



## *Infoteca's E-Journal*



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### CONTENTS

|   |    |
|---|----|
| Swept Away  | 3  |
| Detroit's Latest Model: A Retooled Museum   | 13 |
| When Packaging Radical Art, Be Careful Not to Damage the Contents                               | 16 |
| Translation project to bring cream of foreign writers to Arabs                                  | 18 |
| Novel shortlisted for top award was rejected by 15 publishers                                   | 20 |
| Literature's invisible arbiters   | 21 |
| NEA report on nation's literacy shows decline in young readers                                  | 24 |
| Clouds form over rainmaking technology  | 26 |
| Fisheries producing small, less fertile fish  | 29 |
| Earth as you've never seen it before  | 31 |
| Dazzling red square found in space  | 32 |
| Tiny DNA Molecules Show Liquid Crystal Phases, Pointing Up New Scenario For First Life On Earth | 34 |
| Antidepressant Found To Extend Lifespan In <i>C. Elegans</i>                                    | 36 |
| Even Very Low Levels Of Lead Cause Brain Damage In Children                                     | 38 |
| Giant Fossil Sea Scorpion Bigger Than Man   | 40 |
| Neutron Camera Detects Shielded Radiation To Find Smuggled Nuclear Material                     | 42 |
| Petrified Velvet Worms From 425 Million Years Ago Reveal Ecology Of Distant Past                | 45 |
| Scientists Unravel Plants' Natural Defenses   | 47 |
| Meteorologists See Future of Increasingly Extreme Weather Events                                | 49 |
| Microbiologists and Astrobiologists Help Kids Discover New Species                              | 50 |
| In Hospitals, Air Ducts with Silver-Based Coating Stay Germ-Free                                | 51 |
| Materials Scientists Create Polymer Coating Against Fogged Glass                                | 52 |
| Key Nerve Navigation Pathway Identified   | 53 |
| Neurosurgeon Devises MRI-Based Technique to Diagnose Sciatica                                   | 55 |
| Watching Galaxies Grow Old Gracefully   | 56 |
| New Light On Early Formation Of Earth And Mars  | 58 |
| 'Cooper Pairs' Can Be Found In Insulators As Well Superconductors                               | 60 |
| Chemists Set New World Record For Shortest Chemical Bond Between Metals                         | 61 |
| Internet Users Give Up Privacy In Exchange For Trust  | 63 |
| Surface Orbital 'Roughness' In Manganites Discovered  | 64 |
| Unraveling the Silky Spider Web   | 65 |



|  |     |
|--|-----|
| Is The Beauty Of A Sculpture In The Brain Of The Beholder?                   | 66  |
| Vitamin B12 Derivative Could Be Used To Treat Hypertension And Heart Disease | 68  |
| Storing Carbon Dioxide Deep In Earth May Be Safe Solution To Global Warming  | 69  |
| City-dwelling Women At Greater Risk For Breast Cancer                        | 71  |
| Grisly Court Evidence Makes Juries More Likely To Convict                    | 72  |
| Undercover restorers fix Paris landmark's clock                              | 75  |
| An unsentimental valentine from the New Museum.                              | 77  |
| shh! It's a Secret Kind of Outside Art                                       | 79  |
| Menagerie, Not Museum, for Words That Live                                   | 82  |
| Inside the tomb of tomes   | 85  |
| In the lines of fire   | 89  |
| Art\$ deliver more than entertainment  | 91  |
| Jacques Barzun turns 100   | 93  |
| The surreal life   | 95  |
| 'Super' scanner shows key detail   | 97  |
| UK net numbering project starts  | 99  |
| Better ocean monitoring 'vital'  | 101 |
| Galileo 'compromise' is emerging   | 102 |
| Men motivated by 'superior wage'   | 103 |
| New T-ray Source Could Improve Airport Security, Cancer Detection            | 105 |
| Mediterranean Sea: Most Dangerous Place On Earth For Sharks And Rays         | 107 |
| Flowering Plants Evolved Very Quickly Into Five Groups                       | 110 |
| 'Ultrasound' Of Earth's Crust Reveals Inner Workings Of A Tsunami Factory    | 112 |
| Climate Change Triggers Wars And Population Decline, Study Shows             | 114 |
| Scientists Melt Million-year-old Ice In Search Of Ancient Microbes           | 116 |
| Depression Linked To Bone-thinning In Premenopausal Women                    | 118 |
| Powerful Microscope May Help Cancer Research                                 | 120 |
| For Treating Malaria, Less Drugs May Be Best Drugs                           | 121 |
| Thermoelectric Materials Are One Key To Energy Savings                       | 123 |
| Middle School Students 'Extremely Overconfident' In Their Own Learning       | 125 |
| 'Human-centric' mapping is proposed  | 126 |
| Early Academic Skills, Not Behavior, Best Predict School Success             | 127 |
| Hormone Of Darkness: Melatonin Could Hurt Memory Formation At Night          | 129 |
| How Violent Video Games Are Exemplary Aggression Teachers                    | 131 |
| Electrical Engineers Envision Broad, Transformational Use of Flash Memory    | 133 |
| Engineers Double Life of Alkaline Batteries                                  | 134 |
| Cancer-resistant Mouse Developed By Adding Tumor-suppressor Gene             | 135 |
| Structure Of Largest Nonvirus Particle Ever Crystallized Modeled             | 136 |
| City Ballet and Opera Now Agree on Theater                                   | 138 |
| Mailer wins Bad Sex in Fiction Award   | 140 |
| National Book Critics Circle Reading Lists                                   | 141 |

## Swept Away

Nureyev: The Life By Julie Kavanagh (Pantheon Books)

**Jennifer Homans, *The New Republic*** Published: Tuesday, November 20, 2007



Rudolf Nureyev and Margot Fonteyn, 1963

**I. When Rudolf** Nureyev defected from the Soviet Union in 1961, he became a legend overnight. He was a great dancer; but he was also a Russian, our Russian, and the instant he threw himself into the arms of the French authorities and declared, in English, "I would like to stay in your country," the cultural cold war seemed for a brief moment to have been won. If Nureyev himself appeared stunned by the international media blitz that followed, gazing glassy-eyed into the flashing cameras, he adapted quickly to his new role. And this was not the last time he would touch a cultural nerve: he went on to become an avatar of 1960s style; and an exemplar of the celebrated vanity of the 1970s "Me Generation"; and an unabashed homosexual and, sadly, a victim of AIDS, which killed him in 1993 at the age of fifty-four. He did all of this while dancing--not sexy cutting-edge works, but nineteenth-century Russian classics such as *Swan Lake* and *Giselle*. Nureyev was the most unlikely of creatures: a serious classical ballet dancer who was also an international pop superstar.

Nureyev's life story is well known; few artists have attracted such intense media scrutiny, and we have dozens of glossy picture books filled with effusive descriptions of his art. There are also several good documentary films and a number of biographies, most notably Diane Solway's *Nureyev: His Life*, which appeared in 1998 and is an exhaustively researched and engaging account of his life and art. Now we have Julie Kavanagh's much-anticipated and weighty tome. Ten years in the making, it comes stamped with officialness: this, we are told, is the "authorized" biography, the "definitive" story based on new sources and full-access interviews with Nureyev's "inner circle."

Kavanagh is herself something of an insider: a London-based journalist and author of a thoughtful biography of Frederick Ashton, she has spent a lifetime immersed in the society and the art of twentieth-century English ballet, where Nureyev spent the most productive years of his career. Her new book has genuine merits. Kavanagh writes fluidly and clearly, and her descriptions of Nureyev's ballets and performances are vividly drawn. She also has a good feel (perhaps too good) for the star-studded milieu in which Nureyev moved, and in order to paint this world she has interviewed *le tout* London, New York, Paris, San Francisco, and St. Petersburg. To a limited extent, this copious research helps her to understand her subject. She describes very well, for example, the ambience of what the ballerina Lynn Seymour once called "Rudolf's rich groupie set."



But at more than seven hundred pages, Kavanagh's book groans with unnecessary detail, much of it trivial and gossipy. Must we know every sordid detail of Nureyev's multifarious homosexual encounters in the bars and clubs that he frequented across Europe and America? Do *ad nauseam* recitations of the opinions of his sycophantic fans and lavish descriptions of the lives of people such as the late Wallace Potts (lover and failed pornographic film-maker) or Jeannette Etheredge (friend and balletomane) really help us to comprehend Nureyev's dancing? Kavanagh has done lots of research, although it should be said that much of it retraces Solway's well-laid path. (Kavanagh even reproduces one of Solway's chapter titles.) But she has done very little thinking. "Authorized" is no guarantee of insight, and Kavanagh's lengthy and effusive acknowledgments are far from reassuring: she has extensive debts, many of them to Nureyev's society-page devotees, and at times her book reads more like "Diana for dancers" than the considered biography of an art.

Although Kavanagh writes of larger historical and artistic currents (the Cold War, the 1960s), she treats them as mere background color. In her view, it is Nureyev's tangled private life that best explains his dancing. This approach is illuminating when it comes to his troubled relationship with the Danish dancer Erik Bruhn, a man whom Nureyev truly loved and whose art was a major influence on his own dancing. But it is a strain to suggest, as Kavanagh does, that Nureyev's ardor for Bruhn also explains his passionate stage partnership with Margot Fonteyn. Nureyev was not *always* performing his sex life. Sometimes he was just dancing, and Kavanagh badly underestimates the capacity of art to be its own cause.

Nor is it right to portray Nureyev, as Kavanagh finally does, as a poor Tatar peasant made good and "freed" from Soviet clutches by the West--a headstrong artist "crashing" down barriers and re-inventing his art. As her own evidence often suggests, Nureyev's story was not at all the triumphant Cold War fable beloved of the media. On the contrary, it was testimony to the psychological and artistic scars inflicted by defection and exile--but also by freedom and fame. Defection set Nureyev free, but it destroyed his life and his dancing.

**II. Rudolf Nureyev** was born on a train bound for Vladivostok in 1938, at the height of Stalin's Terror. But his parents were on the "right" side: his father, Hamet Fasliyevich Nureyev, was a member of the



Communist Party and a senior *politruk* in the Red Army, responsible for the political education of soldiers--a man (as Kavanagh points out) who benefited from Stalin's brutal purge of the army elite. As the upper echelons thinned, Hamet moved up. Indeed, Nureyev's parents were a classic Soviet "success" story. His father came from a religious Muslim family (his own father was a mullah) and attended a clerical school, where he learned to read and write Arabic, Tatar, and Russian. After the revolution, when religion was suppressed, he went to cavalry school in Kazan, joined the party, and began a military career. Nureyev's mother, Farida Agilivulyevna, was also a Tatar who read and wrote Arabic. (When she later wrote to Nureyev in the West, she did so in Arabic, and he needed a translator). By the time she married Hamet in the late 1920s, he had risen to the rank of junior officer. When Stalin launched his murderous campaign to collectivize agriculture, Hamet was on the front line.

Kavanagh is not very interested in what Hamet did during these years. (She credulously quotes an old Stalinist who assures her that Hamet was a nice guy.) Solway's more skeptical and historically informed account is a better guide. As she suggests, Hamet had to have been politically astute (at the very least) to survive both the collectivization and the Terror. Promotions followed, and in 1939 the family moved to Moscow, where Hamet taught at a prestigious artillery school. Two years later he was sent to the Western front, and subsequently promoted to the rank of major and decorated. Yet this did not help his family, who fled Moscow as the Germans approached and settled in Ufa, the capital of Bashkiria, where they survived the war in penury. These were Nureyev's hungry "potato years."

After the war Hamet was retired from his duties, and he returned to his family. He continued to wear his Red Army uniform, though, and remained involved in local party politics. It was a sign of his good standing that he eventually became head of security at a local factory. Nureyev was thus raised in an ideologically committed Stalinist family with deep, if repressed, roots in Tatar and Muslim culture; and he grew up during the war--the "Great Patriotic War"--when hardship and sacrifice deepened patriotism and tied people like his parents ever more closely to the Russian homeland, and also to the Soviet regime. It is no accident that until the end of his life he felt an almost Dostoyevskian passion for his Russian and Tatar roots, and for his own bleak but emotionally laden childhood.

It is often said that Nureyev had poor dance training before he finally found his way to the Kirov Ballet's renowned Vaganova School at the late (for a dancer) age of seventeen. But considering that he grew up in a provincial capital some eight hundred miles east of Moscow, it is striking just how good his training was. Nureyev began dancing during the war with the Pioneers, a communist youth group, where he was taught Bashkirian and Tatar folk dances. The Pioneers performed in hospitals and for wounded soldiers, and toured the provinces, setting up makeshift stages out of the back of a truck. Moreover, as part of the ideological program to promote "national" cultures and to bring art to the outlying provinces in the 1930s, Ufa had been given an opera house, and from 1941 the theater also boasted a permanent ballet company, stocked in part with dancers trained in Leningrad. This is where Nureyev saw his first ballet performance.

Ufa was also home to former imperial artists exiled from Leningrad, including Nureyev's first ballet teachers: Anna Ivanovna Udeltsova, who had danced with Pavlova and with Diaghilev's Ballets Russes, and Elena Konstantinovna Voitovich, who had began her dancing career under the czar and left Leningrad for Ufa just before the war. She lived with her mother, formerly a lady-in-waiting at court, who loved to serve the boy Nureyev tea with pots of jam, imperial style. These women did not just teach Nureyev to dance, they also regaled him with stories of pre-revolutionary Russia and even, Kavanagh reports, with tales of the young Georgi Balanchivadze, later known as George Balanchine.

**Nureyev made his** way to Leningrad in 1955, two years after Stalin's death, at the outset of Khrushchev's "thaw," when restrictions on cultural life were briefly relaxed. He was intellectually voracious. He read literature, collected musical scores, practiced the piano, and spent long evenings with scientist and literary friends. He visited Leningrad's art galleries and palaces, studied Impressionist and Italian Renaissance paintings, and went to the theater almost nightly--not just ballet but anything, no matter (Solway tells us) how dull or agitprop: "I don't care what they are saying, I'm only interested in their technique." Kavanagh and Solway both paint a sympathetic picture of this period in Nureyev's life, and in this young Nureyev

we find few signs of the hard cynicism, the desperation for money and fame, that came later. He was too busy with ideas and art.

And, of course, with classical ballet. At the Vaganova School, Nureyev was trained by Alexander Pushkin (1907- 1970), who would later teach Mikhail Baryshnikov. Pushkin was like a father to both men, and under his wing Nureyev worked very hard: he was older and less advanced than the other students--most had been meticulously trained from the age of nine or ten--and driven to catch up. He was painfully aware that his unformed and folk-dance-tinged movements contrasted sharply with the Kirov's refined Russian classicism, and he often returned to the studio late at night to perfect a step or a pose. His insecurity was deepened by his provincial origins: he saw himself as a perennial outsider, and indeed as a Tatar he was housed separately with other non-Russian students from East Germany, Romania, and Finland.



