nation to mandate the teaching of American-Indian history in its primary, middle and high school classrooms through passage — and finally, funding — of the Indian Education for All Act.

Teaching of Indian history to Montana schoolchildren has not been without controversy. One of Cajune's early attempts to teach Indian culture ended amid a misunderstanding about a study of names that some took to be an Indian naming ceremony. They accused Cajune of "teaching spirituality" in the schools.

But Cajune knows that names can themselves be repositories of history. For example, the Salish word for Silver Bow Creek, which flows west from Butte to meet the Clark Fork River, is "The Place Where You Shot Fish In The Head." The names depict two very different realities. Silver Bow Creek was likely named by miners in Butte. For decades, beginning around 1870, it was a repository of arsenic and

mercury tailings from mining operations, resulting in the largest Superfund toxic-waste cleanup project in the nation, downstream near Missoula. For the Salish, it was a stream so full of fish, you could walk across it on their backs, Cajune says.

Indian names are important, she says, because they "speak to the people's relationship to a place a long time ago. They often had to do with a natural resource found there or a particular event that happened there. From our frame of reference, these names are very old, and they speak to thousands of years of inhabitation in this geography, and that is something unique to our tribe."

In 1972, during a state constitutional convention in Helena, two Indian students who were visiting the capital asked the framers to consider letting American Indians study their own culture — perhaps even their own language — in the public schools they attended.

A constitutional amendment was drafted and passed on a near-unanimous vote; it said "the state recognizes the distinct and unique cultural heritage of American Indians and is committed in its educational goals to the preservation of their cultural integrity."

Almost nothing happened for more than two decades. For a time, the amendment's intent was tied to Montana's 1973 Indian Studies Law, which required that K-12 teachers living on or near reservations take a Native-American studies class. In 1979, that law was amended, relieving teachers of even that obligation.

After years of unsuccessful attempts to acknowledge the constitutional mandate, in 1999 a coalition of Indian legislators and other proponents pushed through the Indian Education for All Act. But the act still needed to be funded, and the state had consistently underfunded schools for years. In the late 1990s, a group of school districts sued the state over the inadequate funding, citing language in the 1972 constitution that required the state to provide a free, quality public education to all its students. Leaders of the group asked Carol Juneau, a teacher, a member of the Mandan-Hidatsa tribe and a respected state legislator, to support the school districts' legal challenge. Her amicus brief contended the state had never met its commitment to preserve Indian cultural integrity.

In 2004, a state district judge agreed, and the Montana Supreme Court eventually followed suit. Seeing the writing on the wall, the Montana Legislature got on board in 2005, passing significant increases in funding for state schools and designating $7 million for Indian Education for All. Gov. Brian Schweitzer earmarked another $2 million for the gathering of tribal histories.

Julie Cajune was not the most likely candidate to be at the center of the nation's first attempt to bring Indian history into the mainstream. In her early years at a Catholic school on her reservation, Ursuline nuns provided an education steeped in literature, plays and music; they had high expectations for the students. But in the public middle school in Ronan and a high school in Missoula, where her mother moved to attend the University of Montana, she felt firsthand the marginalization — and at times racism — Indians commonly experienced in the 1960s and '70s. She dropped out of high school in her junior year.

Cajune finished her secondary education by passing a general equivalency exam and entered the University of Montana the next year, but she attended for just a year before marrying, moving to Oregon and giving birth to two children. After a divorce and return to the reservation, her experience in public schools led her to home-school her own children. From that grew an interest in teaching as a career. She enrolled in University of Montana-Western in Dillon and graduated in 1990.

Fresh out of college, she was recruited by a principal on the Flathead Reservation in western Montana — the home of her tribe, the Confederated Salish-Kootenai — to teach Salish language and history to first-through-fourth-graders at the area's public school, Ronan Elementary.

Cajune's foray into teaching Indian culture was fraught with challenges. She taught 400 students in eight classes in an eight-day rotation. For more than a year, no classroom was available, so she taught in a hallway. There were no curriculum materials, so she gathered her own, relying on tribal elders when her own knowledge was insufficient.

"When you start to teach, you find out, 'What do I really know about this?'" Cajune explains. "I had to face my own lack of knowledge. I was learning simultaneously with my students. I found the people in my community who were generous and kind and were willing to spend time with me."

Opposition to the teaching of Indian culture in the mainstream emerged early. The Flathead reservation is one of many Indian reservations in Montana that were opened up to homesteading in the early part of the 20th century, resulting in a checkerboard pattern of land ownership. Today, about 38 percent of the reservation is owned privately or held by the state or federal government; schools have roughly equal numbers of Indians and non-Indians, and conflicts inevitably arise. Cajune's Indian culture classes ended after three years, in part because Cajune attempted to incorporate the study of names — a name's language of origin, who students were named for, nicknames and multicultural practices of name-giving — into her classes. People concerned about the very idea of the class decided Cajune was teaching "spirituality," and a local journalist labeled a celebration of names held at the end of the learning exercise an Indian "naming ceremony."

Cajune says the controversy never completely abated, and the principal who had cajoled her into teaching was removed from her position; within three years, the class was gone.

Still, she had been the first to attempt this multicultural approach to teaching Indian history and culture, and she had learned as much as she had taught. In 1994, she earned a master's degree in bilingual education from Montana State University, Billings, and went on to work for several years for the Confederated Salish-Kootenai tribes as a curriculum specialist, as an adviser and field services director in distance education for the Salish Kootenai College in Ronan, and then again for the Ronan school as its Indian Education director.

Passing the Indian Education for All Act and then getting it funded were vital first steps, but in 2005 the state still was far from realizing its goal. Histories of Montana's recognized tribes had to be gathered and made accessible to teachers. That gathering of knowledge would not be easy. There is no one-size-fits-all Indian. Each tribe has a different language, a different history and a different worldview. Many of Montana's Indian tribes still rely on an oral tradition to preserve their culture. Some had written histories, but even those were often related to one chief or one period of time. And very little was available in a form that could be used in schools.

Soon after funding was available, the Montana Office of Public Instruction decided to give the state's seven tribal colleges the task of gathering the histories of the tribes, which would then be given to Cajune, who would put them in a form accessible to the state's K-12 teachers. When history is passed down through generations of stories and teachings, there comes a time when the threads of memory wear thin, the fabric of language and culture fade. Many of the tribes had persisted for 500 years or more, but had only a few elders who still were fluent in the tribal language.

And there are secrets and place names known only to elders. An example of a secret held for years: Chief Spotted Wolf was a Northern Cheyenne war chief at the Battle of the Little Bighorn, where Gen. George Armstrong Custer and the 7th Calvary perished. But knowledge of the chief's role had been closely guarded. His son would have lost his job with the U.S. Bureau of Indian Affairs if it became known he was a descendant of the chief. Only recently did Bisco Spotted Wolf, an elder in the tribe and Chief Spotted Wolf's grandson, explain the connection in an article published in the *Missoulian* newspaper.

Names of places are also salient elements of Indian history. For example, Cajune explains, "The Place Where You Surround Something" refers to the area around St. Ignatius and a Salish hunting tactic of

building a temporary corral and chasing deer or elk herds inside. The name at once connotes a place and a method for harvesting food. "River of Eyes Wide Open Wood" is named for a willow that grows prolifically on the banks of what is now called the Musselshell River. "When you strip the bark, knots in the wood look literally like eyes," Cajune notes.

The tribal history project has asked elders to publicly share these names and other knowledge that has been guarded for generations. They will then be used with information gathered from a variety of other sources.

The history of each tribe begins with a creation story. Many of the tribes' histories also include tales of migration. For instance, the Northern Cheyenne tribe once had a fishing culture and lived around the Great Lakes. The tribe migrated to Montana over the course of several hundred years, arriving in the 1800s. Like several other tribes, they came in search of buffalo, for centuries a main food source as well as a spiritual emblem. The first white settlers arrived in the state in the 1860s, and by 1890 six of Montana's seven Indian reservations had been established. During this time epidemics wiped out up to 50 percent of some tribes' populations, and broken treaties left Indians with a fraction of their original homelands. For instance, the Fort Laramie Treaty of 1851 identified 38 million acres as Crow tribal lands; by 1905, the Crow Reservation had been reduced to 2.2 million acres.

In the early part of the 20th century, the reservations themselves were broken up in another federal initiative — the allotment system wherein tribes were forced to divide their land into a checkerboard of plots. Plots were first allotted to tribal members, and much of the rest of the land was opened up to homesteading. This period saw Indian land shrinking by 90 million acres. Relocation policies further weakened tribal bonds. In the 1960s, Indians were given one-way tickets to relocate to cities where it was thought they would assimilate better into the American culture.

Contemporary Indian history can be a bitter pill to swallow. But Cajune's approach has been to place it in the broader but much shorter histories of Montana and the United States. For instance, the civil rights movement of the 1960s ignited an Indian consciousness and activism then, just as today's inauguration of the nation's first black president is feeding awareness and desire for a more multicultural view of the world.

Both periods are included in a timeline Cajune has created that shows each tribe's history juxtaposed against key events in state and national history. Each school in the state will receive the timeline, along with a resource guide for teachers, model lessons and a list of primary source materials.

The Indian history curriculum will address a key tenet of governance that many people in the wider culture do not understand: Each Indian tribe is considered a nation and a sovereign power. State governments have no jurisdiction over tribes. Tribal nations relate directly with the federal government. Those facts are fodder for many educational opportunities that, Cajune notes, high school students are eager to explore.

In her curriculum materials, Cajune refers teachers to primary sources whenever possible. An example: Beginning in 1873 and continuing for decades, many Montana Indian children were taken from their families and placed in Catholic boarding schools, part of the federal government's policy of assimilation. Many of the boarding schools ran on the labor of the children. Children were not allowed to speak their language; their hair was cut short on arrival and the rest of their culture was similarly stripped from them. Instead of having teachers explain the Catholic school period, she suggests that students read the journal of a young Indian girl written while living at one of the schools.

Similarly, Cajune's curriculum for Indian education in Montana suggests speeches by Richard Nixon and Lyndon Johnson be used to demonstrate a growing national awareness of the need to address long-held biases, abuses and neglect suffered by Indian people — and to introduce students to legislation passed in the 1970s that began to address those issues.

As you travel north of Missoula on U.S. 93, a large sign announces when you enter the Flathead Reservation. Soon smaller signs are providing both the English and Salish names for creeks, a nature preserve, a bison range and the Mission Mountains, which rise above the rolling highway, their snow-covered peaks carving into a turquoise sky. The communities here are rural, but they contain a surprising diversity of people. Besides the Salish-Kootenai, Indians from many other tribes live on this 1.3-million-acre reservation, not to mention the descendants of early white homesteaders and the inevitable newcomers, including an Amish colony and the Montana Buddhist Center.

The Nkwusm Salish Language Immersion School is on the outskirts of Arlee, about a half-hour from Missoula. Raven-haired preschool children are being escorted by their parents from a monolithic concrete building that once housed a casino and bowling alley. It's just 9 a.m., but they've already had their session for the day. Inside, 32 older students attend three classes, each led by a teacher and an elder fluent in the Salish language. Although a general curriculum is taught, this is a language school and, with only 52 Salish speakers still living, insurance against the disappearance of a language and a culture.

As she nears the end of two years' work in gathering tribal histories, Cajune has taken a position as a fundraiser for the school. It's a brisk February morning; Cajune has just returned from the inauguration of President Barack Obama, and she is brimming with excitement and stories, at once exultant about the outcome of the first stage of the Indian education project and aware that the real work has just begun.

Cajune would like to see the state's colleges become more involved in Indian education, noting that the constitutional amendment was not just aimed at K-12. On that score, she sees a need for the inclusion of Indian culture and history in many disciplines — not just in Native American studies classes. For instance, should there be a class on American Indian literature, or should works by American Indians be part of an American literature class? Should there be a class on Montana Indian history, or should that history be taught as part of Montana history? Cajune believes in the latter, in both cases.

For American Indians to join the mainstream educational community, Cajune says, they will need to be willing to share their culture. She hopes that groups of people who know their tribes' stories, languages and traditions — and are willing to explain them — can be formed. Success in Montana could have wide impact. Already educators and lawmakers in South Dakota and Washington state are considering integrating Indian history in their curricula and are studying Montana's approach.

A cloud moves across her face as Cajune contemplates the next steps in a far-reaching undertaking that began more than three decades ago, when two students asked that they be allowed to study their peoples' history in school. Before long, the sun pokes through, and she notes that it has been extraordinary to be "writing history and making it at the same time."

"Do you see how far we've come?" she says in a statement that comes naturally to a teacher — at once posing a question and answering it.

http://www.miller-mccune.com/culture_society/a-history-in-the-making-1086

Sad But True: We're More Likely to Believe Bad News

By: Tom Jacobs

That's the conclusion of a newly published study by psychologist Benjamin Hilbig of the University of Mannheim in Germany. Working from the well-established concept of negativity bias — the phenomenon that negative events, or the fear thereof, have a disproportionate impact on our emotions and behavior — he conducted three experiments to determine whether bad news was more likely to be believed.

In each of the tests — two online surveys and one standard questionnaire — the identical piece of information was framed in either negative or positive terms, and participants were asked to judge its truthfulness on a four-point scale. For instance, in one experiment, half were informed that 80 percent of German marriages lasted 10 years or longer, where the other half were told that 20 percent of couples were divorced within a decade.In each instance, the facts were judged to be more truthful when they were presented in a negative frame (in this case, with the emphasis on divorce). Details are in his paper, published in the *Journal of Experimental Social Psychology*.

Hilbig notes that "the psychological mechanisms underlying the reported effects are by no means clear." He points out several possible explanations, noting that negative information "is more likely to demand thorough processing than positive information," since it often negates something we previously believed, or alerts us to something we have to pay attention to. This increased level of thought processing "can increase the persuasiveness of messages," he writes.This phenomenon, if confirmed by future research, would appear to have a number of negative consequences. If the public is disinclined to believe positive economic news, it may hold off on spending even when the economy needs just that jolt. If the electorate is more inclined to believe negative things about a candidate, attack ads are likely to become even more dominant in future elections. Government leaders inclined to believe the worst about neighboring nations will presumably be more willing to go to war.

It all sounds pretty bleak — and thus awfully believable.

http://www.miller-mccune.com/news/likely-to-believe-bad-news-1158

Morals Authority

By: Tom Jacobs

Jonathan Haidt is hardly a road-rage kind of guy, but he does get irritated by self-righteous bumper stickers. The soft-spoken psychologist is acutely annoyed by certain smug slogans that adorn the cars of fellow liberals: "Support our troops: Bring them home" and "Dissent is the highest form of patriotism."

"No conservative reads those bumper stickers and thinks, 'Hmm — so liberals *are* patriotic!'" he says, in a sarcastic tone of voice that jarringly contrasts with his usual subdued sincerity. "We liberals are universalists and humanists; it's not part of our morality to highly value nations. So to claim dissent is patriotic — or that we're supporting the troops, when in fact we're opposing the war — is disingenuous.

"It just pisses people off."

The University of Virginia scholar views such slogans as clumsy attempts to insist we all share the same values. In his view, these catch phrases are not only insincere — they're also fundamentally wrong. Liberals and conservatives, he insists, inhabit different moral universes. There is some overlap in belief systems, but huge differences in emphasis.

In a creative attempt to move beyond red-state/blue-state clichés, Haidt has created a framework that codifies mankind's multiplicity of moralities. His outline is simultaneously startling and reassuring — startling in its stark depiction of our differences, and reassuring in that it brings welcome clarity to an arena where murkiness of motivation often breeds contention.

He views the demonization that has marred American political debate in recent decades as a massive failure in moral imagination. We assume everyone's ethical compass points in the same direction and label those whose views don't align with our sense of right and wrong as either misguided or evil. In fact, he argues, there are multiple due norths.

"I think of liberals as colorblind," he says in a hushed tone that conveys the quiet intensity of a low-key crusader. "We have finely tuned sensors for harm and injustice but are blind to other moral dimensions. Look at the way the word 'wall' is used in liberal discourse. It's almost always related to the idea that we have to knock them down.

"Well, if we knock down all the walls, we're sitting out in the rain and cold! We need some structure."

Haidt is best known as the author of *The Happiness Hypothesis*, a lively look at recent research into the sources of lasting contentment. But his central focus — and the subject of his next book, scheduled to be

published in fall 2010 — is the intersection of psychology and morality. His research examines the wellsprings of ethical beliefs and why they differ across classes and cultures.

Last September, in a widely circulated Internet essay titled *Why People Vote Republican*, Haidt chastised Democrats who believe blue-collar workers have been duped into voting against their economic interests. In fact, he asserted forcefully, traditionalists are driven to the GOP by moral impulses liberals don't share (which is fine) or understand (which is not).

To some, this dynamic is deeply depressing. "The educated moral relativism worldview is fundamentally incompatible with the way 50 percent of America thinks, and stereotypes about out-of-touch elitist coastal Democrats are basically correct," sighed the snarky Web site Gawker.com as it summarized his studies.

But others — including many fellow liberal academics — have greeted Haidt's ideas as liberating.

"Jonathan is a thoughtful and somewhat flamboyant theorist," says Dan McAdams, a Northwestern University research psychologist and award-winning author. "We don't have that many of those in academic psychology. I really appreciate his lively mind."

"Psychology, as a field, has lots and lots of data, but we don't have very many good new ideas," agrees Dennis Proffitt, chairman of the University of Virginia psychology department. "They are rare in our field, but Jon is full of good new ideas."

An unapologetic liberal atheist, Haidt has a remarkable ability to describe opposing viewpoints without condescension or distortion. He forcefully expresses his own political opinions but understands how they are informed by his underlying moral orientation. In an era where deadlocked debates so often end with a dismissive "you just don't get it," he gets it.

Four years ago, he recalls, "I wanted to help Democrats press the right buttons because the Republicans were out-messaging them.

"I no longer want to be a part of that effort. What I want to do now is help both sides understand the other, so that policies can be made based on something more than misguided fear of what the other side is up to."

Haidt's journey into ethical self-awareness began during his senior year of high school in Westchester County, N.Y. "I had an existential crisis straight out of Woody Allen," he recalls. "If there's no God, how can there be a meaning to life? And if there's no meaning, why should I do my homework? So I decided to become a philosophy major and find out the meaning of life."

Once he began his studies at Yale, however, he found philosophy "generally boring, dry and irrelevant." So he gradually gravitated to the field of psychology, ultimately earning his doctorate at the University of Pennsylvania. There he met several influential teachers, including anthropologist Alan Fiske and Paul Rozin, an expert on the psychology of food and the emotion of disgust. Fascinated by Rozin's research, Haidt wrote his dissertation on moral judgment of disgusting but harmless actions - a study that helped point the way to his later findings.

As part of that early research, Haidt and a colleague, Brazilian psychologist Silvia Koller, posed a series of provocative questions to people in both Brazil and the U.S. One of the most revealing was: How would you react if a family ate the body of its pet dog, which had been accidentally run over that morning?

"There were differences between nations, but the biggest differences were across social classes within each nation," Haidt recalls. "Students at a private school in Philadelphia thought it was just as gross, but it wasn't harming anyone; their attitude was rationalist and harm-based. But when you moved down in

social class or into Brazil, morality is based not on just harm. It's also about loyalty and family and authority and respect and purity. That was an important early finding."

On the strength of that paper, Haidt went to work for Richard Shweder, a cultural anthropologist at the University of Chicago who arranged for his postdoc fellow to spend three months in India. Haidt refers to his time in Bhubaneshwar — an ancient city full of Hindu temples that retains a traditional form of morality with rigid cast and gender roles — as transformative.

"I found there is not really a way to say 'thank you' or 'you're welcome' (in the local language)," he recalls. "There are ways of acknowledging appreciation, but saying 'thank you' and 'you're welcome' didn't make any emotional sense to them. Your stomach doesn't say 'thank you' to your esophagus for passing the food to it! What I finally came to understand was to stop acting as if everybody was equal. Rather, each person had a job to do, and that made the social system run smoothly."

Gradually getting past his reflexive Western attitudes, he realized that "the Confucian/Hindu traditional value structure is very good for maintaining order and continuity and stability, which is very important in the absence of good central governance. But if the goal is creativity, scientific insight and artistic achievement, these traditional societies pretty well squelch it. Modern liberalism, with its support for self-expression, is much more effective. I really saw the yin-yang."

After returning to the U.S., Haidt accepted a position at the University of Virginia, where he continued to challenge the established wisdom in moral psychology. His colleagues were using data from middle-class American college students to draw sweeping conclusions about human nature. Proffitt remembers him arguing "with some passion" that they needed to widen their scope.

"Jon recognizes that diversity is not just the politically correct thing to do - it's also the intelligent thing to do," he says. "Seeing things from multiple perspectives gives you a much better view of the whole."

In January 2005 — shortly after President Bush won re-election, to the shock and dismay of the left — Haidt was invited by a group of Democrats in Charlottesville, Va., to give a talk on morality and politics. There, for the first time, he explained to a group of liberals his conception of the moral world of cultural conservatives.

"They were very open to what I was saying," he says. "I discovered there was a real hunger among liberals to figure out what the hell was going on."

Haidt's framework of political morality can be traced back to a dispute between two important thinkers: Shweder, who would go on to become his mentor, and legendary Harvard psychologist Lawrence Kohlberg. In his 1981 volume *The Philosophy of Moral Development*, Kohlberg essentially argued that other moral systems are mere stepping-stones on a path that will eventually lead the entire world to embrace Western humanist values. Reviewing the book for the journal *Contemporary Psychology*, Shweder politely but effectively tore that notion apart.

Citing his extensive research on traditional Indian culture, Shweder pointed out the inconsistencies and lack of convincing evidence behind Kohlberg's arguments. Agreeing with philosopher Isaiah Berlin, Shweder asserted — and continues to assert — that a range of ethical systems have always coexisted and most likely always will. In a 1997 paper co-written with three colleagues, he broke down primal moral impulses into a "big three": autonomy, community and divinity.

Haidt found Shweder's ideas persuasive but incomplete. Agreeing with evolutionary theorist James Q. Wilson, he concluded that any full view of the origins of human morality would have to take into account not only culture (as analyzed by anthropologists) but also evolution. He reasoned it was highly unlikely humans would care so much about morality unless moral instincts and emotions had become a part of human nature. He began to suspect that morality evolved not just to help individuals as they competed

and cooperated with other individuals, but also to help groups as they competed and cooperated with other groups.

"Morality is not just about how we treat each other, as most liberals think," he argues. "It is also about binding groups together and supporting essential institutions."

With all that in mind, Haidt identified five foundational moral impulses. As succinctly defined by Northwestern University's McAdams, they are:

• **Harm/care.** It is wrong to hurt people; it is good to relieve suffering.

• **Fairness/reciprocity.** Justice and fairness are good; people have certain rights that need to be upheld in social interactions.

• **In-group loyalty.** People should be true to their group and be wary of threats from the outside. Allegiance, loyalty and patriotism are virtues; betrayal is bad.

• **Authority/respect.** People should respect social hierarchy; social order is necessary for human life.

• **Purity/sanctity.** The body and certain aspects of life are sacred. Cleanliness and health, as well as their derivatives of chastity and piety, are all good. Pollution, contamination and the associated character traits of lust and greed are all bad.

Haidt's research reveals that liberals feel strongly about the first two dimensions — preventing harm and ensuring fairness — but often feel little, or even feel negatively, about the other three. Conservatives, on the other hand, are drawn to loyalty, authority and purity, which liberals tend to think of as backward or outdated. People on the right acknowledge the importance of harm prevention and fairness but not with quite the same energy or passion as those on the left.

Libertarian essayist Will Wilkinson of the Cato Institute — one of many self-reflective political thinkers who are intrigued by Haidt's hypothesis — puts it this way: "While the five foundations are universal, cultures build upon each to varying degrees. Imagine five adjustable slides on a stereo equalizer that can be turned up or down to produce different balances of sound. An equalizer preset like 'Show Tunes' will turn down the bass and 'Hip Hop' will turn it up, but neither turns it off.

"Similarly, societies modulate the dimension of moral emotions differently, creating a distinctive cultural profile of moral feeling, judgment and justification. If you're a sharia devotee ready to stone adulterers and slaughter infidels, you have purity and in-group pushed up to 11. PETA members, who vibrate to the pain of other species, have turned in-group way down and harm way up."

McAdams was first exposed to these ideas about three years ago, when he heard Haidt speak at a conference. Around that same time, he was analyzing information he had compiled from interviews with 150 highly religious middle-aged Americans — men and women from across the political spectrum who had described in detail the ways they find meaning in their lives. Realizing this was an excellent test case for Haidt's theories, McAdams started comparing the comments of self-described liberals and conservatives.

Sure enough, "Conservatives spoke in moving terms about respecting authority and order," he found. "Liberals invested just as much emotion in describing their commitment to justice and equality. Liberals feel authority is a minor-league moral issue; for us, the major leaguers are harm and fairness."

It's hard to play ball when you can't agree who deserves to be a big leaguer.

Of Haidt's five moral realms, the one that causes the most friction between cosmopolitan liberals and traditionalist conservatives is purity/sanctity. To a 21st-century secular liberal, the concept barely registers. Haidt notes it was part of the Western vocabulary as recently as the Victorian era but lost its force in the early 20th century when modern rules of proper hygiene were codified. With the physical properties of contamination understood, the moral symbolism of impurity no longer carried much weight.

But the impulse remains lodged in our psyches, turning up in both obvious and surprising ways. You can hear strong echoes of it when the pope rails against materialism, insisting we have been put on Earth to serve a loftier purpose than shopping until we drop. It can also be found in the nondenominational spiritual belief that we all contain within us a piece of the divine. (Although it's sometimes used in a tongue-in-cheek way in our society, the phrase "my body is a temple" is reflective of the purity/sanctity impulse.)

"The question is: Do you see the world as simply matter?" Haidt asks. "If so, people can do whatever they want, as long as they don't hurt other people. Or do you see more dimensions to life? Do you want to live in a higher, nobler way than simply the pursuit of pleasure? That often requires not acting on your impulses, making sacrifices for others. It implies a reverence — which is a nonrational feeling — towards human life."

Consider two letters to the editor in a recent issue of the *Ventura* (Calif.) *Breeze*. The weekly newspaper has been chronicling a controversy about a 19th-century cemetery that gradually fell into disrepair and, since the early 1960s, has been used as a dog park. Some descendents of the people buried there are demanding that it be restored as a proper burial place.

"Why is there even a debate?" wrote one angry resident. He referred to the park as "this holy ground" and admonished city officials: "Your values and judgment need some serious realignment." But a second reader looked at the controversy from a more practical perspective, noting that public funds are limited in these tough economic times. Besides, he added, "the park is full of life now, and I'm sorry if this sounds harsh, but life is for the living."

Both arguments are rooted in firm moral beliefs. It's just that for the first correspondent, purity/sanctity is paramount, while for the second it's of minimal importance.

Not surprisingly, Haidt's data suggests purity/sanctity is the moral foundation that best predicts an individual's attitude toward abortion. It also helps explain opposition to gay marriage. "If you think society is made up of individuals, and each individual has the right to do what he or she wants if they aren't hurting anybody, it's unfathomable why anyone would oppose gay marriage," he says. "Liberals assume opponents must be homophobic.

"I know feelings of disgust do play into it. When you're disgusted by something, you tend to come up with reasons why it's wrong. But cultural conservatives, with their strong emphasis on social order, don't see marriage primarily as an expression of one individual's desire for another. They see the family as the foundation of society, and they fear that foundation is dissolving."
Haidt doesn't want religious fundamentalists dictating public policy to ensure it lines up with their specific moral code. Even if you perceive purity as a major-league issue, it doesn't have to be on steroids. But he argues it is important that liberals recognize the strength that impulse retains with cultural conservatives and respect it rather than dismissing it as primitive.

"I see liberalism and conservatism as opposing principles that work well when in balance," he says, noting that authority needs to be both upheld (as conservatives insist) and challenged (as liberals maintain). "It's a basic design principle: You get better responsiveness if you have two systems pushing against each other. As individuals, we are very bad at finding the flaws in our own arguments. We all have a distorted perception of reality."

Spend some time reading Haidt, and chances are you'll begin to view day-to-day political arguments through a less-polarized lens. Should the Guantanamo Bay prison be closed? Of course, say liberals, whose harm/fairness receptors are acute. Not so fast, argue conservatives, whose finely attuned sense of in-group loyalty points to a proactive attitude toward outside threats.
Why any given individual grows up to become a conservative or a liberal is unclear. Haidt, like most contemporary social scientists, points to a combination of genes and environment — not one's family of origin so much as the neighborhood and society whose values you absorbed. (Current research suggests that peers may actually have a stronger impact than parents in this regard.)

In his quest to "help people overcome morally motivated misunderstandings," Haidt has set up a couple of Web sites, www.civilpolitics.org and www.yourmorals.org. At the latter, you can take a quiz that will locate you on his moral map. For fun, you can also answer the questions you think the way your political opposite would respond. Haidt had both liberals and conservatives do just that in the laboratory, and the results are sobering for those on the left: Conservatives understood them a lot better than they understood conservatives.

"Liberals tend to have a very optimistic view of human nature," he says. "They tend to be uncomfortable about punishment — of their own children, of criminals, anyone. I do believe that if liberals ran the whole world, it would fall apart. But if conservatives ran the whole world, it would be so restrictive and uncreative that it would be rather unpleasant, too."

The concept of authority resonates so weakly in liberals that "it makes it difficult for liberal organizations to function," Haidt says. (Will Rogers was right on target when he proclaimed, "I don't belong to an organized political party. I'm a Democrat.") On the other hand, he notes, the Republicans' tendency to blindly follow their leader proved disastrous over the past eight years.
"Look how horribly the GOP had to screw up to alienate many conservatives," muses *Dallas Morning News* columnist and BeliefNet blogger Rod Dreher, an Orthodox Christian, unorthodox conservative and Haidt fan. "In the end, the GOP, the conservative movement and the nation would have been better served had we on the right not been so yellow-dog loyal. But as Haidt shows, it's in our nature."

Like Wilkinson, Dreher doesn't fit cleanly into the left-right spectrum; he reports that taking Haidt's test (showing he scored high on certain liberal values but also on some conservative ones) helped him understand why. He's appreciative of that insight and admiring of the way the psychologist is able to set aside the inherent prejudice we all share in favor of our own moral outlook. "It's hard for any of us to get outside our own heads and perform acts of empathy with people we don't much like," he notes.

In higher education, as in so many other fields, the best way to negotiate a pay raise is to get a competing offer. Not infrequently, an academic will entertain an offer from an institution he or she isn't really interested in joining, specifically so he can get a salary offer, take it back to his current employer and demand it be matched.

Haidt found himself in just that situation a few years back. But as he explained to Proffitt, his department chair, he was uncomfortable with the notion of lying to gain leverage.

"He told me, 'I know that if I was offered the position, I could get a big raise here. But I study ethics! I can't do that! That would be wrong!' He felt he wouldn't be playing fair with the people from the other university, who were putting out money and effort to recruit him."

"That game is played by a lot of people, but Jon would not," Proffitt says. "He elected not to do that on purely ethical grounds. That decision cost him at least $30,000 a year."

But was he guided by the harm/care instinct? Or fairness/reciprocity? Or did the conservative value of in-group loyalty, which tends to lie dormant in liberals such as Haidt, emerge under these unusual circumstances and convince him to be true to his school?

The most likely answer is "all of the above." The point is Haidt realized the wrongness of that behavior in his gut and acted on instinct.

In making such decisions, he is setting a rigorous moral example for his son, Max, who turns 3 in July. Haidt would be pleased if, by the time Max gets to secondary school, the study of ethics is part of the curriculum. "If I had my way, moral psychology would be a mandatory part of high-school civics classes, and civics classes would be a mandatory part of all Americans' education," he says. "Understanding there are multiple perspectives on the good society, all of which are morally motivated, would go a long way toward helping us interact in a civil manner."

Shweder cheers him on in that crusade. "I think this is terribly important," he says. "People are not going to converge on their judgments of what's good or bad, or right and wrong. Diversity is inherent in our species. And in a globalized world, we're going to be bumping into each other a lot."

Whether they're addressing the U.S. Congress or U.N. General Assembly, Haidt has astute advice for policy advocates: Frame your argument to appeal to as many points as possible on the moral spectrum. He believes President Obama did just that in his inaugural address, which utilized "a broad array of virtue words, including 'courage,' 'loyalty,' 'patriotism' and 'duty,' to reach out and reassure conservatives."

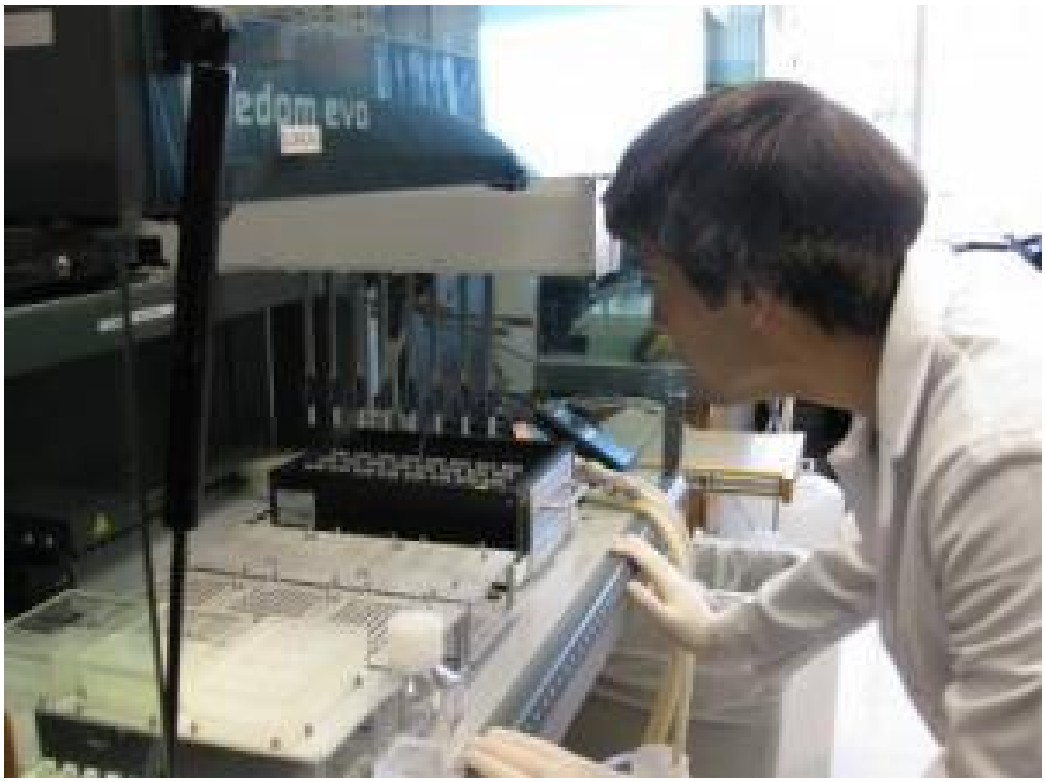
Haidt notes that the environmental movement was started by liberals, who were presumably driven by the harm/care impulse. But conservative Evangelical Christians are increasingly taking up the cause, propelled by the urge to respect authority. "They're driven by the idea that God gave man dominion over the Earth, and keeping the planet healthy is our sacred responsibility," he notes. "If we simply rape, pillage, destroy and consume, we're abusing the power given to us by God.

"The climate crisis and the economic crisis are interesting, because neither has a human enemy. These are not crises that turn us against an out-group, so they're not really designed to bring us together, but they can be used for that. I hope and think we are ready, demographically and historically, for a less polarized era."

But that will require peeling off some bumper stickers. Contrary to the assertion adhered onto Volvos, dissent and patriotism are very different impulses. But Haidt persuasively argues that both are essential to a healthy democracy, and the interplay between them — when kept within respectful bounds — is a source of vitality and strength. "Morality," he insists, "is a team sport."

http://www.miller-mccune.com/culture_society/morals-authority-1099

Autism Genes Discovered; Help Shape Connections Among Brain Cells



A research associate inspects robotic equipment during the DNA labeling process. (Credit: The Children's Hospital of Philadelphia)

ScienceDaily (Apr. 29, 2009) — A research team has connected more of the intricate pieces of the autism puzzle, with two studies that identify genes with important contributions to the disorder. One study pinpoints a gene region that may account for as many as 15 percent of autism cases, while another study identifies missing or duplicated stretches of DNA along two crucial gene pathways. Significantly, both studies detected genes implicated in the development of brain circuitry in early childhood.

"Because other autism researchers have made intriguing suggestions that autism arises from abnormal connections among brain cells during early development, it is very compelling to find evidence that mutations in genes involved in brain interconnections increase a child's risk of autism," said study leader Hakon Hakonarson, M.D., Ph.D., director of the Center for Applied Genomics at The Children's Hospital of Philadelphia. He is on the faculty of the University of Pennsylvania School of Medicine, as is his main collaborator, neuroscientist Gerard D. Schellenberg, Ph.D.

"This comprehensive research opens the door to more focused investigations into the causes of autism disorders," said Philip R. Johnson, M.D., chief scientific officer at The Children's Hospital of Philadelphia. "It moves the field of autism research significantly ahead, similar to the way oncology research progressed a few decades ago with the discovery of specific genes that give rise to cancers. Our extensive pediatric genomics program has pinpointed particular genes and biological pathways, and this discovery provides a starting point for translating biological knowledge into future autism treatments." The hospital's Center for Applied Genomics, launched in 2006, is the world's largest facility dedicated to the genetic analysis of childhood diseases.

Collaborating with researchers from more than a dozen institutions, including members of the Autism Genome Project (AGP), Hakonarson led both studies, which appear April 28 in online publication in *Nature*.

Autism is the best known of the autism spectrum disorders (ASDs), a group of childhood neurodevelopmental disorders that cause impairments in verbal communication, social interaction and behavior. Currently estimated to affect as many as one in 150 U.S. children, ASDs are known from family studies to be strongly influenced by genetics. Previous studies have implicated several chromosome regions harboring rare variants in raising the risk of ASDs, but until now, research has not been consistent in identifying and replicating common genetic variants.

One of the two studies by Hakonarson's team is the first to identify common genetic variants associated with autism. By using highly automated genotyping tools that scan the entire genome of thousands of individuals, the researchers found that children with ASDs were more likely than healthy controls to have gene variants on a particular region of chromosome 5. That region is located between two genes, cadherin 9 (CDH9) and cadherin 10 (CDH10), which carry codes to produce neuronal cell-adhesion molecules.

Neuronal cell-adhesion molecules are important because they affect how nerve cells communicate with each other, thought to be an underlying problem in ASDs. "These molecules are expressed on the cell surfaces of neurons, and they are involved with shaping both the physical structure of the developing brain and the functional connections among different brain regions," Hakonarson said. "Although a particular gene variant may contribute a small risk for an ASD in a particular individual, we estimate that the variants we discovered may contribute to as many as 15 percent of ASD cases in a population—typically referred to as the population-attributed risk of the variant."

Hakonarson's team first performed genome-wide association studies on DNA from over 3,100 subjects from 780 families of children affected with ASDs, then performed further studies in a cohort of 1,200 affected subjects and 6,500 unaffected controls. They then replicated their results in two additional independent cohorts. In total, they analyzed DNA from 12,834 subjects.

Hakonarson's second study in Nature, also using genome-wide association tools, identified copy number variations—deletions or duplications of DNA—that increase a child's risk of having an ASD. Interestingly, these variants were enriched in genes that belong to two biological pathways, one including the same neuronal cell-adhesion molecule gene family that harbored the common variant reported in Hakonarson's first study. The other gene cluster impacted by copy number variations belongs to the ubiquitin degradation pathway. Ubiquitins are a class of enzymes that eliminate connections among nerve cells, and are involved with processing and degrading neuronal cell-adhesion molecules—thus linking the two gene pathways together.

"The copy number variations we discovered are active on two gene networks that play critical roles in the development of neuronal connectivity within the central nervous system," said Hakonarson. "Finding genes that are biologically relevant to these neuronal systems increases our understanding of how autism originates."

The gene discoveries, added Hakonarson, converge with evidence from functional magnetic resonance imaging that children with ASDs may have reduced connectivity among neural cells, and with anatomy studies that have found abnormal development of the brain's frontal lobes in patients with autism.

"Many of the genes we identified concentrate their effects in brain regions that develop abnormally in autistic children," said Hakonarson. "Our current findings, when coupled with anatomical and imaging studies, may suggest that ASDs are a problem of neuronal disconnection."

His group's ongoing research, continued Hakonarson, focuses on investigating the exact mechanisms by which these genetic variations cause autistic disorders. "For instance, we expect to manipulate similar cell-adhesion genes in mice to see if the animals show altered social behaviors that may correspond to human behaviors." In addition, other genes remain to be discovered.

"Although we cannot immediately apply this research to clinical treatments, these findings increase our understanding of how autism spectrum disorders arise, and may in time foster the development of strategies for prevention and early treatment," said developmental pediatrician Susan E. Levy, M.D., a co-author of both studies who is the medical director of the Regional Autism Center and a member of the Center for Autism Research (CAR), both at Children's Hospital.

Support for both studies was provided by The Children's Hospital of Philadelphia, the National Institutes of Health, Autism Speaks, and many other sources, including the Margaret Q. Landenberger Foundation, the Cotswold Foundation, the Beatrice and Stanley A. Seaver Foundation, the Department of Veterans Affairs, and the Utah Autism Foundation. Scientists from 14 other centers in addition to Children's Hospital and the University of Pennsylvania contributed to the discovery or replication of the findings.

Journal references:

1. Wang et al. **Common genetic variants on 5p14.1 associate with autism spectrum disorders**. *Nature*, online April 28, 2009 DOI: 10.1038/nature07999
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Adapted from materials provided by Children's Hospital of Philadelphia.

http://www.sciencedaily.com/releases/2009/04/090428135535.htm

Experimental Drug Shows Promise Against Head And Neck Cancer

ScienceDaily (Apr. 29, 2009) — A laboratory study by researchers at Albert Einstein College of Medicine of Yeshiva University suggests that an anti-cancer compound studied for treating blood cancers may also help in treating cancers of the head and neck.

Head and neck cancer refers to tumors in the mouth, throat, or larynx (voice box). Each year about 40,000 men and women develop head and neck cancer in the U.S., making it the country's sixth-most common type. Surgery, chemotherapy and/or radiation are the main treatment options but can cause serious side effects. Better treatments are needed, since only about half of patients with head and neck cancer survive for five or more years after diagnosis.

The Einstein study involved a new class of chemotherapy agents known as histone deacetylase (HDAC) inhibitors, which affect the availability of genes that are transcribed and translated into proteins. In many types of cancer, out-of-control cell growth results from certain genes that are either too active or not active enough in producing proteins. HDAC inhibitors appear to combat cancer by restoring the normal expression of key regulatory genes that control cell growth and survival.

The Einstein researchers focused on a particular HDAC inhibitor known as LBH589 that has already shown some success in clinical trials involving people with cancers of the blood. The researchers found that LBH589 succeeded in killing tumor cells that had been removed from head and neck cancer patients and grown in the laboratory.

"This report shows that an HDAC inhibitor is effective on head and neck cancer cell lines, and that is the first step toward use in humans," said Richard Smith, M.D., the lead clinician involved in the study. Dr. Smith is associate professor of clinical otorhinolaryngology-head & neck surgery and associate professor of surgery at Einstein and is also vice-chair of otorhinolaryngology-head & neck surgery at Einstein and Montefiore.

The researchers also identified a set of genes whose expression levels change in response to the HDAC inhibitors—a finding that may help doctors identify patients most likely to respond to the drug. Plans call for testing LBH589 on head and neck tumor cells from more patients so that the set of genes that respond to the drug can be more firmly established.

"We are performing studies in mice to confirm these laboratory results, which hopefully will progress to human clinical trials of LBH589 for the treatment of head and neck cancer," said Michael Prystowsky, M.D., Ph.D., chair and professor of pathology at Einstein and corresponding author of the article.

The work is reported in the April 28th online edition of the *Journal of Pathology.* Other Einstein researchers involved in the study were Alfred Adomako, Nicole Kawachi, Wendy McKimpson, Quan Chen, Nicolas Schlecht, Geoffrey Childs and Thomas Belbin. The title of the paper is "The histone deacetylase inhibitor LBH589 inhibits expression of mitotic genes causing G2/M arrest and cell death in head and neck squamous cell carcinoma cell lines."

Adapted from materials provided by Albert Einstein College of Medicine.

http://www.sciencedaily.com/releases/2009/04/090428103057.htm

Arctic Communities Challenged When Temperature Rises

Fish boats may have to travel further north than they used to. (Credit: CICERO)

ScienceDaily (Apr. 29, 2009) — A wide range of challenges are facing people in the Arctic regions as the climate warms up twice as fast as the global average. People in some communities in Northern Norway see wind patterns changing and fish moving towards the North. People in Tuktoyaktuk in Northern Canada, who have seen their coastlines eroding for a long time, may see erosion happen faster due to warming temperatures and stronger storms.

The International Polar Year research project «Community Adaptation and Vulnerability in the Arctic Regions» (CAVIAR) aims to compare case studies across all eight Arctic countries and expand knowledge about adaptation and vulnerability to climatic and other changes.

“What makes this project unique is that it involves local stakeholders from the start and throughout the research project. They are defining the research”, says project leader Grete K. Hovelsrud, a senior research fellow at CICERO Center for Climate and Environmental Research - Oslo.

As an anthropologist, she and her colleagues present the project for communities, and if they are interested in joining, a dialogue between the researchers and the stakeholders begins.

“They tell us what the most important questions are in their communities, whether they are societal, political or environmental”, Hovelsrud explains.

When the research questions are defined, other relevant scientific experts are contacted for the most recent results. In addition, downscaled climate scenarios are prepared for the localities.

“For example, if local stakeholders define precipitation patterns and temperature as important for their livelihoods, we bring them downscaled scenarios. Together we discuss which challenges these scenarios may bring and how these may be met”.

Recently Norwegian and Candadian researchers traveled in the north of Norway to exchange knowledge and to meet some of the local stakeholders taking part in the project. Mark Andrachuk, a resarcher from University of Guelph, says:

"There is a tendency for researchers in the Canadian Arctic just to take information and not bring the research back to the community. One of the most important parts of this project is to bring the research results back to the community. Once communities have this information it makes them more able to make decisions in light of future risks".

Inger Katrine Juuso is the mayor of Nesseby, one of the Norwegian municipalities taking part in the project. She says that it is a mixed blessing to be part of the project since climate change creates challenges for her community.

"However, we are happy that the communities are made visible. People here feel that they see the climate changes. The wind has increased, the tree boarders move, the amount of predators is increasing", Juuso says.

Toril Svendsen, a project leader in the municipality of Lebesby, another town in Northern Norway, say that people talk about the winters changing.

"The winters are milder than they used to be. If it goes on like this, we have to wait until February to get the snow conditions we are used to. This creates challenges for the tourism industry, but also for our general wellbeing. It is dark here in December and January. We are used to the snow lightening up", Svendsen says.

Other challenges facing Northern Norway are a possible reduced food access for reindeer and migration of fish to areas further north.

Robin Sydneysmith, a professor at the University of British Columbia is another Canadian visiting Northern Norway.

"One difference between Canada and the Nordic countries is the connection to the outside world. While in Norway, Sweden and Iceland the livelihoods of people are more directly connected to the external market, subsistence livelihoods are still important in Arctic communities in Canada", he says.

"For many Inuit in Canada, environmental changes are causing livelihood changes, and they already have to adapt in how they harvest and travel. This is something that you don't see yet in Northern Europe. But if the cod moves north or decline, communities in Europe also might face these sorts of challenges", Sydneysmith continues.

The researchers underline the importance of seeing environmental changes in connection to social and political changes.

"Climate change is not at the top of the agenda for many people in the North. Other problems, like unemployment, are more immediate, but more and more people are realizing that climate change may make some things worse. It represents one more thing to worry about", says Robin Sydneysmith.

Adapted from materials provided by Centre for International Climate and Environmental Research.

http://www.sciencedaily.com/releases/2009/04/090428154831.htm

Physical Activity Improves Life Expectancy And Decreases Need Of Care Among Older People

ScienceDaily (Apr. 29, 2009) — A longitudinal research study conducted at the Finnish Centre for Interdisciplinary Gerontology at the University of Jyväskylä shows that people who have been regularly physically active since middle age and have lived long, needed less hospital and institutional care during their last year of life than those people who have been only occasionally or not at all physically active.

- Many older people hope to live long, to stay healthy and to be able to function until the end of their lives. However, as they get older the need of care and assistance increases. This is partly due to the fact that disability increases with age, and makes it substantially more difficult to manage living at home and especially increases the need for long-term care, says researcher Mikaela von Bonsdorff.

Earlier longitudinal studies have shown that physical activity decreases disability. However, there is no previous research on whether physical activity from midlife onward is associated with hospital and institutional care.

- Exercising has lately increased among middle aged and older people, which in the future might have a positive effect on the health of the population and on the need of care, von Bonsdorff predicts.

The 16-year longitudinal study of the Evergreen project conducted at the Finnish Centre for Interdisciplinary Gerontology at the University of Jyväskylä offered a unique possibility to examine the hospital and institutional care in the last year of life of decedent population of 846 persons. The participants were interviewed when they were 65-84 years old. Mortality and need of care were then followed on register-based data.

Journal reference:

1. von Bonsdorff et al. **Physical Activity History and End-of-Life Hospital and Long-Term Care**. *The Journals of Gerontology Series A Biological Sciences and Medical Sciences*, 2009; DOI: 10.1093/gerona/glp029

Adapted from materials provided by University of Jyvaeskylae.

http://www.sciencedaily.com/releases/2009/04/090428093042.htm

Widespread And Substantial Declines Found In Wildlife In Kenya's Masai Mara

This is a zebra at the edge of the Mara. (Credit: ILRI)

ScienceDaily (Apr. 29, 2009) — Populations of major wild grazing animals that are the heart and soul of Kenya's cherished and heavily visited Masai Mara National Reserve—including giraffes, hartebeest, impala, and warthogs—have "decreased substantially" in only 15 years as they compete for survival with a growing concentration of human settlements in the region, according to a new study published April 22 in the May 2009 issue of the *British Journal of Zoology*.

The study, analysed by researchers at the Nairobi-based International Livestock Research Institute (ILRI) and led and funded by World Wide Fund for Nature (WWF), is based on rigorous, monthly monitoring between 1989 and 2003 of seven "ungulate," or hoofed, species in the Maasai Mara National Reserve, which covers some 1500 square kilometers in southwestern Kenya. Scientists found that a total of six species—giraffes, hartebeest, impala, warthogs, topis and waterbuck—declined markedly and persistently throughout the reserve.

The study provides the most detailed evidence to date on declines in the ungulate populations in the Mara and how this phenomenon is linked to the rapid expansion of human populations near the boundaries of the reserve. For example, an analysis of the monthly sample counts indicates that the losses were as high as 95 percent for giraffes, 80 percent for warthogs, 76 percent for hartebeest, and 67 percent for impala. Researchers say the declines they documented are supported by previous studies that have found dramatic drops in the reserve of once abundant wildebeest, gazelles and zebras.

"The situation we documented paints a bleak picture and requires urgent and decisive action if we want to save this treasure from disaster," said Joseph Ogutu, the lead author of the study and a statistical ecologist at ILRI. "Our study offers the best evidence to date that wildlife losses in the reserve are widespread and substantial, and that these trends are likely linked to the steady increase in human settlements on lands adjacent to the reserve."

Researchers found the growing human population has diminished the wild animal population by usurping wildlife grazing territory for crop and livestock production to support their families. Some traditional farming cultures to the west and southwest of the Mara continue to hunt wildlife inside the Mara Reserve, which is illegal, for food and profit.

The Mara National Reserve is located in the northernmost section of the Mara–Serengeti ecosystem in East Africa. The reserve is bounded by Tanzania's Serengeti National Park to the south, Maasai pastoral ranches to the north and east, and crop farming to the west. The area is world-famous for its exceptional wildlife population and an annual migration of nearly two million wildebeest, zebra and other wildlife across the Serengeti and Mara plains.

Ogutu and his colleagues focused much of their attention on the rapid changes occurring in the large territories around the Mara Reserve known as the Mara ranchlands, which are home to the Maasai. Until recently, most Maasai were semi-nomadic herders—known for their warrior culture and colorful red toga-style dress—who co-existed easily with the wildlife in the region.

But over the last few decades, some Maasai have left their traditional mud-and-wattle homesteads, known as bomas, and gravitated to more permanent settlements—on the borders of the reserve. For example, Ogutu and his colleagues report that in just one of the ranchlands adjacent to the reserve—the Koyiaki ranch—the number of bomas has surged from 44 in 1950 to 368 in 2003, while the number of huts grew from 44 to 2735 in number. Their analysis found that the "abundance of all species but waterbuck and zebra decreased significantly as the number" of permanent settlements around the reserve increased.

"Wildlife are constantly moving between the reserve and surrounding ranchlands and they are increasingly competing for habitat with livestock and with large-scale crop cultivation around the human settlements," Ogutu said. "In particular, our analysis found that more and more people in the ranchlands are allowing their livestock to graze in the reserve, an illegal activity the impoverished Maasai resort to when faced with prolonged drought and other problems," he said.

In addition, the study warns that retaliatory killings of wildlife that break down fences, damage crops, degrade water supplies or threaten livestock and humans is "common and increasing" in the ranchlands. Ogutu said the various forces threatening wildlife in the ranchlands "could have grave consequences" for protecting wildlife in the reserve. That's because, given the seasonal movements of the animals in and out of the reserve, on most days, most of the wildlife in the region regularly graze outside the protected reserve, in the ranchlands.

While not covered in their analysis, the researchers involved in the study are quick to point out that the Maasai's transition to a more sedentary lifestyle has been driven partly by decades of policy neglect that left many Maasai with no choice but to abandon their more environmentally sustainable practice of grazing livestock over wide expanses of grasslands.

"The traditional livestock livelihoods of the Maasai, who rarely consume wild animals, actually helped maintain the abundance of grazing animals in East Africa, and where a pastoral approach to livestock grazing is still practiced, it continues to benefit wild populations," said Robin Reid, a co-author of the paper who is now director of the Center for Collaborative Conservation at Colorado State University in the United States. "There appears to be a 'tipping point' of human populations above which former co-existence between Maasai and wildlife begins to break down. In the villages on the border of the Mara, this point has been passed, but large areas of the Mara still have populations low enough that compatibility is still possible."

Previous research by Reid and Ogutu has shown that moderate livestock grazing in the Mara Reserve could also benefit wildlife. For example, many species of grazing wildlife avoid the reserve when the grass is tall in the wet season to avoid hiding predators and coarse, un-nutritious grass. Instead, wildlife tend to graze near traditional pastoral settlements where grass is nutritious and short because it's used to feed pastoralist herds, and predators are clearly visible.

Reid added, "These apparently contradictory findings are now being used by local Maasai communities to address the loss of wildlife. They see that wildlife are lost when settlements are too numerous, but that moderate numbers of settlements can benefit wildlife."

Maasai landowners are working together with the tourism companies to establish conservancies where they carefully manage the number of settlements and the number of livestock to achieve this balance. They also have the incentive to do so because the local community receives a share of the profits from tourism on their land.

Dickson Kaelo, a Maasai leader, works with tour companies and local communities to design these conservancies. During a recent experience at the new Olare Orok Conservancy, he found that wildlife initially flooded into the area when people removed their livestock and settlements. But soon, the grass grew tall and many wildlife left for the shorter grass near settlements beyond the conservancy.

"We know from thousands of years of history that pastoral livestock-keeping can co-exist with East Africa's renowned concentrations of big mammals. And we look to these pastoralists for solutions to the current conflicts," said Carlos Seré, Director General of ILRI. "With their help and the significant tourism revenue that the Mara wildlife generates, it is possible to invest in evidence-based approaches that can protect this region's iconic pastoral peoples, as well as its wildlife populations."

Another such initiative already under way, the Wildlife Conservation Lease Programme, is being implemented in the Kitengela rangelands adjacent to Nairobi National Park. The programme uses cash payments to encourage pastoralist families living on leased lands not to fence, develop or sell their acreage. This lease programme, which is supported by the United States Agency for International Development (USAID), has been highly successful in keeping rangelands open for wildlife and livestock grazing, while also providing Maasai families with an important source of income. ILRI believes the scheme should be broadened to include more families here and should be introduced in other pastoral ecosystems and rangelands.

"We have evidence that the sharp declines of East Africa's wildlife populations in recent years can be slowed and ecosystem crashes prevented by bettering the livelihoods of the Maasai and other pastoralists who graze their livestock near the region's protected game parks," concluded Seré. "Our work demonstrates that scientists, policymakers, and local communities can work together to build the technical means and adaptive capacity needed to keep this region's pastoral ecosystems, and the people who depend on them, more resilient, even in the face of big changes."

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

http://www.sciencedaily.com/releases/2009/04/090421205223.htm

Brain Music: Putting The Brain's Soundtracks To Work

Every brain has a soundtrack -- probably many. Can those soundtracks be made useful? (Credit: Created by Paul Wedig)

ScienceDaily (Apr. 28, 2009) — Every brain has a soundtrack. Its tempo and tone will vary, depending on mood, frame of mind, and other features of the brain itself. When that soundtrack is recorded and played back -- to an emergency responder, or a firefighter -- it may sharpen their reflexes during a crisis, and calm their nerves afterward.

Over the past decade, the influence of music on cognitive development, learning, and emotional well-being has emerged as a hot field of scientific study. To explore music's potential relevance to emergency response, the Dept of Homeland Security's Science & Technology Directorate (S&T) has begun a study into a form of neurotraining called "Brain Music" that uses music created in advance from listeners' own brain waves to help them deal with common ailments like insomnia, fatigue, and headaches stemming from stressful environments. The concept of Brain Music is to use the frequency, amplitude, and duration of musical sounds to move the brain from an anxious state to a more relaxed state.

"Strain comes with an emergency response job, so we are interested in finding ways to help these workers remain at the top of their game when working and get quality rest when they go off a shift," said S&T Program Manager Robert Burns. "Our goal is to find new ways to help first responders perform at the highest level possible, without increasing tasks, training, or stress levels."

If the brain "composes" the music, the first job of scientists is to take down the notes, and that is exactly what Human Bionics LLC of Purcellville, VA does. Each recording is converted into two unique musical compositions designed to trigger the body's natural responses, for example, by improving productivity while at work, or helping adjust to constantly changing work hours.

The compositions are clinically shown to promote one of two mental states in each individual: relaxation – for reduced stress and improved sleep; and alertness – for improved concentration and decision-making. Each 2-6 minute track is a composition performed on a single instrument, usually a piano. The relaxation track may sound like a "melodic, subdued Chopin sonata," while the alertness track may have "more of a Mozart sound," says Burns. (It seems there's a classical genius—or maybe two genii—in all of us.

Listen to an instrumental alert track at
http://www.dhs.gov/xlibrary/multimedia/snapshots/st_brain_music_active.mp3.

After their brain waves are set to music, each person is given a specific listening schedule, personalized to their work environment and needs. If used properly, the music can boost productivity and energy levels, or trigger a body's natural responses to stress.

The music created by Human Bionics LLC is being tested as part of the S&T Readiness Optimization Program (ROP), a wellness program that combines nutrition education and neurotraining to evaluate a cross population of first responders, including federal agents, police, and firefighters. A selected group of local area firefighters will be the first emergency responders taking part in the project.

The Brain Music component of the ROP is derived from patented technology developed at Moscow University to use brain waves as a feedback mechanism to correct physiological conditions.

In British philosopher John Locke's terms, Brain Music brings new meaning to his famous phrase: "A sound mind in a sound body, is a short, but full description of a happy state in this World."

And then there's always Cervantes, who coined, "He who sings scares away his woes."

Adapted from materials provided by US Department of Homeland Security - Science and Technology, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/04/090424114646.htm

Radiation Device In The Breast Reduces Complications For Early Stage Breast Cancer Patients

This is the SAVI applicator. (Credit: NA)

ScienceDaily (Apr. 28, 2009) — A new study shows that the SAVI™ applicator, a small, expandable device inserted inside the breast to deliver partial breast irradiation, carries a low infection risk, a potential complication of such devices. The research, led by radiation oncologists and surgeons at the Moores UCSD Cancer Center and Fort Myers, Florida-based 21st Century Oncology, also indicates that other complications – such as seromas, pockets of fluid that build with the use of internal radiation devices – are unlikely to occur.

That's good news for those women with early-stage breast cancer who opt to have such devices inserted for their radiation therapy after breast-sparing lumpectomy surgery, said Cate Yashar, MD, associate professor of radiation oncology at the UC San Diego School of Medicine and chief of breast and gynecological radiation services at the Moores UCSD Cancer Center. Their use is increasing, she added, noting that the Moores UCSD Cancer Center was one of the first medical facilities in the country to offer SAVI.

SAVI, which consists of flexible catheters through which radiation is given, provides customized radiation therapy and minimizes exposure to healthy tissue after a woman has undergone a lumpectomy to remove a cancerous tumor. Radiation specialists sometimes decide to give women internal radiation – a process called brachytherapy – with the goal of giving concentrated doses of radiation to areas of concern while avoiding healthy tissue.

In the study, researchers examined one-year follow-up data on 63 patients treated with the Food and Drug Administration-approved SAVI device. They found an infection rate that is less than half of the published rates associated with balloon brachytherapy methods, and rated overall cosmetic outcomes with SAVI as "excellent."

The results will be presented at the American Society of Breast Surgeon's annual meeting in San Diego, April 24, 2009.

In addition, physicians were able to use the device's many catheters to customize the radiation dose based on the woman's needs, greatly minimizing radiation to the heart, lungs, ribs and skin, likely resulting in fewer complications, Yashar said. To date, there have been no recurrences or formation of persistent seromas.

"With a full year of follow-up, our research confirms previous findings that this device is safe and effective for radiation delivery, especially compared to other brachytherapy methods," said Yashar. "Without the ability to customize the dose, other devices can lead to complications, like persistent seroma and skin burns. This applicator was created to overcome these problems, and our research shows it has been successful."

Breast brachytherapy is a form of Accelerated Partial Breast Irradiation (APBI). Lasting just five days, APBI offers a shorter course of radiation compared to the six weeks required with traditional whole breast irradiation.

"SAVI has the most flexible dose modulation for single-entry APBI applicators and can sculpt the radiation dose to the size and shape of the tumor cavity and the patient's anatomy, even when only one to two millimeters from normal tissues," Yashar said.

Without the technical limitations of other methods such as balloon brachytherapy, SAVI substantially increases the number of women who qualify for the benefits of APBI, she noted.

Other authors of the poster being presented at ASBS are Daniel Scanderbeg, Anne Wallace, Sarah Blair and Patrick Barna, UC San Diego; and Constantine Mantz, 21st Century Oncology. The SAVI breast brachytherapy applicator is made by Cianna Medical, Inc.

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

http://www.sciencedaily.com/releases/2009/04/090423180246.htm

Zero Emissions Motorcycle Gears Up For The Big Race

Engineering students (from left to right) Dean Goldsmith, Michael Payne (sat on the bike), Sean Whittaker, Alex Jones-Dellaportas and Gonzalo Carrasco with the green bike. (Credit: Image courtesy of Kingston University)

ScienceDaily (Apr. 28, 2009) — It has the ability to reach speeds of 102mph, race around a 38 mile mountainous course and is powered by batteries which can be charged from a standard household socket. It's Kingston University's new, green motorbike. Designed by six final-year engineering students, the bike is set to make history by competing in the world's first zero-emissions Grand Prix this summer. The Kingston team will join 24 eco-bikes from America, India, Italy, Germany and Austria on the start line at the 2009 Isle of Man TTXGP.

Work on the bike began last October, under the guidance of course director for motorsport and motorcycle engineering Paul Brandon. The motorbike, which has gone through many designs, will run on non-fossil fuel but will still be able to clock-up an average 70 mph around the course. "Being green doesn't have to mean slow," Mr Brandon said. "There are too many sceptics when it comes to electric vehicles but we all need to reduce our CO_2 output and this initiative is taking a huge leap in that direction. The ideas we and others put to the test on the racing circuit are the ones most likely to become commonplace on the road."

The bike is run from a custom-built, 72-volt battery and the team estimates it will reach speeds of 102 at the fastest downhill section of the 38 mile course. "The energy density of batteries is far less than that of petrol or diesel so how we manage the energy we carry is critical to our success in the race," Mr Brandon added. "The bike we have designed has a whole vehicle efficiency of 90 per cent, so we are only wasting 10 per cent of what we carry. By comparison a petrol-based vehicle wastes 70 per cent of the energy it carries."

Students studying on the motorcycle engineering design course have worked on the project since October last year and it will form part of their final assessment. Alex Jones-Dellaportas, 40, originally from Oldham, Lancashire, said: "The design has gone through many different stages. We've refined it at each step along the way to try to make it lighter and faster and the majority of the materials we have used have been recycled." Team mate Gonzalo Carrasco, 21, originally from near Madrid, in Spain, said: "It might look similar to a normal motorbike but it has no internal combustion engine, no exhaust system and no fuel tank. The overall CO_2 usage, including the CO_2 generated to charge the batteries, will be around 50 per cent less CO_2 than a petrol or diesel-power bike. People need to realise that this technology is the future. By entering green races and building green designs we are hoping policy-makers will see the potential for this technology and start investing in it."

The competition takes place on June 12.

Adapted from materials provided by Kingston University, via AlphaGalileo.

http://www.sciencedaily.com/releases/2009/04/090424073909.htm

Pizza Tossing Art Unlocks Secrets Of Tiny Motors

Monash University scientists have unlocked the physics of the perfect pizza toss and will use it to design the next generation of micro motors thinner that a human hair. (Credit: iStockphoto/Scott Stanley)

ScienceDaily (Apr. 28, 2009) — Monash University scientists have unlocked the physics of the perfect pizza toss and will use it to design the next generation of micro motors thinner that a human hair.

Mr Daniel (Kuang-Chen) Liu, a PhD student supervised by Associate Professor James Friend and Senior Lecturer Leslie Yeo, videotaped a professional pizza tosser at work. The team from Monash's Micro/Nanophysics Research Laboratory, then calculated how best to describe the way the dough travels through the air – including how much the dough rotates, how quickly it spins, its stability and the energy efficiency of the toss itself.

The result is a set of nonlinear differential equations that captures the art of pizza tossing.

"In brief, if you toss a pizza dough one toss at a time – that is, if you toss then catch – your hands should move in a helical fashion, like they are moving along a spiral, a curved line laid along a cylinder," Associate Professor Friend said.

"If you are tossing the pizza continuously, not stopping to catch it and stop every time, then your hands should move in circles."

The model could help researchers to design the next generation of standing wave ultrasonic motors (SWUMs), which operate on similar principles as pizza tossing.

The tiny motors have the potential to be used for minimally invasive neuro-microsurgery. In these electric motors, the fixed component, the stator, is made to vibrate ultrasonically, and this causes the moveable part, the disc-like rotor, to be "tossed" – both rotated and lifted.

"The SWUM works exactly like a pizza chef tossing dough, with the hands representing the vibrating stator of the SWUM and the dough representing the rotor. The difference is only in the details: a chef tosses dough, about once a second, a few tens of centimetres into the air. A SWUM tosses the rotor a few million times a second into the air," Associate Professor Friend said.

He said scientists around the world have been using trial and error to make variations of the SWUMs, and while they might have worked, there had not been a thorough understanding of the forces involved until now.

"Some of the maths are a bit tricky," Dr Friend said. "The most puzzling questions with SWUMs are answered in this study. We think that further investigation of the work will prove fruitful for the understanding and design of SWUMs."

The scientists are the same principals who recently developed the world's smallest useful motor, only a quarter of a millimetre wide, that could be used in the propulsion system of miniature machines to swim through the bloodstream to inaccessible places, potentially revolutionising future surgical procedures.

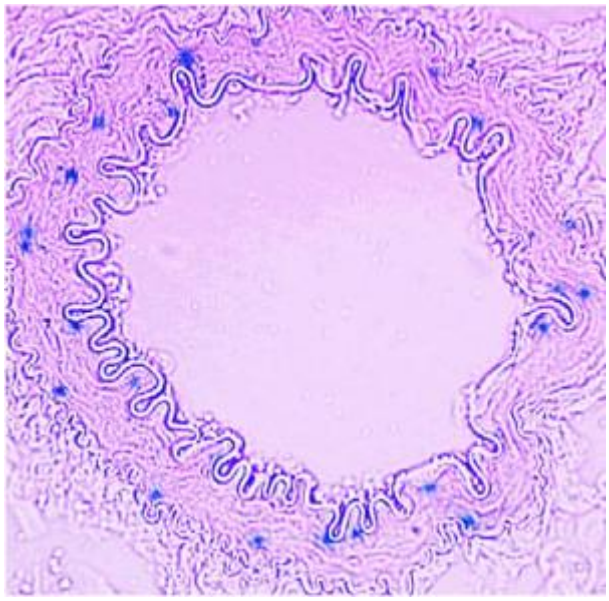
Journal reference:

1. K.-C. Liu, J. Friend and L. Yeo. **The behavior of bouncing disks and pizza tossing**. *EPL (Europhysics Letters)*, 2009; 85 (6): 60002 DOI: 10.1209/0295-5075/85/60002

Adapted from materials provided by Monash University.

http://www.sciencedaily.com/releases/2009/04/090427102237.htm

New Target For Maintaining Healthy Blood Pressure Discovered



Prostaglandin F2-alpha receptor expression depicted in blue in renal artery. (Credit: Ying Yu, PhD, and Garret FitzGerald, MD, University of Pennsylvania School of Medicine)

ScienceDaily (Apr. 28, 2009) — In trying to understand the role of prostaglandins – a family of fatty compounds key to the cardiovascular system – in blood pressure maintenance, researchers at the University of Pennsylvania School of Medicine and colleagues discovered that mice that lack the receptor for one type of prostaglandin have lower blood pressure and less atherosclerosis than their non-mutant brethren.

The results indicate that the normal role for the type of prostaglandin studied, PGF2α, is to increase blood pressure and accelerate atherosclerosis, at least in rodents, and suggest that targeting this pathway could represent a novel therapeutic approach to cardiovascular disease.

The results appeared this week in the Proceedings of the National Academy of Sciences.

“Blocking this prostaglandin receptor may provide a strategy for controlling blood pressure and its attendant vascular disease,” notes senior author Garret A. FitzGerald, MD, Director of the Institute for Translational Medicine and Therapeutics at Penn.

To address prostaglandins’ role in maintaining blood pressure, FitzGerald and his team, including researchers from the University of Southern Denmark, created strains of mice in which both the maternal and paternal copies of the gene for the PGF2α receptor were deleted. They did this in mice with a normal genetic background and in ones that contained an additional mutation in the low-density lipoprotein receptor gene. These manipulations effectively rendered the mice unable to respond to the prostaglandins.

The delicate balance the body maintains to keep blood pressure stable involves not only the prostaglandin system, but another biological pathway, the renin-angiotensin-aldosterone system, or RAAS. Under conditions of low blood pressure, the liver secretes a protein called angiotensiogen. Renin, an enzyme produced by the kidneys, cleaves angiotensiogen into a peptide called angiotensin I. Angiotensin I is cleaved again to form angiotensin II, which stimulates blood vessels to narrow, thereby increasing blood pressure. At the same time, angiotensin II induces the release of the hormone aldosterone, which further elevates blood pressure by promoting retention of water and sodium in the kidneys.

Many conventional therapies for high blood pressure target components of the RAAS pathway. For instance, ACE inhibitors such as captopril (Capoten) target the formation of angiotensin II, while aliskiren (Tekturna) targets renin.

The team assessed the impact of the PGF2α receptor mutations on both blood pressure and RAAS activity. They found that under a variety of circumstances deletion of the PGF2α receptor lowered blood pressure coincident with suppression of RAAS activity.

"Precisely how these two observations are connected is the focus of our current research," says FitzGerald.

Blood pressure was reduced in both types of genetically engineered mice relative to control littermates. The RAAS molecules renin, angiotensin I, and aldosterone were also reduced, a biological situation leading to lower blood pressure.

The team found that the PGF2α receptor is expressed in the smooth muscle surrounding arteries in the kidneys. However, it was absent in the muscle surrounding the aorta, in the atherosclerotic lesions of mice with their PGF2α receptors knocked out, as well as in the macrophages that inhabit those lesions. Importantly, these atherosclerotic lesions were smaller and less abundant in mice that had both the low-density lipoprotein and PGF2α receptors knocked out, as was macrophage infiltration and inflammatory cytokine production, both of which are indicators of the inflammatory response that marks these plaques.

Prostaglandins are produced during the oxidation of certain cell molecules by cyclooxygenases, the COX enzymes targeted by COX inhibitors, but how remains unclear. FitzGerald's group had previously shown that blockading cyclooxygenase 1 and its major prostaglandin product, thromboxane, also lowers blood pressure, slowing atherosclerosis, but in this previous study, the relevant genes are present in the aorta and its atherosclerotic lesions. PGF2α, by contrast, acts via the kidney and represents a distinct therapeutic opportunity.

"The picture is emerging that PGF2α controls blood pressure by a mechanism unique among the prostaglandins," says FitzGerald. "Besides the case of thromboxane, two other types of prostaglandins, PGI2 and PGE2, stimulate renin secretion, which is part of the RAAS pathway."

Assuming these findings can be translated to humans, targeting the PGF2α pathway could represent a novel opportunity for therapeutic control of blood pressure in cardiovascular patients.

The research was funded by the National Heart, Lung, and Blood Institute and the American Heart Association.

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

http://www.sciencedaily.com/releases/2009/04/090424174540.htm

Drinking Diet Soda May Reduce Risk Of Forming Kidney Stones

Patients with stone disease could benefit from drinking diet soda. (Credit: iStockphoto)

ScienceDaily (Apr. 28, 2009) — Patients with stone disease could benefit from drinking diet soda. New research from the University of California, San Francisco suggests that the citrate and malate content in commonly consumed sodas may be sufficient to inhibit the development of calcium stones.

Increased alkalinity is proven to augment citraturia, a known factor for calcium stones. Malate increases the amount of alkali delivered. Researchers measured the citrate and malate content of 15 popular diet sodas. The researchers found that Diet Sunkist Orange contained the greatest amount of total alkali and Diet 7-Up had the greatest amount of citrate as alkali.

"This study by no means suggests that patients with recurrent kidney stones should trade in their water bottles for soda cans," said Anthony Y. Smith, MD, an AUA spokesman. "However, this study suggests instead that patients with stone disease who do not drink soda may benefit from moderate consumption."

The study was presented at the 104th Annual Scientific Meeting of the American Urological Association (AUA).

Study presented: Eisner, B; Asplin, J; Stoller, M. Citrate, malate and alkali concentrations in commonly consumed diet sodas: implications for urinary stone patients. J Urol, suppl. 2009: 181, 4, abstract 1832.

Journal reference:

1. Eisner, B; Asplin, J; Stoller, M. **Citrate, malate and alkali concentrations in commonly consumed diet sodas: implications for urinary stone patients**. *J Urol, suppl*, 2009: 181, 4

Adapted from materials provided by American Urological Association, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/04/090426075452.htm

Bright Future With Solar Lanterns For India's Poor

ScienceDaily (Apr. 28, 2009) — Solar energy has the potential to improve the living conditions of poor rural households in India as well as contribute to the country's future energy security, according to Professor Govindasamy Agoramoorthy from Tajen University, who is Tata-Sadguru Visiting Chair, and Dr. Minna Hsu from the National Sun Yat-sen University in Taiwan.

Their study, looking at the benefits of solar lanterns on the livelihoods of village communities in Western India, as well as sustainable use of the environment, has just been published online in Springer's journal *Human Ecology*.

In India, approximately 70 percent of rural areas lack electricity and over 60 percent of rural households use kerosene lamps for lighting. Kerosene lamps are not only expensive, they are also inefficient, potentially dangerous and a major source of greenhouse gases. Interestingly, the average number of sunny days in India ranges from 250 to 300 days a year, with a solar energy equivalent greater than the country's total energy consumption. Energy efficiency is critical to nations such as India with large and growing populations. Solar lanterns, which make the most of the country's natural and abundant sunshine, could be a practical and clean energy alternative to kerosene lamps in village communities.

Sadguru Foundation, a non-profit agency specializing in natural resources management in India, supplied 100 solar lanterns to socially and economically disadvantaged households in 25 villages in the Dahod District of the Gujarat State between January 2004 and December 2007. Agoramoorthy and Hsu studied the effects of using solar lanterns on energy usage, household savings in terms of kerosene and electricity costs, as well as the family's quality of life. The women in the households were interviewed a month before and again a month after the introduction of the solar lanterns.

Overall, expenditure on kerosene and electricity dropped significantly in all households, after the solar lanterns were introduced. On average each household made important savings ranging from 150 to 250 US dollars annually. Whereas both households above and below the poverty level used a similar amount of electricity before the lanterns were introduced, after their introduction households below the poverty level used significantly less electricity than those above the poverty level.

The researchers also found that the solar lanterns particularly benefited school-aged children and women. Although 70 percent of the villages are connected to the power grid, they do not receive power early in the morning or in the evening because the state power company redirects electricity to major towns and cities. However, with the six hours of light supplied daily by the solar lanterns, study hours increased which had a positive influence on the children's performance at school. Women were also able to perform their routine household work both indoors and outdoors during power outages.

The authors conclude that "the use of solar energy will contribute to India's future energy security, particularly in rural areas where the technology that converts sunlight directly into electricity offers a decentralized alternative to uncertain electricity supplies. If implemented efficiently, renewable energy projects could not only improve the quality of life for India's rural poor but also enhance sustainable use of the environment."

Journal reference:

1. Agoramoorthy et al. **Lighting the lives of the impoverished in India%u2019s rural and tribal drylands**. *Human Ecology*, 2009; DOI: 10.1007/s10745-009-9224-7

Adapted from materials provided by Springer.

http://www.sciencedaily.com/releases/2009/04/090427102235.htm

New Treatment Shows Promise Against Recurrent Gynecologic Cancers

ScienceDaily (Apr. 28, 2009) — Recurrent and metastatic endometrial and ovarian cancers can be notoriously difficult to treat: They have spread to other organs and typically have developed resistance to chemotherapy; and patients already heavily treated with chemotherapy may not be able to endure more chemo.

Now, physicians at Albert Einstein College of Medicine of Yeshiva University have shown that a combination of two chemotherapy drugs not only produced clinical benefit for such patients but were also well tolerated.

"Women with recurrent gynecologic cancers have often had multiple rounds of chemotherapy, which can cause tumor cells to develop resistance to these drugs," says Mark H. Einstein, M.D., associate professor of obstetrics & gynecology and women's health at Einstein, who headed the study. "This resistance can make it difficult for doctors to devise a treatment protocol that will impact the cancers while avoiding the often-severe side effects that certain chemotherapy drugs can cause, particularly when patients have already been heavily pretreated with other anti-cancer drugs."

In previous clinical studies, the chemotherapy drugs topotecan and docetaxel showed effectiveness when used separately against recurrent gynecologic cancers. The phase 2 trial conducted by Dr. Einstein and his colleagues─the first to evaluate the combination of the drugs for this purpose─involved 24 women with recurrent uterine, ovarian, fallopian or peritoneal cancers. The women were given the topotecan-docetaxel combination on Day 1 of the trial and then weekly for three weeks; after a one-week rest, the women received another three-week treatment cycle, ultimately undergoing six such treatment cycles.

Compared with previous clinical trials, an unusually high proportion of these women had been heavily pretreated with chemotherapy─yet nearly 40 percent of them experienced clinical benefit. In addition, the overall survival with the drug combination (median survival of 18.5 months) was higher than in previous phase 2 studies that evaluated the drugs when used singly. Finally, there were few and relatively mild side effects from the drug combination compared with toxicities observed in similar studies.

The trial's effectiveness and safety outcomes are "promising enough to justify a larger clinical study of this drug combination for women with recurrent gynecologic cancers," Dr. Einstein says.

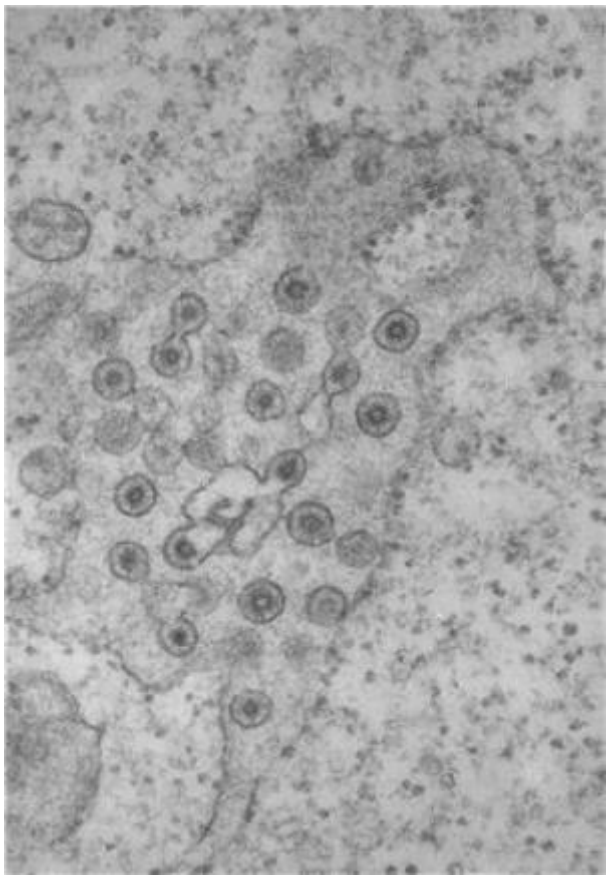
The findings are published online in the journal *Gynecologic Oncology.* Other researchers at Einstein involved in the trial were Divya Gupta, M.D., Ricky L. Owers, M.D., Mimi Kim, Sc.D., Dennis Yi-Shin Kuo, M.D., Gloria S. Huang, M.D., Shohreh Shahabi, M.D., and Gary L. Goldberg, M.D.

Dr. Einstein's research was funded, in part, by investigator-initiated grants from Sanofi-Aventis and GlaxoSmithKline Oncology for research-related costs of this trial.

Adapted from materials provided by Albert Einstein College of Medicine.

http://www.sciencedaily.com/releases/2009/04/090421181039.htm

Mathematical Model Used To Explain Viral Extinction



Electron microscope image of lymphocytic choriomeningitis virus (LCMV) infecting BHK-21 cells. (Credit: CBMSO (taken by Veronica Martin laboratory Esteban Domingo, with the collaboration of Andrew G. and M. Rejas, Electron Microscopy Services))

ScienceDaily (Apr. 28, 2009) — Two researchers from the Spanish Centre of Astrobiology (INTA-CSIC) have developed a mathematical model which demonstrates that a mild increase in the mutation rate of some viruses can reduce their infectivity, driving them to extinction. The study, published recently in *Europhysics Letters*, could have clinical uses in the medium term.

"The model we present shows how simple evolutionary mechanisms can cause the extinction of populations of fast mutating pathogens, such as certain viruses," co-author of the study and Centre of Astrobiology researcher Susanna C. Manrubia explained to SINC.

The results of the research, which have been published this year in Europhysics Letters, suggest that strategies can be devised to fight viral infections by gaining a better understanding of their population dynamics. A moderate increase in the mutation rate of such viruses could become a therapy alternative to the massive use of drugs.

The scientists experimented with the lymphocytic choriomeningitis virus (LCMV), which produces persistent infections in house mice and is sometimes transmitted to humans. This virus does not normally cause serious problems, but occasionally results in death among people with a weak immune system or abortion if infection occurs during pregnancy.

"The high mutation rates of these viruses allow them to maintain a reservoir of variants so as to adapt to possible environmental changes and to challenges such as immune system attacks on behalf of the host or target cell heterogeneity," Manrubia says.

However, this high rate of mutation also produces a high number of unviable mutants, capable of surviving at the expense of viable forms. In order to create this situation and raise the natural rate at which viruses mutate, scientists add mutagen. In the case of LCMV, fluorouracil is used.

By adding mutagen, the ability of the virus to infect cells disappears, although its replicative ability is not affected. The researchers believe that this occurs because the number of unviable mutants, which can replicate but not infect, act "like a cancer" that destroys the system from the inside.

"The mathematical model formally characterizes the extinction of infectivity in these viruses following experimental results and demonstrates three things: this occurs with small amounts of mutagen, which is much more likely if there is only a small number of viral genomes inside a cell and, most importantly, it is a new mechanism for viral extinction that could potentially have clinical uses in the medium term" Manrubia says.

Manrubia developed the model alongside Jaime Iranzo, who joined the Centre of Astrobiology recently. Iranzo received the Archimedes Prize for the best research paper in the field of physics for this study. The prize is awarded by the Spanish Ministry of Science and Innovation to university students or recent university graduates.

Journal reference:

1. J. Iranzo and S. C. Manrubia. **Stochastic extinction of viral infectivity through the action of defectors**. *EPL (Europhysics Letters)*, 2009; 85 (1): 18001 DOI: 10.1209/0295-5075/85/18001

Adapted from materials provided by Plataforma SINC, via AlphaGalileo.

http://www.sciencedaily.com/releases/2009/04/090424073905.htm

Eating Fatty Fish And Marine Omega-3 Fatty Acids May Reduce Risk Of Heart Failure

Traditional Swedish pickled herring dish. (Credit: iStockphoto)

ScienceDaily (Apr. 28, 2009) — Eating fatty fish and marine omega-3 fatty acids, which are found in fish oil, seems to protect men from heart failure, according to one of the largest studies to investigate the association.

However, the effect was seen only in men who eat approximately one serving of fatty fish a week and who had a moderate intake of marine omega-3 fatty acids (approximately 0.3 grams a day). Eating more did not give a greater benefit and, in fact, returned the chances of heart failure to the same level as that seen in men who never consume fatty fish or fish oils.

The study provided no evidence that taking food supplements containing marine omega-3 fatty acids made any difference. The men in this study, which is published in the *European Heart Journal* on April 22, obtained most of their marine omega-3 fatty acids from the food they ate.

Researchers in the USA and Sweden followed 39,367 Swedish men, aged between 45-79, from 1998 to 2004. They recorded details of the men's diet and tracked the men's outcome through Swedish inpatient and cause-of-death registers. During this period, 597 men without a history of heart disease or diabetes developed heart failure, of which 34 died.

The researchers found that men who eat fatty fish, such as herring, mackerel, salmon, whitefish and char, once a week were 12% less likely to develop heart failure compared to men who never eat fatty fish. Although this association with fatty fish did not reach statistical significance, the researchers also found a statistically significant association with the intake of marine omega-3 fatty acids (found in cod livers and other fish oils); men who consumed approximately 0.36 grams a day were 33% less likely to develop heart failure than men who consumed little or no marine omega-3 fatty acids (0.15-0.22 grams a day). *

The men were divided into five groups depending on their intake of fatty fish, with the first group consuming none, or very little, and the fifth group consuming the most – three of more servings of fatty fish a week. The researchers found that while the middle group, which eat one serving of fatty fish a week, had a 12% reduced risk compared to the men who never eat fatty fish, the men in the next two groups, who eat either two servings a week or three or more servings a week, had nearly the same risk as the men who eat none.

The researchers also divided the men into five groups based on their intake of marine omega-3 fatty acids. Again, the same U-shape was seen, with the middle group who consumed 0.36 grams a day of fatty acids having a 33% reduced risk of heart failure, while the men who consumed more (either approximately 0.46 grams per day or approximately 0.71 grams per day) had a risk similar to men who consumed none or very little.

Dr Emily Levitan, a cardiology research fellow at Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, USA, who led the research, said: "Our study shows that a moderate intake of fatty fish and marine omega-3 fatty acids is associated with lower rates of heart failure in men, but that the men did not gain a greater benefit by eating more of these foods.

"The apparent U-shaped relationship of fatty fish and marine omega-3 fatty acids with heart failure was unexpected. The higher rate of heart failure in men who consumed the most fatty fish or marine omega-3 fatty acids compared with moderate consumption may be due to chance. Alternatively, these may be men in poor health who ate more fish to try to improve their ill-health, and therefore the fatty fish and fatty acids appear to be risk factors for heart failure. I suspect this is the most likely explanation, but we cannot be certain from our data."

Previous studies have shown that fatty fish and omega-3 fatty acids help to combat risk factors for a range of heart-related conditions such as lowering levels of triglycerides (fats in the blood), blood pressure, heart rate and heart rate variability. This may explain the association with a reduced risk of heart failure found in this current study.

Dr Levitan said: "This study reinforces the current recommendations for moderate consumption of fatty fish. For example, the Swedish National Food Administration recommends consuming fish two to three times per week, with one of those portions being fatty fish. Similarly, the American Heart Association recommends eating fish, preferably fatty fish, twice a week. Our study supports the idea that a healthy diet, including moderate consumption of fatty fish, can reduce the risk of cardiovascular diseases including heart failure. It will be important to replicate these findings in other populations, particularly those including women, as our study was conducted in men only."

*There are two reasons why results on consumption of fatty fish were not statistically significant while the results on marine omega-3 fatty acids were significant, even though these were derived from food sources. The first is that the marine omega-3 intake was corrected for total energy intake and age and frequency of fatty fish intake was not. The correction for total energy intake was done because a given amount of marine omega-3 is not likely to have the same effect in a man who weighs 250 pounds as in a man who weighs 150 pounds. Correction for age was done because, in this population, the portion sizes varied quite a bit by age. The second reason the results do not line up exactly is that the categories are different. Fatty fish was divided up by frequency of consumption and the very low and very high groups were small. Marine omega-3 (adjusted for age and total energy) intake was divided into five equally sized groups.

Journal reference:

1. . **Fish consumption, marine omega-3 fatty acids, and incidence of heart failure: a population-based prospective study of middle-aged and elderly men**. *European Heart Journal*, April 22, 2009 DOI: 10.1093/eurheartj/ehp111

Adapted from materials provided by European Society of Cardiology, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2009/04/090421205238.htm

New Human Movement Model Can Aid In Studying Epidemic Outbreaks, Public Planning

ScienceDaily (Apr. 28, 2009) — Researchers have developed a new statistical model that simulates human mobility patterns, mimicking the way people move over the course of a day, a month or longer. The model, developed by scientists at North Carolina State University and the Korea Advanced Institute of Science and Technology (KAIST), is the first to represent the regular movement patterns of humans using statistical data.

The model has a host of potential uses, ranging from land use planning to public health studies of epidemic disease.

The researchers gave global positioning system (GPS) devices to approximately 100 volunteers at five locations in the U.S. and South Korea and tracked the participants' movements over time, according to study co-author Dr. Injong Rhee, a professor of computer science at NC State. By plotting the points where the study participants stopped, and their movement trajectories, researchers were able to determine patterns of mobility behavior.

For example, Rhee says, the researchers found that people tend to perform multiple activities in clusters that are in close proximity to each other – such as going to a bank, a dry-cleaner and a pharmacy that are all located on the same street. Furthermore, the researchers found that the study participants tend to more frequently visit locations that are popular among other people.