But his talent was impossible to ignore, and after just three years Nureyev was invited to join the Kirov Ballet as a soloist. Since Stalin's death, the company had been in a state of creative flux, and a new generation of artists had come to the fore. Choreographers such as Igor Belsky and Yuri Grigorovich were making new work, and older artists who had been marginalized for ideological reasons re-emerged, most notably Leonid Jakobson. Whatever we think of their ballets now (and many of them were pretty awful), it is important to recognize that these were serious artists and not merely ideological puppets. Artistic life at the Kirov was constrained, but it was not dead, and in a variety of ways these ballet masters were attempting to challenge and to build on the legacy of the Socialist Realist *drambalet*. Their dances were melodramatic and often lavishly produced; and Nureyev especially admired Grigorovich, with whom he worked closely on *Legend of Love* (1961).

Nureyev made his name, however, in the show-stopping bravura *pas de deux* from *Le Corsaire* and in an old heroic *drambalet* called *Laurencia* (first performed in 1939) about a peasant uprising in Castile. Both were choreographed by the charismatic Soviet dancer Vakhtang Chaboukiani, whose physically intense and fervent dancing opened the way for Nureyev. Indeed, tapes of Nureyev's early dancing--including one extraordinary clip of him performing as a young teenager, discovered by Kavanagh and excerpted in the *Great Performances* documentary *Nureyev: The Russian Years*--show that the qualities that would later galvanize audiences in the West were all there from the start: the long, fully extended legs greedily devouring space, the wide-open 180-degree turnout in the hips and legs, and the ornamented, slightly exotic hands flickering and trailing after the movement.

Kavanagh explains how Nureyev also copied poses from pictures of Western dancers, and how he insisted on dancing on a very high half-toe, giving his movements a lithe and almost androgynous look. Above all, these films reveal the large and free-spirited openness of Nureyev's dancing. Kavanagh quotes Frederick Ashton as later saying that Nureyev had a "marvelous engine inside him, like a Rolls-Royce," and we can see the point: at times Nureyev almost knocks himself over with his own physical power, as if the man barely knew the measure of his own machine.

Kavanagh argues, rather strangely, that Nureyev became a "messiah of pure classicism," and she dotes on his "genuine Maryinsky schooling," hailing him as the "rightful heir" to his teacher Pushkin. This is deeply misleading. It is fashionable these days to portray Pushkin as a paragon of classicism and a direct link to the pre-revolutionary imperial school of Marius Petipa, the creator of *Swan Lake* (with Lev Ivanov), *La Bayadere*, and *The Sleeping Beauty*--thus conveniently erasing any sign of tainted Soviet influences. But Pushkin came of age after the Russian Revolution, and worked closely with the teacher



and pedagogue Agrippina Vaganova, who developed and articulated her own school of ballet in the years after the revolution, continuing until her death in 1951. This school was indeed classical--and the Soviets supported it for the same reasons they adored the nineteenth-century poet Pushkin (no relation)--but many of its male dancers also had a more Soviet-style physicality, rooted in an ideologically inspired exaltation of labor and masculine virility. Nureyev had that intensity and zeal, and he got it back in (and from) the USSR.

**Why did Nureyev** defect? His confrontations with the Soviet authorities were certainly a factor. He went out of his way to meet Western artists, pored over foreign books and pirated ballet tapes, took English lessons, and refused to join Komsomol, the party youth organization. He was duly punished--dispatched on demoralizing bus tours and grounded from trips abroad. He took his revenge on stage. In 1960, he was kept back from a trip to Egypt and exasperated the prudish Soviet authorities (who held the curtain for over an hour) by refusing to wear the customary modest, loosefitting pants for the last act of *Don Quixote*. "In the West they've been dancing in tights for years, and so will I. What do I need these lampshades for?"

Kavanagh acknowledges all of this, but she also believes that Nureyev was primed to defect by an East German boyfriend who (she says) planted the idea in his head. She also suggests that Nureyev was driven out by the smothering relationship that had developed with Pushkin's wife Xenia. (Nureyev lived for a time with the Pushkins in their one-room apartment, and Xenia seduced him.) Even more importantly, she claims, Nureyev was pushed by "the realization that he would never be free to follow his true sexual instincts."

This rings false. Nureyev had no way to know that his sex life would be any freer in the West. Indeed, homosexual intercourse was illegal in many Western European countries at the time, and carried a heavy prison sentence. Nor is there evidence that he was as yet sexually predatory in the ways he would later become. "Sexual liberation" smells more like a reading imposed by post-Stonewall boyfriends in New York and London. The East German boyfriend is Kavanagh's biggest "discovery," and I think she rather exaggerates his importance (he gets a whole chapter). She tells us, for example, that in 1960 he made a film which was an "extraordinary prophetic enactment of Rudolf's defection." In the film, Nureyev walks up the steps of the Neva embankment and turns to look back; he sits on a train alone and thinks of images of Leningrad friends and past performances; and then, in what Kavanagh calls a "potent image of solitary flight," he skates off alone into the sunset. That's it. Nothing more. Kavanagh's romanticized gay-liberation and lone-cowboy speculations are harmless enough, but they do rather distract from the real pressures that Nureyev faced in 1961 at Le Bourget Airport in Paris.

Nureyev defected because he was forced to defect. He did not plan it, and he was as shocked as anyone when it happened. The Kirov was on tour to Western Europe--for the first time ever--and the trip represented an important cultural and political rapprochement. In 1956, Moscow's Bolshoi Ballet had won over audiences in London, but a reciprocal Royal Ballet tour to the Soviet Union had been abruptly canceled in the wake of the Hungarian revolution. The Bolshoi had performed in the United States in 1959, and American Ballet Theater had gone to the USSR the following year. The Kirov tour in 1961 was thus symbolically charged, and Nureyev was its undisputed star. As usual, however, he misbehaved: evading his KGB "escorts," he broke from the official group, made friends with French dancers and artists, and routinely stayed out all night. Impatient to take in every possible new experience, he banked on his tremendous public acclaim: to sideline him would have unleashed a damaging international outcry. They wouldn't dare.

But they did dare. When the Kirov company arrived at the airport en route to London, Nureyev was held back. Under personal orders from Khrushchev, he was told, he would be returning to Moscow for a special performance. Besides, his mother was sick. At this point, Nureyev knew he had lost. Upon return to the Soviet Union, he could expect (at best) banishment to some remote province, no future travel, and a life of artistic and financial penury, hounded by the KGB. There was a precedent: the dancer Valery Panov, his contemporary, had been sent home from a foreign tour under a similar pretext and severely punished. Nureyev was disconsolate; he banged his head against the wall, cried, and refused to be separated from his French friends. As luck would have it, one of the friends he had made in Paris was Clara Saint, fiancée to the son of Andre Malraux, the minister of culture in de Gaulle's government. She



rushed to the airport and secured the help of the French authorities (one of whom, Solway later discovered, was a White Russian emigre himself). Overwhelmed and desperate, Nureyev asked for asylum, and the French police took him into protective custody.

**Was Nureyev's life** in the West a success? Kavanagh has no doubt: the bird was out of the cage and spread his wings. Indeed, just months after his defection, Ashton created a solo for the dancer to music by Scriabin (Nureyev chose the score) titled *Poeme tragique*. Performed in London, it was a sensation. Bare-chested, with a red and white scarf slung over his body, Nureyev tore across the stage (in the words of Cecil Beaton) like "a savage young creature, half naked, rushing with wild eyes on an ecstatic, gaunt face, and a long mop of flying, silk hair." His debut at the Royal Ballet in *Giselle* with Margot Fonteyn the following year was oversubscribed by 70,000 people. (It is worth recalling, though, that Nureyev did not single-handedly launch this ballet fever: when the Bolshoi Ballet was in New York that same year, fans queued for fifty-three hours to get into the theater.) At first Nureyev was circumspect about the media hype. He found the reporters intrusive--"In Russia," he sardonically observed, "only the secret police does this." When Richard Avedon got him drunk and photographed him dancing in the nude, Nureyev appeared at his door the next day and demanded the negatives: "I've left Russia--that in itself is a scandal. Now I'm doing exactly what they expect of me."

But by 1965 he had forgotten all that, and Kavanagh cheerfully reports that "life for Nureyev had never been so much fun." He drove a Karmann Ghia sports car and appeared on the cover of *Men in Vogue* (in bathing trunks). He danced on television and wore crocodile leather and platform boots; he boogied with Elizabeth Taylor at the Dorchester; and his performances were so wildly popular that the police had to be summoned to control the crowds. Jackie Kennedy flew Fonteyn and Nureyev in a private plane to Washington to perform and take tea at the White House. Mick Jagger was also a fan, and Nureyev mixed with a jet-set crowd of partying fashion and media types. He was taken up by the rich and famous. (Marie-Helene de Rothschild was sure he was "quasi ivine.") Sex, mostly homosexual, was a big theme: he "cruised" almost nightly, and in the 1970s he was a regular at London and New York bathhouses such as the Everard ("Ever Hard"). None of this is especially endearing. Nureyev was often extravagantly crass and narcissistic, and he had appalling taste. He thought nothing of disappearing from an intimate dinner party with friends for a quick thump upstairs. (Margot Fonteyn: "Was it nice?") By the early 1990s he owned seven homes and was worth more than \$20 million.

Nureyev's high-flying lifestyle masked a web of destructive impulses and debilitating fears. He was haunted by the idea that the KGB would get him (and there *were* plans to break his legs and destroy his career), and he knew very well that family and friends back in the Soviet Union were being punished for his defiance. For the rest of his life he harbored a consuming desire to throw his success in the face of the Soviet authorities--to do, and with a vengeance, "exactly what they expect of me." When a friend traveled to Russia in 1971, Nureyev asked her to deliver expensive fur coats and evening gowns to his mother and family in Ufa--not for them, but (as the friend recalled) to "show the Soviets his worth." At unguarded moments Nureyev admitted that he was desperately lonely. He never fully mastered English, but neither did he spend much time with other Russian artists or emigres (he even shied from speaking his native tongue to Russian restaurant waiters, embarrassed by his provincial accent), preferring instead to forge ahead with a trail of adoring fans in tow. It was a linguistically and emotionally constricted life that contrasts painfully with the more open and personal relationships that he seems to have had in his Leningrad years. And if the Western press held Nureyev up as an exemplar of sexual and sartorial "liberation," they were in part missing the point: his profligacy was also tied to vengeance, fear, and what Ninette de Valois (a sturdy Irishwoman and founder of the Royal Ballet) called "the hysterical effect of freedom."

**III. Things were** no easier when it came to dancing. Soon after his defection, Nureyev sought out the Danish dancer Erik Bruhn, one of the great ballet classicists of the twentieth century. Bruhn's dancing was elegant and refined, and his great achievement was to fuse "high" classical ballet with a contemporary European taste for expressionism in dance. Bruhn was capable of reaching dramatic heights without resorting to melodrama: even if he was dancing the role of a butler (as he did in the ballet *Miss Julie*, based on Strindberg's play), he drew the role up, elevating it with a finely honed dance-prose. Nureyev





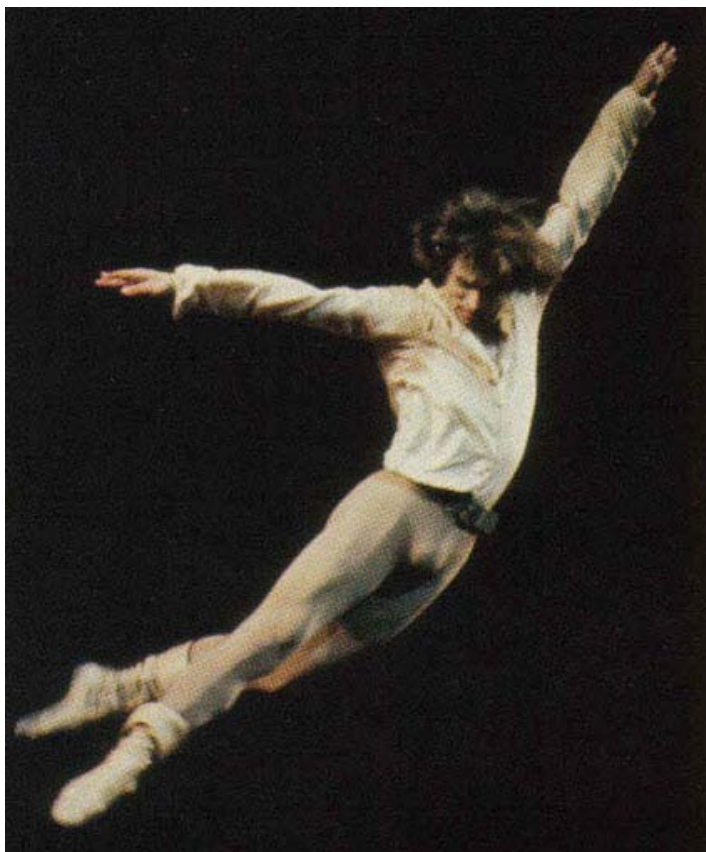
had idolized Bruhn (who was ten years older) for years, and the two men fell in love. Indeed, Bruhn seems to have been the only man that Nureyev truly loved. Kavanagh skillfully shows how their difficult emotional relationship was anchored in Nureyev's jealous admiration of Bruhn's dancing--and in Bruhn's painful decline as he fell into the shadow of Nureyev's celebrity. Nureyev desperately wanted to learn from Bruhn, but something in him resisted. He found Danish ballet "quite dull, very dry, very small, rather empty"; and although he knew that Bruhn had a more sophisticated technique, he couldn't help but cling to his Soviet training. It was deeply ironic: in Leningrad, Nureyev had set his compass by Bruhn and Western "innovation," but after he defected he reverted increasingly to what he thought of as an authoritative Kirov style.

Here we come to the crux of the matter. It is often taken for granted that Nureyev mattered because he was simply the best male dancer in the world. This was not so. Bruhn and others were more skilled and interesting artists. Nureyev was important because his life and art intersected at a sharp angle with history: when he defected he had greatness thrust upon him, and from that point forth his dancing seemed to hold within it the paradoxes and the tensions of his age. Consider his legendary partnership with Margot Fonteyn in the 1960s. At first glance, they seemed an unlikely match: he was twenty-four and had a sweeping Soviet style, she was forty-three and a paragon of prim English restraint. Their "chemistry" has often been explained by sex--that they had it, wanted it, or suppressed it--and Kavanagh ecstatically describes the sexual "frisson" between them in an early film of *Giselle*: "she watches him lie panting on his back, his hand stroking down his chest and hovering for a fraction of a second above the swell in his 'so-white, so-tight' tights."

But this kind of florid orgasmic explanation is redundant. Fonteyn and Nureyev stood for something much larger. In their dancing, East met West: his campy sexuality and exoticism (heavy make-up with teased and lacquered hair) highlighted and offset her impeccable bourgeois taste. Nureyev played his role to almost humiliating perfection. Even in the most classical of dances, he flirted with the image of a virile Asian potentate (with a harem of fans), and his unrestrained sensuality and "tiger-like" movements recalled a clichéd Russian orientalism (first exploited by Diaghilev's Ballets Russes) that was itself linked to the escapist fantasies of the 1960s middleclass youth: Eastern mysticism, revolution, sex, and drugs.

But Nureyev was at the same time held up as an anti-Soviet defector and a symbol of capitalist superiority over the communist East--because he had left the Soviet Union, but also because of the way he moved. His natural charisma and "hungry" free-spirited movements--accentuated by his "liberated" lifestyle--were easy to read as a ringing affirmation of freedom and unbridled individualism: here, in the West, the once-repressed Nureyev could finally let go and really dance. Incredibly, Nureyev's unbound physicality seemed to transform the formal nineteenth-century look of classical ballet into a stylistic affirmation of "let it all hang out."