These behaviors illustrated statistical patterns. For example, Rhee explains, people will try to make the most efficient use of their time and effort by clustering activities together that are in geographical proximity to each other. This behavior creates patterns in which people make many short "jumps" within the clustered areas while making a few long jumps among the clustered areas. These patterns are best explained by statistical processes called self-similar points of visits and power-law distribution of jumping distances.

The researchers were then able to emulate these fundamental statistical properties of human mobility into a model that could be used to represent the regular daily movement of humans, Rhee says. The model is called the Self-similar Least Action Walk (SLAW), which could have a wide array of practical applications.

For example, Rhee says, "a realistic human mobility model could be used by civil engineers to plan roads, by public health officials to study virus outbreak spread, or by telecommunication companies for planning where to locate cell-phone towers. Any situation where you would want to be able to predict where people will go."

The research, "SLAW: A Mobility Model for Human Walks," was presented April 20 at the 28th IEEE Conference on Computer Communications in Rio de Janeiro, Brazil.

The research team that developed the model includes Rhee, NC State Ph.D. candidate Seongik Hong, NC State post-doctoral research associate Seong Joon Kim, and KAIST researchers Kyunghan Lee and Song Chong. The National Science Foundation funded the research.

Adapted from materials provided by North Carolina State University.

http://www.sciencedaily.com/releases/2009/04/090427102231.htm

Buddhist Deity Meditation Temporarily Augments Visuospatial Abilities, Study Suggests

ScienceDaily (Apr. 28, 2009) — Meditation has been practiced for centuries, as a way to calm the soul and bring about inner peace. According to a new study in Psychological Science, a journal of the Association for Psychological Science, there is now evidence that a specific method of meditation may temporarily boost our visuospatial abilities (for example, the ability to retain an image in visual memory for a long time).

That is, the meditation allows practitioners to access a heightened state of visual-spatial awareness that lasts for a limited period of time.

Normally when we see something, it is kept in our visual short-term memory for only a brief amount of time (images will begin to fade in a matter of seconds). However, there have been reports of Buddhist monks who have exceptional imagery skills and are able to maintain complex images in their visual short-term memory for minutes, and sometimes even hours. Led by psychologist Maria Kozhevnikov of George Mason University, a team of researchers investigated the effects of different styles of Buddhist meditation on visuospatial skills.

The researchers focused on two styles of meditation: Deity Yoga (DY) and Open Presence (OP). During DY meditation, the practitioner focuses intently on an image of deity and his or her entourage. This requires coming up with an immensely detailed, three-dimensional image of the deity, and also focusing on the deity's emotions and environment. In contrast, practitioners of OP meditation believe that pure awareness cannot be achieved by focusing on a specific image and therefore, they attempt to evenly distribute their attention while meditating, without dwelling on or analyzing any experiences, images, or thoughts that may arise.

In these experiments, experienced DY or OP meditation practitioners along with nonmeditators participated in two types of visuospatial tasks, testing mental rotation abilities (e.g., being able to mentally rotate a 3-D structure) and visual memory (e.g., being shown an image, retaining it in memory and then having to identify it among a number of other, related images). All of the participants completed the tasks, meditators meditated for 20 minutes, while others rested or performed non-meditative acitivities, and then completed a second round of the tasks.

The results revealed that all of the participants performed similarly on the initial set of tests, suggesting that meditation does not result in an overall, long-lasting improvement of visuospatial abilities. However, following the meditation period, practitioners of the DY style of meditation showed a dramatic improvement on both the mental rotation task and the visual memory task compared to OP practitioners and controls.

These results indicate that DY meditation allows practitioners to access greater levels of visuospatial memory resources, compared to when they are not meditating. The authors state that this finding "has many implications for therapy, treatment of memory loss, and mental training." Although, they conclude, future studies will need to examine if these results are specific to DY meditation, or if these effects can also occur using other visual meditation techniques.

Journal reference:

1. Kozhevnikov et al. **The Enhancement of Visuospatial Processing Efficiency Through Buddhist Deity Meditation**. *Psychological Science*, 2009; DOI: 10.1111/j.1467-9280.2009.02345.x

Adapted from materials provided by Association for Psychological Science.

http://www.sciencedaily.com/releases/2009/04/090427131315.htm

Inadequate Sleep Leads To Behavioral Problems, Study Finds

ScienceDaily (Apr. 28, 2009) — A recent Finnish study suggests that children's short sleep duration even without sleeping difficulties increases the risk for behavioral symptoms of ADHD.

During the recent decades, sleep duration has decreased in many countries; in the United States a third of children are estimated to suffer from inadequate sleep. It has been hypothesised that sleep deprivation may manifest in children as behavioral symptoms rather than as tiredness, but only few studies have investigated this hypothesis.

The researchers at the University of Helsinki and National Institute of Health and Welfare, Finland, examined whether decreased sleep leads to behavioral problems similar to those exhibited by children with attention-deficit/hyperactivity disorder (ADHD).

280 healthy children (146 girls and 134 boys) participated in the study. The researchers tracked the children's sleep using parental reporting as well as actigraphs, or devices worn on the wrist to monitor sleep.

The children whose average sleep duration as measured by actigraphs was shorter than 7.7 hours had a higher hyperactivity and impulsivity score and a higher ADHD total score, but similar inattention score than those sleeping for a longer time. In multivariate statistical models, short sleep duration remained a statistically significant predictor of hyperactivity and impulsivity, and sleeping difficulties were associated with hyperactivity, impulsivity and inattention. There were no significant interactions between short sleep and sleeping difficulties.

"We were able to show that short sleep duration and sleeping difficulties are related to behavioral symptoms of ADHD, and we also showed that short sleep, per se, increases behavioral symptoms, regardless of the presence of sleeping difficulties", says researcher Juulia Paavonen, MD, PhD.

"The findings suggest that maintaining adequate sleep schedules among children is likely to be important in preventing behavioral symptoms. However, even though inadequate sleep seems to owe potential to impair behaviour and performance, intervention studies are needed to confirm the causality," Paavonen continues.

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

http://www.sciencedaily.com/releases/2009/04/090427131313.htm

Bed sharing 'risks babies' lives'

Parents are being warned not to risk their babies' lives by sharing a bed with them while sleeping.

Latest evidence released by the Foundation for the Study of Infant Deaths (FSID) shows bed sharing is implicated in about half of cot deaths.

The risk is greatest if either parent smokes, has been drinking, has taken sedative medication or is "very tired".

Even without these factors, the charity said that the safest place for a baby to sleep was its own cot.

Small babies - those born prematurely and those weighing less than 2.5kg are particularly at risk.

" **The situation around co-sleeping is complex, and blanket advice to avoid it is perhaps unhelpful to parents who may want to do it** "
Cathy Warwick of the Royal College of Midwives

FSID's director, Joyce Epstein, said: "We recognise the urgent need to raise awareness of the dangers associated with bed or sofa sharing with your baby.

"It's fine to breastfeed in bed, but if you smoke at all - even if not in the bedroom - or you've drunk alcohol - you really must protect your baby and put them in their cot to sleep."

John Pollard, a coroner for the Manchester South District, said he saw many families whose lives had been devastated by the sudden death of their baby.

" **We need to make all parents aware that the most comfortable place for them to sleep is the most dangerous place for their baby** "
Coroner John Pollard

"The numbers of infants that we continue to find dead in beds, on sofas or armchairs is unacceptable.

"We need to make all parents aware that the most comfortable place for them to sleep is the most dangerous place for their baby."

Data from Dr Marta Cohen, paediatric pathologist at Sheffield Children's Hospital, showed that of the 50 cases she investigated between 2004 and 2007, 31 were found to have been sharing a bed or sofa with a parent.

Dr Chris Wright, consultant perinatal pathologist at the Royal Victoria Infirmary, Newcastle, examined 15 cases of unexpected death in infants between 2008 and 2009 - seven were found in the parental bed and two had died on a sofa.

In the London area between 2005 and 2008, 173 babies died suddenly and unexpectedly. And 85 of these infants were found dead after falling asleep in bed with an adult or on a sofa.

Informed choice

But the Royal College of Midwives said catch-all advice was unhelpful to parents.

The college's Cathy Warwick said: "It is a terrible tragedy for the parents when they suffer the sudden death of their child, so any research that sheds light on the potential causes is important.

"However, the situation around co-sleeping is complex, and blanket advice to avoid it is perhaps unhelpful to parents who may want to do it.

"A number of factors need to be considered by parents before and if they do this, and they need to discuss this with their midwife to make an individual and informed decision."

The RCM says many factors can contribute to the safety of co-sleeping, including cultural practices, whether the baby is being breastfed, what kind of bedcovers are being used, and where the co-sleeping is taking place.

It recommends that parents discuss the issue with their midwife, and that based on the evidence they can make an informed choice about co-sleeping.

The RCM has also issued guidance on bed sharing and co-sleeping.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8021456.stm

Published: 2009/04/29 00:06:35 GMT

Cosmic blast sets distance mark

By Jonathan Amos
Science reporter, BBC News

The cataclysmic explosion of a giant star early in the history of the Universe is the most distant single object ever detected by telescopes.

The colossal blast was picked up first by Nasa's Swift space observatory which is tuned to see the high-energy gamma-rays emitted from extreme events.

Other telescopes then followed up the signal, confirming the source to be more than 13 billion light-years away.

Scientists say the star's destruction probably resulted in a black hole.

"This gets us into a realm where we've never been before," said Professor Nial Tanvir, of the University of Leicester, UK.

"This is the most remote gamma-ray burst (GRB) ever detected, and also the most distant object ever discovered."

Fast mover

The Swift satellite was launched in 2004 to investigate the energetic flashes that characterise some of the Universe's most violent happenings.

A GAMMA-RAY BURST RECIPE
- Models assume GRBs arise when giant stars burn out and collapse
- During collapse, super-fast jets of matter burst out from the stars
- Collisions occur with gas already shed by the dying behemoths
- The interaction generates the energetic signals detected by Swift
- Remnants of the huge stars end their days as black holes

Led by the US space agency, the mission has significant UK and Italian contributions.

It is a three-in-one observatory. Its Burst Alert Telescope is set up to catch the initial flood of gamma rays. The spacecraft then swings itself to look directly into the flash with X-ray and ultraviolet/visible telescopes.

This longer wavelength afterglow lasts on the order of hours to days and Swift also calls up ground-based observatories to join the spectacle. Indeed, it is the ground campaign that establishes the distance.

This burst, dubbed GRB 090423, was detected by Swift on 23 April.

Follow-up observations were led by the United Kingdom Infrared Telescope and the Gemini North Telescope, both on Mauna Kea, Hawaii.

Cosmic expansion

Analysis of the light spectrum confirmed the blast had a redshift of 8.2. Redshift is a measure of the degree to which light has been "stretched" by the expansion of the Universe. The greater the redshift, the more distant the object and the earlier it is being seen in cosmic history.

The figure 8.2 equates to a distance of 13.035 billion light-years. Put another way, the explosion is being viewed when the Universe was only 630 million years old, a mere one-20th of its current age (estimated to be 13.7 billion years old).

The previous record holder was a GRB witnessed, also by Swift, in September 2008. It had a redshift of 6.7, making it 190 million light-years closer than GRB 090423.

Scientists have seen what they believe may be faint galaxies at redshifts 8-10, but their true nature is still being investigated.

Researchers are very keen to probe these great distances because they will learn how the early Universe evolved, and that will help them explain why the cosmos looks like it does now.

'Fried' gas

Scientists believe the super-hot conditions that existed after the Big Bang eventually cooled sufficiently to allow protons, neutrons and electrons to form neutral atoms of hydrogen and helium.

When the first stars formed, from infalling clouds of hydrogen and helium, they lit up the cosmos.

What is more, these hot, young stars produced so much intense ultraviolet radiation, they "fried" the gas around them - tearing electrons off neutral atoms to leave the diffuse plasma we detect between the stars even today.

The star which ended its days as GRB 090423 was very probably among that early population of giants responsible for this re-ionisation.

Professor Tanvir said: "The re-ionisation era was a change that occurred in the Universe when the first stars switched on; but the actual timescale for that and the processes at work are poorly understood because we have so few observations. We're now pushing into that epoch."

Professor Gerry Gilmore, from Cambridge University, UK, commented: "[This] was probably one of the first stars that ever formed in the Universe; and it will have been one of the first things that ever created stuff like carbon, nitrogen and oxygen that led then to normal stars like our Sun and the planets forming much, much later on. "This is really a crucial stage of the Universe. The fact that we can see that long ago is just astonishing," he told BBC News.

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Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8022917.stm

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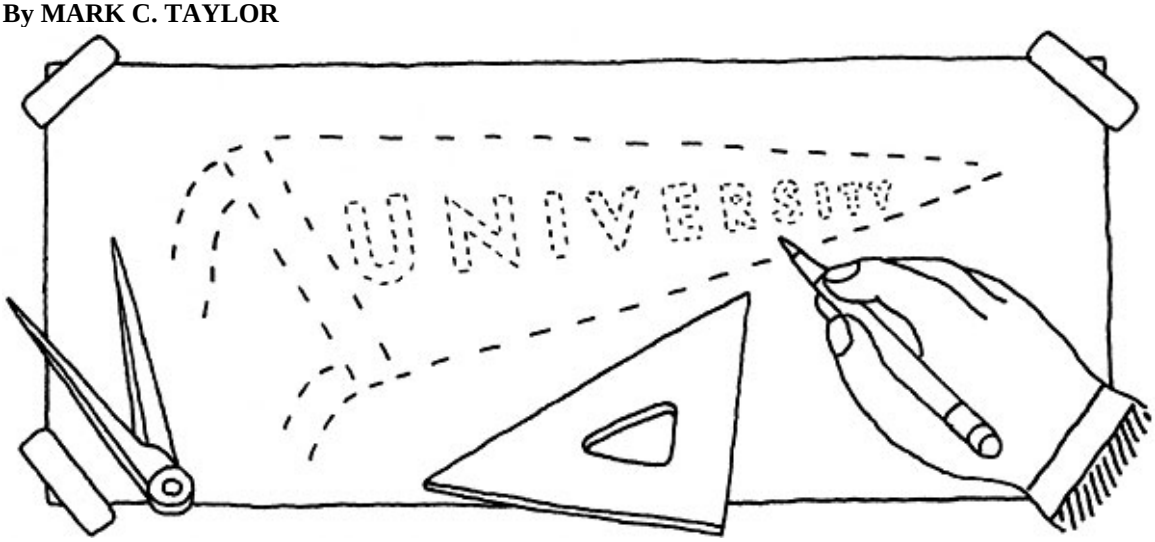
End the University as We Know It

By MARK C. TAYLOR



GRADUATE education is the Detroit of higher learning. Most graduate programs in American universities produce a product for which there is no market (candidates for teaching positions that do not exist) and develop skills for which there is diminishing demand (research in subfields within subfields and publication in journals read by no one other than a few like-minded colleagues), all at a rapidly rising cost (sometimes well over $100,000 in student loans).

Widespread hiring freezes and layoffs have brought these problems into sharp relief now. But our graduate system has been in crisis for decades, and the seeds of this crisis go as far back as the formation of modern universities. Kant, in his 1798 work "The Conflict of the Faculties," wrote that universities should "handle the entire content of learning by mass production, so to speak, by a division of labor, so that for every branch of the sciences there would be a public teacher or professor appointed as its trustee." Unfortunately this mass-production university model has led to separation where there ought to be collaboration and to ever-increasing specialization. In my own religion department, for example, we have 10 faculty members, working in eight subfields, with little overlap. And as departments fragment, research and publication become more and more about less and less. Each academic becomes the trustee not of a branch of the sciences, but of limited knowledge that all too often is irrelevant for genuinely important problems. A colleague recently boasted to me that his best student was doing his dissertation on how the medieval theologian Duns Scotus used citations.

The emphasis on narrow scholarship also encourages an educational system that has become a process of cloning. Faculty members cultivate those students whose futures they envision as identical to their own pasts, even though their tenures will stand in the way of these students having futures as full professors. The dirty secret of higher education is that without underpaid graduate students to help in laboratories and with teaching, universities couldn't conduct research or even instruct their growing undergraduate populations. That's one of the main reasons we still encourage people to enroll in doctoral programs. It is simply cheaper to provide graduate students with modest stipends and adjuncts with as little as $5,000 a course — with no benefits — than it is to hire full-time professors.

In other words, young people enroll in graduate programs, work hard for subsistence pay and assume huge debt burdens, all because of the illusory promise of faculty appointments. But their economical presence, coupled with the intransigence of tenure, ensures that there will always be too many candidates for too few openings

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The other obstacle to change is that colleges and universities are self-regulating or, in academic parlance, governed by peer review. While trustees and administrations theoretically have some oversight

responsibility, in practice, departments operate independently. To complicate matters further, once a faculty member has been granted tenure he is functionally autonomous. Many academics who cry out for the regulation of financial markets vehemently oppose it in their own departments.

If American higher education is to thrive in the 21st century, colleges and universities, like Wall Street and Detroit, must be rigorously regulated and completely restructured. The long process to make higher learning more agile, adaptive and imaginative can begin with six major steps:

1. Restructure the curriculum, beginning with graduate programs and proceeding as quickly as possible to undergraduate programs. The division-of-labor model of separate departments is obsolete and must be replaced with a curriculum structured like a web or complex adaptive network. Responsible teaching and scholarship must become cross-disciplinary and cross-cultural.
2.

Just a few weeks ago, I attended a meeting of political scientists who had gathered to discuss why international relations theory had never considered the role of religion in society. Given the state of the world today, this is a significant oversight. There can be no adequate understanding of the most important issues we face when disciplines are cloistered from one another and operate on their own premises.
It would be far more effective to bring together people working on questions of religion, politics, history, economics, anthropology, sociology, literature, art, religion and philosophy to engage in comparative analysis of common problems. As the curriculum is restructured, fields of inquiry and methods of investigation will be transformed.

2. Abolish permanent departments, even for undergraduate education, and create problem-focused programs. These constantly evolving programs would have sunset clauses, and every seven years each one should be evaluated and either abolished, continued or significantly changed. It is possible to imagine a broad range of topics around which such zones of inquiry could be organized: Mind, Body, Law, Information, Networks, Language, Space, Time, Media, Money, Life and Water.
Consider, for example, a Water program. In the coming decades, water will become a more pressing problem than oil, and the quantity, quality and distribution of water will pose significant scientific, technological and ecological difficulties as well as serious political and economic challenges. These vexing practical problems cannot be adequately addressed without also considering important philosophical, religious and ethical issues. After all, beliefs shape practices as much as practices shape beliefs.

A Water program would bring together people in the humanities, arts, social and natural sciences with representatives from professional schools like medicine, law, business, engineering, social work, theology and architecture. Through the intersection of multiple perspectives and approaches, new theoretical insights will develop and unexpected practical solutions will emerge.
3. Increase collaboration among institutions. All institutions do not need to do all things and technology makes it possible for schools to form partnerships to share students and faculty. Institutions will be able to expand while contracting. Let one college have a strong department in French, for example, and the other a strong department in German; through teleconferencing and the Internet both subjects can be taught at both places with half the staff. With these tools, I have already team-taught semester-long seminars in real time at the Universities of Helsinki and Melbourne.

4. Transform the traditional dissertation. In the arts and humanities, where looming cutbacks will be most devastating, there is no longer a market for books modeled on the medieval dissertation, with more footnotes than text. As financial pressures on university presses continue to mount, publication of dissertations, and with it scholarly certification, is almost impossible. (The average university press print run of a dissertation that has been converted into a book is less than 500, and sales are usually considerably lower.) For many years, I have taught undergraduate courses in which students do not write traditional papers but develop analytic treatments in formats from hypertext and Web sites to films and video games. Graduate students should likewise be encouraged to produce “theses” in alternative formats.
5. Expand the range of professional options for graduate students. Most graduate students will never hold the kind of job for which they are being trained. It is, therefore, necessary to help them prepare for work

in fields other than higher education. The exposure to new approaches and different cultures and the consideration of real-life issues will prepare students for jobs at businesses and nonprofit organizations. Moreover, the knowledge and skills they will cultivate in the new universities will enable them to adapt to a constantly changing world.

6. Impose mandatory retirement and abolish tenure. Initially intended to protect academic freedom, tenure has resulted in institutions with little turnover and professors impervious to change. After all, once tenure has been granted, there is no leverage to encourage a professor to continue to develop professionally or to require him or her to assume responsibilities like administration and student advising. Tenure should be replaced with seven-year contracts, which, like the programs in which faculty teach, can be terminated or renewed. This policy would enable colleges and universities to reward researchers, scholars and teachers who continue to evolve and remain productive while also making room for young people with new ideas and skills.

For many years, I have told students, "Do not do what I do; rather, take whatever I have to offer and do with it what I could never imagine doing and then come back and tell me about it." My hope is that colleges and universities will be shaken out of their complacency and will open academia to a future we cannot conceive.

Mark C. Taylor, the chairman of the religion department at Columbia, is the author of the forthcoming "Field Notes From Elsewhere: Reflections on Dying and Living."

http://www.nytimes.com/2009/04/27/opinion/27taylor.html?_r=2

From Battered Boxes, New Works by Photography's Old Masters

By RANDY KENNEDY

When the three weathered cardboard boxes — known collectively, and cinematically, as the Mexican suitcase — arrived at the International Center of Photography more than a year ago, one of the first things a conservator did was bend down and sniff the film coiled inside, fearful of a telltale acrid odor, a sign of nitrate decay.

But the rolls turned out to be in remarkably good shape despite being almost untouched for 70 years. And so began a painstaking process of unfurling, scanning and trying to make sense of some 4,300 negatives taken by Robert Capa, Gerda Taro and David Seymour during the Spanish Civil War, groundbreaking work that was long thought to be lost but resurfaced several years ago in Mexico City.

What the center's scholars have found among the 126 rolls over the last several months are a number of previously unknown shots by Capa, one of the founders of the Magnum photo agency and a pioneering war photographer, and by Taro, his professional partner and companion, who died in 1937 when she was struck by a tank near the front, west of Madrid. But more surprising has been the wealth of new work by Seymour, known as Chim, that was in the cases. Another of Magnum's founders, he was known not for his battle photography but for penetrating documentation of Spanish life in the shadow of war.

"This really fleshes out for the first time our picture of Chim in Spain, and the work is truly a great accomplishment," said Brian Wallis, the chief curator for the center, which is planning a retrospective of Chim's career to open in September 2010. Roughly a third of the negatives found in the cases have been determined to be by Chim (pronounced shim, an abbreviation of his real surname, Szymin), who was killed in 1956 while covering the Suez crisis. "We were bowled over by how much of his work was in this," Mr. Wallis said.

While there was some initial hope, the negatives did not end up laying to rest a question that has long hovered over Capa's career: whether he staged perhaps his most famous picture and one of the defining images of war, "The Falling Soldier," which shows a Spanish Republican militiaman reeling backward at what appears to be the instant a bullet kills him near Córdoba. The boxes contained none of the series of photographs taken that fateful afternoon of Sept. 5, 1936, though several surviving images from the sequence have been published previously, and Richard Whelan, Capa's biographer, has made a persuasive case that the picture was not faked. (A negative of the shot has never been found; it has been reproduced from two vintage prints.)

What the boxes have provided, said Cynthia Young, the curator of the center's Capa Collections, who has been most closely involved with the images, is a much deeper understanding of how Capa, Taro and Chim worked during the relatively brief period in which they were collectively creating the archetype of the modern war photographer. The find has also fleshed out important stories from the war, like Capa's coverage in March 1939 of the notorious internment camps for Spanish refugees in southwestern France, a subject that is the focus of increasing historical research.

For Capa and Taro the newly discovered negatives are providing a way to make sense of their jumbled archive of images from the Spanish Civil War, in which dates, sequences and even attributions have remained uncertain. Much of their known work from those years was organized in nine notebooks of contact prints with little identifying information. (One of the notebooks is at the center; the others are at the French national archives in Paris.)

Because the rolls in the boxes show sequential shots from much of all three photographers' most famous work from the war, it also allows scholars to "see how their eyes were working as they shot these stories," Ms. Young said. "And I really think that's the most interesting thing in this project, to see their thought process."

The job of carefully scanning all the 35-millimeter images could not begin in earnest until several months after their arrival in New York, when Grant Romer, a conservation specialist from George Eastman House in Rochester, helped develop a special holder through which to run the negatives for digital scanning without damaging them.

Even now that the images have been brought to light, the story of how they wended their way from Capa's Paris studio to Mexico has not become any clearer. From what Mr. Whelan, the biographer (who died in 2007), and other experts have pieced together, Capa apparently asked his darkroom manager to save his negatives in 1939, after Capa fled from Paris to New York. The boxes probably made their way to Marseille and at some point ended up with Gen. Francisco Aguilar Gonzalez, a Mexican diplomat stationed in the late 1930s in Marseille, where the Mexican government was helping antifascist refugees from Spain emigrate to Mexico.

The negatives also made the trip to Mexico, where after the general's death they came into the possession of a filmmaker in Mexico City, Benjamin Tarver, whose aunt was a close friend of the general. In the 1990s, Mr. Tarver made the existence of the negatives known, and in 2007, after fitful negotiations, he agreed to give them to the International Center of Photography, which was founded by Capa's brother, Cornell Capa.

In addition to new images by Chim that will be exhibited at his retrospective, the center is now planning a major exhibition of much of the work from the Mexican suitcase for sometime in 2010, Mr. Wallis said, adding: "We consider this one of the most important discoveries of photographic work of the 20th century."

http://www.nytimes.com/2009/04/30/arts/design/30capa.html?ref=arts

Preservation Group Lists Most Endangered Places

By ROBIN POGREBIN

When composing a list of the country's buildings that are most worth saving, the hangar for the Enola Gay at Wendover Airfield in Utah might not come immediately to mind.

But when the National Trust for Historic Preservation assembles its annual roster of America's most endangered historic places, it looks for more than aesthetic distinction. Each year the trust selects what it considers important examples of the nation's architectural, cultural and natural heritage that are at risk of being destroyed or irreparably damaged.

So when the trust unveils its 2009 sites on Tuesday, the hangar will be among them. It housed the Enola Gay, the plane that dropped the world's first atomic bomb used in war, on Hiroshima, Japan, in 1945, and is in critical disrepair. Other similarly less-than-glamorous locations on the list are Memorial Bridge, which for more than 85 years has connected the coastal towns of Portsmouth, N.H., and Kittery, Maine, and is now in danger of removal, and the Human Services Center in Yankton, S.D. Founded in 1879 as the South Dakota Hospital for the Insane, the institution's collection of neo-Classical, Art Deco and Italianate buildings have long stood vacant, and the state plans to tear down 11 of them.
"Buildings like that can be adaptively reused for new community purposes," said Richard Moe, president of the National Trust for Historic Preservation. "It's a mistake to allow structures to fall into disrepair or to be demolished."

The current economic downturn is a mixed blessing for endangered buildings, Mr. Moe said. Although more buildings are being neglected, fewer are threatened with demolition because development has slowed. In 22 years the trust has selected 211 sites worth saving and lost just 6 of them.
"It focuses not only local attention but national," Mr. Moe said of the list, "and helps to mobilize both human and financial resources."

The 2009 roster of buildings, 11 in all, includes Frank Lloyd Wright's Unity Temple in Oak Park, Ill., a Cubist structure made of poured concrete that has been plagued by structural problems and a lack of money for restoration. Mount Taylor in New Mexico, another trust selection, is a sacred site for American Indian tribes whose cultural and archaeological resources are threatened by uranium mining.
This year the trust made a point of highlighting the threat to Modernist buildings. Thus the inclusion of the Century Plaza Hotel in Los Angeles, where the actress Diane Keaton, a trustee of the organization, is scheduled to announce the list on Tuesday. The Century, built in the mid-'60s and designed by Minoru Yamasaki — the architect of the World Trade Center — was also chosen to focus attention on

sustainability and the need to recycle existing infrastructure. Development plans call for the hotel to be razed and replaced by two 600-foot-tall towers, one residential and one business.

Miami Marine Stadium in Virginia Key, Fla., which was completed in 1963, is another Modernist structure worthy of rescue, the trust asserts. With a cantilevered folded-plate roof, the cast-concrete stadium closed in 1992 after being damaged by Hurricane Andrew, and has since suffered from years of deterioration, vandalism and neglect.

“It’s a wonderful Modernist structure — one of a kind — that could be a catalyst for revitalizing that whole part of Miami if it were redone,” Mr. Moe said. “None of these things stand in isolation by themselves. They affect their context, they affect their surroundings.”

Rounding out the list are Ames Shovel Shops, an intact 19th-century industrial village in Easton, Mass.; the cast-iron architecture of Galveston, Tex., late-19th-century Greek Revival and Italianate buildings with ornate cast-iron storefronts; Dorchester Academy in Midway, Ga., founded in 1868 as a school for freed slaves; and Lanai City, Hawaii, built by the pineapple baron James Dole in the 1920s, which features plantation-style homes.

http://www.nytimes.com/2009/04/28/arts/design/28enda.html?ref=design

Scottish Contemporary, With International Appeal

By BENJAMIN GENOCCHIO

Of all the small and alternative art spaces across Connecticut, one of my favorites is the Center for Contemporary Printmaking in Norwalk. It is a modest little place, really a working print studio with some gallery rooms off to one side. But it is here that Anthony Kirk, the center's artistic director and master printmaker, assembles periodic exhibitions of such intelligence and quality that they rival the offerings at museums with far more substantial budgets and staff.

Take, for example, "Five Scottish Print Studios," a marvelous show of around 80 works surveying contemporary printmaking in Scotland. It is a subject that is close to the heart of Mr. Kirk, who was born in Scotland and came to the United States in the mid-1970s. He has included the work of old friends and teachers like John Bellany and William Crozier, as well as lesser-known artists who are attached to one of the five studios — Dundee Contemporary Arts, Edinburgh Printmakers, Glasgow Print Studio, Graal Press and Peacock Visual Arts of Aberdeen.

The first thing you notice is that the exhibition does not look like a "Scottish" show, which probably says as much about the internationalism of the contemporary Scottish art scene as it does about what interests artists these days.

The prints are arranged by visual similarity, allowing unexpected connections to be drawn both between artists and works. For example, Peter Howson's etching "Cleansed" (1994), showing a standing woman slumped over as if weary and in deep inner grief, is near Neil McPherson's more jovial, even surreal screen print "Portrait of a Cornish Woman With a Tattoo on Her Left Breast" (1994), in the mode of Picasso.

The downside of this arrangement is that it makes it hard to get a sense of the distinctiveness of the participating studios. Important artist groups and movements also tend to get lost in the mix. In the 1980s, for instance, a group known as the "Glasgow Boys" came out of the Glasgow School of Art and began to make powerful contemporary prints at the Glasgow Print Studio. Though many of them have work in this show, it is difficult to get any sense of what they had in common.

Some books and catalogs near the gallery entrance help to fill in the gaps. There is also a modest exhibition catalog, with an engaging personal essay by Mr. Kirk recalling school vacations spent working with his father at a coal mine in the 1960s, his early years as a printmaker at the Winchester School of Art in England, his decision to move to New York, and the process of putting together the current exhibition.

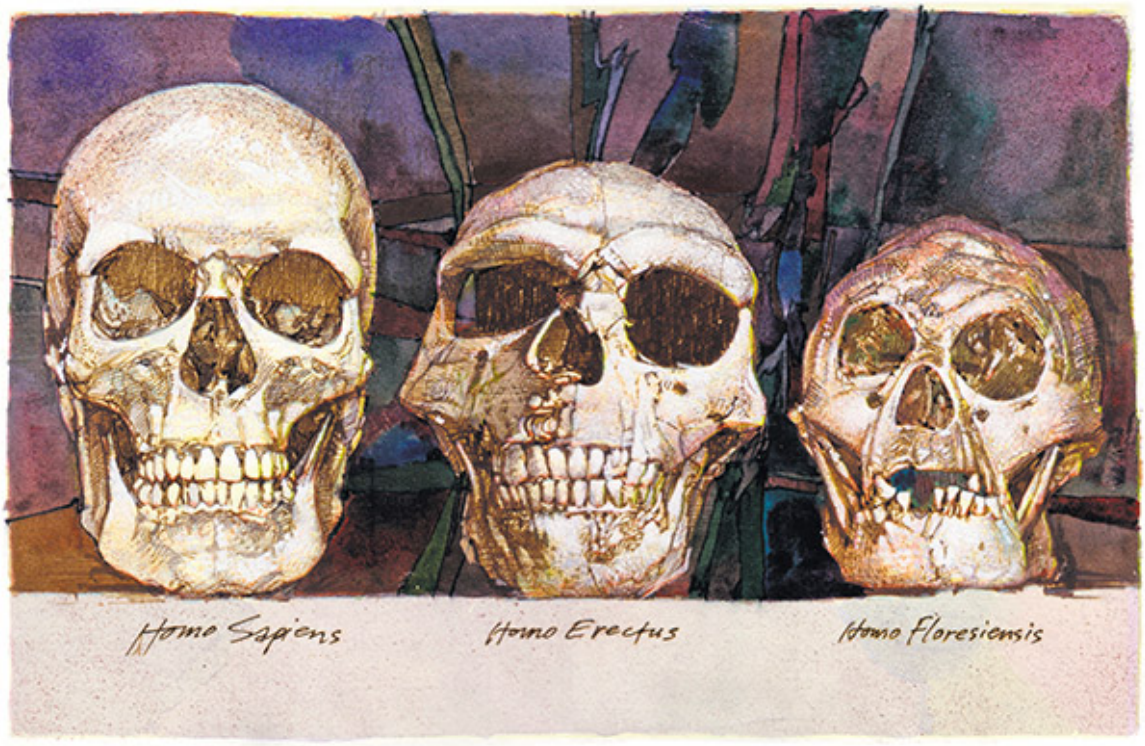
To me, the best way to view this show is simply to wander the galleries until something catches your eye. But be ready to stop constantly, for there are many beautiful prints here. Two of my favorites are Wilhelmina Barns-Graham's sensual and painterly abstract screen print "Just in Time" (1999), which

reminds me a little of the work of earlier British artists like Patrick Heron and Ben Nicholson, and a fantastic landscape by Eduardo Paolozzi, an artist associated with the birth of pop art in the 1960s.
A great many of the printmakers here are little known to Americans. Elaine Kowalsky, a Canadian-born artist who lived in London but spent time in Glasgow making prints, produced powerful images of women; Toby Paterson is a young printmaker who works in the vein of Patrick Heron. Then there is an artist who goes by the name of the Lonely Piper and makes elegant little landscape scenes filled with pathos.
Among the better known artists are Alasdair Gray, a successful novelist who makes strange, surrealistic prints that look a bit like drawings by Aubrey Beardsley, and Steven Campbell, a member of the 1980s Glasgow Boys. Take a good look at Mr. Campbell's aquatint "Natural Follies at Bee Junction" (1985) and you can see instantly why he is regarded as the most talented printmaker to come out of Scotland in decades. It is a direct, unlabored but brilliantly imaginative compilation of objects and figures in a landscape. It is also technically impressive, with the textures of the aquatint giving the image a marvelously seductive surface quality.
Also showing here are terrific prints by, among others, Robert Adam, Martin Boyce, John Byrne, Alastair Clark, Moyna Flannigan and Rosalind Nashashibi. No doubt many of them will be a revelation to visitors, as they were to me. And that is part of this show's charm — to see what we have all been missing out on.
"Five Scottish Print Studios," Center for Contemporary Printmaking, Mathews Park, 299 West Avenue, Norwalk, through May 16. Information: (203) 899-7999 or contemprints.org.

http://www.nytimes.com/2009/04/26/nyregion/connecticut/26artct.html?ref=design

A Tiny Hominid With No Place on the Family Tree

By JOHN NOBLE WILFORD



STONY BROOK, N.Y. — Six years after their discovery, the extinct little people nicknamed hobbits who once occupied the Indonesian island of Flores remain mystifying anomalies in human evolution, out of place in time and geography, their ancestry unknown. Recent research has only widened their challenge to conventional thinking about the origins, transformations and migrations of the early human family.

Indeed, the more scientists study the specimens and their implications, the more they are drawn to heretical speculation.

¶Were these primitive survivors of even earlier hominid migrations out of Africa, before Homo erectus migrated about 1.8 million years ago? Could some of the earliest African toolmakers, around 2.5 million years ago, have made their way across Asia?

¶Did some of these migrants evolve into new species in Asia, which moved back to Africa? Two-way traffic is not unheard of in other mammals.

¶Or could the hobbits be an example of reverse evolution? That would seem even more bizarre; there are no known cases in primate evolution of a wholesale reversion to some ancestor in its lineage.

The possibilities get curiouser and curiouser, said William L. Jungers of Stony Brook University, making hobbits "the black swan of paleontology — totally unpredicted and inexplicable."

Everything about them seems incredible. They were very small, not much more than three feet tall, yet do not resemble any modern pygmies. They walked upright on short legs, but might have had a peculiar gait obviating long-distance running. The single skull that has been found is no bigger than a grapefruit, suggesting a brain less than one-third the size of a human's, yet they made stone tools similar to those produced by other hominids with larger brains. They appeared to live isolated on an island as recently as 17,000 years ago, well after humans had made it to Australia.

Although the immediate ancestor of modern humans, Homo erectus, lived in Asia and the islands for hundreds of thousands of years, the hobbits were not simply scaled-down erectus. In fact, erectus and Homo sapiens appear to be more closely related to each other than either is to the hobbit, scientists have determined.

It is no wonder, then, that the announcement describing the skull and the several skeletons as remains of a previously unknown hominid species, Homo floresiensis, prompted heated debate. Critics contended that these were merely modern human dwarfs afflicted with genetic or pathological disorders.
Scientists who reviewed hobbit research at a symposium here last week said that a consensus had emerged among experts in support of the initial interpretation that H. floresiensis is a distinct hominid species much more primitive than H. sapiens. On display for the first time at the meeting was a cast of the skull and bones of a H. floresiensis, probably an adult female.
Several researchers showed images of hobbit brain casts in comparison with those of deformed human brains. They said this refuted what they called the "sick hobbit hypothesis." They also reported telling shoulder and wrist differences between humans and the island inhabitants.
Even so, skeptics have not capitulated. They note that most of the participants at the symposium had worked closely with the Australian and Indonesian scientists who made the discovery in 2003 and complain that their objections have been largely ignored by the news media and organizations financing research on the hobbits.
Some prominent paleoanthropologists are reserving judgment, among them Richard Leakey, the noted hominid fossil hunter who is chairman of the Turkana Basin Institute at Stony Brook University. Like other undecided scientists, he cited the need to find more skeletons at other sites, especially a few more skulls.
Mr. Leakey conceded, however, that the recent research "greatly strengthened the possibility" that the Flores specimens represented a new species.
At the symposium, Michael J. Morwood, an archaeologist at the University of Wollongong in Australia who was one of the discoverers, said that further investigations of stone tools had determined that hominids arrived at Flores as early as 880,000 years ago and "it is reasonable to assume that those were ancestors of the hobbits." But none of their bones have been uncovered, so they remain unidentified, and no modern human remains have been found there earlier than 11,000 years ago.
Excavations are continuing at Liang Bua, a wide-mouth cave in a hillside where the hobbit bones were found in deep sediments, but no more skulls or skeletons have turned up. Dr. Morwood said the search would be extended to other Flores sites and nearby islands.
Peter Brown, a paleontologist at the University of New England in Australia, said that his examination of the premolars and lower jaws of the specimens made it almost immediately "very, very clear that this was a hominid in the wrong place at the wrong time." The first premolars in particular, he said, were larger than a human's and had a crown and roots unlike those of H. sapiens or H. erectus.
Dr. Brown, a co-author of the original discovery report, said that no known disease or abnormality in humans could have "replicated this condition."
At first, Dr. Brown and colleagues hypothesized that the hobbits were descendants of H. erectus that populated the region and had evolved their small stature because they lived in isolation on an island. Island dwarfing is a recognized phenomenon in which larger species diminish in size over time in response to limited resources.
The scientists soon backed off from that hypothesis. For one thing, dwarfing reduces stature, but not brain size. Moreover, researchers said, the hobbit bore little resemblance to an erectus.
In an analysis of the hobbit's wrist bones, Matthew W. Tocheri of the Smithsonian Institution found that certain bones were wedge-shaped, similar to those in apes, and not squared-off, as in humans and Neanderthals. This suggested that its species diverged from the human lineage at least one million to two million years ago.
So if several lines of evidence now encourage agreement that H. floresiensis was a distinct and primitive hominid, the hobbit riddle can be compressed into a single question of far-reaching importance: where did these little people come from?
"Once you establish that this is a unique species," said Frederick E. Grine, a paleoanthropologist at Stony Brook, "then these primitive features that it has suddenly take on a profound evolutionary significance."
Scientists said in reports and interviews that they had only recently begun contemplating possible ancestries.
As a starting point, scientists rule out island dwarfing as a primary explanation. Dwarfs and pygmies are simply diminutive humans; they do not become more apelike, as the hobbits appear to be in some aspects. Besides, normal dwarfing would suggest that the hobbits presumably evolved from H. erectus, the only previous hominids identified in this part of Asia or anywhere outside Africa; the first one was discovered

in Java in the late 19th century. But research has found few similarities between the hobbit skeleton and Asian H. erectus.

If the hobbit is a throwback to much earlier hominids, scientists said, reverse evolution would be the most far-fetched explanation. Dr. Jungers, a paleoanthropologist who organized the symposium, said there were no known examples of mammals becoming significantly reduced in size and anatomy as a consequence of reverting to an ancestral form.

"Is it possible?" he asked rhetorically. "If that is the case, it is unprecedented and a tremendous discovery."

Several scientists think the answer to hobbit ancestry lies deeper in the hominid past. If this species is unlike H. erectus, it presumably descended from even earlier small-bodied migrants out of Africa that preceded erectus into Asia. Just the thought questions conventional wisdom.

Possible candidates include Homo habilis, the first and least known species of the Homo genus. The short, small-brained habilis might have emerged as early as 2.3 million years ago and lived to co-exist with the brainier, long-limbed H. erectus. At present, erectus fossils, found in the republic of Georgia and dated at 1.8 million to 1.7 million years ago, are the earliest well-established evidence for hominids outside Africa.

If hobbits resemble habilis in some respects, scientists said, it indicates that habilis or something like it possibly left Africa earlier and became the likely hobbit ancestor.

Another possible ancestor might even have been a pre-Homo species of the Australopithecus genus. The first evidence for stone toolmaking in Africa, at least 2.5 million years ago, is associated with australopithecines. Several scientists called attention to skeletal similarities between hobbits and A. afarensis, the species famously represented by the 3.2-million-year-old Lucy skeleton from Ethiopia.

The suggestion that the H. floresiensis ancestor might have reached Asia a million years before H. erectus left Africa was raised earlier this month at a meeting of the American Association of Physical Anthropologists.

And then there is the idea, raised again at the symposium, of hominid migrations out of Africa and back. Dr. Jungers advised abandoning the old image of the long-limbed H. erectus striding out of Africa in the first wave of hominids making their way in the world.

"Why think they couldn't have done it many times, even before erectus?" he said. "Other mammals have migrated in and out of Africa."

The idea revived speculation that erectus itself might have evolved in Asia from an earlier migrant from Africa, and then found its way back to the land of its ancestors. Similarly, other hominids arriving in distant parts of Asia might have churned out new species, among them the hobbits.

Robert B. Eckhardt of Penn State University, an ardent hobbit skeptic, is unyielding in his opposition to the interpretation that the Flores skull belongs to a previously unrecognized species. He insists that it will prove to be from a modern human stricken with microcephaly or a similar developmental disorder that shrinks the head and brain.

"Convincing others is much more difficult than I thought it would be at the outset," Dr. Eckhardt acknowledged in an e-mail message, "but increasingly it is becoming evident that what is at stake is not just some sample of specimens, but instead the central paradigm of an entire subfield."

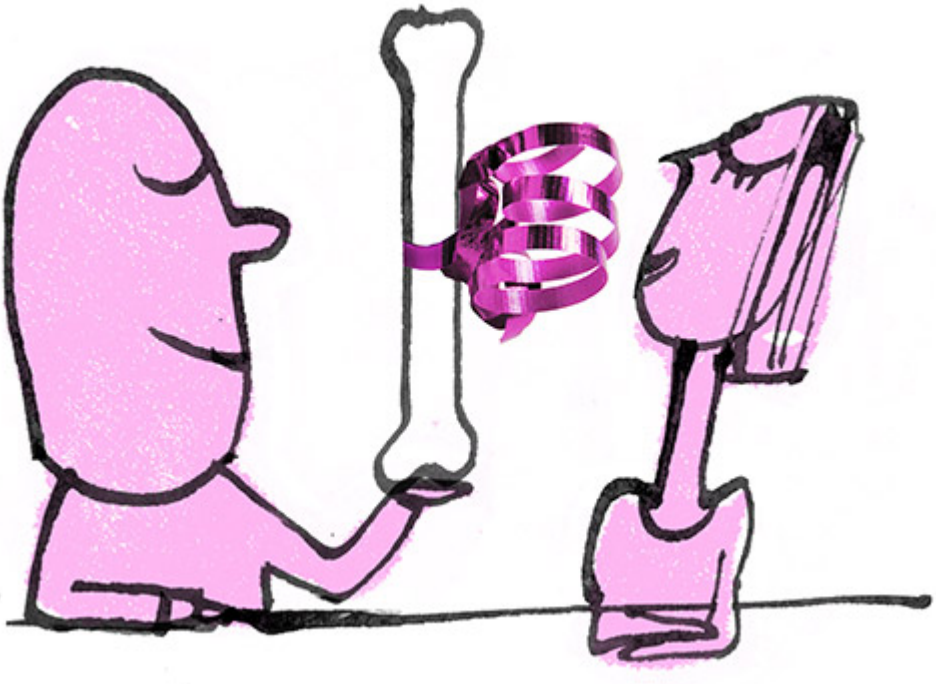
Susan G. Larson, an anatomist at the Stony Brook School of Medicine who analyzed the non-human properties of the hobbit shoulders, said in an interview that the investigations had entered "a period of wait and see."