The East was one thing, but age was another. Nureyev had a gorgeous, youthful physique, but Fonteyn was old enough to be his mother--and although her technique was still impressive, she looked her age. Yet this was not a strike against her: as Fonteyn's "proper" 1950s woman fell into the arms of Nureyev's "New Man," the generation gap seemed to melt away. Class also played a role, with the regal Fonteyn slumming in *Le Corsaire* with (as one critic put it) Nureyev's "great Moslem whore." Not everyone was happy with the result. A prominent American critic lamented that Fonteyn had gone "to the grand ball with a gigolo." Not that Nureyev was disrespectful. Indeed, when he partnered Fonteyn, he did so with perfect nineteenth-century manners. To the British in particular, this mattered a great deal. Fonteyn was "like the Queen," and during the curtain call of their first performance of *Giselle*, Nureyev accepted a rose from Fonteyn and then fell to his knee at her feet. The audience went wild.



But there was more. Fonteyn may have been a foil to Nureyev's wild child, but she was no shrinking violet herself. She was a gutsy dancer and a steely competitor. Even Nureyev was amazed by her newfound abandon: "Margot throw herself--God knows where--and I have to wrestle." And for all his daring and "animal" magnetism, Nureyev was quite conservative. He was more at ease in the nineteenth-century classics than in modern works--and Fonteyn had grown up with them, too. Thus it was not just that Nureyev made Fonteyn young again; they also stayed old together. As ballet in New York and London turned in more experimental directions, Fonteyn and Nureyev danced "the classics" over and again. Together they helped to make ballet a newly popular mass art, and they did it, paradoxically, by living in the past.

Even in their decline, Fonteyn and Nureyev seemed to catch the spirit of their times. In 1969, Fonteyn turned fifty. Her technique was

deteriorating, and her once-lithe femininity was losing its substance. Nureyev was still strong, but his dancing was also on the wane. The touch of youth and authenticity was gone: his makeup grew heavier, and his performances took on an air of forced vitality that seemed to mirror the more staid and derivative fashions of the 1970s. Celebrity substituted increasingly for art--as Nureyev's disastrous portrayal of the lead in *Valentino*, Ken Russell's campy film, attests. Fonteyn retired gently from the stage, gradually removing herself with dignity. For Nureyev, things were different. The 1970s were troubled and difficult years, a sign of the tremendous psychological and emotional deficit he had been running all along.

Fonteyn once observed that at times Nureyev looked like a "little boy lost," and she was not wrong. He could be impossibly rude and bombastic, and it is hard to sympathize with his egregious and often abusive behavior--but we should not forget how ill-equipped he was for the role that history assigned to him. After all, he was a poorly educated dancer from a provincial Tatar outpost, and a child of Stalin. And he was alone, the only Soviet dancer of his generation to defect to the West. Cut off from everything he knew, he tried desperately, instinctively, to become what the West--and the burgeoning media--wanted him to be. But the price was high: he ricocheted from media to stage, dissipating his talent until it was finally exhausted. The horrendous and pathetic stories that fill the latter chapters of Kavanagh's book make the point poignantly. We see the man wasting and damaged, and utterly incapable of reflecting on his own life or dancing.

The artistic consequences were devastating. Nureyev thought of himself as a serious and forward-looking artist, eager to strike out in new directions. He often said he had defected in order to perform new works, especially the ballets of Balanchine. But others knew better. In 1962, Nureyev approached Balanchine, making it known that he hoped to spend two months a year working with the iconoclastic choreographer's New York City Ballet ("just for myself to learn the choreography") and the rest of the year with Fonteyn in London. Balanchine told him to come back when he was "tired of playing at being a prince"--by which he meant *Swan Lake*, but also Nureyev's monolithic ego and his blind adherence to an old-fashioned Romantic style of dance.

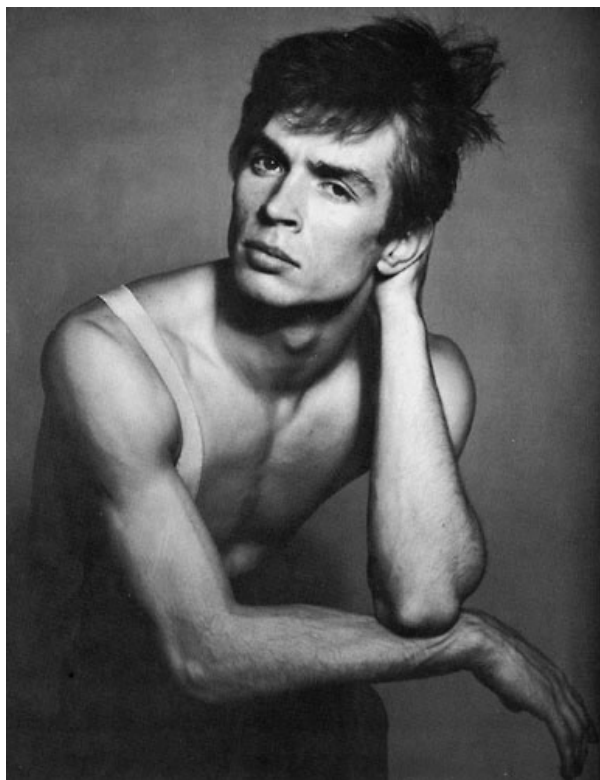
Kavanagh believes that there was a "conspiracy" behind Balanchine's rejection of Nureyev, and she offers a confused and implausible story of backroom pressure placed on Balanchine by Lincoln Kirstein and the "pro-Soviet" *Times* critic John Martin, although she finally and reluctantly concedes that Balanchine had his own reasons for turning Nureyev away. Indeed he did. Nureyev and Balanchine were located at opposite poles of twentieth-century art, and Nureyev was everything Balanchine was against in ballet: ego, melodrama, bravura. As Balanchine himself later reflected, Nureyev was "a one-man show, I, me, a beautiful man, alone.... Frankly we don't need this." The astonishing thing about their encounters--Nureyev approached Balanchine several times and the two men worked together only once, briefly--is not that Balanchine "rejected" Nureyev, but that Nureyev could not appreciate the chasm separating his own lavishly dramatic and narcissistic performing style from the rigorous modernism and complicated romanticism of Balanchine's ballets, from *Apollo* and *Agon* to *Liebeslieder Walzer*.

Balanchine was not the only one. Nureyev was repeatedly turned down by the best and most serious choreographers in Western Europe and America, including Frederick Ashton and Kenneth MacMillan at the Royal Ballet. Ashton made only three ballets for the dancer ("you don't put yourself in my hands"), and MacMillan, who was after a gritty realism, had no use for Nureyev's diva personality and old-fashioned brio. Jerome Robbins worked with Nureyev only once, in a restaging of *Dances at a Gathering*. And the list of the choreographers who were interested in working with Nureyev is equally revealing. There was Maurice Bejart, who created large and pretentious extravaganzas about (as one critic put it) "the sincerity of insincerity." (His fans wore buttons that proclaimed "Bejart is sexier.") Or Roland Petit, who created *Paradise Lost* for Fonteyn and Nureyev in 1967: a pop-art puff piece with flashing lights, white vinyl miniskirts and a backdrop of huge red lips through which Nureyev, scantily clad, plunged--"the kind of thing," Fonteyn dryly remarked, "that really only happens in French ballets."

Kavanagh insists that even if Nureyev was sidelined by the best ballet choreographers, he "crashed" down the barriers between classical dance and modern dance and pushed both forms in bold new directions. Well, it is true that Nureyev worked with Paul Taylor, Rudi van Dantzig, Martha Graham, and others, but most of those artists (as Kavanagh concedes) commented on his stubborn unwillingness to absorb their styles. He was, as Baryshnikov later put it, "a great faker." The truth is that Nureyev never really moved

on from the Russian classics that he learned in Leningrad. Even when he "updated" and modernized them--which he often did--he usually took the Kirov versions as gospel. When he staged the "shades" scene from *La Bayadere* for the Royal Ballet, he worked from memory and from step-by-step notes transcribed for him by the Pushkins in Leningrad; and in 1966 the couple filmed the Kirov's colorful *Don Quixote* and smuggled the tape to Nureyev, who used it when mounting his own version. He also created original dances and ballets, but his taste veered toward grandiose and pseudo-psychological themes. In fact, his productions closely echoed those Yuri Grigorovich was making for the Bolshoi in Moscow.

In 1983, however, Nureyev finally found an artistic home: he was appointed director of the Paris Opera Ballet. François Mitterrand and his Socialist Party had come to power two years earlier, and the new culture minister, Jack Lang, had a taste for celebrity, and also hoped to "democratize" the arts. To this end, he expanded the traditional definition of art to include fashion, popular music, and other creative endeavors. (He was dubbed the "Minister of Desire.") Nureyev's blockbuster classics and





pop-star fame seemed a natural fit. The Paris Opera Ballet had an entrenched hierarchy, and had not been a major center of classical dance for well over a hundred years--and Nureyev came in swinging. Although his reign was fraught with scandal and controversy--he hogged most of the male leads for himself and absented himself for months at a time to perform elsewhere--he nonetheless successfully expanded the company's repertory and promoted a new generation of stars, most notably Sylvie Guillem, whose diva performing style and physical distortions recall those of her mentor.

By this time Nureyev was HIV positive, and the last decade of his life makes sad reading. As his body weakened from sickness and age, his dancing declined to an embarrassingly low level, but he resolutely refused to retire from performing. When the Soviet Union fell, Nureyev returned to the Kirov to dance, even though he was practically crippled with injury and exhaustion: "I've got to dance on this stage." In the West he continued to perform, knowing full well that he had become a parody of himself: unable any longer to play the prince, he settled for the clown. When he could no longer haul himself on stage to dance, he took up conducting. Trading on his celebrity, he managed to perform with several leading orchestras--re-enacting, in another key, the epic physical drama that had sustained his career. By the end he was an empty shell of a man, a disembodied ego prematurely aged and physically defeated.

Today, fourteen years after his death and several decades after his best performances, Nureyev's dancing has faded from memory. All that remains are a few videotapes and a mountain of carefully posed photographs. Yet his career is not likely to be forgotten--not because of the sex and fame, but because he was the first dancer to pitch his talent against the Soviet state and live out the consequences. Unfortunately, by focusing so hard on Nureyev's private life, Julie Kavanagh has not taken us any closer to the truth about why he mattered. Instead she reduces his art to the tedious and sordid details of his life. The people who "authorized" her book got what they asked for. The rest of us will wonder why we should care.

<http://www.tnr.com/booksarts/story.html?id=e6f9e871-ace1-4e30-9bdd-058a09d5af2f>

## Detroit's Latest Model: A Retooled Museum

By HOLLAND COTTER



DETROIT — The Detroit Institute of Arts, one of the country's small but classic encyclopedic museums, could be on an open prairie rather than in the center of a city, so faint is the urban buzz around it. Little commercial energy warms the nearby streets. Residential neighborhoods are at a distance. Traffic on the broad thoroughfare running past the museum is sparse, even as this institution, closed for the last six months, celebrates a reopening on Nov. 23 that is being advertised as a resurrection.

There is potentially much to feel good about. A master plan designed by the architect Michael Graves, reorganizing the museum's interior and expanding its gallery space by 31,000 square feet, has been completed. The permanent collection, with its gems of Flemish, Dutch and American art, has been freshly and inventively reinstalled. A new gallery of African-American art, one of the few of its kind, is in place.

But there is also much to ponder. For years before the shutdown, the financially strained museum was operating at reduced strength, with curtailed hours and closed galleries. The rethought collection is an experiment in progress. Some aspects of it would have given the museum's Victorian founders a healthy shock; other aspects would have pleased them too well.

In short, this story of a vulnerable institution in a spirited but depressed town is one of modest triumphs mingled with failures. And it is a very American story, about the shameful way we treat our ailing cities; about what we value in culture; about how the inescapable politics of race and class shape the institutions that write our history; about how art, that glittering bauble, might have some use after all.

The Detroit Institute of Arts, like most older American art museums, was the product of a hard-nosed, hardscrabble nation that found itself, at the end of the 19th century, on top of the world. A country that had once defined itself as the un-Europe more and more aspired to be a New Europe, at least in terms of high culture. Increasingly, its republican gentry imported art from abroad and built museums that looked like temples and banks to hold those treasures. The Detroit Institute's Beaux-Arts home, designed by Paul Philippe Cret and finished in 1927, is a textbook example of the type.

The 1920s was a peak moment for Detroit. The auto industry was booming; the museum flourished under the leadership of its globally minded German-born director, William Valentiner. Fabulous European paintings arrived: "St. Jerome in His Study," attributed to Jan van Eyck; "The Wedding Dance" by Pieter



Bruegel the Elder; a Giovanni Bellini “Madonna and Child”; Jacob van Ruisdael’s “Jewish Cemetery.” So did examples of Asian, African, pre-Columbian and Islamic art.

Even during the Depression Mr. Valentiner made spectacular acquisitions. In 1931 he commissioned Diego Rivera to paint his now famous, and at the time infamous, “Detroit Industry” mural cycle in one of the museum’s indoor courtyards. One of the great surviving landmarks of populist, leftist art, it was paid for by Mr. Valentiner’s friend and angel Edsel B. Ford.

More art required more room. A new wing was built in 1966, another in 1971. They added space but complicated an already confusing floor plan, making the museum nearly impossible to navigate. The \$158 million Graves master plan was intended to bring some logic to the existing traffic patterns, though as far as I could tell, it doesn’t do the job. The layout just feels confusing in a different way.

As for the revised exterior, I feel that what was needed for a city with a reputation for dust and vacancy was a big, glamorous statement; an architectural event; a thrill. The Graves design is staid, cautious, almost self-effacing. Beginning in the 1960s Detroit began a profound economic slide. Industry faltered; jobs dried up. Racism was a social explosion waiting to happen, and it did. Whites high-tailed it to the suburbs, taking business and services with them. Blacks were left with a desolate urban shell in which the museum sat marooned.

As a monument to aspirations of a white upper class of an earlier age, the museum understandably held little interest for its disenfranchised neighbors. At the same time, the audience it had catered to began to stay away. Caught in a no-win squeeze, the institution appeared to wither as curators left, galleries closed, and public hours shrank.

The present reopening, pushed through by Graham W. J. Beal, director since 1999, clearly represents the start of a strenuous effort to appeal to new audiences while retaining the loyalty of old ones, to create a street-level people’s museum from a lofty mountain of elite art. The signature masterpieces are in place. Some are prominent: the scarlet sun in Frederic Church’s “Cotopaxi” is visible several galleries away. Most are integrated into thematic displays.

Interpretive statements abound: explanatory labels, illustrative videos and various digital aids. Their presence can be annoying when the line between accessibility and dumbing down becomes thin. At the same time, this concept-intensive approach can do a lot to vivify difficult or second-tier material.

By turning the museum’s overabundant supply of French Rococo painting and furnishings into an aristocratic lifestyle display, the curators make shrewd contextual sense of the material. They do so again by calling a gallery of Baroque religious painting “Art as Theater.” That theme is both true to the art and makes it intriguing rather than dismissible for a secular age. It also demonstrates how canny a dramatist Artemisia Gentileschi was in her picture of Judith and her maidservant coolly cleaning up after dispatching Holofernes.

Of real interest is what the reinstallation tells us about the museum’s recent collecting patterns. Its continuing acquisition of African art can surely be taken as a sign of its efforts to engage with the city. In addition, the reinstalled African galleries — overseen by Nii O. Quarcoopome, a curator born in Nigeria — are twice their former size and prominently placed near the most trafficked street entrance. The new galleries of African-American art suggest the same commitment.

You can argue — many people do — that such work should properly be integrated into the larger art historical picture, and in small but telling ways the museum does this. In an excellent special exhibition of works on paper from the collection, all 22 gouache paintings in Jacob Lawrence’s “John Brown” series hang near a two-sided Michelangelo sketch for the Sistine Chapel, uniting two different but equally powerful versions of the heroic.

In the context of a city — and a country — still crippled by old thinking about race, the presence of the African-American galleries constitutes an important gesture in two ways. It acknowledges the reality of



alternative histories of American art. And by including the work of at least one Detroit artist, Tyree Guyton, it emphasizes afresh the museum's identity as a local institution.

Mr. Guyton is a civic treasure as an artist and as the creative force behind the extraordinary "Heidelberg Project," a grand communal act of urban reclamation that has, for 20 years, been turning blocks of condemned houses in a black neighborhood into giant sculptural assemblages incorporating cast-off materials and found objects.

His work was one of the few examples of contemporary Detroit art that I was able to see on a too-brief visit, though there are many artists in the city, and their numbers are growing. Some are moving into cheap studio spaces not far from the Detroit Institute of Arts, though the focus of their cultural reference may well be the modest but adventurous Museum of Contemporary Art Detroit, four blocks south on Woodward Avenue.

Mocad, as everyone calls it, opened just over a year ago in a one-story former car dealership. Its current show, "Words Fail Me," organized by the New York artist and curator Matthew Higgs, explores language as a visual-art medium that is also directly linked to poetry. Most of the 16 artists included are familiar names in New York. I wondered if they would look out of place in Detroit, but they don't.

Carl Pope's fierce, funny posters — part hip-hop, part sermon — are exactly right for this city. So are Sam Durant's placards for an existential protest march and Anne-lise Coste's graffitilike drawings. Siobhan Liddell's near-invisible words, "Weakness as Strength," might make an ideal logo for the beleaguered but valorous Detroit Institute up the road. And the words in a big neon sign by the British artist Martin Creed, now on the exterior of the contemporary-art museum, should be emblazoned high in the city sky. "Everything Is Going to Be Alright," the sign says, and its illuminated message shines brightest at night.

*The reopened galleries are on permanent view at the Detroit Institute of Arts, 5200 Woodward Avenue, (313) 833-7900, dia.org; "Words Fail Me" continues through Jan. 20 at the Museum of Contemporary Art Detroit, 4454 Woodward Avenue, (313) 832-6622, mocadetroit.org.*

**[http://www.nytimes.com/2007/11/23/arts/design/23detr.html?\\_r=1&oref=slogin&pagewanted=print](http://www.nytimes.com/2007/11/23/arts/design/23detr.html?_r=1&oref=slogin&pagewanted=print)**

## When Packaging Radical Art, Be Careful Not to Damage the Contents

By GIA KOURLAS



These days two Butoh festivals have something in common with Performa 07, the performance art festival that's trying with all its might to capture New York in the 1970s (with less grime). They show that the framing of choreography can present even more challenges than the choreography itself. Packaging a radical artistic movement — extending its life through artificial means — is a good way to sap its spirit.

The Cave New York Butoh Festival, a biennial devoted to the avant-garde dance form that began in Japan in the late 1950s as a reaction against Western ideals of beauty and as a response to the postwar landscape, continues through next Wednesday with performances and workshops. In a related Performa event, Min Tanaka is performing at sites including P.S. 1 in Long Island City, Queens, and the Museum of Modern Art.

Last month Japan Society, under Yoko Shioya, its artistic director, presented “Kazuo Ohno 101: 3-Week Butoh Parade,” which included work by the duo Eiko and Koma, and Akira Kasai. On Oct. 27, in honor of the 101st birthday of Mr. Ohno, one of Butoh's founders, Japan Society was the host of the U.S. Butoh Marathon, a showcase of short works organized by the Cave, a resourceful organization based in Williamsburg, Brooklyn, and led by Shige Moriya and Ximena Garnica. There was also an evening program starring Yoshito Ohno, Kazuo Ohno's son, who concluded his appearance with a winsome duet, set to Elvis Presley music, opposite a puppet version of his father.

In Japan Society's festival, Ms. Shioya's desire was to pose some questions: What is Butoh? And how has the influx of Western practitioners affected its development? In a sense, the programs proved that Butoh has much in common with the current state of contemporary ballet. The success or failure of adding contemporary shading to an extreme form, which both are, relies on the individual artistic voice.

Part of the problem has to do with dilution: in borrowing characteristics from modern dance, an art form struggling with its own questions of relevance and sustainability, much contemporary Butoh seems tame



and limited. The form isn't something to be kept frozen in time, yet so much of what falls in the category of new Butoh lacks an unruly edge.

Another founder of Butoh, Tatsumi Hijikata, once stated, "Butoh is a dead body risking its life by planting its feet firmly on the ground." In a film of interviews for sale at the event, Kazuo Ohno said that he and Hijikata, who died in 1986, were "standing on the brink of life and death." While the eccentric, erotic Hijikata was known for the "dance of darkness" (Ankoku Butoh), Mr. Ohno, more of a delicate, poetic force, once said in an interview, "I prefer light sustained by darkness."

Art that focuses on life and death is certainly not limited to Butoh, but a certain mystique has prevailed. Familiar images — white-powdered skin and slow, tortured movement — have unwittingly turned Butoh into something of an exotic fashion show (the popular troupe Sankai Juku comes to mind) or an imitation of a style. Sennichimae Blue Sky Dance Club suffered from a bit of both in its trite "Bowl of Summer" last month at Performance Space 122 in the East Village. The Cave's U.S. Butoh Marathon, featuring six performances at Japan Society, didn't fare much better, although Koichi and Hiroko Tamano's strange, resonant "Tan Ma" was an exception.

Last week the Cave continued its Butoh offerings with a week of performances at the Theater for the New City in the East Village. Ms. Garnica, a Colombian artist, also presented "A Timeless Kaidan," a three-part work featuring video and installation by Mr. Moriya. Referring to the Japanese word kaidan, which can mean scary story or staircase, the production "is a metaphor for my reflection to the staircase of human ambition," as Ms. Garnica described it in her program notes.

Of the three sections, the first was quite beautiful, largely because of the way projections turned a maze of fabric into shimmering water. (Behind it was a staircase; through the billowy material, it seemed as if the dancers were hovering ghosts.) But for all its passion, the meandering production lost its way, a victim of too many ideas.

More impressive was a series of solo performances last weekend. Atsushi Takenouchi, whose body was caked with clay, explored the natural world in "Kizamu." Denise Fujiwara played a ravaged mother who loses her child in Natsu Nakajima's "Sumida River." Taketeru Kudo was a scraggly creature in "Go-Zarashi," and Takuya Ishide, performing "To a Wounded Bird Who Doesn't Stop Pecking Me," alternated jerky dance steps with movements at whiplash speed, made all the more haunting by his masklike face.

Each solo was full of compelling moments, yet fault could be found in the presentation: clichéd lighting, quite a few false endings and a cloying tendency to play to the audience. The rarity was Ko Murobushi, whose "Quick Silver" was full of piercing accuracy. With a prizefighter's grace, he darted from spot to spot, collapsing backward onto the stage only to spring up in a mercuric flash.

In a lecture at the Cave Mr. Murobushi likened the future of Butoh to "bringing in seeds from all over the world to create a new flower." Still, the most invincible performance remains Eiko and Koma's "Mourning," a collaboration with the avant-garde pianist Margaret Leng Tan. Eiko and Koma, who studied with both Hijikata and Mr. Ohno and have been working in New York since the '70s, choose not to label their art as Butoh. In the end labels don't matter much; in the spirit of Butoh, it's the art itself that lives or dies.

*The Cave New York Butoh Festival continues through next Wednesday at Cave, 58 Grand Street, between Wythe and Kent Avenues, Williamsburg, Brooklyn; (212) 561-9539 or nybf.caveartspace.org. Min Tanaka performs Friday through Sunday at P.S. 1 Contemporary Art Center, 22-25 Jackson Avenue, at 46th Avenue, Long Island City, Queens, and on Friday at the Museum of Modern Art.*

**[http://www.nytimes.com/2007/11/14/arts/dance/14buto.html?\\_r=1&ex=1352782800&en=fa16088be2db89df&ei=5088&partner=rssnyt&emc=rss&oref=slogin](http://www.nytimes.com/2007/11/14/arts/dance/14buto.html?_r=1&ex=1352782800&en=fa16088be2db89df&ei=5088&partner=rssnyt&emc=rss&oref=slogin)**



## Translation project to bring cream of foreign writers to Arabs

**Ian Black**

**Thursday November 22, 2007**

**The Guardian**

Books by Stephen Hawking, Umberto Eco, Haruki Murakami and other star writers past and present have been chosen as the first works to be translated into Arabic, in a major initiative to widen access to foreign literature.

The Abu Dhabi-based project, Kalima ("word" in Arabic), aims to publish 100 books in its first year and 500 titles a year by 2010, it announced yesterday.

The first 100 are from 16 languages, including Greek, Japanese, Swedish, Czech, Russian, Chinese, Yiddish, Italian, Norwegian, Latin and ancient Greek. Half the candidate titles are English.

Four years ago the UN's Arab human development report identified a lack of translated foreign works as an issue restricting Arab intellectual life. The UN report noted that Spain translates in one year the number of books that have been translated into Arabic in the past 1,000 years.

"The rest of the world enjoys a wealth of domestic and translated writing, why should the Arab world be any different?" Karim Nagy, Kalima's Egyptian chief executive, said as the first titles were announced. "We can start putting Arabic readers back in touch with great works of world literature and academia, and begin filling the gaps in the Arabic library."

The selection process is designed to strike a balance between different genres, juxtaposing the works of classic authors with contemporary writers. Academic, business and educational material is also being translated.

The organisers point out that in Europe's "dark ages" and until the end of the first millennium Arab scholars and libraries led the world in producing and preserving knowledge in science, medicine, philosophy and the arts. Since then, however, very few foreign works have found their way into Arabic.

"In past centuries Arabic learning was a source of great riches for the western intellectual tradition," said the British author Ian McEwan. "It is a cause for celebration that this major translation initiative is able to offer riches in return."

Other titles due out in Arabic this year are by Nadine Gordimer, Khaled Hosseini, Albert Camus, George Eliot, Albert Einstein, Jacques Lacan and Spinoza.

Muhammad al-Mazrouei, of the Abu Dhabi Authority for Culture and Heritage, which is financing the translation and publishing project, said: "We want to give Arabic readers the opportunity to read and enjoy a breadth of quality writing from around the world in their mother tongue. Arabic is a beautifully expressive language, and one that should be more widely celebrated and valued."

### **At a glance**

At the launch Kalima unveiled the first six books, which have already been translated

**The Sign** by **Umberto Eco** - the bestselling author elucidates on the world of semiotics



**The Halo Effect** by **Phil Rosenzweig** - the second part of the title says it all: "and the Eight Other Business Delusions That Deceive Managers"

**The Future of Human Nature** by **Jürgen Habermas** - the German philosopher puts genetic engineering under the philosophical microscope

**A Briefer History of Time** by **Stephen Hawking** - a follow-up to Hawking's A Brief History of Time exploring the universe and beyond

**Kafka on the Shore** by **Haruki Murakami** - a novel about the parallel journeys of a teenage boy and an elderly simpleton

**The Arab Roots of Capitalism** by **Gene Heck** - exploring Islam and the free market

[http://books.guardian.co.uk/news/articles/0,,2214926,00.html?gusrc=rss&feed=10#article\\_continue](http://books.guardian.co.uk/news/articles/0,,2214926,00.html?gusrc=rss&feed=10#article_continue)



## **Novel shortlisted for top award was rejected by 15 publishers**

**By Arifa Akbar, Arts Reporter**

**Published: 21 November 2007**

It is a story that could reignite the flagging confidence of the most dejected aspiring novelist.

The frustrated efforts of Catherine O'Flynn, a former postwoman who tried and failed 15 times to get her work published, were finally rewarded yesterday when her first book was shortlisted for the £25,000 Costa Book Awards.

O'Flynn, 37, whose novel, *What Was Lost*, was turned down repeatedly before it secured a publishing deal, began writing while working long hours at a shopping centre. The plot revolves around a security guard with a sleep disorder who goes on a quest for the truth after seeing a child who had disappeared 20 years ago on a CCTV camera.

The book – on the shortlist for first novels, with an all-female list of nominees – "pulls the rug from under your feet from the very first page", the judges said.

O'Flynn, who has also worked as a teacher, web manager and civil servant, said she wrote her novel almost accidentally. Her creative side was awakened by her work at a shopping centre in the West Midlands. "There were many things about it that made me want to write. The trance-like state of the shoppers consuming everything in their wake, the eeriness of the empty centre at night, the constant awareness of surveillance, the differing experiences of staff and shoppers, the industrial past buried beneath it.

"I kept writing about it – almost obsessively, I really wanted to pin down the essence of the place but at that stage there was no plan for this to be a novel.

"Then I heard a story doing the rounds among the centre security guards of a child being seen on one of the CCTV monitors in the middle of the night and that image stayed with me."

O'Flynn's book was also longlisted for the Booker and the Orange prizes.

The other nominations in the first-novel category are dominated by writers born abroad. They include the Bangladeshi-born Tahmima Anam, with *A Golden Age*, about the country's liberation war; Indian-born Nikita Lalwani, for *Gifted*, about a 14-year-old maths genius; and Roma Tearne, originally from Sri Lanka, for *Mosquito*, a love story set against the civil war. The shortlist for novels features *Skin Lane*, about a man whose nightmares overwhelm him, by Neil Bartlett, as well as *Day*, by A L Kennedy, and Rupert Thomson's *Death of a Murderer*, about a police constable summoned to guard the body of Myra Hindley in a Suffolk mortuary. *The Road Home*, by Rose Tremain, about a migrant from eastern Europe who hopes to find a new life in Britain, completes the list.

The biography section includes a story of the wartime double agent, Eddie Chapman, entitled *Agent ZigZag*, by Ben Macintyre, which is to be turned into a film.

Winners of the five categories in the awards – for first book, biography, poetry and children's writing – will be announced on 3 January 2008. They will then be pitted against each other for the overall book of the year accolade on 22 January at an awards ceremony in London.

<http://arts.independent.co.uk/books/news/article3179642.ece>

## Literature's invisible arbiters

We never get to read them, but reader's reports for publishers can make or break books - particularly so for translations. Esther Allen 'fesses up about her shadowy trade

**Tuesday November 20, 2007**  
**Guardian Unlimited**

The reader's report is the most silent of literary genres, its existence publicly acknowledged only in attacks or parodies. In Umberto Eco's *Misreadings*, spectacularly obtuse flunkies advise publishers to reject the *Divine Comedy* and *The Trial*. ("Why is the protagonist on trial?" the report queries in exasperation, adding that if this and other issues could be clarified, the novel might eventually become publishable.) Few if any real reader's reports are ever published; they're written for an extremely limited audience: the editors and publishers who will decide whether to bring out the book in question. Hence the hostility the reader's report inevitably generates. The lowly minion who authors it can do something no after-the-fact reviewer, however powerful and unkind, can accomplish: stop the book from being published in the first place.