"Someday," Dr. Larson said, "people may be saying, why was everyone so puzzled back then — it's plain to see where the little people of Flores came from."

http://www.nytimes.com/2009/04/28/science/28hobbit.html?ref=science

Bone, a Masterpiece of Elastic Strength

By NATALIE ANGIER



When Harry Eastlack was 5 years old, he broke his left leg while out playing with his sister. The fracture failed to set properly, and soon his hip and knee had stiffened up as well. Examining the boy, doctors found ominous bony growths on the muscles of his thigh. Within a few years, bony deposits had spread throughout Harry's body, infiltrating his chest, neck, back and buttocks. Surgeons tried to cut the excess bone away, only to watch it grow back thicker and more invasive than before.

By his mid-20s, his vertebrae had fused together, his torso been thrust rigidly forward and his back muscles replaced with solid bone. Finally, even his jaw locked up, and he died of pneumonia in 1973, just shy of his 40th birthday.

Mr. Eastlack had requested that his skeleton be preserved for scientific research, and today it can be seen at the Mutter Museum of the College of Physicians in Philadelphia — or rather, they can be seen. As the developmental biologist Armand Marie Leroi has observed in his book "Mutants," Mr. Eastlack's skeleton, with its "extra sheets, struts and pinnacles of bone," amounts to "that of a 40-year-old man encased in another skeleton, but one that is inchoate and out of control."

Mr. Eastlack suffered from a rare and poorly understood congenital disease called fibrodysplasia ossificans progressiva, in which cuts, bruises and trauma to the body, no matter where they occur, end up being "repaired" by cells designed for building bone. Devastating as it is, the disorder reveals fundamental features of the astonishing connective tissue that is bone. For one thing, although bone may seem like stone, it is tirelessly, ambitiously alive. In many ways, bone is more animate than the muscles and fat draped over it or the quivering visceral organs it protectively encages. It certainly can be more attuned to its surroundings.

Researchers have discovered that an impressive raft of metabolic and reproductive hormones will activate bone tissue, often at doses much smaller than what is required to arouse the breast, gonads or other organs presumed to be a hormone's principal target.

Among the most provocative revelations is that bone quickens to the touch of serotonin and oxytocin, signaling molecules more often associated with happy moods, friendship and cuddling together in a straw nest than with the integrity of the backbone.

"No organ is an island," said Gerard Karsenty, a professor of genetics and development at the Columbia University Medical Center, "and the skeleton is connected functionally to many more organs than we had anticipated."
This week, Dr. Karsenty and other prominent names in the bone business will discuss their new research and gleefully clean out their closets at the Third New York Skeletal Biology and Medicine Conference, at the Mount Sinai School of Medicine.
The Eastlack case also reveals that healthy bone is disciplined bone, with a structure enviably organized at every scale yet probed, from the caliper calibrations of femurs and phalanges down to the nano dimensions of bone's constituent atoms. "It's all in the architecture," said Robert O. Ritchie, a professor of materials science at the University of California, Berkeley, who studies bone.
Bone is built of two basic components: flexible fibers of collagen and brittle chains of the calcium-rich mineral hydroxyapatite. But those relatively simple ingredients, the springy and the salty, are woven together into such a complex cat's cradle of interdigitating layers that the result is an engineering masterpiece of tensile, compressive and elastic strength. "We only wish we could mimic it," Dr. Ritchie said.
Or at least mimic the signals that keep our 206 bones in line. Diseases of excess bone growth are rare, but bone degradation is an almost inevitable symptom of aging, and the severe form called osteoporosis is considered a major and mounting medical crisis. Unfortunately, said Dr. Mone Zaidi, a professor of medicine at Mount Sinai, "the armamentarium for osteoporosis is quite small compared to that for other age-related diseases like high blood pressure."
Behind the dissolution of bone with age is a system designed for the itinerant years of youth. The skeleton is a multipurpose organ, offering a ready source of calcium for an array of biochemical tasks, and housing the marrow where blood cells are born. Yet above all the skeleton allows us to locomote, which means it gets banged up and kicked around. Paradoxically, it copes with the abuse and resists breaking apart in a major way by microcracking constantly. "Bone microcracks, that's what it does," Dr. Ritchie said. "That's how stresses are relieved."
Bone also has a crack repair team, in every sense of the word: osteoclast cells that dig around the cracks, using acids to wipe away the old matrix, and osteoblast cells that migrate in and secrete fresh spacklings of bone. "Bone remodeling is going on simultaneously in hundreds of locations a day," Dr. Karsenty said. It's our private MASH, he said, our ambulatory surgical unit that helps keep us on our feet.
But like all forms of health care, bone repair doesn't come cheap, and maintaining skeletal integrity consumes maybe 40 percent of our average caloric budget. The costliness of the process could explain why the bone and gut appear to be hormonally synchronized, Dr. Karsenty said, controlled by a similar chemical vocabulary.
When bone needs more energy, it talks with the gut; if the gut is all spent, it's time for osteoblast furlough. One candidate cross-link between the alimental and architectural is the hormone serotonin. Reporting last November in the journal Cell, Dr. Karsenty and his colleagues showed that if they slowed the release of serotonin from the gastrointestinal tract — which generates 95 percent of the body's supply of the hormone, against 5 percent in the brain — they could prevent osteoporosis in mice, with no obvious side effects. And because the blood-brain barrier keeps the serotonin caches above and below the neck neatly compartmentalized, a similar approach might be tried in humans without inducing the sudden urge to reread "The Bell Jar."
Another potential frame-saver might be a variant of pitocin, the drug long used to induce uterine contractions and help speed up birth. This month in The Proceedings of the National Academy of Sciences, Dr. Zaidi and his colleagues showed that the hormone oxytocin stimulated bone building in mice. Pitocin is synthetic oxytocin. If our children won't support us, maybe it's time to give birth to ourselves.
This article has been revised to reflect the following correction:
Correction: April 29, 2009
The Basics column on Tuesday, about bone formation, omitted the given name and affiliation of a doctor who studies bone development. Dr. Mone Zaidi is a professor at the Mount Sinai School of Medicine and the director of the Mount Sinai Bone Program.

http://www.nytimes.com/2009/04/28/science/28angi.html?ref=science

On a Hunt for Fishless Lakes, Teeming With Life

By MURRAY CARPENTER

WASHINGTON COUNTY, Me. — Many people scour the Maine woods for lakes with big trout, but just a few seek places like this unnamed four-acre lake near the Machias River. Like thousands of other Maine lakes, it is scenic and remote, but it claims a rare distinction: it has no fish.

Amanda Shearin, a doctoral candidate at the University of Maine, hiked in through mud and over ice one recent morning to set amphibian traps in the lake's shallows. Aside from the whistling wings of a pair of common goldeneyes in flight, it was utterly quiet. But Ms. Shearin cocked an ear. "I've heard wood frogs calling at this pond in years past," she said.

Far from barren, biologists say fishless lakes are hubs of biodiversity. Lacking piscine predators, they are home to a greater abundance and variety of invertebrates than lakes with fish, and provide breeding grounds for frogs, salamanders and waterfowl. But as fish are moved around — legally by fisheries agencies, illegally by anglers and bait growers — fishless lakes are becoming increasingly rare.

Rugged and sparsely populated, the Maine woods have some of the last fishless lakes in the Northeast. Some, like this one, are kettle lakes without inlets or outlets, excavated in the eastern Maine lowlands by melting blocks of glacial ice. Others are clear tarns in high mountains, with outlets too steep for fish to ascend. Still others are simply too acidic for fish. All probably have been fishless since the glaciers receded.

Ms. Shearin's research, comparing amphibians in lakes with and without fish, is part of a series of studies to find Maine's fishless lakes and assess their ecological roles. The studies began in 1999 when Phillip deMaynadier, a biologist with the Maine Department of Inland Fisheries and Wildlife, visited two fishless lakes that were to be stocked with brook trout.

Dr. deMaynadier found frogs, salamanders and damselflies that thrive only where fish are absent. Given the apparent rarity of fishless lakes — the department knew of just 30 among Maine's 6,000 lakes — he recommended a moratorium on stocking them, pending further study.

The department enlisted Cynthia Loftin, an associate professor of wildlife ecology at the University of Maine, to find and do research on the lakes. Dr. Loftin and her students spent five years finding fishless lakes the hard way: poring over topographical maps, following hunches, and packing inflatable rafts and

gill nets high into the mountains and far into the backwoods. Then they learned to apply biology and technology to find them faster.

They found an association of six invertebrates, including several beetles and a midge that swim boldly in open water, that is found only in fishless lakes. Using the bugs as indicators (they gathered them in glow-stick-baited traps), they could quickly assess which lakes were fishless. And they could analyze sediments from lakes with fish, painstakingly searching for mandibles of the phantom midge, to see if the lakes had once been fishless.

Dr. Loftin's team then determined the physical features of fishless lakes — like smallish size and steep outlets — and used geographic modeling to find other fishless lakes. The modeling predicted that 101 of 3,281 appropriately sized lakes in likely areas would be fishless.

The researchers visited 21 of the lakes, set gill nets and found that 15 contained fish. But sediment sampling showed that nine were once fishless.

In a report to the Department of Inland Fisheries and Wildlife, Dr. Loftin and her colleague Emily Schilling estimated that 107 Maine lakes were historically fishless, and that half now contained fish. The agency is writing a policy for managing fishless lakes.

The impact of stocked trout on mountain yellow-legged frogs has prompted research on fishless lakes in California. And with international concern about amphibian declines, fishless lakes have been receiving more attention elsewhere. Dr. Schilling, an assistant research professor at the University of Maine, is now coordinating a broad analysis of fishless lakes, incorporating research from the United States, Europe and South America.

Mark McPeek, a professor at Dartmouth College, has studied fishless lakes in Michigan, Florida and New England. In a telephone interview, he said they were fast disappearing. A decade ago, Dr. McPeek often visited a fishless lake on a steep bluff above the Connecticut River in Vermont. "All of the zooplankton, all of the insects, all of the amphibians that bred there were completely different than the lake with fish that's half a mile down the road," he said. But somebody has since stocked it with carp. "Now this lake is just ruined," Dr. McPeek said.

Dr. Loftin said there was a continuum of fishless waters, with seasonally flooded vernal pools on one end and fishless lakes on the other. She said the lakes might act as refuges for some species as the climate changes. "It could be that these lakes serve as a sort of insurance policy," she said, by providing breeding areas in times of drought.

http://www.nytimes.com/2009/04/28/science/earth/28Lake.html?ref=science

Optical disc offers 500GB storage

A disc that can store 500 gigabytes (GB) of data, equivalent to 100 DVDs, has been unveiled by General Electric.

The micro-holographic disc, which is the same size as existing DVD discs, is aimed at the archive industry.

But the company believes it can eventually be used in the consumer market place and home players.

Blu-ray discs, which are used to store high definition movies and games, can currently hold between 25GB and 50GB.

Micro-holographic discs can store more data than DVDs or Blu-ray because they store information on the disc in three dimensions, rather than just pits on the surface of the disc

" **A single GE disc could be used to package up a library of high definition movies but is there pent-up consumer demand for such an offering?** "
News website Technology editor Darren Waters

The challenge for this area of technology has been to increase the reflectivity of the holograms that are stored on the discs so that players can be used to both read and write to the discs.

Brian Lawrence, who leads GE's Holographic Storage said on the GE Research blog: "Very recently, the team at GE has made dramatic improvements in the materials enabling significant increases in the amount of light that can be reflected by the holograms."

More capacity

The higher reflectivity that can be achieved, the more capacity for the disc. While the technology is still in the laboratory stage, GE believes it will take off because players can be built which are backwards compatible with existing DVD and Blu-ray technologies.

In a statement the firm said: "The hardware and formats are so similar to current optical storage technology that the micro-holographic players will enable consumers to play back their CDs, DVDs and Blu-ray discs."

"GE's breakthrough is a huge step toward bringing our next generation holographic storage technology to the everyday consumer," said Mr Lawrence in a statement.

He added: "The day when you can store your entire high definition movie collection on one disc and support high resolution formats like 3D television is closer than you think."

Micro-holographic technology has been one of the leading areas of research for storage experts for decades. Discs are seen as a reliable and effective form of storage and are both consumer and retail friendly.

However, General Electric will need to work with hardware manufacturers if it is to bring the technology to the consumer market.

The relatively modest adoption of Blu-ray discs sales globally might be an issue with some companies who believe digital distribution and cloud computing is the long-term answer to content delivery and storage.

"This is truly a breakthrough in the development of the materials that are so critical to ultimately bringing holographic storage to the everyday consumer," said Mr Lawrence.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/8021012.stm

Published: 2009/04/27 15:49:46 GMT

Child behaviour 'linked to sleep'

A good night's sleep could reduce hyperactivity and bad behaviour among children, a Finnish study reports.

It has been suggested that some children who lack sleep do not appear tired, but instead behave badly.

Of the 280 examined in the Pediatrics study, those who slept for fewer than eight hours were the most hyperactive.

Experts said adequate sleep could improve behaviour in healthy children and reduce symptoms of attention deficit hyperactivity disorder (ADHD).

It is recognised that chronic sleep deprivation is a problem for many adults in Western countries and that it can have consequences for their health and daily life.

The team behind this research said not enough was understood about the role of sleep in children's lives but it has been estimated that a third of US children do not get enough sleep.

Monitoring

In this research, the team from the University of Helsinki and Finland's National Institute of Health and Welfare studied 280 healthy children aged seven or eight.

They wanted to see if those healthy children who slept the least were the most likely to display the kind of symptoms associated with ADHD.

None of the children studied had the attention disorder.

" **There is a lot of commonality between the symptoms of a tired child and the symptoms of a child with ADHD** "
Neil Stanley, Sleep expert

Parents filled in questionnaires about their children's usual sleeping habits and then noted how long their children slept for over seven nights.

The children also wore devices called actigraphs, which measure movement, to monitor how long they actually rested for.

Parents' estimates of sleep duration were longer than the actigraph measurements, which the researchers say could be because they measured from bedtime or because they assumed their children were asleep when they were simply lying awake in bed or reading.

The parents were also asked about their children's behaviour, using measures normally used to diagnose ADHD.

The children whose average sleep duration as measured by actigraphs was shorter than 7.7 hours had a higher hyperactivity and impulsive behaviour score.

They also had a higher ADHD symptom score overall.

'Sleep needs differ'

Dr Juulia Paavonen, who led the study, said: "We were able to show that short sleep duration and sleeping difficulties are related to behavioural symptoms of ADHD.

"The findings suggest that maintaining adequate sleep schedules among children is likely to be important in preventing behavioural symptoms.

" **Even 30 minutes per night has been shown to give a major improvement** "
Dr Juulia Paavonen, Finnish National Institute of Health and Welfare

"It may well be that inadequate sleep is increasing some of the behavioural problems that have been seen in children with attention deficit disorders."

Dr Paavonen said further studies were needed to confirm the link.

And she advised parents that, even though the study suggested fewer than eight hours sleep could be problematic, it was not a figure everyone should aim for.

"Sleep needs differ between individuals. The only way to take care that a particular child has enough sleep is to see if they seem to have a problem with short sleep.

"But even [an extra] 30 minutes per night has been shown to give a major improvement in objective cognitive tests, improving reaction times, impulsivity and attention spans."

Sleep expert Neil Stanley, of the University of East Anglia, said: "It has been acknowledged for a while now that there is a lot of commonality between the symptoms of a tired child and the symptoms of a child with ADHD."

He said parents needed to recognise that sleep was important for children.

"These things have been lost at a time when ADHD is increasing.

"How much of what is diagnosed as ADHD is something that can be modified or improved, or even totally cured by a more rigid sleep pattern?

"Maybe parents should try and get sleep sorted out. If the child is still showing symptoms, then that's probably the time to look at pharmacological interventions."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8016531.stm

Published: 2009/04/27 23:08:16 GMT

Weak universities 'should shut'

Struggling universities should be allowed to close or be taken over by the private sector, says a think tank.

Policy Exchange says that the government should accept the idea that universities could go out of business.

Universities receive £8bn in public money, but they face no threat of closure if they fail, says the report.

Anna Fazackerley, head of education at the think tank, says the culture of saving universities means they are "unable to learn lessons from failure".

The report, Sink or Swim? Facing up to failing universities, says that there has been a deeply-embedded assumption that universities will always be "shored up" regardless of their difficulties.

'No-fail culture'

"The idea of a university going to the wall is one that we have steadfastly ignored in Britain for many years," says the report.

It argues that with such substantial public investment in higher education, there needs to be more public accountability from universities.

The "no-fail culture" means that there is no real market in higher education, says the report.

"An environment in which all vice-chancellors and governors know that if they get into trouble they will be bailed out can only encourage bad practice," the report concludes.

And with the recession putting pressure on public and private funding, the think tank says that the prospect of a university having to close down is "a nettle that we must finally grasp".

It highlights the financial dependency on the higher fees paid by overseas students of many institutions and the serious risks that could follow if there were any decline in numbers.

It says there are universities in which income from overseas student fees now makes up the majority of student fee revenue.

There are examples when universities get into financial problems, says the report, such as London Metropolitan University having to pay back more than £50m in funding.

Self-regulating

But the report also recognises the difficulties in considering closure.

Apart from the threat to individual students and academic jobs, shutting a university would create political and economic difficulties.

Outside London, universities have become major employers in their local area, and any closure threat will be a major issue for the local economy, says the report.

The report also suggests that there are ambiguities in trying to balance the need to deliver value for money for taxpayers while protecting the self-regulating status of universities.

Paul Marshall, executive director of the 1994 Group of research-intensive universities, says the role of the funding council as "market regulator" should not be "weakened or superseded".

"It should be the role of the funding councils and government to set the framework in which competition takes place, but, beyond this, autonomous higher education institutions must have the freedom to find their own positions, and indeed succeed or fail, within this market place."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/8016178.stm

Published: 2009/04/24 11:30:25 GMT

Against Readings

By MARK EDMUNDSON

If I could make one wish for the members of my profession, college and university professors of literature, I would wish that for one year, two, three, or five, we would give up readings. By a reading, I mean the application of an analytical vocabulary — Marx's, Freud's, Foucault's, Derrida's, or whoever's — to describe and (usually) to judge a work of literary art. I wish that we'd declare a moratorium on readings. I wish that we'd give readings a rest.

This wish will strike most academic literary critics and perhaps others as well as — let me put it politely — counterintuitive. Readings, many think, are what we do. Readings are what literary criticism is all about. They are the bread and butter of the profession. Through readings we write our books; through readings we teach our students. And if there were no more readings, what would we have left to do? Wouldn't we have to close our classroom doors, shut down our office computers, and go home? The end of readings, presumably, would mean the end of our profession.

So let me try to explain what I have in mind. For it seems to me that if we kicked our addiction to readings, our profession would actually be stronger and more influential, our teaching would improve, and there would be more good books of literary criticism to be written and accordingly more to be read.

In my view — a view informed by, among others, William Blake, Ralph Waldo Emerson, and Matthew Arnold — the best way to think of a literary education is as a great second chance. We all get socialized once. We spend the first years of our lives learning the usages of our families, our neighborhoods, our religions, our schools, and our nations. We come to an understanding of what's expected: We come to see what the world takes to be good and bad, right and wrong. We figure out ways to square the ethics of our church with the ethics of our neighborhood — they aren't always the same, but one reason that religions survive and thrive is that they can enter into productive commerce with the values present in other spheres of life. Kids go to primary school so that they can learn their ABC's and math facts, certainly. But they also go to be socialized: They go to acquire a set of more or less public values. Then it's up to them (and their parents) to square those values with the home truths they've acquired in their families. Socialization isn't a simple process, but when it works well, it can produce individuals who thrive in themselves and either do no harm to others or make a genuine contribution to society at large.

But primary socialization doesn't work for everyone. There are always people — how many it's tough to know, but surely a minority — who don't see their own natures fully reflected in the values that they're supposed to inherit or assume. They feel out of joint with their times. The gay kid grows up in a family that thinks homosexuality is a sin. The young guy with a potent individualistic streak can't bear the drippy collectivism foisted on him by his ex-hippie parents and his purportedly progressive school. The girl who is supposed to be a chip off the old legal block and sit some day on the Court only wants to draw and paint; the guy destined (in his mom's heart) for Princeton is born to be a carpenter and has no real worldly ambitions, no matter how often he's upbraided.

To be young is often to know, or to sense, what others have in mind for you and not to like it. But what is harder for a person who has gone unhappily through the first rites of passage into the tribe is to know how to replace the values she's had imposed on her with something better. She's learned a lot of socially sanctioned languages, and still none of them are hers. But are there any that truly might be? Is there something she might be or do in the world that's truly in keeping with the insistent, but often speechless, self that presses forward internally?

This, I think, is where literature can come in — as can all of the other arts and in some measure the sciences, too. By venturing into what Arnold memorably called "the best that has been known and thought," a young person has the chance to discover new vital possibilities. Such a person sees that there are other ways of looking at the world and other ways of being in the world than the ones that she's

inherited from her family and culture. She sees, with Emily Dickinson, that a complex, often frayed, often humorous dialogue with God must be at the center of her life; she sees, with Charles Dickens, that humane decency is the highest of human values and understands that her happiness will come from shrewdly serving others; she likes the sound of Blake and — I don't know — forms a better rock band than the ones we've been hearing for the last decade and more; he seconds Samuel Johnson and Edmund Burke and becomes a conservative, in his way twice wiser than NPR-addicted, Prius-proselytizing Mom and Dad.

In short, the student reads and feels that sensation that Emerson describes so well at the beginning of "Self-Reliance": "In every work of genius we recognize our own rejected thoughts; they come back to us with a certain alienated majesty." The truth of what we're best fit to do is latent in all of us, Emerson suggests, and I think this to be right. But it's also true that we, and society, too, have plenty of tricks for keeping that most important kind of knowledge out of reach. Society seems to have a vested interest in telling us what we should do and be. But often its interpretation of us — fed through teachers and guidance officers and priests and ministers and even through our loving parents — is simply wrong. When we feel, as Longinus said we will in the presence of the sublime, that we have created what in fact we've only heard, then it's time to hearken with particular attention and see how this startling utterance might be beckoning us to think, or speak, or even to live differently.

Everyone who teaches literature has probably had at least one such golden moment. I mean the moment where, reading casually or reading intently, being lazy or being responsive, one is shocked into recognition. "Yes," one says, "that's the way it really is." Then often, a rather antinomian utterance comes: "They say it's not so, but I know it is. I always have."

One of my own such moments occurred reading *The Autobiography of Malcolm X.* It didn't really figure: That shouldn't have been the book (as it was at least for a little while) for a white, Irish-Catholic kid growing up outside of Boston. What Malcolm had to say about race resonated with me: There was a low-grade race war on in my school at the time, and he changed my thoughts about it pretty directly. In sum, I began to see how scary it must be to be black in America, and to be in real danger much of the time from white officials and white cops and white kids (kids not altogether unlike me and my pals).

But what really struck me in that book, oddly enough, was Malcolm's hunger for learning. By now, nearly everyone knows the story of how Malcolm, in prison, found himself unfit for the arguments that proliferated in the prison yard (or at least one quadrant of it) and took in all subjects under the moon and sun: race, sex, politics, history. He had opinions, but he couldn't back them up. He had almost no facts in his mental files. The answer was simple: He needed to start reading. So he loaded his cell with meaty works from the prison library. But of course, smart as the then Malcolm Little was, he hadn't had much formal education, and the books were loaded with words he didn't understand, placed like landmines in every paragraph. He looked them up in the dictionary, but there were simply too many of them. In the process of running around in the dictionary, he'd forget what the paragraph at hand was supposed to be about.

But this didn't induce him to give up. Instead, Malcolm sat down with a dictionary and a notebook and began copying down the dictionary — starting maybe with aardvark and moving on down the line. It took a while and it wasn't the most scintillating of pastimes, but when it was over, Malcolm Little could read.

And he read ferociously. The whole world of thought came into being for him: history, philosophy, literature, and science. He vowed then that he would be a reader for the rest of his life, a learner; and in time he would vow to use his book-won knowledge, along with a considerable quotient of street-smarts, to help himself through life and to do what he could for his people. In the beginning, doing what he could for black people meant bedeviling the white man; in time, it meant doing his part to serve all of humanity.

I was thrilled to read this. It turned out that I — despite being about as impatient with formal schooling as Malcolm was — had some intellectual aspirations, too. I was curious about things, after my fashion. Malcolm was black, I was white. Still, my 17-year-old self saw him as someone I could, in certain

regards, try to emulate. I could read to satisfy my thirst for knowledge; I could use what I learned to make my life a little better, and maybe help some other people along the way. It was an unlikely conversion experience, maybe. But ultimately that's what it was.

I suspect that virtually everyone who teaches literature has had such an experience and maybe more than one. They've read Emerson or Orwell or Derrida or Woolf, and been moved to change the way they do what they do — or they've chosen another way of life altogether. And even if they don't change, they've had the chance to have their fundamental values challenged. Sometimes a true literary education appears to leave a student where he was at the beginning. But that state is only apparent. Confronted by the best that's been thought and said, he's gotten to reconsider his values and views. What was once flat dogma turns into lively commitment and conviction.

I think that the experience of change is at the heart of literary education. How does it come about? For me, it had a long foreground, to be sure, but most immediately I was guided by a teacher. He told me that I — I in particular — might get something worth keeping out of *The Autobiography of Malcolm X.* And I suspect that's how many of us teachers found the books that have made us who we are. Teachers who've been inspired by great works have been moved to pass the gift on. "What we have loved, others will love," says Wordsworth, addressing his friend Coleridge in *The Prelude,* "and we will teach them how."

I think that the highest objective for someone trying to provide a literary education to students is to make such moments of transformation possible. Teachers set the scene for secular conversion. These conversions may be large scale — like the one that Whitman seems to have undergone when he read Emerson's "The Poet," and realized that though Emerson could not himself become the American poet prophesied in the essay, he, Walt Whitman, actually could. But the changes that literary art brings can be relatively minor, too. Reading a book may make a person more receptive to beauty than he otherwise would have been; might make him more sensitive to injustice; more prone to be self-reliant. Granted, books can have negative effects, too. One has read *Don Quixote;* one has read *Madame Bovary.* But a prerequisite for sharing literary art with young people should be the belief that, over all, its influence can be salutary; it can aid in growth. No one would teach history, after all, if he believed that all, or most, forms of historical knowledge were destructive deceptions; one would not teach music if one felt, as Plato did, that most of it disrupts the harmony of the soul.

I said that transformation was the highest goal of literary education. The best purpose of all art is to inspire, said Emerson, and that seems right to me. But that does not mean that literary study can't have other beneficial effects. It can help people learn to read more sensitively; help them learn to express themselves; it can teach them more about the world at large. But the proper business of teaching is change — for the teacher (who is herself a work in progress) and (pre-eminently) for the student.

Nor do I think that everyone who picks up a book must seek the sublime moment of unexpected but inevitable connection. People read for diversion; for relaxation; to inform themselves; to stave off anxiety in airplanes, when the flight attendant is out of wine and beer. A book can make a good door stop; and if you find yourself especially angry at the cat, have a good throwing arm, and a good angle — well, there's no end of uses for a book. But if you're going to take a book into a room, where the objective is to educate people — education being from the Latin *educere,* meaning "lead out of" and then presumably toward something — then you should consider using the book to help lead those who want to go out from their own lives into another, if only a few steps.

If this is what you want to do, then readings will only get in your way. When you launch, say, a Marxist reading of William Blake, you effectively use Marx as a tool of analysis and judgment. To the degree that Blake anticipates Marx, Blake is prescient and to be praised. Thus the Marxist reading approves of Blake for his hatred of injustice; his polemic against imperialism; his suspicion of the gentry; his critique of bourgeois art as practiced by the likes of Sir Joshua Reynolds. But Blake, being Blake, also diverges from Marx. He is, presumably, too committed to something akin to liberal individualism; he doesn't understand the revolutionary potential latent in the proletariat; he is, perhaps, an idealist, who believes that liberation of consciousness matters more, or at least must precede, material liberation; he has no clear theory of

class conflict. Thus Blake, admirable as he may be, needs to be read with skepticism; he requires a corrective, and the name of that corrective is Karl Marx. Just so, the corrective could be called Jacques Derrida (who would illuminate Blake the logocentrist); Foucault (who would demonstrate Blake's immersion in and implicit endorsement of an imprisoning society); Kristeva (who would be attuned to Blake's imperfections on the score of gender politics), and so on down the line. The current sophisticated critic would be unlikely to pick one master to illuminate the work at hand — he would mix and match as the occasion required. But to enact a reading means to submit one text to the terms of another; to allow one text to interrogate another — then often to try, sentence, and summarily execute it.

The problem with the Marxist reading of Blake is that it robs us of some splendid opportunities. We never take the time to arrive at a Blakean reading of Blake, and we never get to ask whether Blake's vision might be true — by which I mean, following William James, whether it's good in the way of belief. The moment when the student in the classroom, or the reader perusing the work can pause and say: "Yes, that's how it is; Blake's got it exactly right," disappears. There's no chance for the instant that Emerson and Longinus evoke, when one feels that he's written what he's only read, uttered what he's only heard.

Nor, it's worth pointing out, does Marx get much real opportunity here either. He's assumed to be a superior figure: There are in fact any number of Marxist readings of Blake out there; I know of no Blakean readings of Marx. But the student who has heard the teacher unfold a Marxist reading of a work probably doesn't get to study Marx per se. He never gets to have a potential moment of revelation reading *The Manifesto* or *The Grundrisse.* Marx too disappears from the scene, becoming part of a technological apparatus for processing other works. No one asks: "Is what Marx is saying true?" "Is Foucault onto something?" "Is what Derrida believes actually the case?" They're simply applied like paint to the side of a barn; the paint can go on roughly or it can go on adroitly, with subtle variations of mood and texture. But paint is what it is.

It should be clear here that my objection isn't to theoretical texts per se. If a fellow professor thinks that Marx or Foucault or Kristeva provides a contribution to the best that has been thought and said, then by all means read and study the text. (I've worked on these figures with students and not without profit.) But the teacher who studies, say, Foucault probably needs to ask what kind of life Foucault commends. Is it one outside of all institutions? Is it one that rebels against all authority? Can that life be in any way compatible with life as a professor or a student? These are questions that are rarely asked about what are conceived of as the more radical thinkers of the era. It is not difficult to guess why this is so.

I've said that the teacher's job is to offer a Blakean reading of Blake, or an Eliotic reading of Eliot, and that's a remark that can't help but raise questions. The standard for the kind of interpretation I have in mind is actually rather straightforward. When a teacher admires an author enough to teach his work, then it stands to reason that the teacher's initial objective ought to be framing a reading that the author would approve. The teacher, to begin with, represents the author: He analyzes the text sympathetically, he treats the words with care and caution and with due respect. He works hard with the students to develop a vision of what the world is and how to live that rises from the author's work and that, ultimately, the author, were he present in the room, would endorse. Northrop Frye does something very much like this in his book on Blake, *Fearful Symmetry;* George Orwell achieves something similar in his famous essay on Dickens. In both cases, the critic's objective is to read the author with humane sensitivity, then synthesize a view of life that's based on that reading. Schopenhauer tells us that all major artists ask and in their fashion answer a single commanding question: "What is life?" The critic works to show how the author frames that query and how he answers it. Critics are necessary for this work because the answers that most artists give to major questions are indirect. Artists move forward through intuition and inference: They feel their way to their sense of things. The critic, at his best, makes explicit what is implicit in the work.

This kind of criticism is itself something of an art, not a science. You cannot tell that you have compounded a valid reading of Dickens any more than that you have compounded a valid novel or a valid play. When others find your Dickensian endorsement of Dickens to be of use to them, humanly,

intellectually, spiritually, then your endorsement is a success. The desire to turn the art of reading into a science is part of what draws the profession to the application of sterile concepts.

Perhaps an analogy will be helpful. Let us say that a friend of ours has been seriously ill, or gone through a bad divorce, or has fallen wildly, unexpectedly in love. The friend tells us all about it, from beginning to end, with all the sensitivity she can muster. The story is long and complex, and laced with nuance. We listen patiently and take it in. Later on we're faced with explaining this situation to a third person, a mutual friend of us both. Our confiding friend, our first one, wants this to happen: She wants her friends to know the story. How do we proceed? Surely we proceed as sensitively and humanely as possible. We honor our first friend's way of understanding the illness or the love affair. If we are a good friend, we tell the story such that, were the first friend there in the room, she would nod with approval and gratitude.

We may not believe the first friend's entire sense of the story. We may have a different idea of what happened and why. But we honor our first friend by keeping true to her insofar as we can. We do not, say, begin with a Freudian or Marxist reinterpretation of what it is she has told us. If we do, we are no friend at all. We have not given someone we care about due consideration.

Just so, we need to befriend the texts that we choose to teach. They too are the testaments of human beings who have lived and suffered in the world. They too deserve honor and respect. If you have a friend whose every significant utterance you need to translate into another idiom — whose two is not the real two, as Emerson says — then that is a friend you need to jettison. If there are texts that you cannot befriend, then leave them to the worms of time — or to the kinder ministrations of others.

In a once-famous essay, "Against Interpretation," Susan Sontag denounced interpretation and called for an "erotics of art." She wanted immersion in the text, pleasure, the drowning of self-consciousness. She sought ecstatic immediacy. To be against readings, as I am, is not to be against interpretation, and it is not to be against criticism. If interpretation means the work, often difficult, often pleasurable, of parsing the complexities of meaning a given text offers, then interpretation is necessary before we decide what vision of the world the text endorses.

To be against readings is also not to be against criticism. Once the author's vision of what Stevens calls "How to Live, What to Do" is made manifest, it's necessary to question it. In time, I learned to ask whether Malcolm X's views about Jews and women were conducive to a good life for anyone. His sense of race relations, early and late in the book, also needed some examination and some skeptical questioning. But this sort of questioning needs to occur once the author's vision is set forth in a comprehensive, clear, sympathetic manner. Criticism is getting into skeptical dialogue with the text. Mounting a conventional academic reading — applying an alternative set of terms — means closing off the dialogue before it has a chance to begin.

You may find that after you've listened to your friend's story about her love affair or her divorce that you can't buy everything she says. Her vision is self-idealizing or skewed. Then, as a friend, you need to bring your reservations forward and to discuss them with her. So it is with the text: The teacher and students inquire into it, and often they too answer in its behalf. But it all begins with a simple gesture. It all begins by befriending the text.

That gesture of befriending should have a public as well as a classroom dimension. The books that we professors of literature tend to write now are admirable in many ways. They are full of learning, hard work, honesty, and intelligence that sometimes, in its way, touches on brilliance. But they are also, at least in my judgment, usually unreadable. They are composed as performances. They are meant to show, and often to show off, the prowess of the author. They could not conceivably be meant to provide spiritual or intellectual nourishment. No one could read a representative instance of such writing and decide based on it to change her life. Our books are not written from love, but from need.

I think that it is possible to write books and essays in behalf of literature that will demonstrate its powers of renovation and inquire into the limits of those powers. Such books can and should be inspiring not only to members of the profession but to educated (or self-educated) and curious members of the general public who are willing to do some hard intellectual work. As a profession, our standing in and impact upon society beyond our classrooms now is minuscule. Yet we are copiously stocked with superb talent: Some of the best young minds in America continue to be drawn to the graduate study of literature. But unless we as a profession change our ways and stop seeking respectability and institutional standing at the expense of genuine human impact, they are destined, as Tennyson has it, to rust unburnished, and that's a sorry fate for them and for all of us.

One must admit that it's possible to develop too exalted a sense of the transforming powers of literature and the other arts. What worked for me and you and you may not have a universal application. It's probable that most people will be relatively content to live within the ethical and conceptual world that their parents and their society pass on to them. Burke and Johnson thought of common-sense opinion as a great repository of wisdom stored through the ages, augmented and revised through experience, trial and error, until it became in time the treasure of humanity. Perhaps the conservative sages were right. But there will always be individuals who cannot live entirely by the standard dispensation and who require something better — or at least something else. This group may be small (though I think it larger than most imagine), but its members need what great writing can bring them very badly indeed. We professors of literature hold the key to the warehouse where the loaves lie fresh and steaming, while outside people hunger for them, sometimes dangerously. We ought to do all we can to open the doors and dispense the bread: We should see how far it'll go.

Mark Edmundson is a professor of English at the University of Virginia. He is author of The Death of Sigmund Freud: The Legacy of His Last Days, *published in 2007 by Bloomsbury.*

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Why we read

Writers share their stories of what drew them into the pages of books and the escapes, surprises and solace they find there.

April 26, 2009

There's a book I don't remember well, though I can remember precisely where I found it in my elementary school library -- three yards to the right of the door, in the middle of the third shelf from the floor.

I was, and remain, a compulsive reader. Back then, I read on the school bus, at the bus stop in the cold, at the dinner table, beneath the sheets and for hours sometimes in the only room with a door that locked, the bathroom, despite my sister's pounding. This book was about a solitary little boy who, as I did, had a nervous habit of tapping everything he touched, and counting the combinations of taps. One day, he tapped a wall of stone. A door appeared. Behind it was a different world, not better really, but brighter and less dull. I read for the same reason that he tapped: to look for doors, to push through walls.

-- Ben Ehrenreich is the author of the novel "The Suitors."

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Confession: I am an abuser of books. I break their spines; I underline passages with felt-tip pen. Once, on vacation, I actually dropped Joyce Maynard's delectable "Where Love Goes" -- a beach-book "Anna Karenina" that I like to re-read every three years -- into the Jacuzzi. For my books, it's spring break at Ft. Lauderdale and they're scared. This is all to the horror of a fusty male friend who keeps his British first editions in a humidity-controlled room, as though they were wine. I see now, though, that my 7- and 8-year-old daughters have caught their mother's bad habit. Across the back seat of our filthy wagon are capsized or spread-eagled "Goosebumps," Jenny B. Joneses, "Beastmasters." They are smeared in juice and Cheetos, and, to my horror recently, I saw this terrifying pink thing called "The Puppies of Princess Place" covered in ants. But, as my girls pointed out, ants like a good read too. Indeed.

-- Sandra Tsing Loh is the author of "Mother on Fire."

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One of the best ways to read is to re-read. Because sometimes it requires too much courage to pick up a new book.

My literary hedges against depression:

"Brideshead Revisited," by Evelyn Waugh. I love these characters as if they were my own crazy family. Why would I, from a clan of buttoned-down Dutch Protestants, be so attracted to insane English Catholics? I only know that when I am low, the mysteries of the loves (and hates!) in this book fill me with hope. And Waugh's similes are magician's tricks.

"The Complete Adventures of Sherlock Holmes," by Arthur Conan Doyle. Just the sight of this fat book lifts my spirits. In the days when I could hide when I felt low (before motherhood, before e-mail, before cellphones), this was what I would repair to bed with. These days I just sneak in a story or two.

Then, when I am too depressed to get out of bed, I read cookbooks.

-- Sonja Bolle, former Los Angeles Times book editor, writes Word Play, a column about children's books.

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It was Camilo who gave me the book. He is dead now. He was killed at the start of the Nicaraguan insurrection that toppled the 45-year-old Somoza dynasty. We were both young. We were both aware that our country was in trouble and that all the civic avenues to change were closed: Elections were rigged, and the military captured, tortured and killed anyone who dared express opposition. Camilo showed up one day at my office with a worn-out copy of Frantz Fanon's "The Wretched of the Earth." The Algerian author wrote of colonialism and struggle, but his book made me realize that we Nicaraguans had no alternative but to fight the dictator. The words on the page were like hands shaking me awake. The images I had collected from living in a country where social injustice and dictatorship had cut short so many lives came galloping into my mind. I knew I couldn't remain indifferent. Shortly afterward, I joined the Sandinista guerrillas. I remember that book often. I remember the rage but also the courage it made me feel. Books have the power to be the light we are seeking at crucial moments in our lives. Reading helps us realize we are not alone, that we can change our circumstances and even achieve the impossible. I named my son Camilo in memory of the dead friend who gave me that book.

-- Gioconda Belli is the author of "Infinity in the Palm of Her Hand, a novel of Adam and Eve."

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Book City

I'm a reader because I grew up in Los Angeles,

most readerly city I know

A city of bookshops then,

all those sun-faded, two-tone bookmarks with no area codes:

raffish Papa Bach,

stately Hunter's,

the Duttonses, of blessed memory,

Acres of Books, a penicillin colony in every binding,

once-starry Stanley Rose,

the Crowns,

bottom-feeders, but they bought the back page every week,

righteous Midnight Special,

those mayflies, Urban Inversion and Butler Gabriel,

quixotic L.A.: The Bookstore,

and Chatterton's, prostrate at the end

But no less a city of bookstores now:

savvy Diesel,

impossible Metropolis,

Williams' of San Pedro, 100 this year,

Book Soup and Village, ineradicable,

Libreria Martinez, barbershop no more,

books and music in sublime Counterpoint,

newborn Stories of Echo Park,

and Skylight,

soul risen from Chatterton's body

All these and so many others

sanctuaries from speed

havens for mavens

like the city

clinging to a strand.

-- David Kipen, author of "The Schreiber Theory," directs the NEA's Big Read program.

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Iread because it is one of the very few satisfying escapes from reality that isn't fattening and doesn't destroy brain cells.

-- Amy Koss is the author of the young adult novel "Side Effects."

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When I was a kid, the greatest thing about reading was that it made the world so much more sympathetic. The bully around the corner, the mouthy girl in class, the recluse nobody talked to -- I understood them all as composites of characters who lived in the stories of Louisa May Alcott, Beverly Cleary, Charles Dickens, Norman Juster, Aesop, the brothers Grimm. Every two weeks, my mother took me to a library to stock up on a new set of books, and I looked forward to those visits the way I looked forward to parties or social engagements. The library was where I made my best friends.

There's a genuine community of reading out there that transcends a lot of differences. Even if you're into

James Baldwin and somebody else is into William F. Buckley, you can always argue ideas. Curiosity and critical thinking put you in the same house, if not always the same room.

Much is made about the cultural relevance of books, about whether they speak to a child's background or view of the world. I understand the concern. But books are ultimately about stimulating imagination and broadening a worldview. In my South-Central neighborhood, Dickens more than did the job.

-- Erin Aubry Kaplan is a Los Angeles journalist.

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Ithink of my car as a literary tabernacle. Sometimes I listen to music, sometimes news, but most often my automobile is where I lose myself in the written word. I savored nearly all of Anne Tyler's novels on audiotapes, and readily recall the vivid scenes I imagined listening to Tom Wolfe's "A Man in Full." I drove to San Diego once with Amy Tan reading to me from "The Bonesetter's Daughter," heading back home with John Updike's "Rabbit" Angstrom and friends as companions. My favorite audio reading experience, however, was listening to an unabridged recording of A. Scott Berg's biography, "Lindbergh." For several weeks, Charles Lindbergh and I prepared for his New York-to-Paris journey together. The day his small plane finally touched down in Paris, I was so choked up, I actually had to pull off the freeway.

-- Barbara Isenberg is the author of "Conversations with Frank Gehry."

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When I moved here in the summer of 1987 from the East Coast, several friends warned me: "You'll be miserable. You read; they don't."

They were partially right -- I was miserable -- but not for the reason they assumed: I missed snow. But the reading was never a problem. They -- we -- read plenty here. The libraries are well-used, now more than ever in this economy. And people who can afford it continue to buy books.

"It's Hollywood," one of the East Coasters cackled. "It's all those agents and directors and producers, sending their assistants out to find books they can turn into movies. They're not reading. Their grunts are."

Those folks probably do account for some percentage of area sales. But the myriad folks reading as they sit on park lawns, the ones with their noses in books while they wait for the takeout lines to inch forward at lunch? The population of readers on coffeehouse patios? They can't all be development gremlins.

So, fine: We'll own up to the have-a-nice-day stereotype, but don't try slapping us with "they don't read." We do. We just have the option of doing it outdoors for more months of the year.

-- Karen Grigsby Bates is an L.A.-based correspondent for NPR News.

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We read to free ourselves from the grind and the misery and big ticking time-bomb questions of life. We read for the same reason we walk alone in the woods or squeeze our ears between headphones. We all need contemplative time, time away, time in another world altogether. For me, that happens when I pick up a good book -- or, for that matter, a good newspaper.

-- T.C. Boyle is the author of "The Women: A Novel."

a

When I was 9, I was sent to a boarding school run by Catholic nuns. I hated it and missed my family terribly. But going home was not an option because my father was working in an oil field in Assam. I cried myself to sleep every night and awoke with a hollow feeling in my stomach. The only time I felt happy was when I borrowed a book from the library and escaped into it. Reading helped me survive that traumatic year. By the time my father was posted to a big city and I returned home, I was hooked.

-- Chitra Divakaruni is the author of "Palace of Illusions."

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Ionce had a stepfather with a head like a badly stitched football, who would get drunk and leer and say, "If I were a gopher, I'd gopher you." Or sing "Pennies from Heaven," because my nickname was Penny at the time. I had a boyfriend who clacked his tongue against the roof of his mouth and made the most unnerving sound. I had a whole set of relatives who loved to start sentences with, "The trouble with YOU is ... !"

The world I found myself in didn't come up to my standards. I was 11 at the time. So I went to the library and found Commander Edward Ellsberg and went deep-sea diving, or Elizabeth Enright, whose Melendy family knew how to have fun with each other, or Kate Seredy, whose Hungarian kids rode magnificent horses across the Magyar plains and never fell off.

Now, if my life doesn't come up to my standards, I have no one to blame but myself. I still open a book.

-- Carolyn See is the author of "Golden Days" and "The Handyman."

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Reading as lifeline, that's how it was in my childhood home, all of us immigrants reaching for something in the written word. My mother, sitting on the porch, slicing open the pages of a new French novel, sheltered in the language as much as in the story; my father, learning English slang in Life magazine; my Russian grandfather, a czarist to his dying day, finding his vanished homeland in an expat newspaper, the gritty pages printed in letters my American friends couldn't understand.

When it came my turn to read, I still remember the feeling of betrayal. "See Spot run. Run, Spot, run." Seriously? But then came E.B. White and Laura Ingalls Wilder, Mark Twain and Harper Lee, Kurt Vonnegut and J.R.R. Tolkien, and I got it, I understood, you're sitting right there, reading, and you're anywhere, everywhere.

-- Veronique de Turenne writes the blog Here in Malibu at laobserved.com/malibu.

http://www.latimes.com/news/opinion/commentary/la-oe-readers26-2009apr26,0,3443765,full.story

Inside the baby mind

It's unfocused, random, and extremely good at what it does. How we can learn from a baby's brain.

By Jonah Lehrer | April 26, 2009

WHAT IS IT like to be a baby? For centuries, this question would have seemed absurd: behind that adorable facade was a mostly empty head. A baby, after all, is missing most of the capabilities that define the human mind, such as language and the ability to reason. Rene Descartes argued that the young child was entirely bound by sensation, hopelessly trapped in the confusing rush of the here and now. A newborn, in this sense, is just a lump of need, a bundle of reflexes that can only eat and cry. To think like a baby is to not think at all.

Modern science has largely agreed, spending decades outlining all the things that babies couldn't do because their brains had yet to develop. They were unable to focus, delay gratification, or even express their desires. The Princeton philosopher Peter Singer famously suggested that "killing a disabled infant is not morally equivalent to killing a person. Very often it is not wrong at all."

Now, however, scientists have begun to dramatically revise their concept of a baby's mind. By using new research techniques and tools, they've revealed that the baby brain is abuzz with activity, capable of learning astonishing amounts of information in a relatively short time. Unlike the adult mind, which restricts itself to a narrow slice of reality, babies can take in a much wider spectrum of sensation - they are, in an important sense, more aware of the world than we are.

This hyperawareness comes with several benefits. For starters, it allows young children to figure out the world at an incredibly fast pace. Although babies are born utterly helpless, within a few years they've mastered everything from language - a toddler learns 10 new words every day - to complex motor skills such as walking. According to this new view of the baby brain, many of the mental traits that used to seem like developmental shortcomings, such as infants' inability to focus their attention, are actually crucial assets in the learning process.

In fact, in some situations it might actually be better for adults to regress into a newborn state of mind. While maturity has its perks, it can also inhibit creativity and lead people to fixate on the wrong facts. When we need to sort through a lot of seemingly irrelevant information or create something completely new, thinking like a baby is our best option.

"We've had this very misleading view of babies," says Alison Gopnik, a psychologist at the University of California, Berkeley, and author of the forthcoming book, "The Philosophical Baby." "The baby brain is

perfectly designed for what it needs to do, which is learn about the world. There are times when having a fully developed brain can almost seem like an impediment."

One of the most surprising implications of this new research concerns baby consciousness, or what babies actually experience as they interact with the outside world. While scientists and doctors have traditionally assumed that babies are much less conscious than adults - this is why, until the 1970s, many infants underwent surgery without anesthesia - that view is being overturned. Gopnik argues that, in many respects, babies are more conscious than adults. She compares the experience of being a baby with that of watching a riveting movie, or being a tourist in a foreign city, where even the most mundane activities seem new and exciting. "For a baby, every day is like going to Paris for the first time," Gopnik says. "Just go for a walk with a 2-year-old. You'll quickly realize that they're seeing things you don't even notice."

There's something slightly paradoxical about trying to study the inner life of babies. For starters, you can't ask them questions. Young children can't describe their sensations or justify their emotions; they can't articulate the pleasure of a pacifier or explain the comfort of a stuffed animal. And, of course, none of us have any memories of infancy. For a scientist, the baby mind can seem like an impenetrable black box.

In recent years, however, scientists have developed new methods for entering the head of a baby. They've looked at the density of brain tissue, analyzed the development of neural connections, and tracked the eye movements of infants. By comparing the anatomy of the baby brain with the adult brain, scientists can make inferences about infant experience.

These new research techniques have uncovered several surprising findings. It turns out that the baby brain actually contains more brain cells, or neurons, than the adult brain: The instant we open our eyes, our neurons start the "pruning process," which involves the elimination of seemingly unnecessary neural connections. Furthermore, the distinct parts of the baby cortex - the center of sensation and higher thought - are better connected than the adult cortex, with more links between disparate regions. These anatomical differences aren't simply a sign of immaturity: They're an important tool that provides babies with the ability to assimilate vast amounts of information with ease.

While the pruning process makes the brain more efficient, it can also narrow our thoughts and make learning more difficult, as we become less able to adjust to new circumstances and absorb new ideas. In a sense, there's a direct trade-off between the mind's flexibility and its proficiency. As Gopnik notes, this helps explain why a young child can learn three languages at once but nevertheless struggle to tie his shoelaces.

But the newborn brain isn't just denser and more malleable: it's also constructed differently, with far fewer inhibitory neurotransmitters, which are the chemicals that prevent neurons from firing. This suggests that the infant mind is actually more crowded with fleeting thoughts and stray sensations than the adult mind. While adults automatically block out irrelevant information, such as the hum of an air conditioner or the conversation of nearby strangers, babies take everything in: their reality arrives without a filter. As a result, it typically takes significantly higher concentrations of anesthesia to render babies unconscious, since there's more cellular activity to silence.

The hyperabundance of thoughts in the baby brain also reflects profound differences in the ways adults and babies pay attention to the world. If attention works like a narrow spotlight in adults - a focused beam illuminating particular parts of reality - then in young kids it works more like a lantern, casting a diffuse radiance on their surroundings.

"We sometimes say that adults are better at paying attention than children," writes Gopnik. "But really we mean just the opposite. Adults are better at not paying attention. They're better at screening out everything else and restricting their consciousness to a single focus."

Consider, for instance, what happens when preschoolers are shown a photograph of someone - let's call her Jane - looking at a picture of a family. When the young children are asked questions about what Jane is paying attention to, the kids quickly agree that Jane is thinking about the people in the picture. But they also insist that she's thinking about the picture frame, and the wall behind the picture, and the chair lurking in her peripheral vision. In other words, they believe that Jane is attending to whatever she can see.

While this less focused form of attention makes it more difficult to stay on task - preschoolers are easily distracted - it also comes with certain advantages. In many circumstances, the lantern mode of attention can actually lead to improvements in memory, especially when it comes to recalling information that seemed incidental at the time.

Consider this memory task designed by John Hagen, a developmental psychologist at the University of Michigan. A child is given a deck of cards and shown two cards at a time. The child is told to remember the card on the right and to ignore the card on the left. Not surprisingly, older children and adults are much better at remembering the cards they were told to focus on, since they're able to direct their attention. However, young children are often better at remembering the cards on the left, which they were supposed to ignore. The lantern casts its light everywhere.

"Adults can follow directions and focus, and that's great," says John Colombo, a psychologist at the University of Kansas. "But children, it turns out, are much better at picking up on all the extraneous stuff that's going on. . . . And this makes sense: If you don't know how the world works, then how do you know what to focus on? You should try to take everything in."

While thinking like an adult is necessary when we need to focus, or when we already know which information is relevant, many situations aren't so clear-cut. In these instances, paying strict attention is actually a liability, since it leads us to neglect potentially important pieces of the puzzle. That's when it helps to think like a baby.

This new understanding of baby cognition, and the peculiar ways in which babies pay attention, is also giving scientists insights into improving the mental functioning of adults. The ability to direct attention, it turns out, doesn't merely inhibit irrelevant facts and perceptions - it can also stifle the imagination. Sometimes, the mind performs best when we don't try to control it.

The differences in how babies and adults pay attention are primarily caused by the unformed nature of the prefrontal cortex, a brain area just behind the eyes. While the prefrontal cortex has been greatly enlarged during human evolution - it's responsible for a wide variety of cognitive abilities, from directed attention to abstract thought - it's also the last brain area to fully develop, and often isn't done developing until late adolescence.

Although scientists have long held the lack of a functional prefrontal cortex responsible for all sorts of "childish" behaviors, researchers are beginning to realize that, sometimes, it might actually be better to allow the prefrontal cortex to loosen its grip.

A recent brain scanning experiment by researchers at Johns Hopkins University found that jazz musicians in the midst of improvisation - they were playing a specially designed keyboard in a brain scanner - showed dramatically reduced activity in the prefrontal cortex. It was only by "deactivating" this brain area that the musicians were able to spontaneously invent new melodies. The scientists compare this unwound state of mind with that of dreaming during REM sleep, meditation, and other creative pursuits, such as the composition of poetry. But it also resembles the thought process of a young child, albeit one with musical talent. Baudelaire was right: "Genius is nothing more nor less than childhood recovered at will."

The immaturity of the baby brain comes with another advantage: utter absorption in the moment. The best evidence for this comes from brain scans of adult subjects as they watched an engrossing Clint Eastwood

movie. The experiment, led by Rafael Malach at Hebrew University, found that when adults were watching the film their brains showed a peculiar pattern of activity, as their prefrontal areas were suppressed. At the same time, areas in the back of the brain associated with visual perception were turned on. As Gopnik notes, this mental state - the experience of being captivated by entertainment - is, in many respects, a fleeting reminder of what it feels like to be a young child. "You are incredibly aware of what's happening - your experiences are very vivid - and yet you're not self-conscious at all," she says. "You're not thinking about anything but what's on the screen."

But it's not just the movie theater that transports us back to a newborn state of mind, in which we're fully immersed in the moment. Gopnik notes that a number of other situations, from Zen meditation to the experience of natural beauty, can also lead to states of awareness so intense that the self seems to disappear. "This is the same ecstatic feeling that the Romantic poets were always writing about," she says. "It's seeing the world in a grain of sand."

If people could never regress into this babylike consciousness, then we'd struggle with the kind of tasks that require us to stop being self-conscious and lose ourselves in the job. Such moments are often described as "flow" activities, and can occur whenever we're completely captivated by what we're doing, be it stirring a risotto or solving a crossword puzzle. The Zen Master Shunryu Suzuki referred to such modes as "beginner's mind," since people are able to think like a baby, open to possibility and free of errant preconceptions.

Gopnik has discovered for herself the advantages of being able to shift between a babyesque form of cognition and a more adult frame of mind. "As a scientist, you really need to use both kinds of thinking," she says. "Sometimes you need to focus and analyze your data. But you also need the ability to be open and creative, to think in a new way if the old way isn't working."

At such moments, she suggests, we need to think with the innocence of an infant - to release the reins of attention and look anew at a world we're still trying to understand.

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http://www.boston.com/bostonglobe/ideas/articles/2009/04/26/inside_the_baby_mind/

American Stonehenge: Monumental Instructions for the Post-Apocalypse

By Randall Sullivan 04.20.09

The Georgia Guidestones may be the most enigmatic monument in the US: huge slabs of granite, inscribed with directions for rebuilding civilization after the apocalypse. Only one man knows who created them—and he's not talking.
Photo: Dan Winters

The strangest monument in America looms over a barren knoll in northeastern Georgia. Five massive slabs of polished granite rise out of the earth in a star pattern. The rocks are each 16 feet tall, with four of them weighing more than 20 tons apiece. Together they support a 25,000-pound capstone. Approaching the edifice, it's hard not to think immediately of England's Stonehenge or possibly the ominous monolith from 2001: A Space Odyssey. Built in 1980, these pale gray rocks are quietly awaiting the end of the world as we know it.

Called the Georgia Guidestones, the monument is a mystery—nobody knows exactly who commissioned it or why. The only clues to its origin are on a nearby plaque on the ground—which gives the dimensions and explains a series of intricate notches and holes that correspond to the movements of the sun and stars—and the "guides" themselves, directives carved into the rocks. These instructions appear in eight languages ranging from English to Swahili and reflect a peculiar New Age ideology. Some are vaguely eugenic (GUIDE REPRODUCTION WISELY—IMPROVING FITNESS AND DIVERSITY); others prescribe standard-issue hippie mysticism (PRIZE TRUTH—BEAUTY—LOVE—SEEKING HARMONY WITH THE INFINITE).

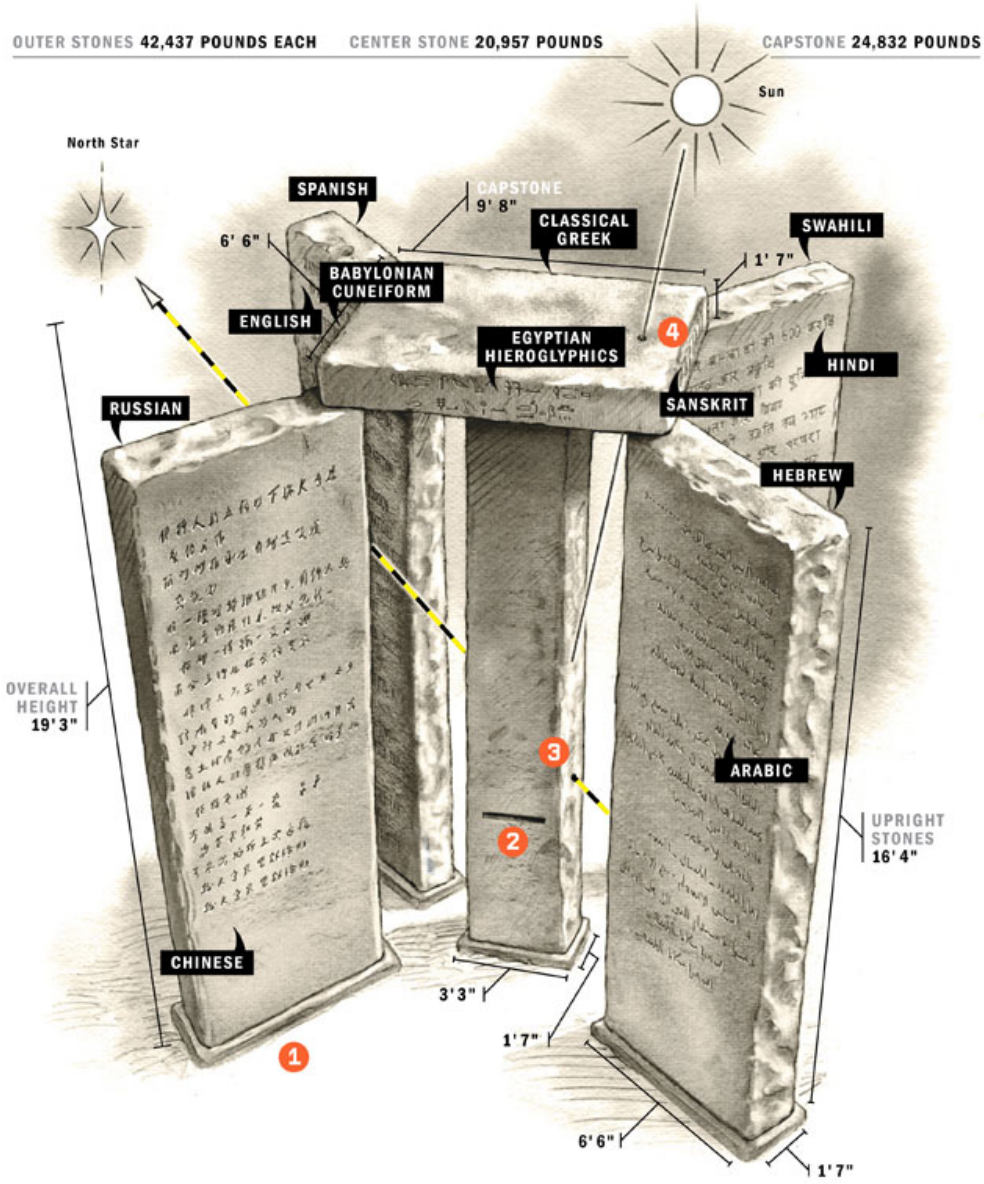
What's most widely agreed upon—based on the evidence available—is that the Guidestones are meant to instruct the dazed survivors of some impending apocalypse as they attempt to reconstitute civilization. Not everyone is comfortable with this notion. A few days before I visited, the stones had been splattered with polyurethane and spray-painted with graffiti, including slogans like "Death to the new world order." This defacement was the first serious act of vandalism in the Guidestones' history, but it was hardly the first objection to their existence. In fact, for more than three decades this uncanny structure in the heart of the Bible Belt has been generating responses that range from enchantment to horror. Supporters (notable among them Yoko Ono) have praised the messages as a stirring call to rational thinking, akin to Thomas Paine's *The Age of Reason*. Opponents have attacked them as the Ten Commandments of the Antichrist.

Whoever the anonymous architects of the Guidestones were, they knew what they were doing: The monument is a highly engineered structure that flawlessly tracks the sun. It also manages to engender endless fascination, thanks to a carefully orchestrated aura of mystery. And the stones have attracted plenty of devotees to defend against folks who would like them destroyed. Clearly, whoever had the monument placed here understood one thing very well: People prize what they don't understand at least as much as what they do.

The story of the Georgia Guidestones began on a Friday afternoon in June 1979, when an elegant gray-haired gentleman showed up in Elbert County, made his way to the offices of Elberton Granite Finishing, and introduced himself as Robert C. Christian. He claimed to represent "a small group of loyal Americans" who had been planning the installation of an unusually large and complex stone monument. Christian had come to Elberton—the county seat and the granite capital of the world—because he believed its quarries produced the finest stone on the planet.

Joe Fendley, Elberton Granite's president, nodded absently, distracted by the rush to complete his weekly payroll. But when Christian began to describe the monument he had in mind, Fendley stopped what he was doing. Not only was the man asking for stones larger than any that had been quarried in the county, he also wanted them cut, finished, and assembled into some kind of enormous astronomical instrument.

What in the world would it be for? Fendley asked. Christian explained that the structure he had in mind would serve as a compass, calendar, and clock. It would also need to be engraved with a set of guides written in eight of the world's major languages. And it had to be capable of withstanding the most catastrophic events, so that the shattered remnants of humanity would be able to use those guides to reestablish a better civilization than the one that was about to destroy itself.



MONUMENTAL PRECISION

Built to survive the apocalypse, the Georgia Guidestones are not merely instructions for the future—the massive granite slabs also function as a clock, calendar, and compass.

1

The monument sits at the highest point in Elbert County and is oriented to track the sun's east-west migration year-round.

2

On an equinox or solstice, visitors who stand at the west side of the "mail slot" are positioned to see the sun rise on the horizon.

3

An eye-level hole drilled into the center support stone allows stargazers on the south side to locate Polaris, the North Star.

4

A 7/8-inch hole drilled through the capstone focuses a sunbeam on the center column and at noon pinpoints the day of the year.

Text: Erik Malinowski; illustration: Steve Sanford

Fendley is now deceased, but shortly after the Guidestones went up, an Atlanta television reporter asked what he was thinking when he first heard Christian's plan. "I was thinking, 'I got a nut in here now. How am I going get him out?'" Fendley said. He attempted to discourage the man by quoting him a price several times higher than for any project commissioned there before. The job would require special tools, heavy equipment, and paid consultants, Fendley explained. But Christian merely nodded and asked how long it would take. Fendley didn't rightly know—six months, at least. He wouldn't be able to even consider such an undertaking, he added, until he knew it could be paid for. When Christian asked whether there was a banker in town he considered trustworthy, Fendley saw his chance to unload the strange man and sent him to look for Wyatt Martin, president of the Granite City Bank.

The tall and courtly Martin—the only man in Elberton besides Fendley known to have met R. C. Christian face-to-face—is now 78. "Fendley called me and said, 'A kook over here wants some kind of crazy monument,'" Martin says. "But when this fella showed up he was wearing a very nice, expensive suit, which made me take him a little more seriously. And he was well-spoken, obviously an educated person." Martin was naturally taken aback when the man told him straight out that *R. C. Christian* was a pseudonym. He added that his group had been planning this secretly for 20 years and wanted to remain anonymous forever. "And when he told me what it was he and this group wanted to do, I just about fell over," Martin says. "I told him, 'I believe you'd be just as well off to take the money and throw it out in the street into the gutters.' He just sort of looked at me and shook his head, like he felt kinda sorry for me, and said, 'You don't understand.'"

Martin led Christian down the street to the town square, where the city had commissioned a towering Bicentennial Memorial Fountain, which included a ring of 13 granite panels, each roughly 2 by 3 feet, signifying the original colonies. "I told him that was about the biggest project ever undertaken around here, and it was nothing compared to what he was talking about," Martin says. "That didn't seem to bother him at all." Promising to return on Monday, the man went off to charter a plane and spend the weekend scouting locations from the air. "By then I half believed him," Martin says.

When Christian came back to the bank Monday, Martin explained that he could not proceed unless he could verify the man's true identity and "get some assurance you can pay for this thing." Eventually, the two negotiated an agreement: Christian would reveal his real name on the condition that Martin promise to serve as his sole intermediary, sign a confidentiality agreement pledging never to disclose the information to another living soul, and agree to destroy all documents and records related to the project when it was finished. "He said he was going to send the money from different banks across the country," Martin says, "because he wanted to make sure it couldn't be traced. He made it clear that he was very serious about secrecy."

Before leaving town, Christian met again with Fendley and presented the contractor with a shoe box containing a wooden model of the monument he wanted, plus 10 or so pages of detailed specifications. Fendley accepted the model and instructions but remained skeptical until Martin phoned the following Friday to say he had just received a $10,000 deposit. After that, Fendley stopped questioning and started working. "My daddy loved a challenge," says Fendley's daughter, Melissa Fendley Caruso, "and he said this was the most challenging project in the history of Elbert County."

Construction of the Guidestones got under way later that summer. Fendley's company lovingly documented the progress of the work in hundreds of photographs. Jackhammers were used to gouge 114 feet into the rock at Pyramid Quarry, searching for hunks of granite big enough to yield the final stones. Fendley and his crew held their breath when the first 28-ton slab was lifted to the surface, wondering if their derricks would buckle under the weight. A special burner (essentially a narrowly focused rocket

motor used to cut and finish large blocks of granite) was trucked to Elberton to clean and size the stones, and a pair of master stonecutters was hired to smooth them.

Fendley and Martin helped Christian find a suitable site for the Guidestones in Elbert County: a flat-topped hill rising above the pastures of the Double 7 Farms, with vistas in all directions. For $5,000, owner Wayne Mullinex signed over a 5-acre plot. In addition to the payment, Christian granted lifetime cattle-grazing rights to Mullinex and his children, and Mullinex's construction company got to lay the foundation for the Guidestones.

With the purchase of the land, the Guidestones' future was set. Christian said good-bye to Fendley at the granite company office, adding, "You'll never see me again." Christian then turned and walked out the door—without so much as a handshake.

From then on, Christian communicated solely through Martin, writing a few weeks later to ask that ownership of the land and monument be transferred to Elbert County, which still holds it. Christian reasoned that civic pride would protect it over time. "All of Mr. Christian's correspondence came from different cities around the country," Martin says. "He never sent anything from the same place twice."

The astrological specifications for the Guidestones were so complex that Fendley had to retain the services of an astronomer from the University of Georgia to help implement the design. The four outer stones were to be oriented based on the limits of the sun's yearly migration. The center column needed two precisely calibrated features: a hole through which the North Star would be visible at all times, and a slot that was to align with the position of the rising sun during the solstices and equinoxes. The principal component of the capstone was a 7\8-inch aperture through which a beam of sunlight would pass at noon each day, shining on the center stone to indicate the day of the year.

The main feature of the monument, though, would be the 10 dictates carved into both faces of the outer stones, in eight languages: English, Spanish, Russian, Chinese, Arabic, Hebrew, Hindi, and Swahili. A mission statement of sorts (LET THESE BE GUIDESTONES TO AN AGE OF REASON) was also to be engraved on the sides of the capstone in Egyptian hieroglyphics, classical Greek, Sanskrit, and Babylonian cuneiform. The United Nations provided some of the translations (including those for the dead languages), which were stenciled onto the stones and etched with a sandblaster.

By early 1980, a bulldozer was scraping the Double 7 hilltop to bedrock, where five granite slabs serving as a foundation were laid out in a paddle-wheel design. A 100-foot-tall crane was used to lift the stones into place. Each of the outer rocks was 16 feet 4 inches high, 6 feet 6 inches wide, and 1 foot 7 inches thick. The center column was the same (except only half the width), and the capstone measured 9 feet 8 inches long, 6 feet 6 inches wide, and 1 foot 7 inches thick. Including the foundation stones, the monument's total weight was almost 240,000 pounds. Covered with sheets of black plastic in preparation for an unveiling on the vernal equinox, the Guidestones towered over the cattle that continued to graze beneath it at the approach of winter's end.

The monument ignited controversy before it was even finished. The first rumor began among members of the Elberton Granite Association, jealous of the attention being showered on one of their own: Fendley was behind the whole thing, they said, aided by his friend Martin, the banker. The gossip became so poisonous that the two men agreed to take a lie detector test at the Elberton Civic Center. The scandal withered when The Elberton Star reported that they had both passed convincingly, but the publicity brought a new wave of complaints. As word of what was being inscribed spread, Martin recalls, even people he considered friends asked him why he was doing the devil's work. A local minister, James Travenstead, predicted that "occult groups" would flock to the Guidestones, warning that "someday a sacrifice will take place here." Those inclined to agree were hardly discouraged by Charlie Clamp, the sandblaster charged with carving each of the 4,000-plus characters on the stones: During the hundreds of hours he spent etching the guides, Clamp said, he had been constantly distracted by "strange music and disjointed voices."

The team that built the Guidestones didn't know who was financing the project—just that it was the biggest monument in county history. Local banker Wyatt Martin inspects the English lettering with sandblaster Charlie Clamp before the 1980 unveiling.
Photo: Courtesy of Fendley Enterprises Inc.

The unveiling on March 22, 1980, was a community celebration. Congressmember Doug Barnard, whose district contained Elberton, addressed a crowd of 400 that flowed down the hillside and included television news crews from Atlanta. Soon Joe Fendley was the most famous Elbertonian since Daniel Tucker, the 18th-century minister memorialized in the folk song "Old Dan Tucker." Bounded by the Savannah and Broad rivers but miles from the nearest interstate—"as rural as rural can be," in the words of current *Star* publisher Gary Jones—Elberton was suddenly a tourist destination, with visitors from all over the world showing up to see the Guidestones. "We'd have people from Japan and China and India and everywhere wanting to go up and see the monument," Martin says. And Fendley's boast that he had "put Elberton on the map" was affirmed literally in spring 2005, when National Geographic Traveler listed the Guidestones as a feature in its Geotourism MapGuide to Appalachia.

But many who read what was written on the stones were unsettled. Guide number one was, of course, the real stopper: MAINTAIN HUMANITY UNDER 500,000,000 IN PERPETUAL BALANCE WITH NATURE. There were already 4.5 billion people on the planet, meaning eight out of nine had to go (today it would be closer to 12 out of 13). This instruction was echoed and expanded by tenet number two: GUIDE REPRODUCTION WISELY—IMPROVING FITNESS AND DIVERSITY. It didn't take a great deal of imagination to draw an analogy to the practices of, among others, the Nazis. Guide number three instructed readers to unite humanity with a living new language. This sent a shiver up the spine of local ministers who knew that the Book of Revelations warned of a common tongue and a one-world government as the accomplishments of the Antichrist. Guide number four—RULE PASSION—FAITH—TRADITION—AND ALL THINGS WITH TEMPERED REASON—was similarly threatening to Christians committed to the primacy of faith over all. The last six guides were homiletic by comparison. PROTECT PEOPLE AND NATIONS WITH FAIR LAWS AND JUST COURTS. LET ALL NATIONS RULE INTERNALLY RESOLVING EXTERNAL DISPUTES IN A WORLD COURT. AVOID PETTY LAWS AND USELESS OFFICIALS. BALANCE PERSONAL RIGHTS WITH SOCIAL DUTIES. PRIZE TRUTH—BEAUTY—LOVE—SEEKING HARMONY WITH THE INFINITE. BE NOT A CANCER ON THE EARTH—LEAVE ROOM FOR NATURE—LEAVE ROOM FOR NATURE.

Even as locals debated the relative merits of these commandments, the dire predictions of Travenstead seemed to be coming true. Within a few months, a coven of witches from Atlanta adopted the Guidestones as their home away from home, making weekend pilgrimages to Elberton to stage various pagan rites ("dancing and chanting and all that kind of thing," Martin says) and at least one warlock-witch marriage ceremony. No humans were sacrificed on the altar of the stones, but there are rumors that several chickens were beheaded. A 1981 article in the monthly magazine UFO Report cited Naunie Batchelder (identified in the story as "a noted Atlanta psychic") as predicting that the true purpose of the guides would be revealed "within the next 30 years." Viewed from directly overhead, the Guidestones formed an X, the piece in UFO Report observed, making for a perfect landing site.

Visitors kept coming, but after several failed investigations into the identity of R. C. Christian, the media lost interest. Curiosity flared again briefly in 1993, when Yoko Ono contributed a track called "Georgia Stone" to a tribute album for avant-garde composer John Cage, with Ono chanting the 10th and final guide nearly verbatim: "Be not a cancer on Earth—leave room for nature—leave room for nature." A decade later, however, when comedienne Roseanne Barr tried to work a bit on the Guidestones into her comeback tour, nobody seemed to care.

Christian kept in touch with Martin, writing the banker so regularly that they became pen pals. Occasionally, Christian would call from a pay phone at the Atlanta airport to say he was in the area, and the two would rendezvous for dinner in the college town of Athens, a 40-mile drive west of Elberton. By this time, Martin no longer questioned Christian's secrecy. The older man had successfully deflected Martin's curiosity when the two first met, by quoting Henry James' observations of Stonehenge: "You

may put a hundred questions to these rough-hewn giants as they bend in grim contemplation of their fallen companions, but your curiosity falls dead in the vast sunny stillness that enshrouds them." Christian "never would tell me a thing about this group he belonged to," Martin says. The banker received his last letter from Christian right around the time of the 9/11 terrorist attacks and assumes the man—who would have been in his mid-eighties—has since passed away.

The mysterious story of R. C. Christian and the absence of information about the true meaning of the Guidestones was bound to become an irresistible draw for conspiracy theorists and "investigators" of all kinds. Not surprisingly, three decades later there is no shortage of observers rushing to fill the void with all sorts of explanations.

Among them is an activist named Mark Dice, author of a book called The Resistance Manifesto. In 2005, Dice (who was using a pseudonym of his own—"John Conner"—appropriated from the Terminator franchise's main character) began to demand that the Guidestones be "smashed into a million pieces." He claims that the monument has "a deep Satanic origin," a stance that has earned him plenty of coverage, both in print and on the Web. According to Dice, Christian was a high-ranking member of "a Luciferian secret society" at the forefront of the New World Order. "The elite are planning to develop successful life-extension technology in the next few decades that will nearly stop the aging process," Dice says, "and they fear that with the current population of Earth so high, the masses will be using resources that the elite want for themselves. The Guidestones are the New World Order's Ten Commandments. They're also a way for the elite to get a laugh at the expense of the uninformed masses, as their agenda stands as clear as day and the zombies don't even notice it."

Ironically, Dice's message has mainly produced greater publicity for the Guidestones. This, in turn, has brought fresh visitors to the monument and made Elbert County officials even less inclined to remove the area's only major tourist attraction.

Phyllis Brooks, who runs the Elbert County Chamber of Commerce, pronounced herself aghast last November when the Guidestones were attacked by vandals for the first time ever. While Dice denies any involvement in the assault, he seems to have inspired it: Spray-painted on the stones were messages like "Jesus will beat u satanist" and "No one world government." Other defacements asserted that the Council on Foreign Relations is "ran by the devil," that the 9/11 attacks were an inside job, and that President Obama is a Muslim. The vandals also splashed the Guidestones with polyurethane, which is much more difficult to remove than paint. Despite the graffiti's alignment with his views, Dice says he disapproves of the acts. "A lot of people were glad such a thing happened and saw it as standing up against the New World Order," Dice says, "while others who are unhappy with the stones saw the actions as counterproductive and inappropriate."

Martin winces every time he hears Dice's "Luciferian secret society" take on the Guidestones. But while he disagrees, he also admits that he doesn't know for sure. "All I can tell you is that Mr. Christian always seemed a very decent and sincere fella to me."

Dice, of course, is far from the only person with a theory about the Guidestones. Jay Weidner, a former Seattle radio commentator turned erudite conspiracy hunter, has heavily invested time and energy into one of the most popular hypotheses. He argues that Christian and his associates were Rosicrucians, followers of the Order of the Rosy Cross, a secret society of mystics that originated in late medieval Germany and claim understanding of esoteric truths about nature, the universe, and the spiritual realm that have been concealed from ordinary people. Weidner considers the name R. C. Christian an homage to the legendary 14th-century founder of the Rosicrucians, a man first identified as Frater C.R.C. and later as Christian Rosenkreuz. Secrecy, Weidner notes, has been a hallmark of the Rosicrucians, a group that announced itself to the world in the early 17th century with a pair of anonymous manifestos that created a huge stir across Europe, despite the fact that no one was ever able to identify a single member. While the guides on the Georgia stones fly in the face of orthodox Christian eschatology, they conform quite well to the tenets of Rosicrucianism, which stress reason and endorse a harmonic relationship with nature.

Weidner also has a theory about the purpose of the Guidestones. An authority on the hermetic and alchemical traditions that spawned the Rosicrucians, he believes that for generations the group has been passing down knowledge of a solar cycle that climaxes every 13,000 years. During this culmination, outsize coronal mass ejections are supposed to devastate Earth. Meanwhile, the shadowy organization behind the Guidestones is now orchestrating a "planetary chaos," Weidner believes, that began with the recent collapse of the US financial system and will result eventually in major disruptions of oil and food supplies, mass riots, and ethnic wars worldwide, all leading up to the Big Event on December 21, 2012. "They want to get the population down," Weidner says, "and this is what they think will do it. The Guidestones are there to instruct the survivors."

On hearing Weidner's ideas, Martin shakes his head and says it's "the sort of thing that makes me want to tell people everything I know." Martin has long since retired from banking and no longer lives in Elberton, yet he's still the Guidestones' official—and only—secret-keeper. "But I can't tell," the old man quickly adds. "I made a promise." Martin also made a promise to destroy all the records of his dealings with Christian, though he hasn't kept that one—at least not yet. In the back of his garage is a large plastic bin (actually, the hard-sided case of an IBM computer he bought back in 1983) stuffed with every document connected to the Guidestones that ever came into his possession, including the letters from Christian.

For years Martin thought he might write a book, but now he knows he probably won't. What he also won't do is allow me to look through the papers. When I ask whether he's prepared to take what he knows to his grave, Martin replies that Christian would want him to do just that: "All along, he said that who he was and where he came from had to be kept a secret. He said mysteries work that way. If you want to keep people interested, you can let them know only so much." The rest is enshrouded in the vast sunny stillness.

*Randall Sullivan (*randysul@aol.com*) wrote about the electric-vehicle company ZAP in issue 16.04.*

http://www.wired.com/science/discoveries/magazine/17-05/ff_guidestones

Shedding New Light

David Stork Uses Science To See a World of Art Through Old Masters' Eyes

By Blake Gopnik
Washington Post Staff Writer
Sunday, April 26, 2009

You *love* Vermeer's "Girl With a Pearl Earring." But what do you really know about it? What is it -- *who* is it -- that you're really seeing there, beyond the surface of the paint?

David Stork knows. He's been through Vermeer's looking glass and seen the other side. He's floated beside the painting's beauty and he's ridden its light, Tinker Bell-style, as it flashes on her pearl, then bounces from cheek to nose to liquid eyes.

Stork is a physicist, and he's used modernoptical science and a good bit of computing power to make a virtual, 3-D copy of the world that Vermeer gave us in two dimensions in about 1665. Stork gives the painter's "girl" a kind of Second Life avatar, which he has used to solve some of the painting's puzzles, such as whether Vermeer could have painted his subject from life, and *how* he might have lighted her if he did. "When people look and say, 'Look how impressive his lighting is?' they don't know how impressive," says Stork. His techniques do for art historians, he says, "just what a microscope does for biologists. We can now reveal things in art that we didn't see before."

Or at least that's what he'll be trying to prove in a lecture he gives Friday at the National Gallery of Art.

Stork will be talking about how his knowledge of vision, optics and computers -- an entire 30-page CV's worth of scientific achievements -- has let him look into Vermeer's light, and discover just how closely it matches reality.

Stork's science has let him step into Caravaggio's great "Calling of Saint Matthew" from 1600, and find out that the daylight that seems to shine into its tavern isn't natural at all: It could only have come from some kind of artificial source in Caravaggio's studio.

Most recently, the scientist has taken on "Las Meninas" by Velázquez, possibly the greatest picture ever made, and one of the most befuddling. By translating Velázquez's 1657 painting into a virtual world, Stork's been able to untangle some of its knots: He's figured out what kind of space the picture shows and exactly who is doing what in it.

* * *

Stork, who grew up in Chevy Chase, Maryland,turns 55 tomorrow. He is tall, handsome and fit (he's an advanced scuba diver). In a lecture hall, his energy is endearing and infectious, and he knows how to dumb down his subject when it's called for. His PhD in physics is from the University of Maryland, he has 37 patents (know what an "N-bit neural network encoder" is?)and a Silicon Valley job directing research on digital imaging for Ricoh Innovations, as well as a teaching position at Stanford. The day before his talk at the gallery, Stork will be at DARPA, the Defense Department research group in Arlington, briefing the military's eggheads on "securely outsourcing audio and video analytics."

None of which has helped him break into the world of art history.

Over a Sunday lunch a few months ago at the Phillips Collection -- a favorite spot -- Stork was frustrated that only a handful of art historians seemed to care or even know about his work on pictures.

That work started when Stork encountered a radical claim by celebrity painter David Hockney that had received huge media attention. In his 2001 book "Secret Knowledge," Hockney asserted that the great masters of Renaissance art had set up their subjects in front of curved mirrors, which then projected images that the artists traced their pictures from. That, Hockney claimed, is what accounts for the huge increase in realism that hits Western art in the years after 1400.

Stork says he received a last-minute invitation to a conference on Hockney's theory, which he'd barely heard of, as one of the few people who could debate the science involved. He had started out thinking the claims looked interesting, but then watched as the evidence collapsed "like a house of cards" under his physicist's touch. Which, he says, is when his work on art "really took off" -- for him, if not for most art experts.

Although scholars have been happy to see Stork use science to bring about the demise of Hockney's theory, they've tended to view his work as confirmationof something they'd always insisted on, for all sorts of cogent historical reasons.

As for Stork's non-Hockney discoveries, the problem is that, as fascinating as they are, it hasn't always been clear what kind of profound insights they can bring to art. Stork's microscope analogy is all very well, but even the most powerful microscope isn't any good unless you're pointing it at the right things, to solve the right problems, and letting the right people look through it.

Take *S*tork's *p*aper on the l*i*ght in "Girl With a Pearl Earring," published, liked many of his findings, in an esoteric scientific journal. It proves that the highlights on her pearl, the cast shadow of her nose and the soft shading on her jaw each gives quite independent, cross-verifiable confirmation of the picture's light. But, reading that paper, even the most brilliant art historian might need some extra coffee to follow Stork and his team as they "let *Si* be the i{+t}{+h} source of information, such as from a single cast shadow, or a single occluding contour, and p(x{vbar}S1, . . . , *S {+k}*) the probability density the illuminant is in position x given such information."

Even without the language problem, it doesn't get us very far just to confirm that (or even why) the light in Vermeer's painting seems astoundingly real: That's a cliche about the picture. As far as the art world is concerned, the real insight in Stork's paper is buried in a throwaway line in the thick of a discussion of computer modeling: "We assume Vermeer executed the portrait from a live model and sought to render reasonably faithfully what he saw." Actually, that assumption isn't obvious at all. Art historians know surprisingly little about how the Old Masters really worked: how much was drawn or painted on the spot in front of a live model, how much was freely altered afterward and how much in a picture was entirely made up.

The most important thing about Stork's virtual-world version of the "Girl With a Pearl Earring" is that it can exist at all: that Vermeer's picture is so perfectly consistent in its every detail that a computer can use it as the basis for building an equally consistent 3-D world, complete with lighting. That seems pretty good evidence that there was more observation than imagination in the making of the picture.

John Marciari, a Yale-trained art historian who is now curator of Italian and Spanish painting at the San Diego Museum of Art, remains skeptical of the idea that paintings would often have been closely based on scenes fully staged in the studio. "My feeling is that the majority of paintings show imaginary scenes," says Marciari.

He says his own research has looked at gorgeous pastel faces by Federico Barocci, an older contemporary of Caravaggio's, which have been praised for centuries as having been done direct from life. And that research has shown that they almost certainly were not.

"I understand the constructed nature of art -- that artists are not photographers," responds Stork. "All that our techniques can do is point out when the artists were consistent and realistic, or not." But what's not

clear -- or has yet to be proven, at least -- is whether computer analysis could ever tell the difference between a picture that science registers as completely realistic because it's done from life, and one that a computer reads as realistic just because a painter's got the skills to simulate it perfectly.

Stork admits that his lab can't give all the answers -- "but we do better than pure connoisseurship." He can, for instance, tell when the simulation's *not* as perfect as it seems -- when a picture does not reflect the real-world situation that expert eyes might think they see in it.

In the case of the "Calling of Saint Matthew," even a connoisseur would say there's sunlight pouring through the window in Caravaggio's tavern. Yet Stork's analysis shows that the bright light on the rear wall could only have been cast by a source much nearer than the sun, like a lamp or a candle. (Why? Because the light on the wall gets dimmer with each inch that it gets farther from its source -- which wouldn't happen if that source were 90 million miles off.) Stork's finding proves that a plausibly realistic *look*, such as we also admire in Vermeer, isn't by itself enough to tell us if a scene is completely natural, or faked and posed in the studio, or perfectly imaginary.

In what he refers to as "the chink in the dam," Stork was invited to present his latest findings on the "Calling" at the meeting of the august Renaissance Society of America, held in Los Angeles in March. "There wasn't a negative word said," recalls Stork of the reaction to his talk. "I was happy as a clam." (Stork has now lectured on art more than 150 times, everywhere from Milan to Helsinki to Tokyo.)

David Stone, an art historian from the University of Delaware helped organize the society's session on Caravaggio. He gave Stork one of its coveted slots after attending a lecture the scientist had given to conservators. Stork, Stone says, pushes art history to "think more deeply about the degree to which artists observed the world and respected it. . . . He gets us to think again about issues we thought were settled, or issues that we thought could never be settled." Stork is "evidently not an art historian," Stone says, and doesn't always focus on the "compelling issues" of art history. (Although a love of art and culture runs deep in Stork's family: One great-grandfather was painter to Crown Prince Rudolf of Austria. The physicist's father, a technical writer for the federal government, was an art lover and his sister was chief calligrapher at the White House. David Stork himself has had a sideline as an orchestral percussionist, with 18 recordings to his credit.) So Stone has agreed to work with the scientist on a paper that will set out the full art-historical potential -- as well, perhaps, as the limitations -- of the computer analysis of art. The pair hope to see it published in one of art history's most prestigious journals.

"I'm just at the beginning of understanding the implications of Stork's work," says Stone. It's about "getting at the decisions that artists make" -- by finding new ways to look at the pictures they painted.

Take Stork's work on "Las Meninas." Velázquez's great puzzle-picture from 1657 famously shows the artist himself painting a portrait of the king and queen of Spain, whom we glimpse only through their reflection in a mirror on the back wall of the scene. (We can't see the royals themselves, because Velázquez seems to render the whole setting as though it's being viewed through their eyes.)

What has never been clear is whether we're supposed to imagine that the mirror is reflecting the actual royals, or whether what we're seeing in it is a reflection of the picture Velázquez is painting of them. Stork has resolved the issue by building a computer model of the painting that lets us view its scene from any angle. What we discover is that the only way the layout of the painting works is if it's the royal portrait, rather than the royal couple, that's been caught in that reflection.

Stork has made a similar computer model of the "Calling of Saint Matthew." Lorenzo Pericolo, a scholar from the University of Montreal, hopes to use it to flesh out some work he's been doing on the gazes in the painting: Which characters could see Christ and which couldn't? And how does that make us think about the sacred import of the scene?

In his model, Stork can move an imaginary movie camera to the viewpoint of each figure, so we can look through their eyes, as it were, and see precisely what would have been in view for each of them in that dark tavern. Pericolo says that Stork, whom he describes as "humble and open-minded," seems to enjoy having art historians ask him to solve new problems. Even if that means that Stork finds out "that what he thought was primary in his work is in fact secondary, and vice versa."

In the end, knowing more about a painting's "real-life" scene, as well as its unreal peculiarities, may help us nail down our most complex reactions to the work of art -- revealing even more, maybe, than Stork and his supporters have hoped. If, for instance, it turns out that the "Calling of Saint Matthew" is painted so that the tavern's back wall and the figures in front of it seem lighted by different kinds of light (that's where Stork's latest research is tending), that could help account for how the painting touches us. Though we don't even know it, our eyes tell us that the tavern is illuminated by artificial light: It represents a transient world of human artifice. And then they read the sacred figures in the scene as lighted by the sun: They stand for a moment of eternal, daylit truth that's entered the darkness. Couldn't that mean that Stork's findings have given us real, hard evidence for why the picture works so well as a depiction of Christ's impact on the human world?