Reader, I confess: For more than a decade, I've been writing reader's reports. I evaluate books written in or translated into French or Spanish for editors who, for the most part, can't read those languages. Writing the reports is a time-consuming, often frustrating, and always financially unprofitable pastime, and there can't be many of us willing to do it; sometimes two or three different publishers in sequence will, unbeknownst to each other, send me the same book to evaluate. I often wonder - particularly when a deadline is looming - why I do reader's reports at all.

Certainly there is pleasure akin to idly spinning the radio dial; the books I receive offer random, occasionally enlightening glimpses into the international literary marketplace, and there's always the chance of stumbling across something really good I would never otherwise have read. But there's more to it than that.

There is, for example, the fact that only two real tests of a book's merit exist: time and translation. Both tests are essentially collective and impersonal, and neither is ever definitive - none of us knows which 20th century books the 22nd century will value most. Nor can either one help in making the old-fashioned distinction between high culture and low - *Ulysses* versus *Winnie the Pooh*. Nevertheless, the reader's report offers an opportunity to put a given book to the more immediate of these tests - that of translation. Will this piece of writing retain meaning and interest for a different set of readers in a different linguistic context? As a translator by profession, I find this question one of the most interesting that can be asked of a book, and I'm always eager for an opportunity to try to answer it.



Coming up with an answer is often tough, and would be even if the question had to be decided on literary merit alone. But alas, literary merit usually ends up being a minor component of a decision that is also inescapably political, and, most of all, economic. For of course what most editors really want to know is whether the book will sell in the US marketplace.

Sometimes the question is easy, though; so easy that I wonder what mindless domino effect has sent a book into my hands. There were, for example, the memoirs of a Madrid cleaning lady, an immensely popular book in Spain which had catapulted its author into minor celebrity. I was startled that any agent would have submitted such a book to a US publisher: it was full of references to Spanish TV shows and their stars, soccer players and teams, Madrid neighbourhoods and local trends that were bound to baffle rather than amuse even the small subset of US readers who are fans of the films of Almodóvar. But then - it took me a while to realise - any number of books filled with local references to our own culture have been successful in translation around the world. The Nanny Diaries, to pick an example at random, has already been translated into four languages. Ours is an export culture, which means that a significant group of readers in Madrid, Tokyo, Bombay, and just about everywhere else are, after a lifetime of watching our TV shows and movies and reading our novels, either well acquainted with or very curious about our celebrities, domestic habits, and in-jokes. The agent who was shopping around the Madrid cleaning lady's book had just forgotten, momentarily, that it doesn't go both ways.

"Why," a German writer complained at a conference last year, "will people all over the world read about divorce in New Jersey, while almost no one in the English-speaking world seems to have the faintest interest in reading about divorce in Bonn or Haifa or Seville?" Several writers of English have proposed a facile, triumphalist answer to this question, happily attributing the global dominance of the English language to their own prowess - which is a bit like murdering your competitors to achieve a monopoly and then gloating over the vast superiority of your product.

The advantage of writing in English is obvious: Empires come and go, but the sun never sets on the English language. Access to English is access to power; it speaks louder than any other language in the world, and its juggernaut position as global lingua franca is further consolidated each day. At the same time, harder writers of other languages find it harder and harder to break in. The English book market is the world's largest and most transnational, but the elite group of writers across the globe who can feel sure that their books will be translated into English could all fit around a medium-sized conference table (and a very interesting meeting it would be).

The reader's report struggles to swim against this current but also has to take it into account. It's a bit like being an admissions officer at the world's most selective institution: even the Nobel prize for literature is no guarantee you'll get in. The bar has to be set terribly high because every translation into English that fails to sell makes its publisher that much less likely to do another one. Worse, the power of a reader's report is almost entirely negative. Barbara Epler of New Directions famously decided to publish the great WG Sebald on the strength of a negative reader's report, but in general a bad report guarantees that a book won't be published. A good report, however, is likely to be ignored. Worst of all, even when a good report does lead to publication - and the publisher finds a translator who's up to the task - the translated book will probably be left to its own devices in the marketplace, with little or no publicity, and will therefore ultimately be deemed a failure. All of which leaves those of us who write reader's reports in a rather ambiguous position.

One of the most enthusiastic reader's reports I ever wrote - for a novel called *Paradise of the Blind*, written in Vietnamese by Duong Thu Huong - was dismissed out of hand by the head of the prestigious publishing house I evaluated it for: No matter what I said about it, the novel was "too minor" for his house. The book was picked up by another company and has sold 20,000 copies in English. A later work by Ms Duong was nominated for the Dublin IMPAC award as one of the best novels published in English in 1996. Now that's a reason to write reader's reports: the private satisfaction of seeing your opinion confirmed. But it's not usually that simple.

Last year I evaluated a recent European novel, a sprawling, multigenerational family saga that had a curiously American flavour. It was set in a brand-new housing development near the sea, where the



central characters had moved into adjacent houses to shuck off their past lives and reinvent themselves. An American naval base stood nearby, and the novel concluded with an image of Thanksgiving turkeys wrapped in coloured cellophane, on sale at the local market. The author took care to include an American suitor, a Navy captain, flawlessly fit, trim, and white-toothed, but not the least bit sexy, whose advances are soon rejected. It's a well-plotted novel, with some memorable characters and situations, but I thought it was far too long. I also worried that the social hierarchies around which it revolves - a sequence of complicated relationships between household servants and their employers - play out in ways that American readers of this type of fiction are unlikely to find as satisfactory or as moving as European readers had. I recommended against it.

Not long after, I was having lunch with an old friend, a European academic who mentioned that he, too, happened to have written a report on the same book. Living on a diet of literary theory and the latest postmodern metafiction, my professor friend had been impressed by the novel's daring embrace of realism and thoroughly enjoyed the unusual experience of reading a straightforward narrative with clearly defined characters and a plot full of suspense and drama. He was annoyed at me for not having backed the novel. I tried to explain my misgivings about the differences between American and European social hierarchies. "Then Americans should read it so they can understand European society!" he snapped. On that point, at least, we were in agreement.

In the end, that same book was sent to me by three different publishers. I imagined and pitied the poor agent, doggedly sending it back out after each new rejection, not knowing that my report had already shot it down. Then I found myself sitting in that agent's office. I was the one who'd brought up the difficulty of getting foreign books published in English. "Yes!" he exclaimed. "I've been submitting this wonderful novel everywhere" - he named the title - "and no one will do it!" My heart sank. He spoke of the book with admiration, convinced that an American audience would take it to heart.

I remained silent, hoping that my deeply sympathetic expression was showing no sign of strain. I made no mention of the fact that it was my report which has, for the moment, kept the book off the Barnes & Noble shelves.

And I also hoped that he was right and I was wrong, that he will persevere and find the right publisher for the book, and that American readers will buy it in droves, immerse themselves in its multigenerational sprawl, and find its social hierarchies intriguing rather than mystifying or objectionable. I hoped all those things, and said not a word.

· A version of this article has previously appeared on American PEN's website, [www.pen.org](http://www.pen.org)

<http://books.guardian.co.uk/departments/generalfiction/story/0,,2214117,00.html?gusrc=rss&feed=10>

**Book News: NEA report on nation's literacy shows decline in young readers**

Tuesday, November 20, 2007

By Bob Hoover, Pittsburgh Post-Gazette



National Endowment for the Arts chairman Dana Gioia: Study shows how declines in reading affect culture, economy and civic life.

There's a mass of tables and charts to wade through in the latest pulse-taking by the National Endowment for the Arts on the nation's literacy -- 93 to be precise -- and it all points downhill.

Titled "To Read or Not to Read," the report targets teen and young adults. It concludes not only that declines in reading by those groups have translated into a drop in education test scores over 10 years, but also that the drop poses serious threats to the nation's civic and cultural health.

"This study shows the startling declines, in how much and how well Americans read, that are adversely affecting this country's culture, economy and civic life as well as our children's educational achievement" was how NEA chairman Dana Gioia summed it up in press material accompanying the study.

Drawing on a variety of findings, primarily the National Center for Education Statistics, an arm of the U.S. Department of Education, the NEA reiterated what has been extensively reported for years about reading activity among teens -- voluntary reading drops as children enter adolescence.

Scores for reading proficiency have fallen among high school seniors between 1992-2005, reports the Department of Education, a finding repeated in the NEA report. The drop is higher among boys than girls.

The cultural agency doesn't stop at cataloging research on reading activity but attempts to link those findings to other studies to sound warnings about American society as whole.

Cited are a range of reports drawing parallels between voluntary reading and academic and job performance, all leading to the NEA's conclusions that:

- "Reading for pleasure correlates strongly with academic achievement."
- "Good readers generally have more financially rewarding jobs."
- "Good readers play a crucial role in enriching our cultural and civic life."





- "Good readers make good citizens."

Critics of Gioia's report noted that the definition of reading was limited to print, mostly books, and for pleasure, and largely ignored the increasing use of Internet sites as sources of information and entertainment.

There was no attempt to gauge the amount of time young people spend reading online because "there's a lack of specific data" on it, the NEA admitted.

Patricia Schroeder, president of the Association of American Publishers, said yesterday that sales of books aimed at teen readers have been "experiencing double-digit growth in recent years," reflecting an increasing popularity of books among teen readers not noted by the NEA.

Schroeder cited two federal reading programs for preschoolers -- Reading First and Early Reading First -- that have inspired "demonstrable enthusiasm for reading" but criticized the Bush administration, which appointed Gioia to the NEA, of planning to cut funding for those programs.

In the Post-Gazette's series "Back to School: The First 'R' " that appeared in August, educators who had long been aware of this decline described new efforts in schools and libraries here to reach young readers and offered suggestions for parents to work on the problem.

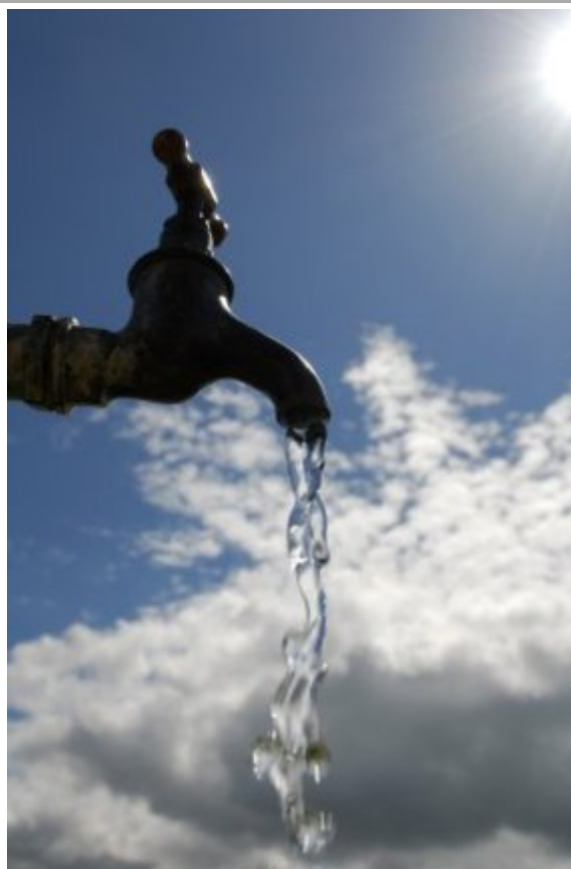
The full "To Read or Not to Read" summary can be found at the NEA Web site, [www.nea.gov](http://www.nea.gov).

Post-Gazette book editor Bob Hoover can be reached at [bhoover@post-gazette.com](mailto:bhoover@post-gazette.com) or 412-263-1634. First published on November 20, 2007 at 12:00 am

<http://www.post-gazette.com/pg/07324/835242-369.stm?cmpid=entertainment.xml>

## Clouds form over rainmaking technology

Friday, 23 November 2007 Anna Salleh  
ABC



*Storm clouds are brewing over the best way to spend money on rainmaking technologies*(Source: iStockphoto)

Rainmaking technology funded by the Australian government has already been given the thumbs down by international scientists, says an adviser to the World Meteorological Organization.

But proponents of the technology say the criticism is unjust.

Dr Roelof Bruintjes, a US-based researcher who advises the World Meteorological Organization (WMO) on rainfall enhancement, was commenting on technology soon to be tested in Queensland by the Australian Rain Corporation.

The Sydney-based company, which was recently allocated A\$10 million from the Australian Government Water Fund, hopes to use forthcoming trials to show its technology can bring rain.

The technology is being tested to see if it can make *new* rain clouds from blue skies by generating ions in the atmosphere.

This is very different from existing rainmaking technology, which relies on seeding *existing* clouds, and has been carried out for decades in Tasmania and the Snowy Mountains.

Some Australian experts have already publicly said they are sceptical of the new ionisation technology and Bruintjes agrees.



"I don't think it's money well spent to be honest with you. As far as I'm concerned it's physically not possible," he says.

"Nobody can make or chase away a cloud. Nobody can make rain out of nothing."

### **Making clouds from scratch?**

Scientists involved in testing the Australian Rain Corporation technology, including Professor Jürg Keller of the University of Queensland, say the ionisation system uses a ground-based device to attract water molecules.

These then condense, generating heat that, in turn, triggers an up-draft of the kind that occurs when clouds form naturally.

But Bruintjes, a cloud physicist at the National Center for Atmospheric Research in Boulder Colorado, says WMO experts have already warned against using such ionisation techniques because they are not based on accepted scientific principles.

Bruintjes says while it's possible to ionise atmospheric particles, it is not possible to modify the thermodynamic structure of the atmosphere and so there is no current credible theory to support the idea.

He also says evaluations of the technology in the United Arab Emirates and Mexico have shown it is not useful in enhancing rainfall.

Bruintjes does not understand why Australia has embraced the technology.

"Any country that is in a severe drought is desperate to use any type of technology and maybe this is what has happened in Australia," he says.

### **If it works, hang the mechanism**

Queanbeyan-based sustainability consultant Andrew Campbell, is advising the Australian Rain Corporation on the Queensland trials.

He says it is prudent to investigate whether the technology works in Australian conditions, even if scientists don't understand how it works.

"From a water policy perspective, the much more important question is whether or not this technology enhances rainfall," says Campbell, former chief executive officer of Land and Water Australia.

"If it does we can analyse the mechanisms at our leisure. If it doesn't then that's a completely academic exercise."

Campbell says he is not aware of any prior evaluation of the technology Australian Rain Corporation will be trialling.

But Bruintjes is adamant the technology is the same Russian-developed system that has been promoted over many years by various companies around the world, and which the WMO has warned against.

### **Competitors?**

Bruintjes is currently in Australia advising the Queensland government on cloud seeding.



Campbell says criticism of the competing ionisation technology is not justified.

"It's understandable that people involved in cloud seeding are concerned about a competitive technology," he says.

"But until it is properly scientifically evaluated, claims either for or against aren't credible."

Bruintjes agrees it's urgent to investigate rain enhancement technologies but says there are better ways to spend the money.

He says one problem is that it's very difficult to determine the success of any rain enhancement technology because of natural variation in rainfall.

Bruintjes says it's important to develop a better understanding of how rain forms in clouds, and how technologies with known physical mechanisms can manipulate this.

"We need to focus on understanding rather than just going out blindly testing technology we don't understand," he says.

**<http://www.abc.net.au/science/articles/2007/11/23/2099071.htm?site=science&topic=latest>**

**Fisheries producing small, less fertile fish**

Friday, 23 November 2007 Karin Strohecker  
Reuters



*Overfishing has favoured fish that mature smaller and earlier, and carry far fewer eggs when they first reproduce* (Source: iStockphoto)

Industrial-scale fisheries have changed fish evolution, exacerbating the effect of overfishing by producing smaller and less fertile fish, scientists say.

Dr Ulf Dieckmann, from the International Institute for Applied Systems Analysis in Austria, and co-authors write a commentary on managing fish stocks today in the journal *Science*.

Dieckmann also says that overfishing and the practice of throwing lower quality fish back into the sea to raise the value of fishing quotas might explain the massive drop in population.

"Human activity had a possibly irreversible evolutionary effect in just a few generations," he says.

"We are running up a Darwinian debt that future generations will have to pay back."

Some 15 years ago, cod stocks in the Canadian Grand Banks in the northwest Atlantic collapsed, bringing down the fishing industry in the region.

The same species is now under threat in the northeast Atlantic off Norway and Russia, he says.

In the Canadian Grand Banks fish stocks still show little sign of recovery, Dieckmann says, adding that evidence suggests humans are also responsible for this.

Looking at fishery data from the past few decades, the scientists found that increased mortality due to overfishing has favoured fish that mature smaller and earlier, yet also carry far fewer eggs at their first reproduction.

Older data shows that a typical cod caught in Norway might have taken 10 years to mature, while the same fish now would only take six years or even less, says Dieckmann.



"The question is not whether such evolution will occur, but how fast fishing practices bring about evolutionary changes and what the consequences will be," the scientists write, warning that such evolution may even be irreversible.

Dieckmann expects that a change coming about in 40 years might take up to 250 years to reverse, if it happens at all.

"Upsetting the dynamics of predators and prey may cause other changes that block this," he says.

### **Evolutionary impact**

Assessing the evolutionary impact could become an essential tool in managing fish stocks, says Dieckmann.

Fishing policymakers could have helped avoid the collapse of cod stocks in the Atlantic by taking into account the fishing industry's impact on evolution in the oceans, and that might help prevent future catastrophes.

Dieckmann says recommendations for future fishing policy based on the research included: less fishing overall; avoiding catching small fish by using wider-meshed nets; and banning fishing in areas where fish spawn.

"Based on data that were available seven to 10 years before the collapse of the Grand Banks cod fisheries, an evolutionary impact assessment could have been used to send an early warning signal to policy makers," says Dieckmann.

"[Such assessments] applied now can thus help us avoid future catastrophes unfolding elsewhere," he adds.

**<http://www.abc.net.au/science/articles/2007/11/23/2099040.htm?site=science&topic=latest>**

## Earth as you've never seen it before

Thursday, 22 November 2007

ABC



Snapshots of the earth as seen from the comet-chasing Rosetta space probe have revealed the globe in true colour, with Australia clearly shown. The images were taken last week as Rosetta made its closest approach to earth, before swinging out towards the outer solar system in search of comet 67P/Churyumov-Gerasimenko.

At its closest point, Rosetta was 5295 kilometres above the earth's surface.

The narrow-angle camera on the probe's optical, spectroscopic and infrared remote imaging system took the images. This particular one was taken on 15 November and is a colour composite of the camera's orange, green and blue filters. Last week marked Rosetta's second gravity assisted swing-by of earth, part of a series of gravity boosts needed to put the spacecraft into the right trajectory.

The swing-by also provided a good chance to calibrate the spacecraft's instruments by observing the earth and moon for which the expected observation results are well known. Data from the probe's instruments has been received on the ground by the New Norcia station in Western Australia and is available on the European Space Agency website.

Rosetta's third gravity boost from earth will occur in November 2009 and will be used to increase its speed to provide enough energy to reach its target. In 2014, it is scheduled to rendezvous and orbit 67P/Churyumov-Gerasimenko before sending down a lander, called Philae, to make the first ever controlled landing on a comet. On its way, Rosetta will pass and study two asteroids, Steins and Lutetia. The probe is set to pass the 100 kilometre wide Steins asteroid in 2008 and the 10 kilometre wide Lutetia asteroid in 2010.

Rosetta was launched in March 2004 from French Guiana.

<http://www.abc.net.au/science/articles/2007/11/22/2098193.htm?site=science&topic=latest>

## Dazzling red square found in space

Friday, 13 April 2007 Anna Salleh  
ABC



*This space jewel, known as the red square, could shed light on mysterious rings seen around a famous supernova (Image: Peter Tuthill/University of Sydney).*

Astronomers have snapped the most symmetrical and dazzling space object of its kind, just 5000 light-years away in the Milky Way.

The object, which the astronomers named the red square, could help solve a 20 year astronomical mystery.

Dr Peter Tuthill of the University of Sydney and Dr James Lloyd of Cornell University describe their research today in the journal *Science*.

"It's a bit of jewel," says Tuthill. "Everything is quite remarkably symmetrical."

Tuthill and Lloyd discovered the red square surrounding a star in the constellation Serpens, the serpent mythologically associated with the origin of medicine.

Rather than a square, they say the object is an hour-glass shaped cloud of gas and dust called a bipolar nebula.

Tuthill says the cross shape in the image represents two cone shapes placed tip to tip.

The object is bright because it is being illuminated by light from the star at its heart.

More important than its beauty, says Tuthill, will be how the red square can help astronomers understand a 20-year-old mystery involving the famous exploding star called Supernova 1987A.





Supernovae are exploding stars, and Supernova 1987A is the only one to be caught on camera.

The image shows the exploding star is surrounded by two overlapping rings of dust and gas.

Astronomers did not expect to see these rings, says Tuthill, and are still arguing today about what they are.

Tuthill says the rings must have existed before the star exploded because they are so far out from the explosion itself.

Like a bolt of lightning, the explosion simply illuminated the rings that were previously in the dark, he says.

Tuthill thinks that these rings were from a nebula just like the red square.

To test his theory, he modelled the basic geometrical shape of the nebula in 3D and then rotated it to see would it would look like in 2D from various angles (see animation).

He found that at some angles the red square nebula gave a structure like the two overlapping rings seen in the image of Supernova 1987A.

"It's possible that the star that blew up to make Supernova 1987A actually had a nebula around it [similar to the red square]," he says.

He's not sure whether the star at the heart of the red square will one day explode.

Either way, if the red square can help astronomers understand supernovae, Tuthill will be pleased.

"Supernovae throw their weight around and have a big influence over the evolution of the galaxy itself," he says.

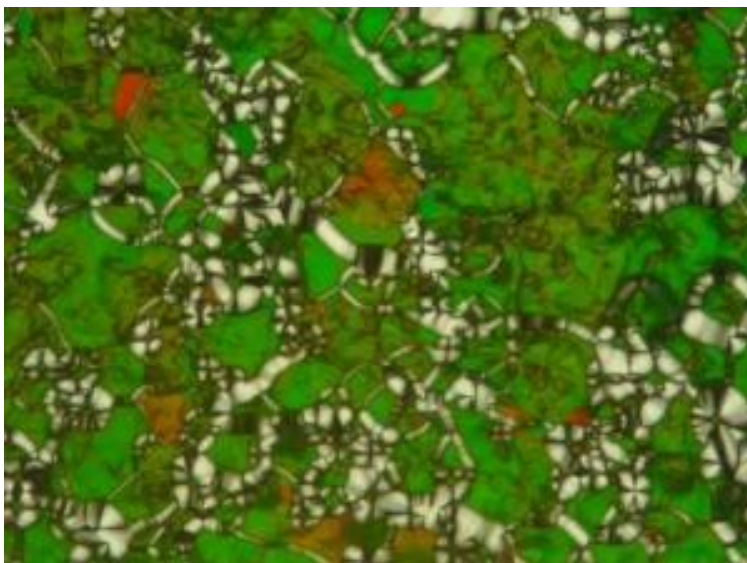
Tuthill and Lloyd say the red square is a more symmetrical cousin of a red rectangle previously discovered in the 1970s.

"The red rectangle is a very, very famous nebula and it was thought to be unique," says Tuthill.

But the researchers now think there may be many more of these symmetrical structures in space.

**<http://www.abc.net.au/science/articles/2007/04/13/1895422.htm>**

## Tiny DNA Molecules Show Liquid Crystal Phases, Pointing Up New Scenario For First Life On Earth



*A colorful microscope image showing that a solution of tiny DNA molecules has formed a liquid-crystal phase. The DNA molecules pair to form DNA double helices, which, in turn stack end-to-end to make rod-shaped aggregates that orient parallel to one another. (Credit: Michi Nakata)*

ScienceDaily (Nov. 23, 2007) — A team led by the University of Colorado at Boulder and the University of Milan has discovered some unexpected forms of liquid crystals of ultrashort DNA molecules immersed in water, providing a new scenario for a key step in the emergence of life on Earth.

CU-Boulder physics Professor Noel Clark said the team found that surprisingly short segments of DNA, life's molecular carrier of genetic information, could assemble into several distinct liquid crystal phases that "self-orient" parallel to one another and stack into columns when placed in a water solution. Life is widely believed to have emerged as segments of DNA- or RNA-like molecules in a prebiotic "soup" solution of ancient organic molecules.

Since the formation of molecular chains as uniform as DNA by random chemistry is essentially impossible, Clark said, scientists have been seeking effective ways for simple molecules to spontaneously self-select, "chain-up" and self-replicate. The new study shows that in a mixture of tiny fragments of DNA, those molecules capable of forming liquid crystals selectively condense into droplets in which conditions are favorable for them to be chemically linked into longer molecules with enhanced liquid crystal-forming tendencies, he said.

"We found that even tiny fragments of double helix DNA can spontaneously self-assemble into columns that contain many molecules," Clark said. "Our vision is that from the collection of ancient molecules, short RNA pieces or some structurally related precursor emerged as the molecular fragments most capable of condensing into liquid crystal droplets, selectively developing into long molecules."

Liquid crystals -- organic materials related to soap that exhibit both solid and liquid properties -- are commonly used for information displays in computers, flat-panel televisions, cell phones, calculators and watches. Most liquid crystal phase molecules are rod-shaped and have the ability to spontaneously form large domains of a common orientation, which makes them particularly sensitive to stimuli like changes in temperature or applied voltage.

RNA and DNA are chain-like polymers with side groups known as nucleotides, or bases, that selectively adhere only to specific bases on a second chain. Matching, or complementary base



sequences enable the chains to pair up and form the widely recognized double helix structure. Genetic information is encoded in sequences of thousands to millions of bases along the chains, which can be microns to millimeters in length.

Such DNA polynucleotides had previously been shown to organize into liquid crystal phases in which the chains spontaneously oriented parallel to each other, he said. Researchers understand the liquid crystal organization to be a result of DNA's elongated molecular shape, making parallel alignment easier, much like spaghetti thrown in a box and shaken would be prone to line up in parallel, Clark said.

A paper on the subject was published in the Nov. 23 issue of Science. The paper was authored by Clark, Michi Nakata and Christopher Jones from CU-Boulder, Giuliano Zanchetta and Tommaso Bellini of the University of Milan, Brandon Chapman and Ronald Pindak of Brookhaven National Laboratory and Julie Cross of Argonne National Laboratory. Nakata died in September 2006.

The CU-Boulder and University of Milan team began a series of experiments to see how short the DNA segments could be and still show liquid crystal ordering, said Clark. The team found that even a DNA segment as short as six bases, when paired with a complementary segment that together measured just two nanometers long and two nanometers in diameter, could still assemble itself into the liquid crystal phases, in spite of having almost no elongation in shape.

Structural analysis of the liquid crystal phases showed that they appeared because such short DNA duplex pairs were able to stick together "end-to-end," forming rod-shaped aggregates that could then behave like much longer segments of DNA. The sticking was a result of small, oily patches found on the ends of the short DNA segments that help them adhere to each other in a reversible way -- much like magnetic buttons -- as they expelled water in between them, Clark said.

A key characterization technique employed was X-ray microbeam diffraction combined with in-situ optical microscopy, carried out with researchers from Argonne and Brookhaven National Laboratories. The team using a machine called the Argonne Advanced Photon Source synchrotron that enabled probing of the "nano DNA" molecular organization in single liquid crystal orientation domains only a few microns in size. The experiments provided direct evidence for the columnar stacking of the nano DNA pieces in a fluid liquid crystal phase.

"The key observation with respect to early life is that this aggregation of nano DNA strands is possible only if they form duplexes," Clark said. "In a sample of chains in which the bases don't match and the chains can't form helical duplexes, we did not observe liquid crystal ordering."

Subsequent tests by the team involved mixed solutions of complementary and noncomplementary DNA segments, said Clark. The results indicated that essentially all of the complementary DNA bits condensed out in the form of liquid crystal droplets, physically separating them from the noncomplementary DNA segments.

"We found this to be a remarkable result," Clark said. "It means that small molecules with the ability to pair up the right way can seek each other out and collect together into drops that are internally self-organized to facilitate the growth of larger pairable molecules."

"In essence, the liquid crystal phase condensation selects the appropriate molecular components, and with the right chemistry would evolve larger molecules tuned to stabilize the liquid crystal phase. If this is correct, the linear polymer shape of DNA itself is a vestige of formation by liquid crystal order."

*Adapted from materials provided by University of Colorado at Boulder.*

<http://www.sciencedaily.com/releases/2007/11/071122151148.htm>

## Antidepressant Found To Extend Lifespan In C. Elegans



Roundworm *Caenorhabditis elegans*. (Credit: Amy Pasouinelli, Image courtesy of NIH)

ScienceDaily (Nov. 22, 2007) — A team of scientists led by Howard Hughes Medical Institute (HHMI) investigator Linda B. Buck has found that a drug used to treat depression can extend the lifespan of adult roundworms.

Buck and colleagues Michael Petrascheck and Xiaolan Ye report in the November 22, 2007, issue of the journal *Nature*, that the antidepressant drug mianserin can extend the lifespan of the nematode *Caenorhabditis elegans* by about 30 percent.

Intriguingly, the drug may act by mimicking the effects of caloric restriction, which has been shown to retard the effects of aging in a variety of animals ranging from worms and flies to mammals.

"Our studies indicate that lifespan extension by mianserin involves mechanisms associated with lifespan extension by dietary restriction," said Buck, a member of the Basic Sciences Division of the Fred Hutchinson Cancer Research Center in Seattle. "We don't have an explanation for this. All we can say is that if we give the drug to caloric restricted animals, it doesn't increase their lifespan any further. That suggests the same mechanism may be involved."

Researchers don't yet understand exactly how mianserin staves off the effects of aging. But the drug appears to act the same way in both *C. elegans* and humans: by blocking certain receptors for the neurotransmitter serotonin. Serotonin is a chemical that cells use to communicate, helping them regulate many functions, including mood, appetite, and sensory perception.