"I'll leave it to others to take that interpretative step," says Stork, always one for the empirically provable. "We're just a tool that will help art historians."

But that doesn't mean he suffers from false modesty: "I really think we're making a difference, and will make an even greater difference in the future -- especially now that Hockney's out of the way

http://www.washingtonpost.com/wp-dyn/content/article/2009/04/24/AR2009042402232.html?wprss=rss_print/style

Solar Wind Tans Young Asteroids

Artist's impression of how the solar wind makes young asteroids look old. After undergoing a catastrophic collision, the colour of an asteroid gets modified rapidly by the solar wind so that it resembles the mean colour of extremely old asteroids. After the first million years, the surface "tans" much more slowly. At that stage, the colour depends more on composition than on age. (Credit: ESO)

ScienceDaily (Apr. 27, 2009) — A new study published in *Nature* this week reveals that asteroid surfaces age and redden much faster than previously thought — in less than a million years, the blink of an eye for an asteroid. This study has finally confirmed that the solar wind is the most likely cause of very rapid space weathering in asteroids.

This fundamental result will help astronomers relate the appearance of an asteroid to its actual history and identify any after effects of a catastrophic impact with another asteroid.

"Asteroids seem to get a 'sun tan' very quickly," says lead author Pierre Vernazza. "But not, as for people, from an overdose of the Sun's ultraviolet radiation, but from the effects of its powerful wind."

It has long been known that asteroid surfaces alter in appearance with time — the observed asteroids are much redder than the interior of meteorites found on Earth [1] — but the actual processes of this "space weathering" and the timescales involved were controversial.

Thanks to observations of different families of asteroids [2] using ESO's New Technology Telescope at La Silla and the Very Large Telescope at Paranal, as well as telescopes in Spain and Hawaii, Vernazza's team have now solved the puzzle.

When two asteroids collide, they create a family of fragments with "fresh" surfaces. The astronomers found that these newly exposed surfaces are quickly altered and change colour in less than a million years — a very short time compared to the age of the Solar System.

"The charged, fast moving particles in the solar wind damage the asteroid's surface at an amazing rate [3]", says Vernazza. Unlike human skin, which is damaged and aged by repeated overexposure to sunlight, it is, perhaps rather surprisingly, the first moments of exposure (on the timescale considered) — the first million years — that causes most of the aging in asteroids.

By studying different families of asteroids, the team has also shown that an asteroid's surface composition is an important factor in how red its surface can become. After the first million years, the surface "tans" much more slowly. At that stage, the colour depends more on composition than on age. Moreover, the observations reveal that collisions cannot be the main mechanism behind the high proportion of "fresh" surfaces seen among near-Earth asteroids. Instead, these "fresh-looking" surfaces may be the results of planetary encounters, where the tug of a planet has "shaken" the asteroid, exposing unaltered material.

Thanks to these results, astronomers will now be able to understand better how the surface of an asteroid — which often is the only thing we can observe — reflects its history.

Notes

[1] Meteorites are small fragments of asteroids that fall on Earth. While a meteorite enters the Earth's atmosphere its surface can melt and be partially charred by the intense heat. Nevertheless, the meteorite interior remains unaffected, and can be studied in a laboratory, providing a wealth of information on the nature and composition of asteroids.

[2] An asteroid family is a group of asteroids that are on similar orbits around the Sun. The members of a given family are believed to be the fragments of a larger asteroid that was destroyed during a collision.

[3] The surface of an asteroid is affected by the highly energetic particles forming the solar wind. These particles partially destroy the molecules and crystals on the surface, re-arranging them in other combinations. Over time, these changes give formation of a thin crust or irradiated material with distinct colours and properties.

Journal reference:

1. Vernazza et al. **Solar wind as the origin of rapid reddening of asteroid surfaces**. *Nature*, 2009; 458 (7241): 993 DOI: 10.1038/nature07956

Adapted from materials provided by ESO.

http://www.sciencedaily.com/releases/2009/04/090422132918.htm

I'll Go On

By JOSEPH O'NEILL

THE LETTERS OF SAMUEL BECKETT

Volume I: 1929-1940

Edited by Martha Dow Fehsenfeld and Lois More Overbeck

Illustrated. 782 pp. Cambridge University Press. $50

Submerged for years in a murk of international literary diplomacy and scrupulous academic exertion, "The Letters of Samuel Beckett" has finally surfaced; and an elating cultural moment is upon us. It is also a slightly surprising moment. Beckett, in his published output and authorial persona, was rigorously spare and self-effacing. Who knew that in his private writing he would be so humanly forthcoming? We always knew he was brilliant — but this brilliant? Just as the otherworldliness of tennis pros is most starkly revealed in their casual warm-up drills, so these letters, in which intellectual and linguistic winners are struck at will, offer a humbling, thrilling revelation of the difference between Beckett's game and the one played by the rest of us. (Beckett played tennis, incidentally.)

This volume (three more are promised) auspiciously begins with two notes from Beckett to James Joyce, in the second of which (from April 1929) this 23-year-old lecturer at the École Normale Supérieure in Paris politely briefs the maestro on the distinction between the infinitive and substantive forms of a Greek phrase.

Rather more forebodingly, the volume ends with a letter, dated June 10, 1940, regarding a billiards game the following Friday. Rain checks were presumably issued, because Friday was the day the Germans occupied Paris. In the years between these missives, Beckett has abandoned an academic career; published a handful of essays, a book of poems, a study of Proust, stories ("More Pricks Than Kicks," 1934) and a novel ("Murphy," 1938); and bounced between Ireland, England, France and Germany, engaged in what he hopefully describes, in a job application, as "private study and composition" — i.e., not very much at all. For the most part, then, we are concerned with a portrait of the artist as an unsettled, underemployed and relatively unknown young man.

Thus he is broke: he wears his shoes until they finally "explode" on the Boulevard St.-Michel. He is exuberantly ill disposed to established writers (Eliot is a "nice man" but a "bad poet," and his book on Dante is "insufferably condescending"). He writes, with great difficulty and doubt, difficult and doubtful poems. He alternates between self-laceration and cockiness. He is profoundly alienated, not least because he inhabits a world of rejection slips, indefinite longings, extreme aesthetic sensitivity and (in the words of a friend) "passionate nihilism." He is moody. A flâneur as well as a great hill-walker, he is given to "St. Germainizing" and to the company, actual or potential, of Sartre and Djuna Barnes and Kandinsky. His creativity is a source of torment because, although he is a genius, as yet he lacks the wherewithal to bring his vocation to satisfactory fruition. He is, in short, waiting.

En attendant, Beckett writes self-admittedly "pestilential" letters about waiting. In Dublin, he records the "fruitless retreat from Monday to Friday and then the degrading cotton wool interpolation of the weekend" and acknowledges that he's "more than ever frightened by the prospect of effort, initiative & even the little self-assertion of getting about from one place to another." In London, he sleeps "more and more — 10 hours at a stretch. I wish it were 20." In Paris, he is "paralyzed in listlessness" and has "done nothing." His disorders are physical, too. Although his spleen is clearly in fine working order, he suffers from a series of ailments whose details he entrusts to his stalwart confidant Thomas McGreevy. Most significant are acutely distressing nocturnal "heart attacks," which lead him to try cure by psychoanalysis. We also learn of pulled teeth, dry pleurisy ("I feel all right except for a reluctance to sneeze & belch"), intestinal pains, boils and — brace yourself — "a sebaceous cyst in my anus, which happily a fart swept away before it became operable." Beckett's fondness for this kind of unsavory detail wasn't trivial. Decay and decrepitude were central to his dramatic vision, but just as significant was the connection he drew between compulsory bodily functions (his poems are "turds") and the proper making of art. He seeks "the integrity of a pendu's emission of semen."

One naturally seizes on such statements — and on all evidence of stasis, itinerancy, nausea, angoisse, etc. — because they are so utterly Beckettian. But our understanding of this adjective is radically enlarged by the evidence, in this correspondence, of other qualities. Beckett, for example, was fanatical about art. He was addicted to galleries and extraordinarily knowledgeable and opinionated about their contents. A typical meditation considers Cézanne's "Montagne Sainte-Victoire au Grand Pin" and its relationship with earlier, anthropomorphic landscape paintings:

"So the problem . . . of how to state the emotion of Ruisdael in terms of Post-Impressionist painting must disappear as a problem as soon as it is realized that the Ruisdael emotion is no longer authentic & Cuyp's cows as irrelevant as Salomon's urinator in Merrion Square except as a contrivance to stress the discrepancy between that which cannot stay still for its phases & that which can. . . . How far Cézanne had moved from the snapshot puerilities of Manet & Cie when he could understand the dynamic intrusion to be himself & so landscape to be something by definition unapproachably alien, unintelligible arrangement of atoms, not so much as ruffled by the kind attentions of the Reliability Joneses."

Music, too, is within his purview. He considers that Mary Jo Prado's performances of Chopin and Debussy "were dragged out by the scruff of the neck, very disagreeable. She sits perched up above the keyboard like Mme. Mahieu at the seat of custom. Her left hand in the Scriabin was extremely scrupulous & good." He is capable of great enthusiasm — for Austen, Sade, Sainte-Beuve, Schopenhauer — and for all his pessimism and bile he is a fundamental enemy of cynicism: "How energetic they always are, these self-avowed cynics and désabusés, bristling with passionate estimates and beating their breasts in a jemenfoutiste & jusquauboutiste frenzy."

The kicker, here and elsewhere, is Beckett's uncanny multilingualism. (Remember, this is the man they entrusted with the translation of portions of "Work in Progress," a k a "Finnegans Wake," into French.) Italian phrases and poems judiciously and joyfully pepper these letters, and never gratuitously: Beckett seems practically incapable of an unconscientious utterance. Among the most affecting streams of correspondence is the one he conducts with his teenage cousin in Dublin, a promising student of modern

languages. Lucky, lucky fellow, because from Beckett he receives long letters in French and German that are masterpieces of mentorship: learned, utterly uncondescending, self-revealing, personal. (The editors, Martha Dow Fehsenfeld and Lois More Overbeck, throughout provide translations — executed by George Craig, Dan Gunn and Viola Westbrook — of all foreign-language letters.) It is to the youngster that Beckett makes the crucial admission (in German) that "no sooner do I take up my pen to compose something in English than I get the feeling of being 'de-personified.' "

Although there are no letters here to his parents — perhaps because Beckett authorized the publication only of letters "having bearing on my work"? — there is no doubt he remained deeply preoccupied by "the fading fact of my family." He notes: "Lovely walk this morning with Father, who grows old with a very graceful philosophy. Comparing bees & butterflies to elephants & parrots & speaking of indentures with the leveler. Barging through hedges and over the walls with the help of my shoulder, blaspheming and stopping to rest under color of admiring the view. I'll never have anyone like him." Several months later, the father dies. The son says, "I can't write about him, I can only walk the fields and climb the ditches after him."

This bereavement was, no doubt, one of the events that influenced the progressive calming, over the years, of Beckett's tone. About the possible Nazi invasion, he writes from Paris: "No matter how things go I shall stay on here. . . . All I have to lose is legs, arms, balls etc., and I owe them no particular debt of gratitude as far as I know." There is little sign, in these pages, of sustained attention to political and economic crises. The Great Depression is not mentioned, and Hitler and his cronies figure, briefly, as absurdities; even when he travels in Nazi Germany in 1936-37, Beckett's focus is on galleries and churches. The future member of the Resistance has yet to show himself. In June 1940, he writes from Paris: "Suzanne seems to want to get away. I don't. Where would we go, and with what?"

Suzanne is Suzanne Deschevaux-Dumesnil. Here's how we learn of her: "There is a French girl also whom I am fond of, dispassionately, and who is very good to me. The hand will not be overbid. As we both know that it will come to an end there is no knowing how long it may last." Beckettists will know, of course, that in due time Suzanne and Sam married, and that the marriage lasted till their deaths.

The knowledge of what lay ahead for Beckett — the writing of the plays and the great prose fiction — makes one very impatient for the further volumes of letters, almost as if Beckett were in actual correspondence with oneself. I know a little about what this might feel like. Many years ago, while languishing like Murphy in a London flat, I received an airmail envelope on which my name had been scratched with a ballpoint pen. I had no idea who could be writing to me from France, so unthinkingly I tore open the envelope. I wish I'd been more careful. The envelope contained a very short, playful message from Samuel Beckett. It's still my most precious possession.

Joseph O'Neill is the author, most recently, of "Netherland," a novel

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http://www.nytimes.com/2009/04/05/books/review/ONeill-t.html?_r=1&8bu&emc=bua1

The Past as Peep Show

By SUSAN DOMINUS

THE FORBIDDEN APPLE

A Century of Sex and Sin in New York City

By Kat Long

Illustrated. 287 pp. Ig Publishing. $18.95

LICENTIOUS GOTHAM

Erotic Publishing and Its Prosecution in Nineteenth-Century New York

By Donna Dennis

Illustrated. 386 pp.Harvard University Press. $29.95

These days, pornographers, pundits and scientists are forever pondering what women want, but in 1913, at least, it was pretty clear: They wanted "The Inside of the White Slave Traffic," a film depicting the sexual coercion of innocents into a life of brothels, and they weren't going to let a team of New York's finest get in their way. When the deputy police commissioner of New York brought six officers to the Park Theater to seize the film, the 500 or so women waiting to see the 9:30 screening nearly broke into a riot, waving their green tickets and making a mad dash for the door. The scene attracted several thousand protesters who joined the cause in sympathy, a crowd that dispersed only when the police brought in reinforcements. Never was a film purporting, in its own words, to "teach a great moral lesson" so ardently embraced by a group of young women. (The producers' argument: Learn from the mistakes of our protagonist to resist the seductive ways of that dark, handsome stranger.)

There's a great history of racy entertainment covering itself, if scantily, in a cloak of righteous education. Kat Long describes these protective measures, or ruses, in "The Forbidden Apple: A Century of Sex and Sin in New York City," less a catalog of vice than an analysis of attempts to evade its suppression. Long promises at the outset that the book will demonstrate that "the agents for good and evil, in New York especially, are symbiotic."

When it comes to illicit media, the agents for good and evil, even outside New York, are always symbiotic: pornography, in the experience of many moral crusaders, is like an infuriating weed that loves nothing more than a good pesticide, its strength only enhanced by efforts to tamp it down. But Long also chronicles the way that initiatives to eradicate vice only helped pave the way for its further evolution in the city. Try to eliminate drinking on Sunday by limiting it to hotels, as did the Raines Law of 1896, and suddenly every bar and saloon in Manhattan is putting up cheap dividers to create makeshift accommodations, ideal breeding grounds for prostitution, which thrived in the era of the so-called Raines Law hotels. Try to provide a place where working-class men can find a bathroom that isn't in a bar, and from that solution — public restrooms — will come another challenge: gay (semipublic) sex. Close down the Continental Baths, a glorious, early-'70s gay pick-up spot, and make way for Plato's Retreat, a heterosexual swinger's club in the same location in the basement of the Ansonia Hotel.

The sexual history of 20th-century New York, as written by Long, the co-author of the guidebook "Sexy New York," has, at times, the feel of a whirlwind tour: Step up and see the sexually free flapper of the '20s rebelling in a post-World War I rejection of staid social values; see the burlesque theaters thrilling the Depression-era man who's down on his luck; see the pill liberate sex from reproduction. Along the

way, the tour highlights some lesser-known figures in New York's sexual history, among them its premier peep show entrepreneur, Martin Hodas, and the young women who flocked to the city as military groupies during World War II and came to be known as the khaki whackies.
In part because Long keeps the pace moving quickly, there isn't always time for some of the detail the reader might crave, even for non-prurient reasons. Beyond the bump and grind, what exactly did the fans of burlesque see in some of the many shows that so outraged censors? And who were its stars? Why not lavish a little less space on the nitty-gritty of legal maneuverings and a little more on the actual witty, bawdy lyrics that shocked audiences in Harlem clubs in the '20s?
In the late 19th century, peddlers were known to mislead buyers with books that promised great thrills with their titillating covers, only to hold, on the inside, puritanical tracts. Long's "Forbidden Apple" promises a century of sex and sin, but seekers of vivid portrayals of New York's sexual high life will have to be satisfied instead with a history that comes alive mostly in descriptions of the vain efforts to keep that high life down.
Readers trying to imagine how the city's sexual culture might change in the new depressed economy might predict, based on the Depression-era trends that Long describes, a return to the safety of morality and religious values, a crackdown on whatever remaining illicit entertainment may linger in hidden corners of Times Square or along the West Side Highway.
But the aftershocks of the Panic of 1837 had an entirely different effect on attitudes toward sex, as described by Donna Dennis, a Rutgers law professor, in "Licentious Gotham: Erotic Publishing and Its Prosecution in Nineteenth-Century New York." "By the early 1840s," Dennis writes, "a prolonged economic depression and widespread unemployment stemming from the Panic of 1837 helped unravel the old-line elites' monopoly on political power and usher in an age of mass party politics." A sign of the changing times, she argues, was the rise of flash weeklies that catered to proto-Maxim rakes who were sexually brash and often mingled with the demimonde. Anti-aristocratic in spirit (and usually run by people who mixed it up with the Tammany regulars), the flash papers not only published salacious gossip about members of high society, but generated income by blackmailing the same crowd (possibly the one approach the struggling newspaper industry isn't currently convening panels to consider).
Dennis suggests that the flash papers could have gone on publishing suggestive material indefinitely, except that they made the mistake of including in some of their transgressive tales the names of the individuals involved. Some of the powerful figures they so relished exposing started filing suit in the name of the public good. Who knows? If the papers had kept the stories sufficiently vague, they might have flourished for at least another decade before getting bollixed up in the courts. Like Long, Dennis traces the ways in which provocative material was passed off as edifying, like the guides to the city's prostitutes that purported to steer unknowing rubes away from their clutches. And she also notes that prohibitions of one sort of racy material only led to another innovation, often more popular than the first. From closer restrictions on sexually explicit writing came the success, in the mid-19th century, of the novelist George Thompson, who combined graphically violent scenes set in urban dystopias with coy peekaboo references to sex. Thompson stopped short of describing those scenes but encouraged the reader to imagine them, while mocking the authorities for compelling him to draw the curtain.
That Long begins her book where Dennis's ends—with the moral crusader Anthony Comstock all but eradicating the once-thriving illicit publishing industry in 19th-century New York — is a testament (if any were needed) to the irrepressibility of pornography and its less graphic predecessors. Gov. David A. Paterson recently proposed that the state, in search of new revenue, tax Internet downloads of pornography, proof that the government may have reached a new level of appreciation of New York's porn industry — if you can't beat it, you might as well use it to help balance the budget.
Susan Dominus writes the Big City column for The Times.

http://www.nytimes.com/2009/04/05/books/review/Dominus-t.html?8bu&emc=bua2

Who Is Thabo Mbeki?

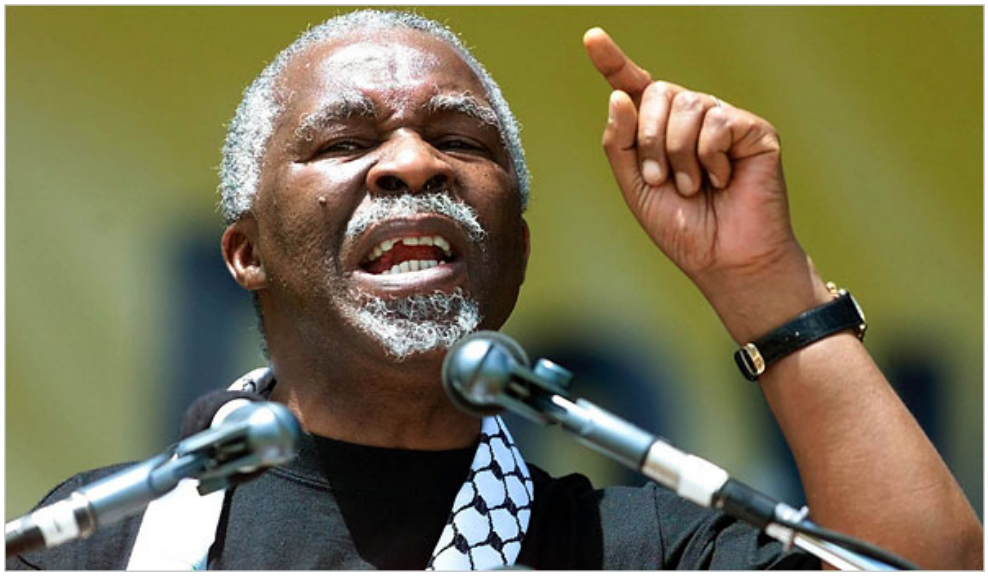
By SUZANNE DALEY

A LEGACY OF LIBERATION

Thabo Mbeki and the Future of the South African Dream

By Mark Gevisser

376 pp. Palgrave Macmillan. $29.95



Early in Nelson Mandela's presidency, a rumor spread that he was dying. Investors balked. South Africa's currency collapsed. And pundits began debating whether Mandela's heir apparent, the aloof, cerebral Thabo Mbeki, had the stuff to lead a young and battered nation. The appraisals were harsh. "Is Mbeki fit to rule?" one headline asked.

The question was repeated again and again during most of Mbeki's 14 years in power, first during his time as Mandela's deputy from 1994 to 1999 — when everyone, including Mandela, admitted that Mbeki really ran the country — and then through Mbeki's own two terms as president, which ended abruptly last September when he was forced to step down early.

No one doubted Mbeki's formidable intellect, but he seemed to lack the human touch that made Mandela bigger than life. And then there were his controversial policies. He questioned the idea that H.I.V. caused AIDS and refused to distribute antiviral drugs, a stance that activists blame for hundreds of thousands of needless deaths. And he stubbornly defended Robert Mugabe, even as Mugabe's policies destroyed Zimbabwe's economy and left the population to starve. To most of the world, Mbeki is a puzzle — and not a very likable one at that.

Now comes Mark Gevisser's biography of the man, the result of eight years of research. An earlier edition, "Thabo Mbeki: A Dream Deferred," was published in South Africa in 2007 at a door-stopping 900-plus pages. The new abridged and updated edition, "A Legacy of Liberation: Thabo Mbeki and the Future of the South African Dream," is less than half as long, and takes account of recent events while looking forward to the elections later this month, which are expected to result in Mbeki's rival, Jacob Zuma, ascending to the presidency.

Even in this abridged version, the book is an impressive feat of journalism. Gevisser, a prominent South African journalist who has written for The New York Times, The Nation and other American publications, traces Mbeki's family back several generations, from colonial dispossession through the struggle for liberation. He interviews witnesses to even the less eventful meetings in the run-up to negotiations with South Africa's white leaders.

Certainly Mbeki's life story has the makings of a gripping tale. Born in 1942, he spent his earliest years in the Transkei, in the Eastern Cape, where his mother ran a country store. But she was often in debt and harassed by the authorities. As a young boy, Mbeki read and wrote letters for illiterate customers, fashioning communication between wives and their husbands working in the cities, sharing their hopes, confessions and hardships. At age 8, he was sent away to school. Mbeki joined the African National Congress at age 14 and went into exile six years later, in 1962. (His father, Govan, who had rarely been at home, was arrested and jailed on Robben Island in 1964 with Mandela and other A.N.C. leaders.) Mbeki spent decades without a home or a family — essentially in transit. His only child, from a teenage romance, disappeared.

Mbeki earned an economics degree at Sussex University in England, where he had several English girlfriends (Gevisser interviews some of them). Later, he went to the Soviet Union for military training and lived for spells in Nigeria, Botswana, Swaziland and the dusty suburbs of Lusaka, the capital of Zambia, where he was a major player in early negotiations with South Africa's ruling whites.
In the transition leading up to South Africa's first elections with black voters in 1994, Mbeki was locked in a power struggle with some of the A.N.C.'s most charismatic characters, including Cyril Ramaphosa and Chris Hani (who was gunned down in his driveway by right-wing assailants before a single vote was cast). Yet Mbeki succeeded in outmaneuvering everyone to become Mandela's deputy. And it was Mbeki who — still a relatively young man in an organization that bowed to age and experience — persuaded the graying lions of the A.N.C., including Mandela, to give up their Communist dogma and embrace free market principles in 1990.

Gevisser writes well, particularly when he is witness to an event, when his narrative leaps off the page. One example is the description of the funeral of Mbeki's father in 2001. Govan Mbeki, who had been more activist than parent, insisted that he be buried in a dilapidated, litter-strewn local cemetery near Port Elizabeth. This produced, as Govan must clearly have understood it would, a painful tableau for his son, the president who had not succeeded in lifting most of his countrymen out of poverty.
"There was something festive and celebratory in the air — not just that Govan Mbeki truly was a local hero in these neglected quarters, but that the carnival of power had come to town — and most onlookers cheered for the dignitaries they recognized," Gevisser writes. "Some, however, made no bones about their feelings. 'Look at your fancy cars!' one woman yelled to a prominent black businessman as he alighted from his BMW."

But at other times Gevisser's thoroughness overwhelms the narrative, and in the end the book is oddly unsatisfying, more a history of the liberation movement than a window into this curious, elusive man. Gevisser's own frustration with his subject is clear in the introduction. He notes that while this is not an authorized biography, Mbeki did cooperate, agreeing to be interviewed seven times, for a total of about 20 hours. During that time, Mbeki never asked Gevisser a question, resisted all small talk and did not touch any food. He kept his hands busy with his pipe, which Gevisser sees as "more than just a way of focusing the mind: it created a scrim between him and his interlocutor, allowing him to work with ideas, unhindered by the mess of human interaction"

Gevisser says that he tried to avoid making the book about his own interpretation of Mbeki's behavior, choosing instead to offer a variety of perspectives. So it is that Mbeki is sometimes described for pages as patient, hardworking and humble. But later, Gevisser will also tell us that Mbeki was intensely disliked by everyone around him and considered ambitious and conniving. It is hard to reconcile the pieces.
Still, "A Legacy of Liberation" offers some intriguing insights. Mbeki, Gevisser posits, suffers from "disconnect" because of his dysfunctional family life and his years without a country. And when it comes to his notorious stance on AIDS, Gevisser makes another interesting point. In exile, Mbeki preached negotiation with the South African government while many of his peers talked war. And prodding the

African National Congress to embrace the free market was the equivalent of heresy. With such a record of challenging orthodoxy and being proven right, Gevisser says, it was natural for Mbeki to question the scientific community on the origins of AIDS. Publicly, Mbeki gave up arguing on this point some time ago. But Gevisser says that his views have not changed.
In exile, Mbeki was known as the A.N.C.'s charming representative. He favored whiskey, smoked a pipe and was available to debate politics deep into the night. He was the "black Englishman" who seduced South Africa's white Afrikaner leadership with his reasonableness.

When I was covering South Africa from 1995 to 1999, that Mbeki was nowhere to be found. He was prickly, distant, quick to dispatch his enemies and surrounded by yes men. Journalists who had known him in exile would shake their heads and ask, "Who is the real Thabo Mbeki?" For all its meticulous reporting, "A Legacy of Liberation" never really answers that question.

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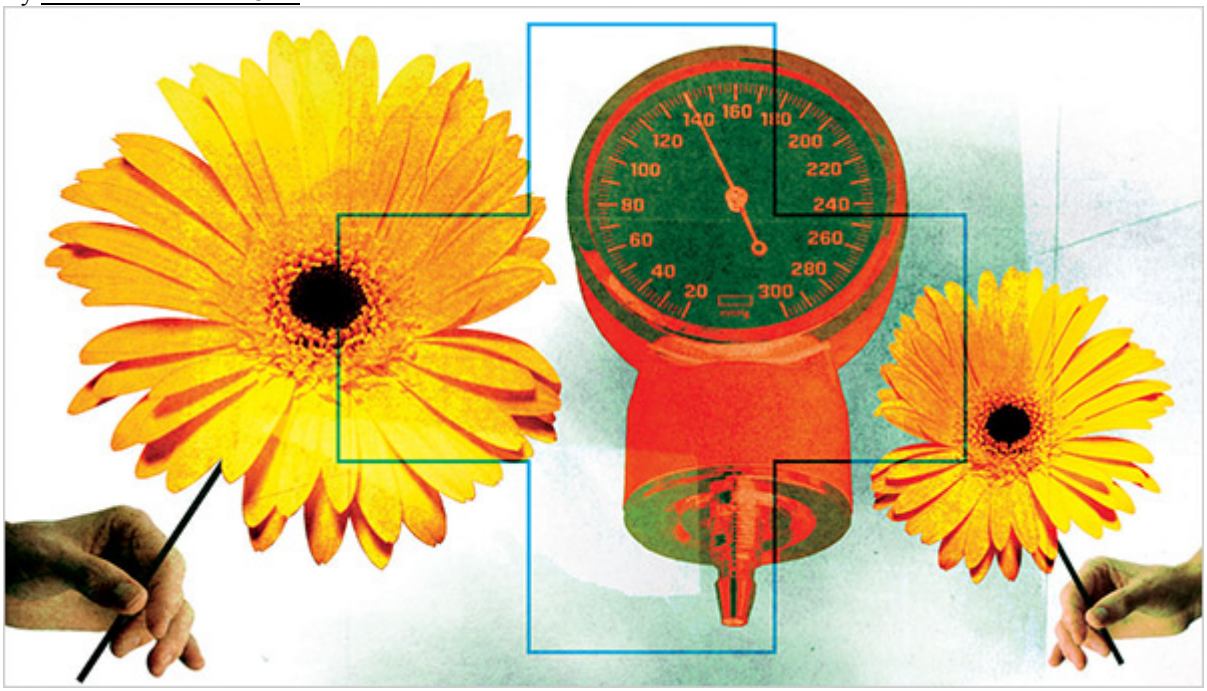
http://www.nytimes.com/2009/04/05/books/review/Daley-t.html?8bu&emc=bua2

What Are Friends For? A Longer Life

By TARA PARKER-POPE



In the quest for better health, many people turn to doctors, self-help books or herbal supplements. But they overlook a powerful weapon that could help them fight illness and depression, speed recovery, slow aging and prolong life: their friends.

Researchers are only now starting to pay attention to the importance of friendship and social networks in overall health. A 10-year Australian study found that older people with a large circle of friends were 22 percent less likely to die during the study period than those with fewer friends. A large 2007 study showed an increase of nearly 60 percent in the risk for obesity among people whose friends gained weight. And last year, Harvard researchers reported that strong social ties could promote brain health as we age.

"In general, the role of friendship in our lives isn't terribly well appreciated," said Rebecca G. Adams, a professor of sociology at the University of North Carolina, Greensboro. "There is just scads of stuff on families and marriage, but very little on friendship. It baffles me. Friendship has a bigger impact on our psychological well-being than family relationships."

In a new book, "The Girls From Ames: A Story of Women and a 40-Year Friendship" (Gotham), Jeffrey Zaslow tells the story of 11 childhood friends who scattered from Iowa to eight different states. Despite the distance, their friendships endured through college and marriage, divorce and other crises, including the death of one of the women in her 20s.

Using scrapbooks, photo albums and the women's own memories, Mr. Zaslow chronicles how their close friendships have shaped their lives and continue to sustain them. The role of friendship in their health and well-being is evident in almost every chapter.

Two of the friends have recently learned they have breast cancer. Kelly Zwagerman, now a high school teacher who lives in Northfield, Minn., said that when she got her diagnosis in September 2007, her doctor told her to surround herself with loved ones. Instead, she reached out to her childhood friends, even though they lived far away.

"The first people I told were the women from Ames," she said in an interview. "I e-mailed them. I immediately had e-mails and phone calls and messages of support. It was instant that the love poured in from all of them."

When she complained that her treatment led to painful sores in her throat, an Ames girl sent a smoothie maker and recipes. Another, who had lost a daughter to leukemia, sent Ms. Zwagerman a hand-knitted hat, knowing her head would be cold without hair; still another sent pajamas made of special fabric to help cope with night sweats.

Ms. Zwagerman said she was often more comfortable discussing her illness with her girlfriends than with her doctor. "We go so far back that these women will talk about anything," she said.

Ms. Zwagerman says her friends from Ames have been an essential factor in her treatment and recovery, and research bears her out. In 2006, a study of nearly 3,000 nurses with breast cancer found that women without close friends were four times as likely to die from the disease as women with 10 or more friends. And notably, proximity and the amount of contact with a friend wasn't associated with survival. Just having friends was protective.

Bella DePaulo, a visiting psychology professor at the University of California, Santa Barbara, whose work focuses on single people and friendships, notes that in many studies, friendship has an even greater effect on health than a spouse or family member. In the study of nurses with breast cancer, having a spouse wasn't associated with survival.

While many friendship studies focus on the intense relationships of women, some research shows that men can benefit, too. In a six-year study of 736 middle-age Swedish men, attachment to a single person didn't appear to affect the risk of heart attack and fatal coronary heart disease, but having friendships did. Only smoking was as important a risk factor as lack of social support.

Exactly why friendship has such a big effect isn't entirely clear. While friends can run errands and pick up medicine for a sick person, the benefits go well beyond physical assistance; indeed, proximity does not seem to be a factor.

It may be that people with strong social ties also have better access to health services and care. Beyond that, however, friendship clearly has a profound psychological effect. People with strong friendships are less likely than others to get colds, perhaps because they have lower stress levels.

Last year, researchers studied 34 students at the University of Virginia, taking them to the base of a steep hill and fitting them with a weighted backpack. They were then asked to estimate the steepness of the hill. Some participants stood next to friends during the exercise, while others were alone.

The students who stood with friends gave lower estimates of the steepness of the hill. And the longer the friends had known each other, the less steep the hill appeared.

"People with stronger friendship networks feel like there is someone they can turn to," said Karen A. Roberto, director of the center for gerontology at Virginia Tech. "Friendship is an undervalued resource. The consistent message of these studies is that friends make your life better."

http://www.nytimes.com/2009/04/21/health/21well.html?nl=8hlth&emc=hltha1

Natural Happiness

By PAUL BLOOM

Why should we care about nature? Should we care about it for its own sake — or for our sake, because it happens to make us happy or healthy? These might not seem like the brightest questions. Few people need convincing that the destruction of rain forests, the mass extinction of species and the melting of the ice sheets in Greenland would all be very bad things. Do we really need to list the reasons?

We do. After all, in many regards our species has already kissed nature goodbye, and we are better off for it. Technology has come to be more diverse than the biosphere. In 1867, Karl Marx observed that there were 500 types of hammer made in Birmingham, England. In 1988, Donald Norman, a cognitive scientist at the University of California, San Diego, suggested that the average American encounters 20,000 different kinds of artifacts in everyday life, which would be more than the number of animals and plants that we can distinguish. And right now, there are about 1.5 million identified species on Earth — impressive, but nothing compared to the more than 7 million United States patents.

This is mostly good news. No sane person would give up antibiotics and anesthesia, farming and the written word. Our constructed environments shield us from heat and cold and protect us from predators. We have access to food and drink and drugs that have been devised to stimulate our nervous systems in magnificent ways. We sleep in soft beds and have immediate access to virtual experiences from pornography to classical symphonies. If a family of hunter-gatherers were dropped into this life, they would think of it as a literal heaven.

Or maybe not. There is a considerable mismatch between the world in which our minds evolved and our current existence. Our species has spent almost all of its existence on the African savanna. While there is debate over the details, we know for sure that our minds were not adapted to cope with a world of billions of people. The life of a modern city dweller, surrounded by strangers, is an evolutionary novelty. Thousands of years ago, there was no television or Internet, no McDonald's, birth-control pills, Viagra, plastic surgery, alarm clocks, artificial lighting or paternity tests. Instead, there was plenty of nature. We lived surrounded by trees and water and animals and sky.

This history has left its mark on our minds. Children are irrepressible taxonomizers, placing the world of distinct individuals into categories based on their appearance, their patterns of movement and their presumed deeper natures, and some psychologists have argued that the hard-wired capacity to organize and structure the world is specially adapted to nature: we are natural-born zoologists and botanists. We may also have evolved to get pleasure from certain aspects of the natural world. About 25 years ago, the Harvard biologist E. O. Wilson popularized the "biophilia" hypothesis: the idea that our evolutionary history has blessed us with an innate affinity for living things. We thrive in the presence of nature and suffer in its absence.

Our hunger for the natural is everywhere. It is reflected in art: the philosopher Denis Dutton, in his book "The Art Instinct," suggests that popular taste in landscape painting has been shaped by preferences that evolved for the African savanna. The appeal of the natural is also reflected in where we most want to live. People like to be close to oceans, mountains and trees. Even in the most urban environments, it is reflected in real estate prices: if you want a view of the trees of Central Park, it'll cost you. Office

buildings have atriums and plants; we give flowers to the sick and the beloved and return home to watch Animal Planet and the Discovery Channel. We keep pets, which are a weird combination of constructed things (cats and dogs were bred for human companionship), surrogate people and conduits to the natural world. And many of us seek to escape our manufactured environments whenever we can — to hike, camp, canoe or hunt.

Wilson emphasizes the spiritual and moral benefits of an attachment to nature, warning that we "descend farther from heaven's air if we forget how much the natural world means to us." But there are more tangible benefits as well. Many studies show that even a limited dose of nature, like a chance to look at the outside world through a window, is good for your health. Hospitalized patients heal more quickly; prisoners get sick less often. Being in the wild reduces stress; spending time with a pet enhances the lives of everyone from autistic children to Alzheimer's patients. The author Richard Louv argues that modern children suffer from "nature-deficit disorder" because they have been shut out from the physical and psychic benefits of unstructured physical contact with the natural world.

So the preservation of the natural world should be important to us. But how important? The psychologist Philip Tetlock has pointed out that many people talk about the environment as a "sacred value," protected from utilitarian trade-offs — when the Exxon Valdez spilled nearly 11 million gallons of crude oil, 80 percent of the respondents in one poll said that we should pursue greater environmental protection "regardless of cost." But he also points to the need to balance environmental concerns with social and political and personal priorities. (Few of these respondents would be willing to hand over their pensions for a more efficient cleanup of the Alaskan shoreline.) And even if we did value nature above everything else, we would still have to decide which aspects of nature we care about the most. You can see this in the debate over the creation of giant wind farms in the ocean or on hillsides. Proponents are enthusiastic about the cheap, green energy; critics worry about the loss of natural beauty and the yearly filleting of thousands of songbirds and ducks.

In the end, an indiscriminate biophilia makes little sense. Natural selection shaped the human brain to be drawn toward aspects of nature that enhance our survival and reproduction, like verdant landscapes and docile creatures. There is no payoff to getting the warm fuzzies in the presence of rats, snakes, mosquitoes, cockroaches, herpes simplex and the rabies virus. Some of the natural world is appealing, some of it is terrifying and some of it grosses us out. Modern people don't want to be dropped naked into a swamp. We want to tour Yosemite with our water bottles and G.P.S. devices. The natural world is a source of happiness and fulfillment, but only when prescribed in the right doses.

You might think that technology could provide a simulacrum of nature with all the bad parts scrubbed out. But attempts to do so have turned out to be interesting failures. There is a fortune to be made, for instance, by building a robot that children would respond to as if it were an animal. There have been many attempts, but they don't evoke anywhere near the same responses as puppies, kittens or even hamsters. They are toys, not companions. Or consider a recent study by the University of Washington psychologist Peter H. Kahn Jr. and his colleagues. They put 50-inch high-definition televisions in the windowless offices of faculty and staff members to provide a live view of a natural scene. People liked this, but in another study that measured heart-rate recovery from stress, the HDTVs were shown to be worthless, no better than staring at a blank wall. What did help with stress was giving people an actual plate-glass window looking out upon actual greenery.

All of this provides a different sort of argument for the preservation of nature. Put aside for the moment practical considerations like the need for clean air and water, and ignore as well spiritual worries about the sanctity of Mother Earth or religious claims that we are the stewards of creation. Look at it from the coldblooded standpoint of the enhancement of the happiness of our everyday lives. Real natural habitats provide significant sources of pleasure for modern humans. We intuitively grasp this, and this knowledge underlies the anxiety that we feel about nature's loss. It might be that one day we will be able to replace the experience of nature with "Star Trek" holodecks and robotic animals. But until then, this basic fact about human pleasure is an excellent argument for keeping the real thing.

Paul Bloom is a professor of psychology at Yale and the author of "Descartes' Baby." He is currently writing a book about pleasure.

http://www.nytimes.com/2009/04/19/magazine/19wwln-lede-t.html

Women Who Keep Ovaries Live Longer

By RONI CARYN RABIN

Each year, hundreds of thousands of women who undergo hysterectomies have their ovaries removed along with their uterus, a practice meant to protect them from ovarian cancer. But a new study has found that women who keep their ovaries live longer.While women who had their ovaries removed developed fewer breast cancers and almost entirely eliminated their risk of ovarian cancer over 24 years of follow-up, they were more likely to develop heart disease than women who kept their ovaries, and they were more likely to die.

The new findings — from an analysis of data in the famous Nurses' Health Study, published in the May issue of the journal Obstetrics & Gynecology — raises questions about a widespread practice. Some 300,000 American women a year, about half of those who have hysterectomies, have their ovaries removed."This finding is contrary to 35 years of teaching in gynecology," said the lead author, Dr. William H. Parker of the John Wayne Cancer Institute in Santa Monica, Calif.

"In the 1970s, it was decided that taking out the ovaries to prevent ovarian cancer would be the new strategy," he said. "This study shows that you're more likely to die if you have your ovaries taken out, unless you're among a group of women with a family history that places you at high risk for ovarian cancer or breast cancer."While ovarian cancer is difficult to detect and often deadly, it is also rare, Dr. Parker explained, noting that only 34 of the study participants who kept their ovaries died of ovarian cancer during the follow-up period. "Heart disease kills more than 20 times the number of women every year," he said.

The study analyzed data on 29,380 women who had participated in the Harvard Nurses' Health Study: 16,345 who had hysterectomy with both ovaries removed, and 13,035 who had hysterectomy but kept their ovaries. After 24 years of follow-up, women in the first group had 895 cases of breast cancer — a 25 percent lower risk than those who kept their ovaries — and 96 percent less risk of ovarian cancer (just 5 cases). But they were 12 percent more likely to die during the follow-up period. Their risk of heart disease was 17 percent higher than the risk faced by women with ovaries. They also had a 17 percent greater risk of dying of cancer. And in an unexpected finding, they were at greater risk for lung cancer.

The risks of heart disease and death appeared to be even greater for women who had their uterus and ovaries removed before age 50 and did not take estrogen, compared with women who had a hysterectomy before 50 but kept their ovaries.

The study may add to the debate over estrogen and the role it plays in heart disease in women. Dr. Parker and other experts suggested that women who kept their ovaries lived longer because even though the ovaries make less estrogen after menopause, they produce androstenedione and testosterone, which are converted into estrogen by fat and muscle.

Dr. Isaac Schiff, chief of obstetrics and gynecology at Massachusetts General Hospital and a professor at Harvard School of Medicine, said the study did not mean that women undergoing hysterectomies should never have their ovaries removed.

"A woman with a strong family history of ovarian cancer or breast cancer should still be given the option of having her ovaries removed," said Dr. Schiff, who was not involved in the study. "The individual patient should be given the information, and decide what's best for her."

But that is a change from the past, he said, adding, "We used to just arbitrarily say, 'If you're over 45, have your ovaries taken out.' "

http://www.nytimes.com/2009/04/28/health/research/28ovar.html?nl=8hlth&emc=hltha2

Snapshots From the Days of Bare-Hands Anatomy

By ABIGAIL ZUGER, M.D.

The array of familiar objects threatened by digital technology encompasses the old (books, paintings) and the new (CDs). And then there is the human body, which counts as both.

Not the bodies we use, of course, but rather the bodies we allow medical professionals to use while training, to familiarize themselves with the terrain. Dissecting a cadaver has been part of medical education for millenniums. But the cadaver that enters the gross anatomy suite with the blessing of both the prior owner and the state is actually quite a new phenomenon.

Barely a century ago American medical schools were helping themselves to alumni of the local poorhouse for some of their teaching material and paying grave robbers for the rest. Uniformity came to the process of organ donation beginning only in 1968, with the development of a model law that states could adopt.

Now the same technology that lets us scan living bodies in all dimensions may obviate our need for dead ones, as some anatomy courses move from real dissection to its virtual counterpart — clean and odor-free, in crystal-clear focus with infinite zoom.

Some say virtual anatomy can never replace the transcendent reality. Some say it is a huge improvement over smelly, greasy, inconvenient flesh. Both arguments will be fueled by “Dissection,” an extraordinary collection of photographs that makes even today’s flesh-and-blood anatomy laboratories look tame.

Photography soared in popularity after the Civil War, and in 1900 Eastman Kodak’s Brownie camera created armies of snapping amateurs. A vogue for photographing the gross anatomy class swept through American medical schools, as students were moved to recreate in black and white the iconic dissection scenes of Rembrandt and other great masters: scholarly doctors posing around the supine cadaver, scalpels in hand, gravitas on face.

Some student groups posed for professional photographers. Others took their own shots. The prints were mounted on living room walls, sent as postcards and even used as calling cards. By 1920 the craze had simmered down, and after World War II it was pretty much over.

But hundreds of these photographs endure. John Harley Warner, chairman of Yale's History of Medicine program, and James M. Edmonson, curator of a museum of medical memorabilia at Case Western Reserve University in Cleveland, have culled more than 100 for what might under other circumstances be considered a coffee-table book. It is a striking, glossy, oversize volume, immensely decorative if shredded flesh and the odd bone are your idea of décor.

But as ghoulish as the cadavers in these shots may be — they range from pristine, untouched corpses to unrecognizable piles of picked-over remains — their shock value diminishes with each turned page. Conversely, the attention commanded by the groups of young students self-consciously posed around the dissecting table never wanes.