Buck said it was a surprise to find that a drug used to treat depression in humans could extend lifespan in worms. The researchers in Buck's lab found that in addition to inhibiting certain serotonin receptors in the worm, it also blocked receptors for another neurotransmitter, octopamine.

A number of observations support the idea that serotonin and octopamine may complement one another in a physiological context, Buck explained, with serotonin signaling the presence of food and octopamine signaling its absence or a state of starvation. *C. elegans*, for instance, usually only lays eggs when food is on hand. But serotonin stimulates egg laying in the absence of food, while



octopamine inhibits egg laying even when food is nearby. Another example of interplay between the two chemicals is that pharyngeal pumping, the mechanism by which worms ingest food, is jump-started by serotonin and thwarted by octopamine.

"In our studies, mianserin had a much greater inhibitory effect on the serotonin receptor than the octopamine receptor," she said. "One possibility is that there is a dynamic equilibrium between serotonin and octopamine signaling and the drug tips the balance in the direction of octopamine signaling, producing a perceived, though not real, state of starvation that activates aging mechanisms downstream of dietary restriction."

Buck and her colleagues chose to focus on the effects of mianserin based on the results of a search through 88,000 chemicals for agents that extended the lifespan of nematodes. They found 115 such chemicals. In follow-up studies of one chemical, they found four additional compounds, including mianserin, that extended lifespan by 20-33 percent. All four compounds inhibit certain types of serotonin receptors in humans.

"We screened a wide variety of chemicals without knowing anything about them except that they were small molecules," Buck noted. "By screening adult animals with this extremely varied panel of compounds, we hoped to identify drugs that could increase lifespan in adults, even though some might have a deleterious effect on the developing animal."

By identifying drugs that influence lifespan, Buck added, it may be possible to home in on how those drugs act and contribute to a growing body of knowledge about the genetic mechanisms of aging.

"Other researchers have done beautiful work using molecular genetic approaches to identify genes involved in aging," she said. "We decided to take a chemical approach. By finding chemicals that enhance longevity, and then finding the targets of those chemicals, it may be possible to identify additional genes important in aging. In addition, the chemical approach could point to drugs suitable for testing in mammals."

Buck said that her group has yet to identify what kinds of cells are affected by the drug, because while the serotonin receptors involved are only found on neurons, many types of cells -- not just cells of the nervous system -- have receptors for octopamine.

*Adapted from materials provided by Howard Hughes Medical Institute.*

<http://www.sciencedaily.com/releases/2007/11/071121144946.htm>

## Even Very Low Levels Of Lead Cause Brain Damage In Children



*Sample of galena, a natural mineral form of lead sulfide. (Credit: iStockphoto/Sean Curry)*

ScienceDaily (Nov. 21, 2007) — Even very small amounts of lead in children's blood -- amounts well below the current federal standard -- are associated with reduced IQ scores, finds a new, six-year Cornell study.

The study examined the effect of lead exposure on cognitive function in children whose blood-lead levels (BLLs) were below the Centers for Disease Control and Prevention (CDC) standard of 10 micrograms per deciliter (mcg/dl) -- about 100 parts per billion. The researchers compared children whose BLLs were between 0 and 5 mcg/dl with children in the 5-10 mcg/dl range.

"Even after taking into consideration family and environmental factors known to affect a child's cognitive performance, blood lead played a significant role in predicting nonverbal IQ scores," said Richard Canfield, a senior researcher in Cornell's Division of Nutritional Sciences and senior author of the study in the journal *Environmental Health Perspectives*.

"We found that the average IQ scores of children with BLLs of only 5 to 10 mcg/dl were about 5 points lower than the IQ scores of children with BLLs less than 5 mcg/dl. This indicates an adverse effect on children who have a BLL substantially below the CDC standard, suggesting the need for more stringent regulations," he said.

In the United States over the last several months, nearly 50 specific products, including millions of toys for young children, have been recalled due to excessive lead in the paint, plastics and metal. "Our findings emphasize the very real dangers associated with low-level exposures, to which lead in toys can contribute," Canfield said.

U.S. children are exposed to lead primarily from household dust contaminated by deteriorating interior lead-based paint. In addition to toys, other potential sources include contaminated soil, imported food stored in lead-glazed pottery and certain plastic, metallic and painted products.

This most recent finding builds on the same research team's influential 2003 study, published in the *New England Journal of Medicine*, that reported adverse effects of BLLs below 10 mcg/dl in a group of children followed from infancy to age 5. "Our new findings are based on follow-up testing of the same children at age 6, using a more comprehensive IQ test to assess cognitive function. The results provide compelling evidence that low-level lead exposure has effects into the school-age years," said



Todd Jusko '01, a University of Washington Ph.D. candidate in epidemiology and co-author on both reports.

"Children living in poverty disproportionately suffer from elevated BLLs," said statistician and co-author Charles Henderson, a Cornell senior researcher in human development. He also noted that "even a small decline in an IQ score is likely to be reflected in aptitude test scores such as the SAT."

According to the CDC, about one out of every 50 children in the United States between ages 1 and 5 has a BLL above 10 mcg/dl and about 10 percent of children have BLLs of 5 mcg/dl or higher; about 25 percent of U.S. homes with children under age 6 have a lead-based paint hazard.

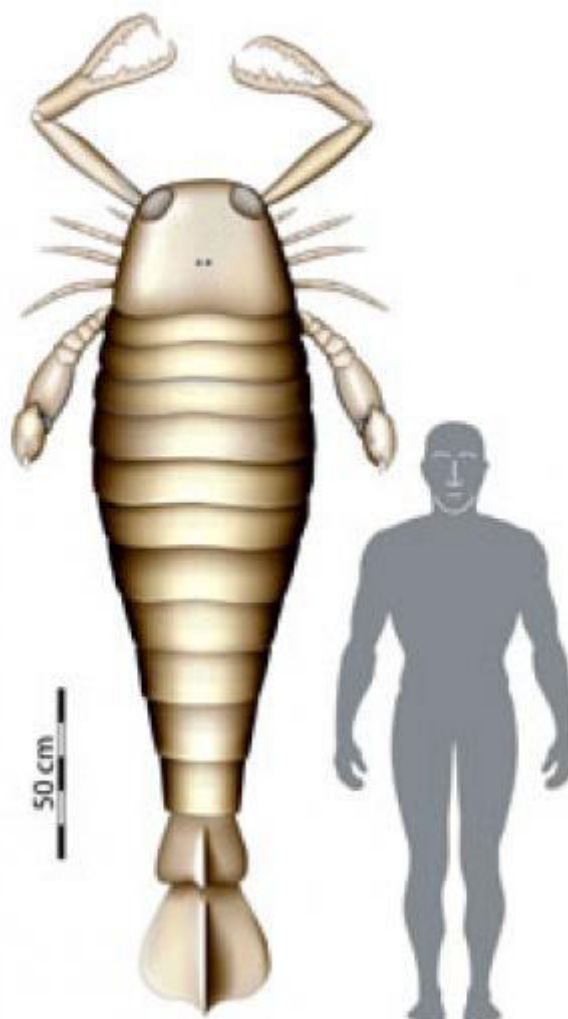
"The bottom line," according to Canfield, "is that lead is a persistent neurotoxin that causes brain damage. The fact that lead has been found in millions of toys, even toys specifically designed for children to put into their mouths, presents an unacceptable risk. Our findings suggest the need to re-evaluate the current federal standards for lead in consumer products and the current definition of an elevated BLL in children."

The research was funded primarily by the National Institute of Environmental Health Sciences.

*Adapted from materials provided by Cornell University.*

**<http://www.sciencedaily.com/releases/2007/11/071120111526.htm>**

## Giant Fossil Sea Scorpion Bigger Than Man



*Mock up of fossil sea scorpion, compared to man. (Credit: Simon Powell)*

ScienceDaily (Nov. 21, 2007) — The discovery of a giant fossilised claw from an ancient sea scorpion indicates that when alive it would have been about two and a half meters long, much taller than the average man.

This find, from rocks 390 million years old, suggests that spiders, insects, crabs and similar creatures were much larger in the past than previously thought.

Dr Simon Braddy from the Department of Earth Sciences at the University of Bristol, co-author of an article about the find, said, 'This is an amazing discovery. We have known for some time that the fossil record yields monster millipedes, super-sized scorpions, colossal cockroaches, and jumbo dragonflies, but we never realised, until now, just how big some of these ancient creepy-crawlies were.'

The claw was discovered by one of Dr Braddy's co-authors\*, Markus Poschmann, in a quarry near Prüm in Germany.

Poschmann described finding the fossil: "I was loosening pieces of rock with a hammer and chisel when I suddenly realised there was a dark patch of organic matter on a freshly removed slab. After some cleaning I could identify this as a small part of a large claw. Although I did not know if it was more complete or not, I decided to try and get it out. The pieces had to be cleaned separately, dried, and then glued back together. It was then put into a white plaster jacket to stabilise it."





The claw is from a sea scorpion (eurypterid) *Jaekelopterus rhenaniae* that lived between 460 and 255 million years ago. It is 46 centimetres long, indicating that the sea scorpion to which it belonged was around 2.5 metres (8 feet) long -- almost half a metre longer than previous estimates for these arthropods and the largest one ever to have evolved.

Eurypterids are believed to be the extinct aquatic ancestors of scorpions and possibly all arachnids.

Some geologists believe that giant arthropods evolved due to higher levels of oxygen in the atmosphere in the past. Others, that they evolved in an 'arms race' alongside their likely prey, the early armoured fish.

'There is no simple single explanation', explains Braddy. 'It is more likely that some ancient arthropods were big because there was little competition from the vertebrates, as we see today. If the amount of oxygen in the atmosphere suddenly increased, it doesn't mean all the bugs would get bigger.'

\*The research is published online in the Royal Society's journal *Biology Letters*.

*Adapted from materials provided by University of Bristol.*

**<http://www.sciencedaily.com/releases/2007/11/071120195710.htm>**

## Neutron Scatter Camera Detects Shielded Radiation To Find Smuggled Nuclear Material

ScienceDaily (Nov. 26, 2007) — In an effort to find an answer to the problem of identifying smuggled special nuclear material (SNM), researchers at Sandia National Laboratories in California say a neutron scatter camera they are developing may be able to detect radiation from much greater distances and through more shielding than current detection instruments.

The neutron scatter camera, says Sandia physicist Nick Mascarenhas, has the capability to count neutrons from a source of SNM and localize it — meaning it doesn't only indicate there is radiation present, but also where it is emanating from and, under some circumstances, how much.



*Nick Mascarenhas, physicist and principal investigator, prepares the detector for a test. The neutron scatter camera detects radiation at significant standoff distances and through shielding, and pinpoints radiation sources. (Credit: Photo by Randy Wong)*

“This instrument can pinpoint a hot spot in another room through walls, something not typically possible with gamma-ray detectors,” says Mascarenhas.

“Performance-wise, it’s beating the older technologies, but we want to continue to push the limits of sensitivity and detection distance.”

Distance, says Mascarenhas, is a significant benchmark because it means the neutron scatter camera has the potential to detect through various types of shielding, a concern at any border crossing or point of entry.

Results of neutron scatter camera testing have been encouraging. “It’s more penetrating and can detect unambiguously at a greater distance and through more shielding,” says Jim Lund, who manages the Rad/Nuc Detection Systems group at Sandia/California.

Since 9/11, radiation detection has taken on a new immediacy as a means of preventing a nuclear weapon attack within the United States. Gamma-ray and neutron detectors are being deployed at border crossings and ports, with the goal of enabling interdiction of a nuclear weapon or material before it enters the country.

### Role in in-transit radiation characterization

The neutron scatter camera project is currently supported by the Office of Nonproliferation R&D in the National Nuclear Security Administration (NNSA). After successful initial development, the technology is being transitioned to both the Defense Threat Reduction Agency (DTRA) and Domestic Nuclear Detection Office (DNDO) to support specific application studies.

Recently, representatives from DNDO sat in on a presentation by Mascarenhas to NNSA. They were sufficiently impressed to inquire how quickly he could modify the camera for shipping to and from Hawaii as part of Sandia's in-transit radiation characterization project, which has been examining the viability of radiation detection onboard a ship.

The neutron scatter camera will make three round-trips to Hawaii; the first departed from the Port of Oakland in early September. Sandia physicist George Lasche, who leads the project known as Experimental Limits for In-Transit Detection of Radiological Materials, says the camera has the potential to reduce false alarm rates — a critical issue for in-transit radiation detection.

“Our other instruments have told us a lot about the nature of nuclear radiation at sea, but not where it is coming from,” says Lasche. “The neutron scatter camera can tell us where the radiation is coming from and whether it is coming from a small object or not. This information is very helpful in deciding if we have a serious threat on our hands, and can lead to fewer false alarms and a better chance of not missing the real thing,” he said.

DTRA is funding a separate project to use the neutron scatter camera to measure and characterize background neutrons at Sandia/California, Sandia/New Mexico, and in Alameda, Calif.

“There are neutrons all over the place from cosmic radiation, even when you are sitting indoors,” explains Mascarenhas. “Our instrument can measure the energies, rates and angular variation. This is important in understanding standard operating conditions. You can't really detect anomalies until you understand what's normal. This data can also be used to improve instruments to better suppress the standard operation conditions.”

The neutron scatter camera has an advantage over traditional neutron detection because it can differentiate low energy neutrons from high energy neutrons.

“It doesn't have to worry about the low-energy nuisance neutrons that are always all around us because it can only see high energy neutrons, and the high-energy neutrons carry almost all of the imaging information,” says Lasche.

Another advantage is shielding. While some gamma rays can be blocked from detectors, neutrons are much more difficult to conceal. In a lab test, the camera easily detected and imaged a source placed across the hallway, through several walls and cabinets.

### **Size and feedback time limitations**

Lund notes that the neutron scatter camera does have limitations, particular in terms of size and time. “Ideally, we'd use both the neutron scatter camera and a gamma-ray detector,” he says. “The neutron scatter camera is not practical as a handheld detector with immediate feedback.”

The neutron scatter camera consists of elements containing proton-rich liquid scintillators in two planes. As neutrons travel through the scintillator, they bounce off protons like billiard balls. This is where “scatter” comes into play — with interactions in each plane of detector elements, the instrument can determine the direction of the radioactive source from which the neutron came.

The neutron eventually flies off, but not before energizing the protons with which it has interacted. The proton will lose its energy in the scintillator. As that energy is lost, it is converted into light. Photomultiplier tubes coupled to the scintillator detect the light.

Computers record data from the neutron scatter camera, and using kinematics, determine the energy of the incoming neutron and its direction. Pulse shape discrimination is employed to distinguish between neutrons and gamma rays.



The biggest obstacle to the camera becoming widely adopted is the liquid scintillator, which is flammable, hazardous, and requires special handling. According to Mascarenhas, materials exist that could be used as a solid scintillator, but they need to be mass produced and made readily available in the U.S. for this purpose. Solid scintillator material, he says, is not in the scope of the current project but is a logical next step.

The current version of the neutron scatter camera has four elements on one side and seven on the other. To improve sensitivity and direction, all that is required is to add more elements.