They attended schools all over the country, from prestigious Harvard and Johns Hopkins to small, short-lived institutions in the Midwest. Only a few female faces are scattered in the groups of white men: in one photograph a handwritten scrawl identifies one small girl as "wife." A few shots depict all-female and all-black students from segregated schools.

The so-called dieners, who prepared the bodies and disposed of the remains, were almost all black men who stared impassively into the camera a little apart from the students.

Until well into the 20th century all of them wore street clothes. A few had skimpy aprons to deflect noxious splashes, but the disposable latex glove was far in the future: almost all worked with bare hands. That fact alone is enough to chill the 21st-century medical spine: we may shake our patients' hands and touch their skin, but the tactile sensation of muscle, brain and viscera, living or not, is one we no longer know.

And the complex process of imagining it is only the beginning of the deep stretch of the mind these photographs provoke.

Many show medicine at its cocky, callous worst. Some students posed the cadaver as one of the boys — hat on head, pipe in bared grinning teeth, skeletal fist clutching a fan of playing cards. In one 1905 shot a balding, fully clad student lies on the dissection table while six flayed cadavers are propped to a standing position around him, purportedly preparing to cut. The photographer took the trouble to copyright this shot, titled "A Student's Dream."

But the other side of medicine is visible here, as well. For a haunting image of all it has ever aspired to be, little can surpass one of the last photographs in the book, shot at an unknown medical school in 1950. Four young men cluster about the head of a table, gazing down at the face of their eviscerated cadaver. The photographer has created the illusion that the body rests, Pietà-like, in their laps; the light illuminates their hair. Forget the truckloads of grandiose prose that has been spun about the art and science of medicine over the centuries: one look at this picture and you understand what it is all supposed to be about.

This article has been revised to reflect the following correction:

Correction: April 29, 2009
A review on Tuesday about "Dissection: Photographs of a Rite of Passage in American Medicine: 1880-1930," by John Harley Warner and James M. Edmonson, referred incorrectly to laws on organ donation. State law, not federal, governs the process.

http://www.nytimes.com/2009/04/28/health/28book.html?nl=8hlth&emc=hltha8

'Safe' climate means 'no to coal'

By Richard Black
Environment correspondent, BBC News website

About three-quarters of the world's fossil fuel reserves must be left unused if society is to avoid dangerous climate change, scientists warn.

More than 100 nations support the goal of keeping temperature rise below 2C.

But the scientists say that without major curbs on fossil fuel use, 2C will probably be reached by 2050.

Writing in Nature, they say politicians should focus on limiting humanity's total output of CO2 rather than setting a "safe" level for annual emissions.

The UN climate process focuses on stabilising annual emissions at a level that would avoid major climate impacts.

" **It took us 250 years to burn the first half trillion, and on current projections we'll burn the next half trillion in less than 40 years** "
Myles Allen

But this group of scientists says that the cumulative total provides a better measure of the likely temperature rise, and may present an easier target for policymakers.

"To avoid dangerous climate change, we will have to limit the total amount of carbon we inject into the atmosphere, not just the emission rate in any given year," said Myles Allen from the physics department at Oxford University.

"Climate policy needs an exit strategy; as well as reducing carbon emissions now, we need a plan for phasing out net emissions entirely."

Forty years

The UN climate convention, agreed at the 1992 Rio Earth Summit, commits countries to avoiding "dangerous" climate change, without defining what that is.

The EU proposed some years ago that restricting the rise to 2C from pre-industrial times was a reasonable threshold, and it has since been adopted by many other countries, although some - particularly small islands - argue that even 2C would result in dangerous impacts.

Temperatures have already risen by about 0.7C during the industrial age.

Dr Allen's analysis suggests that if humanity's CO2 emissions total more than about one trillion tonnes of carbon, the 2C threshold is likely to be breached; and that could come within a lifetime.

"It took us 250 years to burn the first half trillion," he said, "and on current projections we'll burn the next half trillion in less than 40 years."

Inherent uncertainties in the modelling mean the temperature rise from the trillion tonnes could be between 1.3C and 3.9C, Dr Allen's team calculates, although the most likely value would be 2C.

Oil change

The "trillion tonnes" analysis is one of two studies published in Nature by a pool of researchers that includes the Oxford group and scientists from the Potsdam Institute for Climate Change Impact Research in Germany.

The second study, led by Potsdam's Malte Mainshausen, attempted to work backwards from the 2C goal, to find out what achieving it might mean in practice.

It suggests that the G8 target of halving global emissions by 2050 (from 1990 levels) would leave a significant risk of breaching the 2C figure.

"Only a fast switch away from fossil fuels will give us a reasonable chance to avoid considerable warming," said Dr Mainshausen.

"If we continue burning fossil fuels as we do, we will have exhausted the carbon budget in merely 20 years, and global warming will go well beyond 2C."

If policymakers decided they were happy to accept a 25% chance of exceeding 2C by 2050, he said, they must also accept that this meant cutting emissions by more than 50%.

That would mean only burning about a quarter of the carbon in the world's known, economically-recoverable fossil fuel reserves. This is likely to consist mainly of oil and natural gas, leaving coal as a redundant fuel unless its emissions could be captured and stored.

Both analyses support the view of the Stern Review and the Intergovernmental Panel on Climate Change (IPCC) in suggesting that making reductions earlier would be easier and cheaper than delaying.

But according to Potsdam's Bill Hare, a co-author on the second paper, some key governments appear to favour pledging milder cuts in the near term in return for more drastic ones in decades to come.

"We have a number of countries - the US, Japan, Brazil - saying 'we will emit higher through to 2020 and then go down faster'," he said.

"That might be true geophysically, but we cannot find any economic model where emissions can fall in the range that this work shows would be necessary - around 6% per year."

Major intervention

Myles Allen's group has made the argument before that focussing on humanity's entire carbon dioxide output makes more scientific and political sense than aiming to define a particular "safe" level of emissions, or to plot a pathway assigning various ceilings to various years.

Some greenhouse gases, such as methane, have a definable lifetime in the atmosphere, meaning that stabilising emissions makes sense; but, said Dr Allen, CO2 "doesn't behave like that".

"There are multiple levers acting on its concentration and it does tend to accumulate; also models have to represent the possibility of some feedback between rising temperatures and emissions, such as parts of the land turning from carbon sinks into sources, for example."

The Nature papers emerge in a week that has seen the inaugural meeting of President Obama's Major Economies Forum on Energy and Climate, a new version of a body created under President Bush that brings together 17 of the world's highest-emitting countries for discussion and dialogue.

During the opening segment, Secretary of State Hillary Clinton re-affirmed the administration's aim of cutting US emissions by 80% from 1990 levels by 2050 - a target espoused by some other developed countries.

But according to Malte Meinshausen's analysis, even this reduction may not be enough to keep the average global temperature rise within 2C, assuming less developed nations made less stringent cuts in order to aid their development.

"If the US does 80%, that equates to about 60% globally, and that offers only a modest chance of meeting the 2C target," he said.

Last week saw the publication of data showing that industrialised countries' collective emissions rose by about 1% during 2007.

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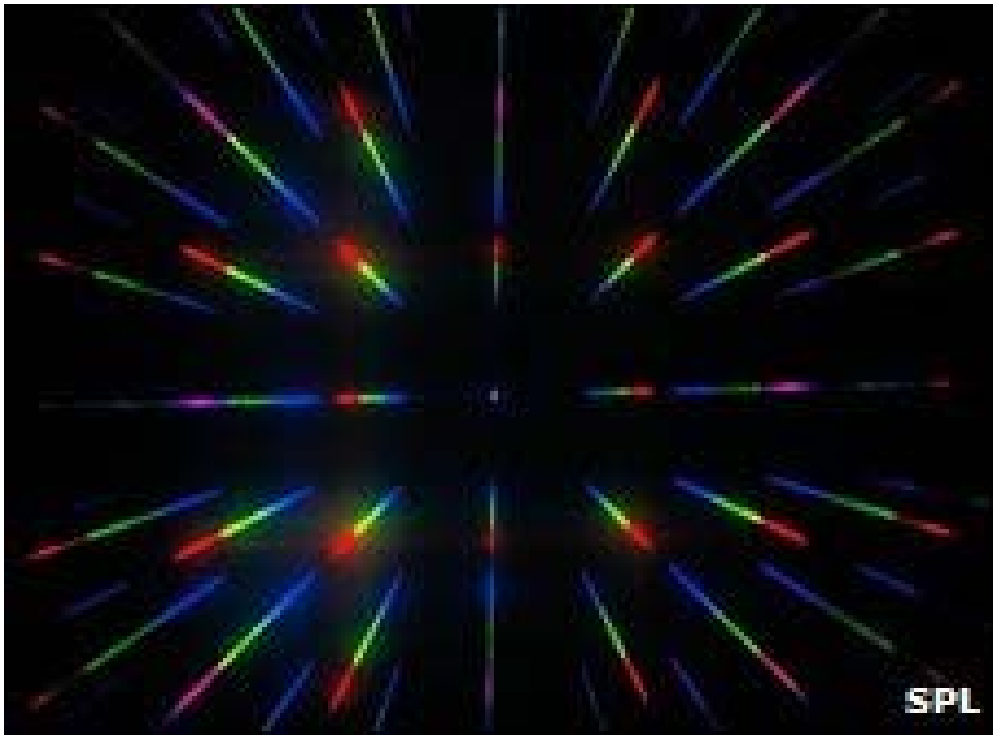
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8023072.stm

Published: 2009/04/29 17:15:08 GMT

Debut for world's fastest camera

By Jason Palmer
Science and technology reporter, BBC News

The fastest imaging system ever devised has been demonstrated by researchers reporting in the journal Nature.



Their camera's "shutter speed" is just a half a billionth of a second, and it can capture over six million images in a second continuously.

Its "flashbulb" is a fast laser pulse dispersed in space and then stretched in time and detected electronically.

The approach will be instrumental in imaging fast-moving or random events, such as communication between neurons.

What is more, the camera works with just one detector, rather than the millions in a typical digital camera.

Gathering steam

Dubbed Serial Time-Encoded Amplified imaging, or Steam, the technique depends on carefully manipulating so-called "supercontinuum" laser pulses.

These pulses, less than a millionth of a millionth of a second long, contain an enormously broad range of colours.

Two optical elements spread the pinprick laser pulses into an ordered two-dimensional array of colours.

It is this "2-D rainbow" that illuminates a sample. Part of the rainbow is reflected by the sample - depending on light and dark areas of the illuminated spot - and the reflections travel back along their initial path.

Because the spreading of the pulse's various colours is so regular and ordered, the range of colours reflected contains detailed spatial information about the sample.

"Bright spots reflect their assigned wavelength but dark ones don't," explained Bahram Jalali, the University of California, Los Angeles professor who led the research.

" **Our next step is to improve the spatial resolution so we can take crystal clear pictures of the inner structure of cells** "
Bahram Jalali, UCLA

"When the 2-D rainbow reflects from the object, the image is copied onto the colour spectrum of the pulse."

The pulse then passes back through the dispersive optics and again becomes a pinprick of light, with the image tucked away within as a series of distributed colours.

However, that colour spectrum is mixed up in an exceptionally short pulse of light that would be impossible to unpick in traditional electronics.

The team then routes the pulse into a so-called dispersive fibre - a fibre-optic cable that has a different speed limit for different colours of light.

As a result, the red part of the spectrum races ahead of the blue part as the pulse travels along the fibre.

Eventually, the red part and blue part separate in the fibre, arriving at very different times at the fibre's end.

All that remains is to detect the light as it pops out of the fibre with a standard photodiode and digitise it, assigning the parts of the pulse that arrive at different times to different points in two-dimensional space.

The result of all this optical trickery: an image that represents a snapshot just 440 trillionths of a second long.

The researchers used a laser that fired more than six million pulses in a second, resulting in as many images. However, they say that the system can be improved to acquire more than 10 million images per second - more than 200,000 times faster than a standard video camera.

'Rogue cells'

Another imaging system known as a streak camera can capture images with an even shorter shutter speed, but they can only capture a fixed number of images and must be triggered to do so for a given event.

The Steam camera, by contrast, can capture images continuously, making it ideal for random events that cannot be triggered.

Some applications that may benefit from the approach include observing the communication between cells, or the activity of neurons.

But the perfect example of an application for the Steam camera's specifications is analysing flowing blood samples in an approach known as flow cytometry.

The imaging of individual cells in a fast-flowing volume of blood is impossible for current cameras, a small random sample is taken and those few cells are imaged manually with a microscope.

"But, what if you needed to detect the presence of very rare cells that, although few in number, signify early stages of a disease?," asks Keisuke Goda, lead author of the study.

Dr Goda cites circulating tumour cells as a perfect example of such a target. Precursors to metastasis, they may exist as only a few among a billion healthy cells.

"The chance that one of these cells will happen to be on the small sample of blood viewed under a microscope is virtually negligible."

But with the Steam camera, fast-flowing cells can be individually imaged.

The team is working to extend the technique to 3-D imaging with the same time resolution, and to increase the effective number of "pixels" in a given image to 100,000.

"Our next step is to improve the spatial resolution so we can take crystal clear pictures of the inner structure of cells," Professor Jalali told BBC News.

"We are not there yet, but if we are able to accomplish this, then there is no shortage of applications in biology."

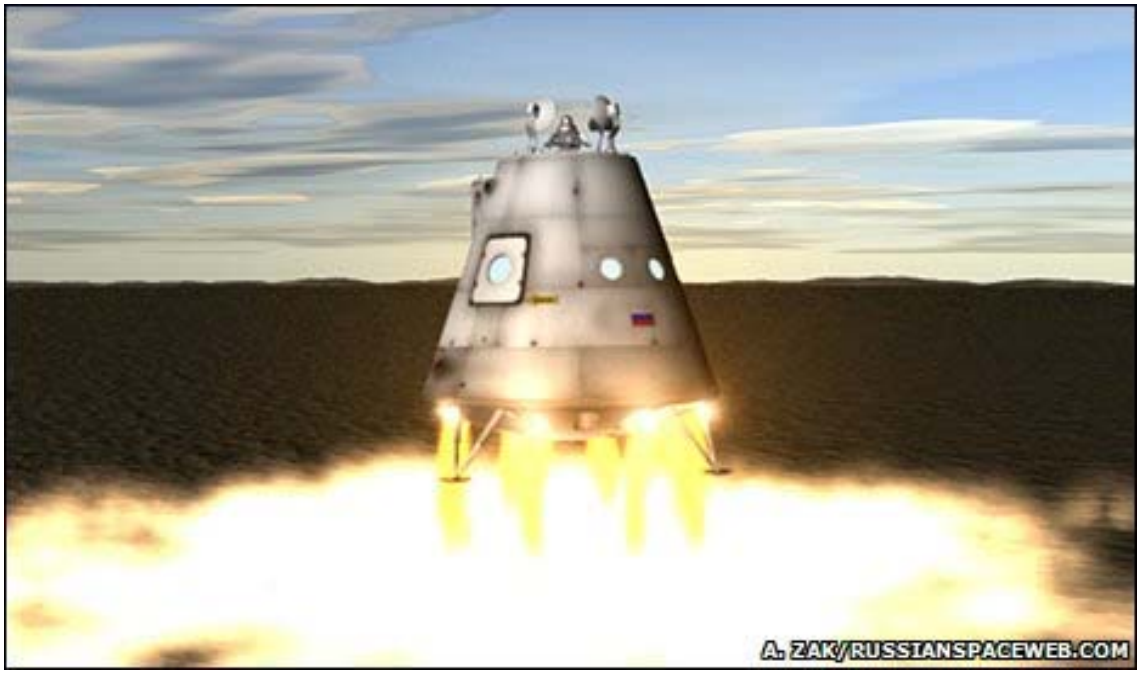
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8025211.stm

Published: 2009/04/29 17:23:42 GMT

Russia mulls rocket power 'first'

By Anatoly Zak
Science reporter

Russia's next-generation manned space vehicle might be equipped with thrusters to perform a precision landing on its return to Earth.



Engineers are considering a rocket-powered landing system for the successor to Russia's Soyuz spacecraft.

If accepted, it would be the first time that a manned vehicle relied solely on rocket engines for touchdown.

Previous manned missions have landed on Earth using a parachute or, in the case of space shuttles, a pair of wings. RKK Energia, Russia's prime developer of manned spacecraft, had to examine the feasibility of the rocket-powered landing as a result of conflicting requirements for the project set by the Russian government.

Currently, Russian cosmonauts are carried into orbit on the three-seat Soyuz capsule. Russia is developing the new craft as a replacement to this venerable spacecraft, which has been in service for more than four decades. The Soyuz does use small solid propellant motors to soften its touchdown, but the ship's parachute plays the main role in providing the vehicle and crew with a safe landing.

New launch site

In 2007, Moscow took the momentous decision to build a new launch site in the nation's far east, hoping to end Russia's dependency on the spaceport in Baikonur, which, after the collapse of the Soviet Union, ended up in the newly independent republic of Kazakhstan.

The new site, which has been dubbed Vostochny, or simply "Eastern", will be located almost as far south as Baikonur - an important orbital mechanics factor which determines the cargo-carrying capacity of rockets.

" **I think, from the technical point of view, there is no doubt that this concept would work** "
Christian Bank, EADS-Astrium

However, the very same decision left only a narrow strip of land in the European part of Russia, near the city of Orenburg, where returning space capsules could touch down if they followed a straight ballistic trajectory.

Not surprisingly, Russian engineers found themselves under political pressure to improve the manoeuvrability of the future spacecraft, so it could guide itself into a relatively small landing area.

The alternative - landing under a parachute - would put the craft at the mercy of the wind.

Radical solutions like gliding wingless vehicles and "transformers" with deployable wings were deemed too expensive and technically risky giving the Kremlin's current requirement to have the new spacecraft ready for its first manned mission in 2018.

Eventually, the idea for a rocket-assisted landing emerged as a winner, promising to keep the predicted touchdown to a patch of land of only two by five kilometres.

Last July, Korolev-based RKK Energia released the first drawings of a multi-purpose transport ship, known as the Advanced Crew Transportation System (ACTS), which, at the time, Russia had hoped to develop in co-operation with Europe.

But the design of the spacecraft's crew capsule had raised eyebrows in some quarters, as it lacked a parachute - instead sporting a cluster of 12 soft-landing rockets, burning solid propellant.

Combined with retractable landing legs and a re-usable thermal protection system, landing rockets promised to enable not only a safe return to Earth, but also the possibility of performing multiple space missions with the same crew capsule.

According to the presentation made by Nikolai Bryukhanov, the leading designer at RKK Energia, at the 26th International Symposium on Space Technology and Science in Hamamatsu, Japan, the spacecraft would fire its engines at an altitude of just 600-800m, as the capsule is streaking toward Earth after re-entering the atmosphere at the end of its mission.

After a vertical descent, the precision landing would be initiated at the altitude of 30m above the surface.

Christian Bank, the leading designer of manned space systems at EADS-Astrium in Bremen, Germany, which at the time was responsible for the European side of the ACTS project, agreed with the validity of this novel Russian approach toward landing.

"It was explained to us how it was supposed to work and, I think, from the technical point of view, there is no doubt that this concept would work," Mr Bank told BBC News.

However, inside Russia, the idea apparently has many detractors. Since the end of 2008, Moscow has shrouded the new manned spacecraft project - now known by the Russian abbreviation PPTS, for Prospective Piloted Transport System - in a veil of secrecy.

But hints dropped by Russian officials and in anonymous postings on industry web forums have provided insights into a vigorous debate on the landing system raging within the Russian space industry.

Controversial system

In April 2009, the semi-official RIA Novosti news agency quoted an unnamed RKK Energia official as saying that the future spacecraft would use an environmentally-friendly liquid propellant - such as alcohol - during its touchdown.

The use of liquid propellants would also enable more control during landing thanks to variable thrust, while solid fuel would burn according to a pre-determined profile once it had been ignited.

Still, the switch to a liquid propellant did not silence the critics, who regard any rocket engines too complex and risky to rely on in the last minutes or seconds before touching down.

As a result, an alternative concept has emerged, which would combine a high-precision rocket-powered landing under normal circumstances and a parachute in the case of an emergency.

As with any compromise, it requires splitting the capsule into two parts - the crew cabin and the propulsion section.

If the craft's landing engines were to fail, the propulsion section would have to be jettisoned. Otherwise, the propellant-laden ship would be too heavy for a parachute to handle.

As preliminary development of the PPTS vehicle would not be completed until mid-2010, only time will tell whether this compromise can silence the system's detractors.

Track record

RKK Energia did not begin its work for the rocket-powered landing system on a blank sheet of paper. In the 1980s, the company worked on a highly classified project to develop a large manned capsule, called Zarya ("Dawn"), for a wide range of civilian and military missions.

The bell-shaped vehicle was to use liquid propellant rockets for returning to Earth. Zarya was in an advanced stage of design when the project was shelved in 1989 on the eve of the Soviet Union's collapse.

Back then, the concept of a rocket-powered landing also produced plenty of controversy. During the formal defence of the project, one high-ranking official sceptical of the rocket-cushioned approach to landing reportedly used an unprintable expletive to describe what was going to happen to crew members unlucky enough to encounter a rocket engine failure a few seconds before touchdown.

But if a rocket-powered landing was ever to be adopted for Russia's next-generation manned spacecraft, it would not be the first space vehicle to use such a system. In the 1990s, the US tested an unmanned prototype of a re-usable launcher, know as DC-X, which would lift off and land vertically under rocket power.

Conceived primarily for the needs of the US Star Wars missile defence programme, DC-X was abandoned after the end of the Cold War. Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8024590.stm

Published: 2009/04/29 12:59:18 GMT

Cancer pill 'offers MS benefits'

Courses of a common cancer drug can dramatically reduce the risk of a patient with multiple sclerosis having a relapse or deterioration, work shows.

Taking cladribine a few times a year more than halved the chances of a relapse, with few side-effects, the UK study of 1,300 patients found.

UK expert Professor Gavin Giovannoni said the drug could revolutionise the treatment of MS.

Its manufacturer Merck Serono hopes to seek licensing for its use this year.

The drug is already licensed for treating leukaemia.

" **The evidence is there, but we now need to see cladribine move smoothly through the regulatory process and the price the manufacturer sets will play a crucial part in that** "
Dr Lee Dunster, head of research at the MS Society

Prof Giovannoni gave his assessment of its potential value to MS patients at a meeting of the American Academy of Neurology in Seattle.

The UK's drugs watchdog, the National Institute for Health and Clinical Excellence, is considering including cladribine in its next round of assessments.

Cladribine works by suppressing the immune system, reducing the risk of further damage to a patient's nervous system.

Patients who took the drug were 30% less likely to suffer worsening in their disability due to MS.

Easy to take

The study involved over 1,300 MS patients who were followed up for nearly two years and monitored using MRI scans.

Patients were given either two or four treatment courses of cladribine tablets per year, or a placebo.

" **Having an effective oral therapy will have a major impact for people with MS** "
Professor Giovannoni

Each course consists of a single tablet per day for four or five days, adding up to just eight to 20 days of treatment each year.

If it becomes available to patients, cladribine will be the first licensed treatment for MS which does not involve regular injections.

Professor Giovannoni, of Barts and The London School of Medicine and Dentistry, part of Queen Mary, University of London, said: "These results are really exciting. MS can be a very debilitating illness and at the moment treatment options remain limited.

"Having an effective oral therapy will have a major impact for people with MS.

"Our study shows that cladribine tablets prevent relapses and slow down the progression of the disease, making patients feel better.

"Importantly, it does so without the need for constant injections that are associated with unpleasant side-effects.

"We will continue to follow the patients in the trial to see how they fare in the long-term."

Dr Lee Dunster, head of research at the MS Society, said: "These are remarkable results and being able to take a tablet instead of having injections will be a huge step forward for people with MS.

"The evidence is there, but we now need to see cladribine move smoothly through the regulatory process and the price the manufacturer sets will play a crucial part in that."

It is estimated that 85,000 people in the UK currently have MS, with 2,500 new cases diagnosed each year.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/8023120.stm

Published: 2009/04/29 23:33:46 GMT

Can Living And Non-living Follow Same Rules? Unifying The Animate And Inanimate Designs Of Nature

A leaping Arctic Grayling shows a form honed by efficiency. (Credit: US Fish and Wildlife Service)

ScienceDaily (Apr. 30, 2009) — Living beings and inanimate phenomena may have more in common than previously thought.

At least that is the view of Duke University engineer Adrian Bejan and Penn State biologist James Marden.

What they believe connects the two worlds is a theory that flow systems – from animal locomotion to the formation of river deltas -- evolve in time to balance and minimize imperfections. Flows evolve to reduce friction or other forms of resistance, so that they flow more easily with time. This view has been termed the constructal law, which Bejan first stated 13 years ago.

With the help of Marden, Bejan believes that he has now unified both the biological and geophysical principles of nature's design through the constructal law, which can also be viewed as the physics of evolution.

"This is an exciting development for physicists, but it should also resonate with biologists," Bejan said. "The idea that organic evolution is analogous to the way form evolves in inanimate flow systems is a novel concept that has the potential to unite perspectives and approaches across disparate disciplines. We suggest that the constructal law provides a powerful tool for examining and understanding variation in both the animate and inanimate compartments of nature."

The team's findings were published online in the journal *Physics of Life Reviews*. It was supported by the U.S. Air Force Office of Scientific Research and the National Science Foundation.

The story began with the two scientists trying to determine if the same laws applied to two very different forms of locomotion -- the swimming of fish and the running or flying of animals. The commonly held belief among biologists was that fish locomotion was different than other animal locomotion. Since they

live in water, the conventional wisdom held, fish were different because they would not be subject to gravity.

The way Bejan saw it, birds and animals could be seen as weight-lifters, since their means of locomotion required effort with an unyielding base – the ground – and a limitless top – the air. He argued that as fish swim, they too have an unyielding floor – the sea bed. Hence, water flowed over and around them like the air over runners and flyers.

So, fish too were weight-lifters, and these forms of locomotion are predicted by the constructal law, Bejan said.

"Our discovery that animal locomotion adheres to the constructal law tells us that – even though you couldn't predict exactly what animals would look like if you started evolution over on Earth, or it happened on another planet – with a given gravity and density of their tissues, the same basic patterns of their design would evolve again," Marden said.

In numerous papers over past decade, Bejan has demonstrated that the constructal law predicts the design of a wide range of flow systems seen in nature, from biology and geophysics to social dynamics and technology evolution.

"When thinking of evolution and Darwin, most people think of animals or trees," Bejan said. "That's too bad, because design features are everywhere in nature. The constructal law can be seen as a universal principle of evolution, which applies in many fields, from physics to economics."

He describes the law as an animated movie, where one screen is replaced by another screen on which the currents flow with greater ease. He sees the constructal law (http://www.constructal.org) as the time direction of the movie, flow configurations (designs, drawings) that flow more easily."

"The constructal law can be seen to cover 'natural design' phenomena across the board," Bejan said, "as a compact summary of common observations, the tape of evolution running in one direction, which may be expressed in physics terms simply as: time and configuration."

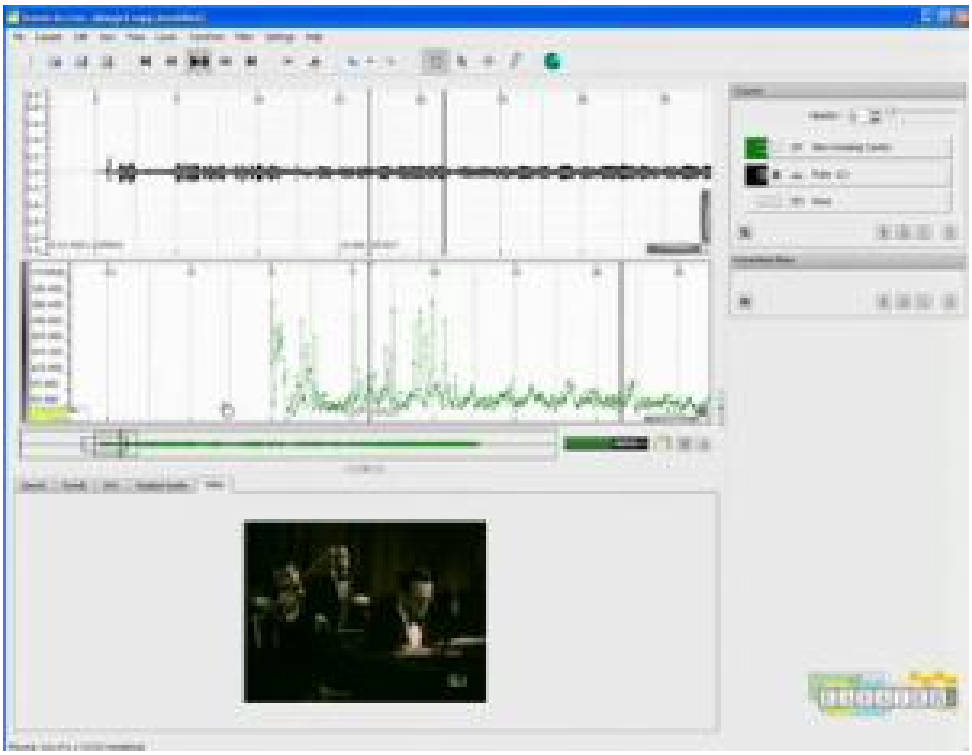
Journal reference:

1. Adrian Bejana, James H. Marden. **The constructal unification of biological and geophysical design**. *Physics of Life Reviews*, 2008; DOI: 10.1016/j.plrev.2008.12.002

Adapted from materials provided by Duke University.

http://www.sciencedaily.com/releases/2009/04/090428103104.htm

Rich Musical Pickings With Easier Access To Archives



Easaier -- Enabling Access to Sound Archives through Integration, Enrichment and Retrieval -- features system functions that are all combined within in a single user-configurable interface that allows users to access archives in a variety of useful ways. (Credit: Image courtesy of ICT Results)

ScienceDaily (Apr. 30, 2009) — Digital sound archives offer enormously rich resources but accessing them is currently difficult, and often arbitrary. European researchers believe they have developed a solution, one that offers compelling new functions to digital sound archive access.

Digital sound archives offer enormously rich resources, but suffer from access problems. Sound material is often held separately from other materials and media. Worse, it can be very difficult to listen to or to browse the content, and there is no way to search it.

Existing solutions, which attempt to deal with these problems, tend to be library or content specific, of limited functionality, or difficult to use.

Music archives made Easaier

This is an issue that the EU-funded Easaier project sought to solve. Easaier stands for Enabling Access to Sound Archives through Integration, Enrichment and Retrieval, and the project achieved just that by developing innovative new methods for accessing sound archives.

The system functions are all combined within in a single user-configurable interface that allows users to access archives in a variety of useful ways.

For example, the system responds to the needs of amateurs and professionals by providing new ways to interact with, or retrieve, content through a simple web-client access point that works in any web browser, or from an advanced user access system developed in a stand-alone application.

Metadata is used extensively in both applications, and can provide a wide range of information to users, including tempo, key and other technical and background information. To achieve this, Easaier created a music ontology for semantic metadata, which will have an impact well beyond the project's core aim.

Taking music further

But the system functions go further. "Of course, nobody just wants to find a piece of music. They want to play around with it, too, so we developed a series of tools that allow users to manipulate the sounds in a wide variety of useful ways," explains Joshua Reiss, coordinator of the Easaier project.

The Easaier system, for example, will allow students to slow down playback without altering the pitch. It will also allow them to separate specific instruments from a piece, and they can play back the piece an octave higher or lower, to hear how that affects it.

What's more, there are tools that can be used with speech, as well as a novel presentation of multimedia material, such as sound-source separation, equalisation and noise-reduction algorithms, and methods to synchronise video and audio streams in real time.

Crucial issue: what next?

Easaier has generated a lot of interest among music archives. "We have an agreement in principle with the British Library, we are currently working on how they want to implement the system for their archive," explains Reiss.

The Irish Pipers Archive and the Irish Traditional Music archive are also interested in the system and have been testing and evaluating it. But that is only the beginning. A lot of the tools and technologies used in Easaier are currently at work in National and European projects. "They are being used for other projects and are receiving further development," Reiss reveals.

Some of the partners are commercialising or licensing their work to other companies. NICE is incorporating speech tools it developed in Easaier into its call centre management software, and the Dublin Institute of Technology has licensed its source separation tools to Sony Music.

In all, almost ten patents were taken out for various elements of the project, and Memnon, one of Europe's main players for audio archiving systems, has shown considerable interest in the project, while a start up company in the USA, called Platinum Blue, has licensed technology developed in part within the project.

"We are interested in any other ways the system could be commercialised or adapted to other products, too," notes Reiss.

What ever happens, it will mean music archiving, retrieval and manipulation will be made a lot easier.

The Easaier project received funding from the ICT strand of the Sixth Framework Programme for research.

More information is available at: http://easaier.org/

Adapted from materials provided by ICT Results.

http://www.sciencedaily.com/releases/2009/04/090422121947.htm

Ice Sheet Behavior Much More Volatile And Dynamic Than Previously Thought, Tahiti Corals Show

The drilling platform researchers used in Tahiti to extract cores of fossilised coral from beneath the ocean floor. (Credit: Image courtesy of University of Oxford)

ScienceDaily (Apr. 30, 2009) — Fossilised corals from tropical Tahiti show that the behaviour of ice sheets is much more volatile and dynamic than previously thought, a team led by Oxford University scientists has found.

Analysis of the corals suggests that ice sheets can change rapidly over just hundreds of years – events associated with sea level rises of several metres over the same period. It also shows that a natural warming mechanism thought to be responsible for ending ice ages does not fit the timing of the end of the penultimate ice age, around 137,000 years ago.

A report of the research appears online in the journal *Science* on April 23.

"It's amazing just how rapidly these 'melting' – or 'deglaciation' – events occurred and how enormous the volumes of ice involved were," said Dr Alex Thomas, from the Department of Earth Sciences at Oxford University, lead author of the paper. "In the case of deglaciation after the penultimate ice age, before 137,000 years ago, we're talking about ice sheets – that covered most of the USA and Canada and were up to five kilometres thick – simply vanishing."

The tropical paradise of Tahiti is an ideal place to study the sea level rises associated with deglaciation. This is because not only is it home to different species of corals that like to live at different depths but it is sinking at a constant rate which can be adjusted for when dating these corals, and it is far enough away from the ice sheets not to be affected by displacement or gravitational effects.

"Getting to these ancient fossilised corals without damaging the reef and local ocean life is far from easy," said Dr Thomas. "A robot submersible was sent to survey the ocean floor and placed a target which was used to guide down a drill from a shallow-draft drilling vessel with great precision and extract our cores. We only left a tiny hole behind that soon disappeared – something that was only possible because of the expertise of the Integrated Ocean Drilling Programme."

The fossilised coral within the cores showing sea level changes was then dated using a uranium dating technique. The timing of these changes showed that a natural warming mechanism known as northern hemisphere summer insolation could not have caused the deglaciation that brought the penultimate ice age to an end.

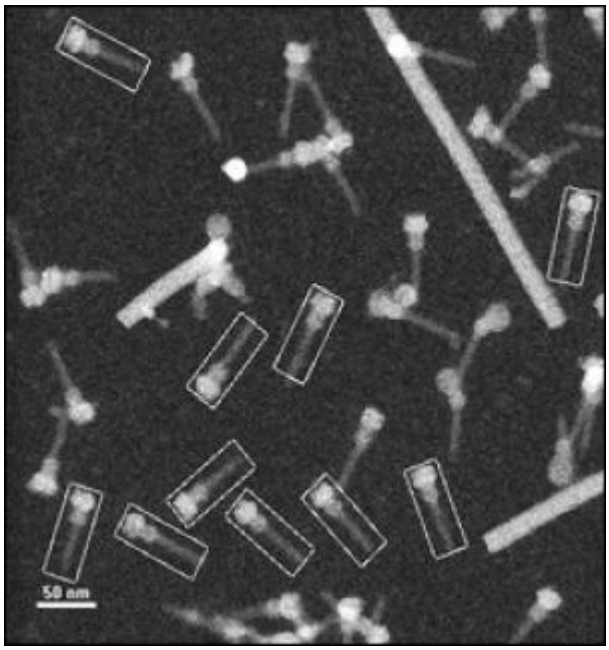
Dr Thomas said: "People had assumed that because this natural warming mechanism matched the timing of deglaciation ending the last ice age (around 21,000 years ago) that it would be responsible for the one before that. What we have shown is that this was not the case. We are starting to understand that recent observations of changes in ice sheets have not prepared us for just how rapidly the covering of ice across the Earth can fluctuate and that, as yet, we have not identified all the natural phenomena which drive deglaciation."

Journal reference:

1. Alex L. Thomas, Gideon M. Henderson, Pierre Deschamps, Yusuke Yokoyama, Andrew J. Mason, Edouard Bard, Bruno Hamelin, Nicolas Durand, and Gilbert Camoin. **Penultimate Deglacial Sea-Level Timing from U/Th Dating of Tahitian Corals**. *Science*, 2009; DOI: 10.1126/science.1168754

Adapted from materials provided by University of Oxford.
http://www.sciencedaily.com/releases/2009/04/090423205104.htm

Details Of Bacterial 'Injection' System Revealed



STEM image showing isolated needle complexes marked with rectangles for mass analysis. Rods are TMV (tobacco mosaic virus) particles used for reference. (Credit: Image courtesy of DOE/Brookhaven National Laboratory)

ScienceDaily (Apr. 29, 2009) — New details of the composition and structure of a needlelike protein complex on the surface of certain bacteria may help scientists develop new strategies to thwart infection.

The research, conducted in part at the U.S. Department of Energy's Brookhaven National Laboratory, will be published April 26, 2009, in the advance online edition of *Nature Structural & Molecular Biology*.

The scientists were studying a needlelike protein complex known as a "type III secretion system," or T3SS, on the surface of Shigella bacteria, a cause of dysentery. The secretion system is a complex protein structure that traverses the bacterial cell membrane and acts as a biological syringe to inject deadly proteins into intestinal cells. These proteins rupture the cell's innards, leading to bloody diarrhea and sometimes death. Similar secretion systems exist in a range of other infectious bacteria, including those that cause typhoid fever, some types of food poisoning, and plague.

"Understanding the 3D structure of these secretion proteins is important for the design of new broad-spectrum strategies to combat bacterial infections," said study co-author Joseph Wall, a biophysicist at Brookhaven Lab.

Previous studies of the type III secretion system have revealed that it is composed of some 25 different kinds of proteins assembled into three major parts: a "bulb" that lies within the bacterial cell, a region spanning the inner and outer bacterial membranes, and a hollow, largely extracellular "needle." But to understand how the parts work together to secrete proteins, the scientists required higher-resolution structural information, and knowledge of the chemical makeup and arrangement of the components.

Using a combination of scanning transmission electron microscopy (STEM) and transmission electron microscopy (TEM), the scientists have now revealed new details of the "needle complex" structure.

"STEM and the other techniques work in complementary ways," said Wall, who designed and runs the STEM facility at Brookhaven Lab. By itself, STEM cannot reveal a structure, but it gives very accurate

sizes of the molecules making up particular parts, which helps scientists hone in on the structure hinted at by the other techniques. STEM also allows only good, intact molecules to be selected for analysis, which avoids errors inherent in bulk measures of mixtures of intact and broken complexes, a problem that may have affected previous analyses.

"Our reconstruction shows an overall size, shape and major sub-component arrangement consistent with previous studies," said Wall. "However, the new structure also reveals details of individual subunits and their angular orientation, which changes direction over the structure's length. We now see 12-fold symmetric features and details of connections between sub-domains both internally and externally throughout the 'needle' base."

The more accurate model therefore shows how the different parts of the injection machine fit together and may fit with other bacterial components that provide the engine to drive injection. These are important steps toward developing a detailed understanding of how the injection machine works, and to developing inhibitors that can prevent bacterial infections.

Although STEM was built more than 25 years ago, it remains a state-of-the-art tool for accurately determining the stoichiometry and homogeneity of biological complexes. It is one of the unique tools that Brookhaven Lab provides to the scientific community.

In the case of this study, said lead author Ariel Blocker of Oxford University and the University of Bristol, UK, "The STEM experiment was key because it provided unique and independent information that allowed the narrowing down of potential symmetries within the structure to a small set of testable possibilities."

Co-authors on this study include: Julie L. Hodgkinson of Oxford University and Medical School Hanover, Germany; Ariel J. Blocker of Oxford and University of Bristol, UK; Ashley Horsley, David Stabat, Steven Johnson, and Susan M. Lea, all of Oxford; Joseph S. Wall and Martha Simon of Brookhaven Lab; and Paula C. A. da Fonseca and Edward P. Morris of Chester Beatty Laboratories, UK.

The research was funded by the UK Medical Research Council, and a Guy G. F. Newton Senior Research Fellowship. The STEM laboratory at Brookhaven Lab is supported by the U.S. National Institutes of Health and the Department of Energy's Office of Science (Office of Biological and Environmental Research) and by fee-for-service support.

Journal reference:

1. Julie L Hodgkinson, Ashley Horsley, David Stabat, Martha Simon, Steven Johnson, Paula C A da Fonseca, Edward P Morris, Joseph S Wall, Susan M Lea & Ariel J Blocker. **Three-dimensional reconstruction of the Shigella T3SS transmembrane regions reveals 12-fold symmetry and novel features throughout**. *Nature Structural & Molecular Biology*, 2009; DOI: 10.1038/nsmb.1599

Adapted from materials provided by DOE/Brookhaven National Laboratory.

http://www.sciencedaily.com/releases/2009/04/090426175651.htm

Vitamin K With Sorafenib Showed Anti-tumor Effects In Pancreas Cancer, Hepatocellular Carcinoma

ScienceDaily (Apr. 29, 2009) — A combination of sorafenib and vitamin K had an effect in vitro on both human pancreas cancer and hepatocellular carcinoma, according to researchers from the Kimmel Cancer Center at Jefferson. Data from the two studies were presented at the AACR 100th Annual Meeting 2009 in Denver.

Vitamin K1 or vitamin K2, plus sorafenib (Nexavar) each have shown activity against the growth of human cancer cells by inhibiting the extracellular signal-regulated kinase (ERK) pathway according to Brian Carr, M.D., Ph.D., a professor of Medical Oncology at the Jefferson Medical College of Thomas Jefferson University. ERK plays a major role in cell growth of cancers.

Although sorafenib has demonstrated success at extending survival in patients with hepatocellular carcinoma (HCC, or primary liver cancer), hand-foot syndrome is a common adverse effect that affects approximately 20 percent of patients who receive the drug. It typically manifests as painful sores on the soles of patients' feet that can prevent the patients from walking, Dr. Carr said. Profound tiredness and weight loss is also seen in at least 30 percent of patients.

In the pancreas cancer study, Dr. Carr and his colleagues tested each K vitamin in combination with sorafenib in pancreatic cell lines. Each combination inhibited cell growth, induced cell death and decreased the expression of ERK. They found that when combining vitamin K and sorafenib, the sorafenib dose required for inhibiting cancer cell growth decreased by more than 50 percent. This dose was ineffective when used alone.

"So few agents have activity against pancreas cancer," Dr. Carr said. "One of the attractions of the combination of sorafenib and vitamin K is that both of these agents are already approved for human use. K vitamins also have no known adult human toxicities, and appear to enhance the effects of sorafenib, thus requiring lower, less-toxic doses."

In the second study, vitamin K1 also enhanced the effects of sorafenib in HCC. Sorafenib is FDA-approved for the treatment of HCC, which typically arises on a cirrhotic liver, which tolerates conventional chemotherapy poorly. The researchers previously had shown that vitamin K alone is a weak inhibitor of HCC growth. In this study, they found that the combination inhibits the growth of HCC, induces cell death and decreases the expression of ERK.

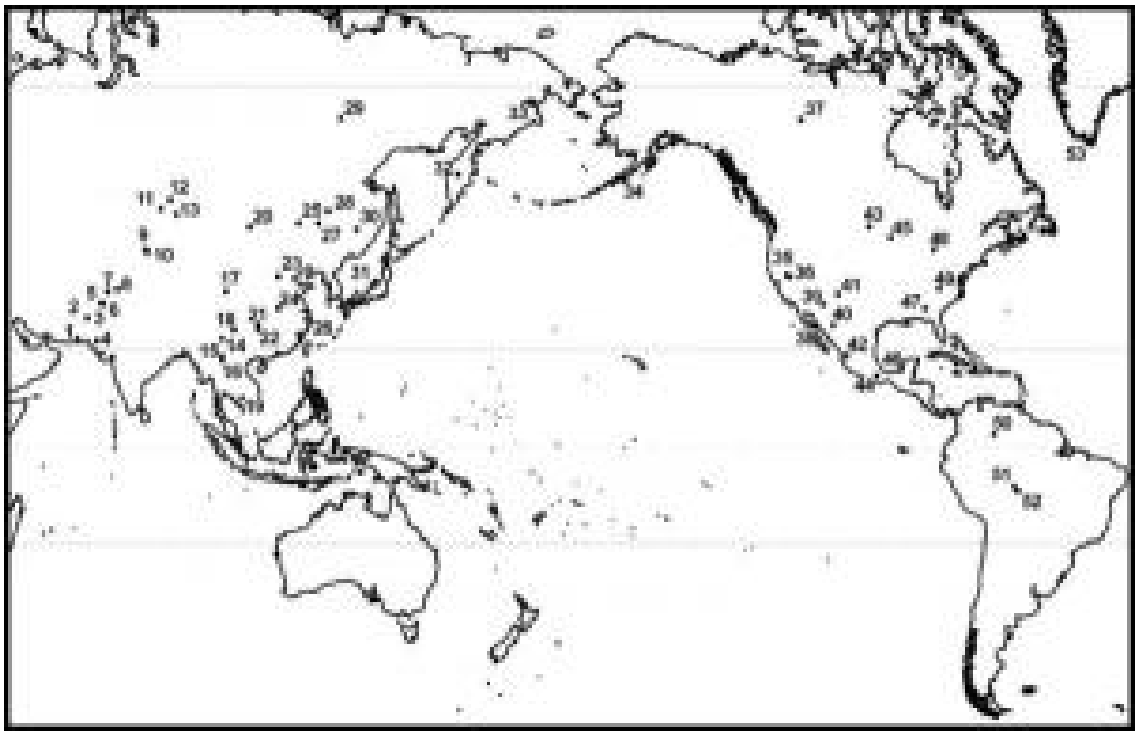
"Many patients need to discontinue treatment with sorafenib because of the debilitating side effects," Dr. Carr said. "If we could lower the dose, more patients would be able to complete their treatment."

These data also pave the way for potential studies to evaluate the combination of sorafenib and vitamin K as an HCC prevention strategy in patients who are at greater risk for developing the disease. This population includes patients with cirrhosis or patients who have previously had surgery for HCC. According to Dr. Carr, the recurrence rate for HCC after surgery is 40 percent.

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

http://www.sciencedaily.com/releases/2009/04/090422103548.htm

Native Americans Descended From A Single Ancestral Group, DNA Study Confirms



A distinct DNA signature was found among all but one of the populations shown as points 32 to 53 on this map. (The Fox tribe, point 48, was the exception. But DNA samples of only 2 people were tested, too few to provide a valid result.) The signature was absent in all Asian groups sampled, points 1-32. (Credit: Kari Britt Schroeder/UC Davis)

ScienceDaily (Apr. 29, 2009) — For two decades, researchers have been using a growing volume of genetic data to debate whether ancestors of Native Americans emigrated to the New World in one wave or successive waves, or from one ancestral Asian population or a number of different populations.Now, after painstakingly comparing DNA samples from people in dozens of modern-day Native American and Eurasian groups, an international team of scientists thinks it can put the matter to rest: virtually without exception, the new evidence supports the single ancestral population theory.

"Our work provides strong evidence that, in general, Native Americans are more closely related to each other than to any other existing Asian populations, except those that live at the very edge of the Bering Strait," said Kari Britt Schroeder, a lecturer at the University of California, Davis, and the first author on the paper describing the study."While earlier studies have already supported this conclusion, what's different about our work is that it provides the first solid data that simply cannot be reconciled with multiple ancestral populations," said Schroeder, who was a Ph.D. student in anthropology at the university when she did the research.

The study is published in the May issue of the journal *Molecular Biology and Evolution*.The team's work follows up on earlier studies by several of its members who found a unique variant (an allele) of a genetic marker in the DNA of modern-day Native American people. Dubbed the "9-repeat allele," the variant (which does not have a biological function), occurred in all of the 41 populations that they sampled from Alaska to the southern tip of Chile, as well as in Inuit from Greenland and the Chukchi and Koryak people native to the Asian (western) side of the Bering Strait. Yet this allele was absent in all 54 of the Eurasian, African and Oceanian groups the team sampled.

Overall, among the 908 people who were in the 44 groups in which the allele was found, more than one out of three had the variant.

In these earlier studies, the researchers concluded that the most straightforward explanation for the distribution of the 9-repeat allele was that all modern Native Americans, Greenlanders and western Beringians descend from a common founding population. Furthermore, the fact that the allele was absent in other Asian populations most likely meant that America's ancestral founders had been isolated from the rest of Asia for thousands of years before they moved into the New World: that is, for a period of time that was long enough to allow the allele to originate in, and spread throughout, the isolated population.

As strong as this evidence was, however, it was not foolproof. There were two other plausible explanations for the widespread distribution of the allele in the Americas.

If the 9-repeat allele had arisen as a mutation multiple times, its presence throughout the Americas would not indicate shared ancestry. Alternatively, if there had been two or more different ancestral founding groups and only one of them had carried the 9-repeat allele, certain circumstances could have prompted it to cross into the other groups and become widespread. Say that there was a second allele — one situated very close to the 9-repeat allele on the DNA strand — that conferred a strong advantage to humans who carried it. Natural selection would carry this allele into new populations and because of the mechanics of inheritance, long stretches of DNA surrounding it, including the functionless 9-repeat allele, would be carried along with the beneficial allele.To rule out these possibilities, the research team, which was headed by Noah Rosenberg at the University of Michigan, scrutinized DNA samples of people from 31 modern-day Asian populations, 19 Native American, one Greenlandic and two western Beringian populations.They found that in each sample that contained the 9-repeat allele, short stretches of DNA on either side of it were characterized by a distinct pattern of base pairs, a pattern they seldom observed in people without the allele. "If natural selection had promoted the spread of a neighboring advantageous allele, we would expect to see longer stretches of DNA than this with a similarly distinct pattern," Schroeder said. "And we would also have expected to see the pattern in a high frequency even among people who do not carry the 9-repeat allele. So we can now consider the positive selection possibility unlikely."

The results also ruled out the multiple mutations hypothesis. If that had been the case, there would have been myriad DNA patterns surrounding the allele rather than the identical characteristic signature the team discovered."There are a number of really strong papers based on mitochondrial DNA — which is passed from mother to daughter — and Y-chromosome DNA — which is passed from father to son — that have also supported a single ancestral population," Schroeder said. "But this is the first definitive evidence we have that comes from DNA that is carried by both sexes."

Other authors of the study are David G. Smith, a professor of anthropology at UC Davis; Mattias Jacobsson, University of Michigan and Uppsala University in Sweden; Michael H. Crawford, University of Kansas; Theodore Schurr, University of Pennsylvania; Simina Boca, Johns Hopkins University; Donald F. Conrad and Jonathan Pritchard, University of Chicago; Raul Tito and Ripan Malhi, University of Illinois, Urbana-Champaign; Ludmilla Osipova, Russian Academy of Sciences, Novosibirsk; Larissa Tarskaia, Russian Academy of Sciences, Moscow; Sergey Zhadanov, University of Pennsylvania and Russian Academy of Sciences, Novosibirsk; and Jeffrey D. Wall, UC San Francisco.

The work was supported by NIH grants to Rosenberg and Smith and an NSF Graduate Research Fellowship to Schroeder.

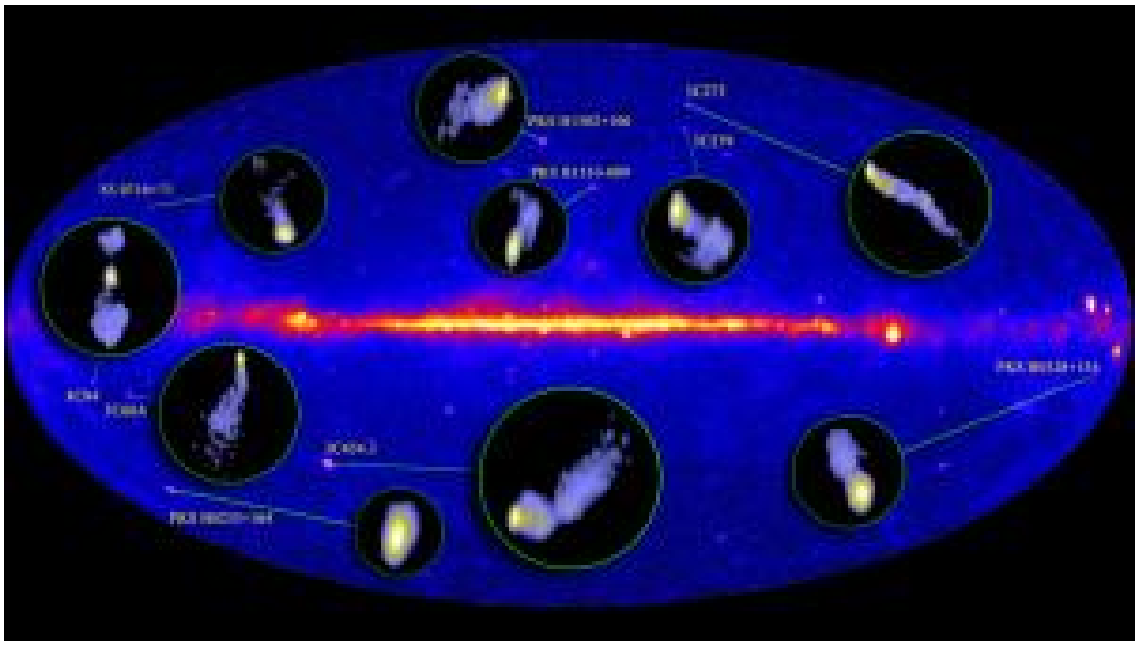
Journal reference:

1. Schroeder et al. **Haplotypic Background of a Private Allele at High Frequency in the Americas**. *Molecular Biology and Evolution*, 2009; 26 (5): 995 DOI: 10.1093/molbev/msp024

Adapted from materials provided by University of California, Davis.

http://www.sciencedaily.com/releases/2009/04/090428223836.htm

Continent-sized Radio Telescope Takes Close-ups Of Fermi Active Galaxies



The radio jets of several active galaxies mapped by the Very Long Baseline Array (VLBA) are inset into the Fermi Gamma-ray Space Telescope's map of the gamma-ray sky. (Credit: NASA/DOE/Fermi LAT Collaboration and NRAO/AUI/MOJAVE Team/M. Kadler)

ScienceDaily (Apr. 29, 2009) — An international team of astronomers has used the world's biggest radio telescope to look deep into the brightest galaxies that NASA's Fermi Gamma-ray Space Telescope can see. The study solidifies the link between an active galaxy's gamma-ray emissions and its powerful radio-emitting jets.

"Now we know for sure that the fastest, most compact, and brightest jets we see with radio telescopes are the ones that are able to kick light up to the highest energies," said Yuri Kovalev, a team member at the Max Planck Institute for Radio Astronomy in Bonn, Germany.

The brightest galaxies Fermi sees are active galaxies, which emit oppositely directed jets of particles traveling near the speed of light. Some, called blazars, are especially bright because one of the jets happens to be directed toward us. Astronomers believe that these jets somehow arise as a consequence of matter falling into a massive black hole at the galaxy's center, but the process is not well understood.

To peer into the jets, Kovalev and his colleagues used the National Science Foundation's Very Long Baseline Array (VLBA), a set of ten radio telescopes located from Hawaii to St. Croix in the U.S. Virgin Islands and operated by the National Radio Astronomy Observatory. When the signals from these telescopes are combined, the array acts like a single enormous radio dish more than 5,300 miles across. The VLBA can resolve details about a million times smaller than Fermi can and 50 times smaller than any optical telescope.

The new findings are an outcome of the MOJAVE program, a long-term study of the jets from active galaxies using the VLBA. "We see the innermost few hundred light-years of these jets for even the most distant active galaxies seen by Fermi," Kovalev noted.

For decades, astronomers have wondered about the nature of these radio-emitting jets. Hints that they also emit radiation at higher energies came from NASA's Compton Gamma-Ray Observatory, which operated throughout the 1990s, and, more recently, from observations by NASA's Chandra X-Ray Observatory.

Fermi's Large Area Telescope (LAT) scans the entire sky every three hours. These quick snapshots of the gamma-ray sky allow astronomers to better monitor sudden flares from active galaxies. The astronomers combined VLBA data of active galaxies with Fermi observations. Active galaxies detected in the LAT's first few months of operations generally possess brighter and more compact radio jets than galaxies the LAT did not see. Moreover, an active galaxy's radio jets tend to be brighter in the months following any gamma-ray flares observed by the LAT.

Kovalev and his colleagues also see a correlation between active galaxies with the brightest gamma-ray emission and those with the fastest jets. Because we see these jets nearly end on, and because the particles within the jets move close to the speed of light, the VLBA can study a phenomenon called "Doppler boosting." This makes radio-emitting blobs look brighter and appear to move much faster that the speed of light.

The VLBA data show that the bigger the Doppler boost seen in a radio jet, the more likely it is that Fermi recorded it as a variable gamma-ray source. In addition, many objects found by Fermi to be extreme in gamma-rays are broadcasting strong bursts of radio emission at about the same time.

All this points to the team's conclusion that the portion of an active galaxy's radio jet closest to the galaxy's core is also the source of the gamma-rays Fermi detects. The team's findings appear in two papers to be published in the May 1 issue of *The Astrophysical Journal Letters*.

"For more than a decade, we have collected images of the brightest galaxies in the radio sky to study the changing structures of their jets," said Matthew Lister, a professor at Purdue University and a member of the research team. Lister leads the MOJAVE program and is also a Fermi guest investigator. "We've waited a long time to compare our measurements with the findings in the gamma-ray sky -- and now, thanks to this state-of-the-art space observatory, we finally can."

Journal reference:

1. Y. Y. Kovalev, H. D. Aller, M. F. Aller, D. C. Homan, M. Kadler, K. I. Kellermann, Yu. A. Kovalev, M. L. Lister, M. J. McCormick, A. B. Pushkarev, E. Ros, and J. A. Zensus. **The Relation Between AGN Gamma-Ray Emission and Parsec-Scale Radio Jets**. *The Astrophysical Journal*, 2009; 696 (1): L17 DOI: 10.1088/0004-637X/696/1/L17

http://www.sciencedaily.com/releases/2009/04/090422175151.htm

Lower Dementia Drug Dose Boosts Brain Function, Cuts Side Effects

ScienceDaily (Apr. 29, 2009) — Sometimes less is more: Lower doses of an Alzheimer's drug delivered via skin patches improve cognition with fewer serious side effects than higher doses, researchers have found in an updated review.

"Is there any advantage of giving patients higher doses of rivastigmine? There doesn't seem to be any," said lead review author Jacqueline Birks, senior medical statistician for the University of Oxford, in England.

Previous studies had shown that high daily doses of rivastigmine (also known by its brand name, Exelon) of between 6 and 12 milligrams improved cognitive functions, such as memory, language and ability to perform simple daily living tasks, in patients with mild to moderate Alzheimer's disease.

However, adverse events often accompany high doses of rivastigmine.

Rivastigmine is part of the drug class called acetylcholinesterase inhibitors. These drugs work by improving transmission of electrical signals across certain areas of the brain.

Manufactured by Novartis, rivastigmine typically causes gastrointestinal side effects such as nausea, vomiting, diarrhea, abdominal pain and lack of appetite, as well as dizziness, fainting and weakness. In the United States, the drug costs about $160 per month.

Previous studies indicated that smaller, more frequent doses of rivastigmine might reduce the incidence of adverse events. Based on that evidence, a new study, the results of which are included in the update, began testing the safety and effectiveness of two strengths of the rivastigmine skin patch.

The review appears in the latest issue of The Cochrane Library, a publication of The Cochrane Collaboration, an international organization that evaluates medical research. Systematic reviews like this one draw evidence-based conclusions about medical practice after considering both the content and quality of existing medical trials on a topic.

The current review examined nine studies involving 4,775 patients with Alzheimer's disease. Research in five of the studies took place in the United States.

"What I was really interested in was how the [smaller 9.6 milligram/day] patch compared to the [larger 17.4 milligram/day] patch. What I found was that there didn't seem to be any differences in efficacy, but the patch in higher doses has more adverse events associated with it," Birks said.

Patients taking the larger patch scored similarly on cognitive function tests, compared to those taking the smaller patch, but two-thirds of patients taking the larger patch had at least one adverse event, compared to only half of patients taking the smaller patch.

For example, 19 percent of those taking the larger patch reported vomiting, whereas only 6 percent of patients taking the smaller patch reported this side effect.

"Gastrointestinal adverse events are associated with acetylcholinesterase inhibitors, but we see fewer with the smaller patch compared with the larger patch," Birks noted.

Patients taking the smaller rivastigmine patch also had lower rates of adverse events when compared to patients taking a 6- to 12-milligram daily dose of rivastigmine capsules, Birks said.

"It seems to show that they have improved the method of administering rivastigmine. We seem to get the same efficacy but we have a better adverse event profile" with the smaller dose patch, Birks said.

"This review has confirmed what we knew about the drug — that it provides cognitive improvements similar to other Alzheimer's medications, said Piero Antuono, M.D., a professor of neurology, pharmacology and toxicology at the Medical College of Wisconsin.

He has no affiliation with the review.

"Over a period of six months, people with Alzheimer's who take this drug improve by two points on a cognitive scale of zero to 70. If untreated, people with Alzheimer's lose an average of seven points per year," Antuono said.

Although acetylcholinesterase inhibitors such as rivastigmine do affect cognitive function in people with Alzheimer's, patients and their caregivers should understand that these drugs do not change the ultimate progression of this degenerative disease, he said.

"It's changing a little bit of the journey of the disease. You either take the expressway from point A to point B, or with this medication, you slow down and take the country road. It doesn't really make a difference long term, and it doesn't prolong life," Antuono said.

"Although these medications do provide symptomatic intervention for some time, they have to be used with non-pharmacological interventions, meaning that one needs to counsel the caregiver in managing the patient and provide social support so that the drug gets to work," Antuono said.

Journal reference:

1. Birks J, et al. **Rivastigmine for Alzheimer%u2019s disease**. *The Cochrane Database of Systematic Reviews*, 2009, Issue 2

Adapted from materials provided by Center for Advancing Health.

http://www.sciencedaily.com/releases/2009/04/090423203925.htm

Did Comets Contain Key Ingredients For Life On Earth?

Comet Hale Bopp. Comets have always fascinated us. A mysterious appearance could symbolize God's displeasure or mean a sure failure in battle, at least for one side. Now new research justifies our fascination -- comets might have provided the elements for the emergence of life on our planet. (Credit: iStockphoto/Michael Puerzer)

ScienceDaily (Apr. 29, 2009) — Comets have always fascinated us. In early cultures, a mysterious appearance of a comet could symbolize a deity's displeasure with humankind or mean a sure failure in battle, at least for one side. Now Tel Aviv University research adds a new twist to that fascination: comets might have provided the elements for the emergence of life on our planet.

While investigating the chemical make-up of comets, Prof. Akiva Bar-Nun of the Department of Geophysics and Planetary Sciences at Tel Aviv University found they were the source of missing ingredients needed for life in Earth's ancient primordial soup. "When comets slammed into the Earth through the atmosphere about four billion years ago, they delivered a payload of organic materials to the young Earth, adding materials that combined with Earth's own large reservoir of organics and led to the emergence of life," says Prof. Bar-Nun.

It was the chemical composition of comets, Prof. Bar-Nun believes, that allowed them to kickstart life. He has published his theory widely in scientific journals, including recently in the journal *Icarus.*

A Pinch of Argon, A Dash of Xenon

Using a one-of-a-kind machine built at Tel Aviv University, researchers were able to simulate comet ice, and found that comets contain ingredients necessary for providing the basic nutrients of life.

Specifically, Prof. Bar-Nun looked at the noble gases Argon, Krypton and Xenon, because they do not interact with any other elements and are not destroyed by Earth's oxygen. These elements have maintained stable proportions in the Earth's atmosphere throughout the lifetime of the planet, he explains.

"Now if we look at these elements in the atmosphere of the Earth and in meteorites, we see that neither is identical to the ratio in the sun's composition. Moreover, the ratios in the atmosphere are vastly different than the ratios in meteorites which make up the bulk of the Earth. So we need another source of noble

gases which, when added to these meteorites or asteroid influx, could change the ratio. And this came from comets.

Solving the Otherworldly Puzzle

Comets are essentially large chunks of ice, whose temperature ranges from -200 to -250 degrees centigrade. Formed in the early days of the solar system far away from the sun, water vapor condensed directly into ice, making little grains. These grains came together to form the comets, which are less than 2/3 of a mile in diameter, explains Prof. Bar-Nun.

During the comets' formation, the porous ice trapped gases and organic chemicals that were present in outer space. "The pattern of trapping of noble gases in the ice gives a certain ratio of Argon to Krypton to Xenon, and this ratio — together with the ratio of gases that come from rocky bodies — gives us the ratio that we observe in the atmosphere of the Earth."

Thus, the arrival on Earth of comets and asteroids led to the necessary ratio of materials for organic life, "which eventually were dissolved in the ocean and started the long process leading to the emergence of life on Earth," says Prof. Bar-Nun.

Asteroid Showers and Thunderstorms

The story started between 4.6 and 3.8 billion years ago, when both the moon and the Earth were bombarded by a flux of asteroids and comets. "On the Earth, most of the craters were obliterated by continental movement and by weathering winds and water erosion. On the moon, they remained as they were," says Prof. Bar-Nun, who adds that no life could thrive during this period of bombardment.

But the Earth recovered, and three to four hundred million years later, fragile forms of life emerged after the comet-delivered elements precipitated into the ocean. "There was another chemical development of these molecules in water, which became more and more complex," says Prof. Bar-Nun, leading to the origin of life on Earth.

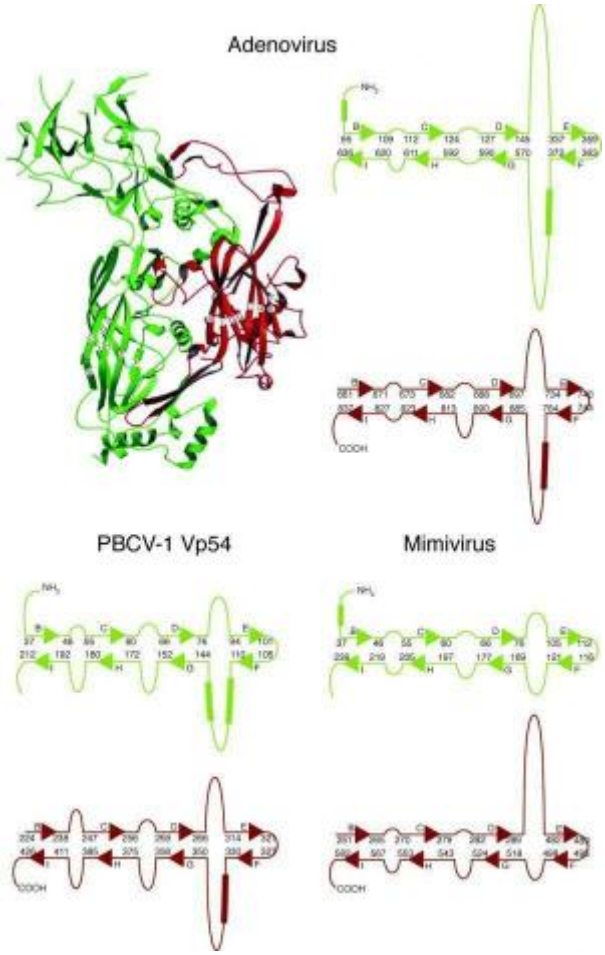
Journal reference:

1. I. Pat-El, D. Laufer, G. Notesco, A. Bar-Nun. **An experimental study of the formation of an ice crust and migration of water vapor in a comet's upper layers**. *Icarus*, 2009; 201 (1): 406 DOI: 10.1016/j.icarus.2008.12.041

Adapted from materials provided by Tel Aviv University.

http://www.sciencedaily.com/releases/2009/04/090428144126.htm

New Details About Mysterious Giant Virus Uncovered



The N-terminal and C-terminal jelly-roll domains are colored green and red, respectively. Top left is a ribbon diagram of the adenovirus capsid protein. Diagrammatic representation of the arrangement of the β strands (arrows) within each jelly-roll are given for adenovirus, PBCV1, and Mimivirus at the top right, bottom left, and bottom right, respectively. The β strands within each domain are labelled A to H. This gives rise to the two opposing BIDG and CHEF β sheets in each jelly-roll as indicated in the ribbon diagram. (Credit: Structural Studies of the Giant Mimivirus Xiao C, Kuznetsov YG, Sun S, Hafenstein SL, Kostyuchenko VA, et al. PLoS Biology Vol. 7, No. 4, e92 doi:10.1371/journal.pbio.1000092)

ScienceDaily (Apr. 29, 2009) — An international team of researchers has determined key structural features of the largest known virus, findings that could help scientists studying how the simplest life evolved and whether the unusual virus causes any human diseases.

The mimivirus has been called a possible "missing link" between viruses and living cells. It was discovered accidentally by French scientists in 1992 but wasn't confirmed to be a virus until 2003.

The virus infects amoebas, but it is thought to possibly be a human pathogen because antibodies to the virus have been discovered in pneumonia patients. However, many details about the virus remain unknown, said Michael Rossmann, Purdue University's Hanley Distinguished Professor of Biological Sciences.

Now a team of researchers from Purdue, the University of California at Irvine and the University of the Mediterranean in Marseilles, France, have thrown more light on the mimivirus' makeup.

The scientists have determined the basic design of the virus' outer shell, or capsid, and also of the hundreds of smaller units called capsomeres making up this outer shell. Findings also confirmed the existence of a starfish-shaped structure that covers a "special vertex," an opening in the capsid where genetic material leaves the virus to infect its host, and an indentation in the virus's genetic material itself is positioned opposite this opening, Rossmann said.

"The findings are important in terms of studying the evolution of cells, bacteria and viruses," said Siyang Sun, a postdoctoral research associate working in Rossmann's lab. "The mimivirus is like an intermediate between a cell and a virus. We usually think of cells as being alive and a virus is thought of as being dead because it needs a host cell to complete its life cycle. The mimivirus straddles a middle ground between viruses and living cells, perhaps redefining what a virus is."

The virus approaches the size of bacteria and is about half of a micron in diameter, more than 10 times larger than the virus that causes the common cold and large enough to be seen with a light microscope. Other viruses are too small to be seen with conventional light microscopes.

The findings are detailed in a research paper that will appear online April 28 in the journal *PLoS Biology*, published by the Public Library of Science, a nonprofit organization of scientists and physicians. The paper's lead author was Chuan Xiao, a former Purdue postdoctoral research associate and now an assistant professor in the Department of Chemistry at the University of Texas at El Paso.

Researchers had previously been unable to determine the virus's structure because they had assumed that, like many other viruses, it's capsid possessed a design known as icosahedral symmetry.

Xiao discovered the true structure when he decided to try reconstructing the virus assuming it possessed not standard icosahedral symmetry but another configuration called five-fold symmetry.

"If you start out thinking the object has icosahedral symmetry, then you assume there are 60 identical pieces, and that influences how you reconstruct the virus's structure," Rossmann said.

Researchers took images of the virus using an atomic force microscope, revealing a pattern of holes regularly spaced throughout the virus's outer shell.

"The capsids of most other large, pseudo icosahedral viruses do not contain such holes, and their function is unknown," Rossmann said.

The researchers used a method called cryo-electron microscopy reconstruction to determine the structure details. The reconstruction method enables researchers to produce three-dimensional structures by combining two-dimensional pictures, much like a complete architectural drawing of a house can be assembled with two-dimensional drawings of the sides, the roof and other elements.

Using five-fold symmetry revealed that one side of the virus's capsid is slightly different than the others, whereas all sides are the same in a regular icosahedron.

An icosahegron has a roughly spherical shape containing 20 triangular facets and 60 identical subunits. Like an icosahedron, the mimivirus capsid also has 20 facets. However, unlike an icosohedron, five facets of the capsid are slightly different than the others and surround the special vertex. Icosohedra contain 12 similar vertices, whereas the mimivirus contains eleven such vertices, with the 12th being different than the others.

The new reconstructed picture of the virus matched features seen using the atomic force microscope picture, Rossmann said.

The starfish-shaped feature apparently opens up like a blooming flower when the virus is ready to infect its host amoeba, enabling the virus to eject its DNA for insertion into the host, Rossmann said.

"In addition, we think the indentation of the genetic material has something to do with how the genome comes out of the virus," he said. "There is a relationship between the shape of the genome and the special vertex."

The research, which is funded by the National Institutes of Health, is ongoing, with future work probing additional properties of the virus, particularly the structure of the starfish-shaped feature and how it functions.

The paper was written by Xiao; microscope expert Yurii G. Kuznetsov in the Department of Molecular Biology and Biochemistry at UC Irvine; Sun; postdoctoral research associates Susan L. Hafenstein and Victor A. Kostyuchenko and electron microscopist Paul R. Chipman, from Purdue; research scientist Marie Suzan-Monti and Didier Raoult, a professor of microbiology, both from the University of the Mediterranean; Alexander McPherson, a professor of molecular biology and biochemistry at UC Irvine; and Rossmann.

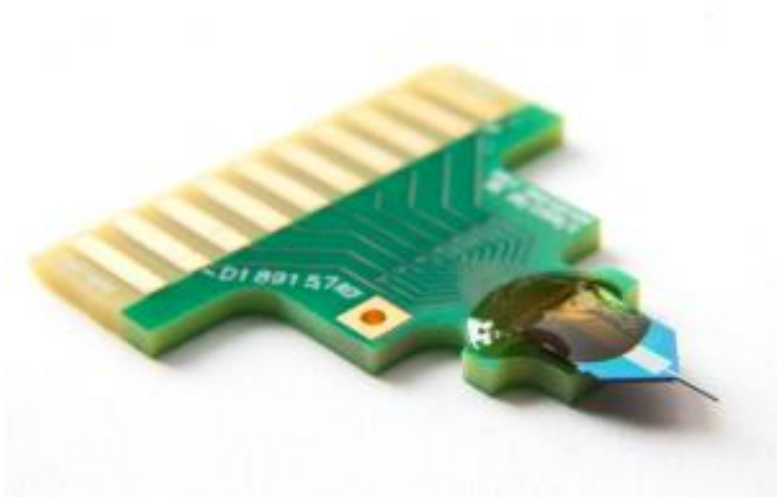
Journal reference:

1. Xiao et al. **Structural Studies of the Giant Mimivirus**. *PLoS Biology*, 2009; 7 (4): e92 DOI: 10.1371/journal.pbio.1000092

Adapted from materials provided by Purdue University.

http://www.sciencedaily.com/releases/2009/04/090427203701.htm

New Design Strategy For Brain Implants Paves The Way To Multi-electrode Deep-brain Stimulation



IMEC's design and modeling strategy allows developing advanced brain implants consisting of multiple electrodes enabling simultaneous stimulation and recording. (Credit: IMEC)

ScienceDaily (Apr. 29, 2009) — At this week's Design, Automation & Test in Europe (DATE) conference, IMEC presents a new design strategy for brain implants, which it used to create a prototype multi-electrode stimulation & recording probe for deep-brain stimulation. With this development, IMEC highlights the opportunities in the healthcare market for design tool developers. Brain implants for electrical stimulation of specific brain areas are used as a last-resort therapy for brain disorders such as Parkinson's disease, tremor, or obsessive-compulsive disorder. Today's deep-brain stimulation probes use millimeter-size electrodes. These stimulate, in a highly unfocused way, a large area of the brain and have significant unwanted side effects.

Wolfgang Eberle, Senior Scientist and project manager at IMEC's bioelectronics research group: "To have a more precise stimulation and recording, we need electrodes that are as small as individual brain cells (neurons). Such small electrodes can be made with semiconductor process technology, appropriate design tools, and advanced electronic signal processing. At DATE, we want to bring this message to the design community, showing the huge opportunities that the healthcare sector offers."

IMEC's design and modeling strategy allows developing advanced brain implants consisting of multiple electrodes enabling simultaneous stimulation and recording. This strategy was used to create prototype probes with 10 micrometer-size electrodes and various electrode topologies.The design strategy relies on finite-element modeling of the electrical field distribution around the brain probe. This was done with the multi-physics simulation software COMSOL 3.4 and 3.5. The COMSOL tools also enabled investigating the mechanical properties of the probe during surgical insertion and the effects of temperature. The results indicate that adapting the penetration depth and field asymmetry allow steering the electrical field around the probe. This results in high-precision stimulation. Also key to the design approach is developing a mixed-signal compensation scheme enabling multi-electrode probes capable of stimulation as well as recording. This is needed to realize closed-loop systems.

These new design approaches open up possibilities for more effective stimulation with less side effects, reduced energy consumption due to focusing the stimulation current on the desired brain target, and closed-loop control adapting the stimulation based on the recorded effect.

Adapted from materials provided by Interuniversity Microelectronics Centre (IMEC).

http://www.sciencedaily.com/releases/2009/04/090421080351.htm

Are Researchers Cherry Picking Participants For Studies Of Antidepressants?

ScienceDaily (Apr. 29, 2009) — Findings from clinical studies used to gain Food and Drug Administration approval of common antidepressants are not applicable to most patients with depression, according to a report led by the University of Pittsburgh Graduate School of Public Health.

Published in the May issue of the *American Journal of Psychiatry*, the study suggests only a small percentage of people with depression qualify for these studies, and those who do not qualify are often treated with the same medications but may suffer poorer clinical outcomes.

A part of the National Institute of Mental Health-funded Sequenced Treatment Alternatives to Relieve Depression (STAR*D) project – the largest study of the treatment of depression conducted in the United States – researchers compared symptoms and outcomes in depressed patients who met phase III study inclusion criteria to those who did not. Phase III studies for antidepressants determine the effectiveness of the drug in comparison to a placebo. The inclusion criteria for these studies are not standardized nor subject to federal guidelines, resulting in some variation from study to study in the profile of eligible patients. Typically excluded are patients with milder forms of depression, who might be more likely to respond to a placebo drug, and those who may have chronic depression or psychiatric and medical co-morbidities – additional illnesses or conditions.After assessing 2,855 patients treated with citalopram, a commonly prescribed selective serotonin reuptake inhibitor for mood disorders, study authors concluded that fewer than one in four, or 22.2 percent, of the patients met the usual criteria for inclusion in phase III antidepressant trials."Only a small percentage of depressed patients in our study would have qualified for inclusion in phase III efficacy trials of depression drugs," said study lead author, Stephen Wisniewski, Ph.D., professor of epidemiology and co-director of the Epidemiology Data Center, University of Pittsburgh Graduate School of Public Health. "This raises major concerns about whether results from traditional phase III studies can be generalized to most people with depression, who also often suffer from anxiety, substance abuse and other medical and psychiatric problems."

When Dr. Wisniewski and colleagues further assessed how well patients did on treatment, they found that those who met the eligibility criteria for phase III trials had better outcomes, including higher remission rates, less severe side effects and serious adverse events. The depression remission rate in the patients who met the criteria was 34.4 percent, compared to only 24.7 percent in the ineligible group. Additionally, the drug response rate also was higher in the eligible group – 51.6 percent compared to 39.1 percent of the ineligible group."Results from research studies suggest more optimistic outcomes than may exist for real-world patients receiving treatment for depression," said Dr. Wisniewski. Although phase III eligibility criteria could be changed to include a broader population of patients, Dr. Wisniewski cautions that this could come at the cost of more serious side effects in patients who have co-morbidities and are generally sicker. These patients may not be able to safely tolerate the drugs being tested. Instead, he suggests medical care providers who treat patients with depression use their professional judgment by noting that most phase III findings are based on patients who may be very different than those under their care.

The study was funded by the National Institute for Mental Health. Co-authors include A. John Rush, M.D., National University of Singapore; Diane Warden, Ph.D., M.B.A., and Madhukar Trivedi, M.D., University of Texas Southwestern Medical Center; Andrew Nierenberg, M.D., and Maurizio Fava, M.D., Harvard Medical School; Bradley Gaynes, M.D., M.P.H., University of North Caroline School of Medicine; James Luther, M.A., University of Pennsylvania School of Medicine; Patrick McGrath, M.D., Columbia University Medical Center; Philip Lavori, Ph.D., Stanford University School of Medicine; and Michael Thase, M.D., University of Pittsburgh School of Medicine.

Adapted from materials provided by University of Pittsburgh Schools of the Health Sciences, via EurekAlert!, a service of AAAS.
http://www.sciencedaily.com/releases/2009/04/090428103108.htm

Computers enter learning 'core'

Computer technology is to move centre stage alongside English, maths and personal skills in an overhaul of England's primary school curriculum.

These are the "essentials for learning and life" recommended by former school inspections director Sir Jim Rose.

Traditional subjects continue with more cross-curricular work in six themes, and a stress on speaking and listening.

From 2011 all children will be able to start school in the September after they turn four, the government says.

The change is part of an overhaul to smooth progression from early years through primary and into secondary school.

" **The touchstone of an excellent curriculum is that it instils in children a love of learning for its own sake** "
Sir Jim Rose

Sir Jim said: "The touchstone of an excellent curriculum is that it instils in children a love of learning for its own sake.

"From what I have seen on my visits, the best schools demonstrate that these priorities - literacy, numeracy, ICT and personal development - are crucial for giving children their entitlement to a broad and balanced education."

Science is no longer a core subject, but he added: "In no way does that suggest we are stepping back from recognising the importance of science and technology."

Subjects stay

His final report advocates six broad areas of understanding:

- English, communication and languages
- mathematical
- the arts
- historical, geographical and social
- physical development, health and wellbeing
- scientific and technological

But it also complains that his interim proposals had been misreported as doing away with traditional subjects.

"My recommended areas of learning will not 'abolish' subjects, such as history or geography," he said.

"The essential content of these subjects must be taught well in order for children to be able to make links between them, which is what having the six new areas of learning will allow teachers to do."

Early starts

The recommendation that summer-born children should start primary school in the September after their fourth birthday, rather than wait until January, would be subject to discussions between parents and schools. They might attend part-time.

But the government says it is committing to fund, from 2011, the cost of children starting school or having up to 25 hours a week in private or voluntary early years establishments - if parents want it.

Schools Secretary Ed Balls denied it would put pressure on parents to make their children start school before they were ready.

"We aren't saying it's compulsory to start school in September, we are saying that all local authorities will have to give that option to parents," he said.

Of England's 150 local authorities, 94 already had a single start date - so at present parents did not have the option of their child starting later if they were not ready, he said.

The acting general secretary of the National Union of Teachers, Christine Blower, said: "I welcome the fact that Sir Jim Rose has stepped back from his proposal that children can only enter reception classes on the first of September.

"Such a requirement would have led to very young children starting formal learning far too early."

Drama

The new focus on speaking and listening will make particular use of the performing and visual arts.

" **Teachers ... don't need another serving of vapid jargon from the quangocrats** "
Nick Gibb Shadow schools minister

"The perception of primary schools visited by the review is that more children are entering primary schools with impoverished language and poor social development.

"The appeal to primary children of role play, and drama in its various forms, is often used very successfully to develop speaking and listening and leads to other worthy outcomes."

The general secretary of the NASUWT teachers' union, Chris Keates, said the national curriculum had been undermined for far too long by the "punitive" school accountability regime based on performance tables and Ofsted inspections.

Mr Balls would not be drawn on the future of the "Sats" tests in England's primary schools.

A report from an expert group on assessment - which includes Sir Jim Rose - is awaited.

Sir Jim told reporters: "You have got to get the curriculum right and then talk about assessment."

Shadow schools minister Nick Gibb said the review was a worrying step in the wrong direction, with confusing programmes of study.

"Teachers need a curriculum which helps them ensure that every child has a firm grasp of the basics and a good grounding in the general knowledge subjects.

"They don't need another serving of vapid jargon from the quangocrats who have presided over all our existing problems with education."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/8027271.stm

Published: 2009/04/30 14:59:10 GMT

Experts unveil African gene study

A group of scientists have unveiled what they say is the most comprehensive study ever of African genes.

Published following a decade of study, the researchers say their findings give new insight into the origins of humans.

The first humans probably evolved near the South Africa-Namibia border before migrating north, the study says.

Published in the US journal Science, it aims to teach Africans on population history and aid research into why diseases hit particular groups.

The scientists examined genetic material from 121 African populations, as well as four African-American populations and 60 non-African populations.

'Benefit Africans'

The results provided "novel insights about levels and patterns of genetic diversity in Africa, a region that has been under-represented in human genetic studies", said Sarah Tishkoff, a geneticist from the University of Pennsylvania.

The first humans most likely evolved near the South Africa-Namibia border, the team said, and migrated north out of the continent via the Red Sea.

Researchers had identified 14 ancestral population clusters "that correlated with ethnicity and shared cultural and/or linguistic properties", they said.

They found high levels of mixed ancestry in most populations, as well as evidence showing common ancestry in geographically diverse groups.

The study also looked at African-American populations, finding that almost three-quarters could trace their ancestry to West Africa.

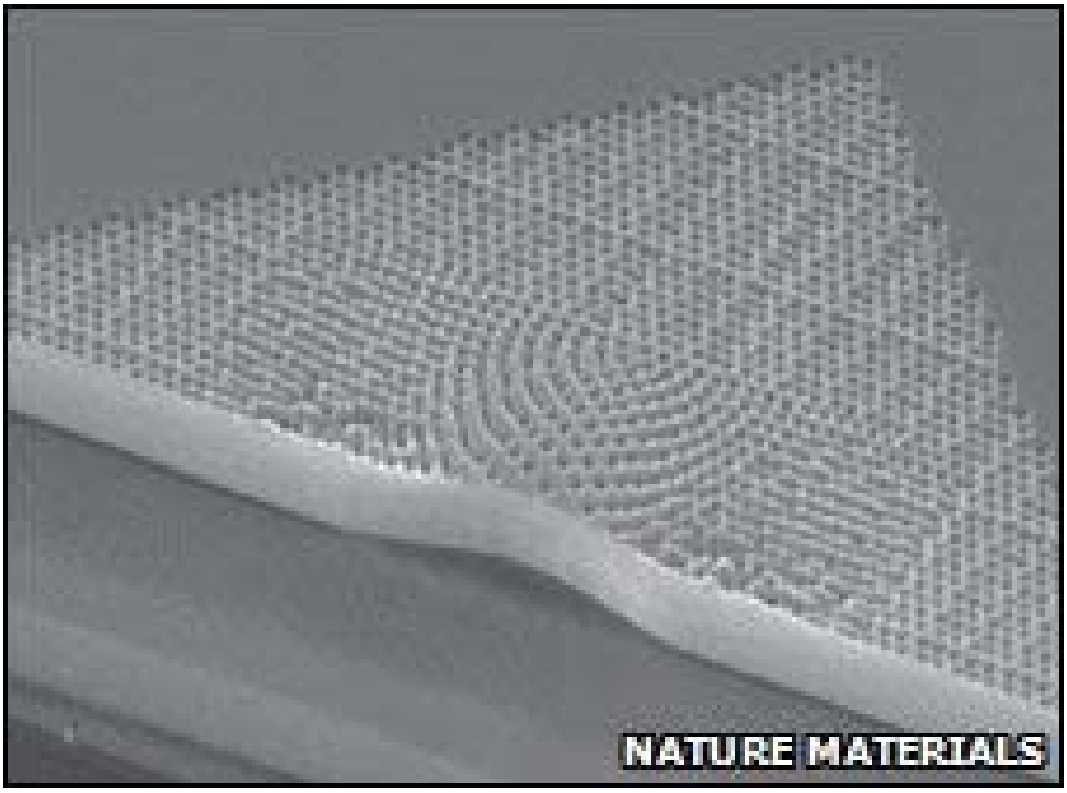
This knowledge could help experts better understand why certain diseases impact on African-American populations, researchers said.

Dr Tishkoff said that the goal was to "benefit Africans, both by learning more about their population history and by setting the stage for future genetic studies, including studies of genetic and environmental risk factors for disease and drug response".

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8028100.stm

Published: 2009/04/30 23:10:31 GMT
Invisibility cloak edges closer
By Victoria Gill
Science reporter, BBC News

Scientists have rendered objects invisible under near-infrared light.



Unlike previous such "cloaks", the new work does not employ metals, which introduce losses of light and result in imperfect cloaking.

Because the approach can be scaled down further in size, researchers say this is a major step towards a cloak that would work for visible light.

One of the research teams describes its miniature "carpet cloak" in the journal Nature Materials.

This "carpet" design was based on a theory first described by John Pendry, from Imperial College London, in 2008.

Michal Lipson and her team at Cornell University demonstrated a cloak based on the concept.

Xiang Zhang, professor of mechanical engineering at the University of California, Berkeley, led the other team.

"Essentially, we are transforming a straight line of light into a curved line around the cloak, so you don't perceive any change in its pathway," he explained.

This is not the first time an invisibility cloak has been made, but previous designs have used metals, whereas the carpet cloak is built using a dielectric - or insulating material - which absorbs far less light.

"Metals introduce a lot of loss, or reduce the light intensity," said Professor Zhang. This loss can leave a darkened spot in the place of the cloaked object.

So using silicon, a material that absorbs very little light, is a "big step forward," he says.

Transforming light

The cloak's design cancels out the distortion produced by the bulge of the object underneath, bending light around it - like water around a rock - and giving the illusion of a flattened surface.

Professor Zhang explained that the cloak "changes the local density" of the object it is covering.

"When light passes from air into water it will be bent, because the optical density, or refraction index, of the water is different to air," he told BBC News.

"So by manipulating the optical density of an object, you can transform the light path from a straight line to to any path you want."

The new material does this via a series of minuscule holes - which are strategically "drilled" into a sheet of silicon.

Proving Professor Pendry's theory, Professor Zhang's team was able to "decide the profile" of the cloaked object - altering the optical density with the holes.

"In some areas we drill lots of very densely packed holes, and in others they are much sparser. Where the holes are more dense, there is more air than silicon, so the optical density of the object is reduced," Professor Zhang explained.

"Each hole is much smaller than the wavelength of the light. So optical light doesn't see a hole - it just sees a sort of air-silicon mixture. So as far as the light is concerned, we have adjusted the density of the object."

He pointed out that his demonstration cloak is very tiny - just a few thousandths of a millimetre across.

But there are applications even for a cloak of this size.

Such a device could be used, for example, in the electronics industry, to hide flaws on the intricate stencils or 'masks' that are used to cast processor chips.

"This could save the industry millions of dollars," he said. "It would allow them to fix flaws rather than produce an entirely new mask."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/8025886.stm

Published: 2009/04/30 11:23:43 GMT