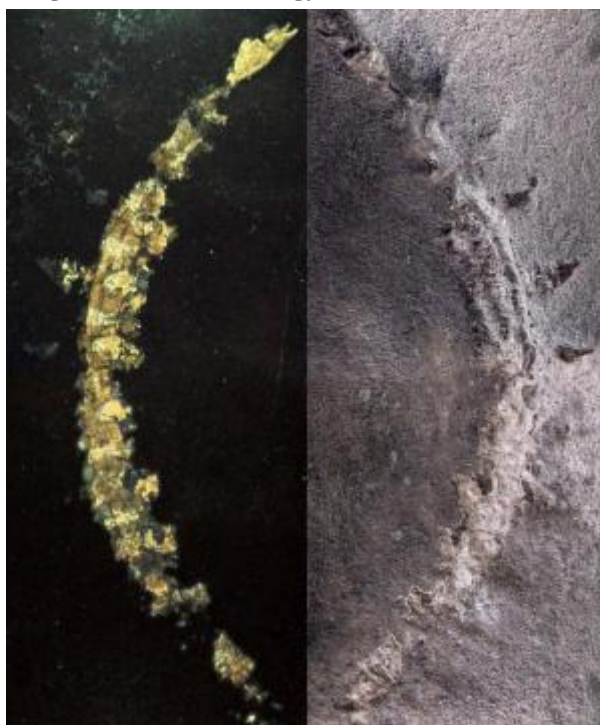
Mascarenhas describes scaling up as an engineering challenge rather than a scientific limit. Bigger means more places where things can break down, but this isn't a physics issue, he says.

“We are not concerned with size at this point — our mission is to understand everything about the performance of this instrument and make it the best it can be,” he says. “Making it portable or compact might be the next steps, but that’s something I’m confident that Sandia, as an engineering laboratory, can solve.”

*Adapted from materials provided by Sandia National Laboratories.*

[http://www.sciencedaily.com/releases/2007/11/  
071123203623.htm](http://www.sciencedaily.com/releases/2007/11/071123203623.htm)

## Petrified Velvet Worms From 425 Million Years Ago Reveal True Ecology Of Distant Past



*Fossilized velvet worm, preserved in calcium phosphate, with possible colour banding. This was found in the middle Silurian age rocks in Ontario, Canada. The image on the left shows the specimen is covered in glycerol, and illuminated with polarized light; the other side of the rock slab preserving the specimen is shown on the right, photographed using under low angle lighting. (Credit: Published in von Bitter, Purnell, Tetrault, & Stott 2007: Eramosa Lagerstätte - exceptionally preserved soft-bodied biotas with shallow-marine shelly and bioturbating organisms (Silurian, Ontario, Canada). *Geology* 35, 879-882.)*

ScienceDaily (Nov. 26, 2007) — University of Leicester Geologist Dr Mark Purnell, with Canadian colleagues, reported, in the journal *Geology*, a new, exceptionally preserved deposit of fossils in 425 million year old Silurian rocks in Ontario.

The fossils include complete fish (only the second place on earth where whole fish of this age have been found), various shrimp and worm like creatures, including velvet-worms, which look (in Dr Purnell's words) "rather like a dozen headless Michelin men dancing a conga."

The velvet worms were deflated slightly by a little early rotting, but within days of dying these animals had been transformed to the mineral calcium phosphate. This preserved them as beautiful petrified fossils, showing the wonderful detail of their bodies, including coloured stripes.

This Canadian deposit is unusual even for sites of exceptional preservation because it also includes normal shelly fossils. From this it is possible to be sure that the conditions in which all the animals were living were not much different to normal nearshore seas of the Silurian period.

Dr Purnell commented: "It provides us with our best view of what lived together in such environments 425 million years ago, and our best information for understanding how life on earth at that time was different to today.

"If people think of a fossil, they will undoubtedly be thinking of something with a hard skeleton or shell of some sort, and it is true that the vast majority of fossil are what in today's world we call sea shells. But imagine trying to understand the biodiversity and ecology of a submarine seaside ecosystem with only the remains of sea shells to go on.



“All the variety of worms that crawl over and into the sand would be unknown, as would all the shrimpy things that scurry over the surface. We would have only a very partial view of the real biological picture.

“This is what palaeontologists are faced with when they try to reconstruct the history and past ecology of life on Earth, because everything without a shell very quickly, within hours or days, rots away to nothing, leaving no trace that it ever existed.”

Fortunately, there are a few special rock deposits scattered around the world that preserve fossilised traces of those things that normally rot away. These are known to palaeontologists as sites of exceptional preservation, but they are, Dr Purnell says, tricky to interpret precisely because they are exceptional.

“They require very unusual environmental conditions in order to slow down the decomposition of soft tissues, such as muscle and skin, and rapidly transform them into geologically stable minerals that will survive as fossils for millions of years.

“The difficulty for geologists has been that if the conditions are exceptionally unusual, is that also true of the preserved fauna or is it a more typical example? That is something our latest find has helped resolve.”

*Adapted from materials provided by University of Leicester.*

**<http://www.sciencedaily.com/releases/2007/11/071126121836.htm>**

## Scientists Unravel Plants' Natural Defenses



*A healthy young pine tree growing in a dry hostile environment. When plants get too much light they were found to employ a remarkable process called photoprotection, in which a change takes place in the leaves so that the excess light energy is converted into heat, which is harmlessly dispersed. (Credit: Michele Hogan)*

ScienceDaily (Nov. 26, 2007) — A team of researchers, led by the University of Sheffield and Queen Mary, University of London, has discovered how plants protect their leaves from damage by sunlight when they are faced with extreme climates. The new findings, which have been published in *Nature*, could have implications both for adapting plants to the threat of global warming and for helping man better harness solar energy.

Photosynthesis in plants relies upon the efficient collection of sunlight. This process can work even at low levels of sunlight, when plants are in the shade or under cloud cover for example. However, when the sun is very bright or when it is cold or very dry, the level of light energy absorbed by leaves can be greatly in excess of that which can be used in photosynthesis and can destroy the plant. However, plants employ a remarkable process called photoprotection, in which a change takes place in the leaves so that the excess light energy is converted into heat, which is harmlessly dispersed.

Until now, researchers hadn't known exactly how photoprotection works. By joining forces with their physicist colleagues in France and the Netherlands, the UK team have determined how this process works. They were able to show how a small number of certain key molecules, hidden among the millions of others in the plant leaf, change their shape when the amount of light absorbed is excessive; and they have been able to track the conversion of light energy to heat that occurs in less than a billionth of a second.

Many plant species can successfully inhabit extreme environments where there is little water, strong sunlight, low fertility and extremes of temperature by having highly tuned defence mechanisms, including photoprotection. However, these mechanisms are frequently poorly developed in crop plants since they are adapted for high growth and productivity in an environment manipulated by irrigation, fertilisation, enclosure in greenhouses and artificial shading. These manipulations are not sustainable, they have high energy costs and may not be adaptable to an increasingly unstable climate. Researchers believe that in the future, the production of both food and biofuel from plants needs to rely more on their natural defence mechanisms, including photoprotection.



Professor Horton, of the University of Sheffield's Department of Molecular Biology and Biotechnology, who lead the UK team, said: "These results are important in developing plants with improved photoprotective mechanisms to enable them to better cope with climate change. This may be hugely significant in our fight against global warming. It is a fantastic example of what can be achieved in science when the skills of biologists and physicists are brought together."

Moreover, there are other global implications of this research. Dr Alexander Ruban of Queen Mary's School of Biological and Chemical Sciences, comments: "As we seek to develop new solar energy technology it will be important to not only understand, but to mimic the way biology has learnt to optimise light collection in the face of the continually changing intensity of sunlight."

The paper, Identification of a mechanism of photoprotective energy dissipation in higher plants, will be published in Nature on 22 November 2007.

The research project is a collaboration between the University of Sheffield, UK; Queen Mary, University of London, UK; the University of Amsterdam, Netherlands; the University of Wageningen, Netherlands; CEA Saclay and CNRS Gif-sur-Yvette, France.

The work was supported by grants from UK Biotechnology and Biological Sciences Research Council, the Netherlands Organization for Scientific Research via the Foundation of Earth and Life Sciences, Laserlab Europe; ANR, and the Marie Curie Research Training Network.

*Adapted from materials provided by University of Sheffield.*

**<http://www.sciencedaily.com/releases/2007/11/071121144953.htm>**





## **Harder Rain, More Snow**

### **Meteorologists See Future of Increasingly Extreme Weather Events**

*February 1, 2006* — While raising average global temperatures, climate change could also bring more snow, harder rain, or heat waves, meteorologists say. Computer models based on climate data from nine countries indicate every place on the planet will be hit with extreme weather events, including coastal storms and floods.

ORLANDO, Fla.-- f you don't like the weather now ... Just wait, huge changes could be in store. Some scientists predict severe weather events will be even more extreme over the next few decades -- more snow, harder rain, and hotter heat waves.

People everywhere are noticing the changes in climate. Susan Decker, from Broomfield, Colo., says, "It seems warmer. Not as cold. We don't get the snow anymore." Rob Topolski, from Paducah, Ky., says, "We also don't have not nearly as much snow as we used to in Kentucky." Abbie Pumarejo, from Augusta, Ga., says, "It just seems like every summer gets a little bit warmer."

Gerald Meehl, from the Climate and Global Dynamics Division at the National Center for Atmospheric Research (N-CAR) in Boulder, Colo., tells Ivanhoe, "We see the biggest increase in heat waves in the Pacific Northwest where we don't presently have heat waves."

Computer models based on nine different countries' climate data indicate every country will be hit with climate change throughout this century. Meehl says: "If extreme heat bothers you that can be a problem. It could affect your utility bill. You might have to think about getting air conditioning if you don't have it."

The potential effects are far reaching; the computer models have accurately simulated past weather events and now some experts believe these simulations of future climates are likely to be correct. Scientists, however, disagree on what can or should be done, but know something needs to be done.

N-CAR scientists expect the average global temperature to increase by three degrees over this century. Three degrees may not seem like a large amount, but in a heat wave, a three-degree difference could be dangerously hot for more people and create one-foot higher storm surges.

**[http://www.sciencedaily.com/videos/2006/0205-harder\\_rain\\_more\\_snow.htm](http://www.sciencedaily.com/videos/2006/0205-harder_rain_more_snow.htm)**



### **Microbiologists and Astrobiologists Help Kids Discover New Species**

*March 1, 2006* — Extremophiles are microbes that have adapted to extreme environments, such as Utah's Great Salt Lake. But new microorganisms can be found in everyday places, and scientists are showing school kids how to discover and name their own new species.

MOFFETT FIELD, Calif.--Thanks to advances in computer technology and DNA testing, scientists are identifying new species faster than ever. There are literally millions and millions of animals, plants and other living creatures all around us.

Elin Kelsey, a science writer, says, "Scientists are discovering more new species today than at any other time in history."

Among the latest discoveries are tiny microorganisms. Hundreds fit on the head of a pin, yet they're tough enough to survive in Utah's Great Salt Lake. "They've all figured out how to be able to survive in very high salt," says Lynn Rothschild, an astrobiologist at the NASA Ames Research Center in Moffett Field, Calif.

"It's so salty; it's 10-times saltier than the sea," Kelsey tells DBIS. This new organism is an extremophile, which means it likes to live in extreme environments.

Kelsey wants kids to learn about the new species that micro- and astrobiologists are discovering and to get involved. "I hope they really take away the wonder of the world, you know, that there are so many places in which life can exist and does exist," she says.

Kelsey shows kids how to find new species using things they have a home. "It really just stretches the idea of where life can exist on Earth and where life could exist, perhaps, in the universe."

Kids are being asked to come up with a name for the new species and submit it to become part of scientific history. "The idea that kids, themselves, might be able to name something and have that name go on in perpetuity for a real living organism -- a newly discovered species -- that's very spectacular," Kelsey says.

So does this look like a Charlie? Fluffy? Rover? How about Frosty? If you have a good name, send it in!

So far, the names of rock stars have topped the list of names submitted. Kids between ages 7 and 15 can submit their ideas by logging onto [www.mapletreepress.com](http://www.mapletreepress.com). The deadline for entries is March 31. The winner will be announced on Earth Day, which is April 22. Elin Kelsey has written a new kids book, "Strange New Species."

**[http://www.sciencedaily.com/videos/2006/0307-name\\_that\\_species.htm](http://www.sciencedaily.com/videos/2006/0307-name_that_species.htm)**



## **Killing Germs**

### **In Hospitals, Air Ducts with Silver-Based Coating Stay Germ-Free**

*September 1, 2005* — Preventing hospital infections -- from such stubborn bugs as *Staphylococcus aureus* -- could get a little easier with a new non-toxic, silver-based material. Used in coating, it helps keep hospital air ducts bacterium- and fungus-free. The material is also used in a number of products including athletic footwear, door hardware, pens and business supplies.

DUARTE, Calif.--For more than 6,000 years, humans have used silver to fight germs, also known as microbes. Now, some hospitals are using a silver compound to reduce hospital infections.

You can't see them, but millions of microorganisms are living quietly among us, in places where we least expect them.

Cancer patient Steve Measer worries about germs a lot. "In the last two months I have been in three separate hospitals." But at the Helford Clinical Research Hospital at City of Hope in Duarte, Calif., where he is receiving treatment, microbes are hard to find.

Dr. James Miser, Chief Executive Officer at City of Hope National Medical Center, says, "The room which we are currently standing in is as free of germs as medically possible in a hospital."

This is possible because the ducts delivering air to patients' rooms are coated with a silver-based anti-microbial compound called AgION. It can kill bacteria, viruses and fungus. Jeffrey Trogolo, Chief Technology Officer at AgION Technologies, Inc. in Wakefield, Mass., says, "When the conditions are right, it turns on, and that's where the silver comes out."

Agion technologies is using silver, a centuries-old germ killer, in a unique compound to coat surfaces and instruments that could spread disease. When bacteria are detected, the compound releases silver ions to the surface, killing existing microbes and any new ones that come along. "We have virtually no organisms grown," Dr. Miser says.

It's potent enough to kill germs, but is safe to use on virtually any surface. Trogolo says, "It's less toxic than table salt and less irritating than talcum powder. Ultimately we hope this will result in less infections and actually better outcomes for the patients."

The silver compound can also kill germs in your kitchen, on shopping cart handles, even in your sneakers. It's already used in a number of products including athletic footwear, door hardware, pens and business supplies.

**[http://www.sciencedaily.com/videos/2005/0910-killing\\_germs.htm](http://www.sciencedaily.com/videos/2005/0910-killing_germs.htm)**



## **Fog-Free Glass**

### **Materials Scientists Create Polymer Coating Against Fogged Glass**

*January 1, 2006* — When moisture condenses on a cool surface, droplets can form that are the right size to scatter light, fogging up glass. A new polymer coating draws droplets into nanopores and transforms them into a transparent sheet, improving vision.

BOSTON--If you're all fogged up, a new discovery may have you seeing more clearly. Fog is not just a weather nuisance for drivers; it can cause problems just about everywhere. Now, a new anti-fog glass coating is clearing the way for consumers.

Your bathroom mirror, eyeglasses, and your car windshield all fall victim to fog. It can happen anywhere moisture condenses on a cool surface.

Michael Rubner, a materials chemist and professor of Polymer Material Science at Massachusetts Institute of Technology in Boston, says, "When they condense they are just the right size to scatter light. If light gets scattered you can't see through those glasses anymore."

Michael created a polymer coating, made from different materials that transform the opaque droplets of water into a transparent sheet. "All of the process that we use to create these coatings is done with water," he says.

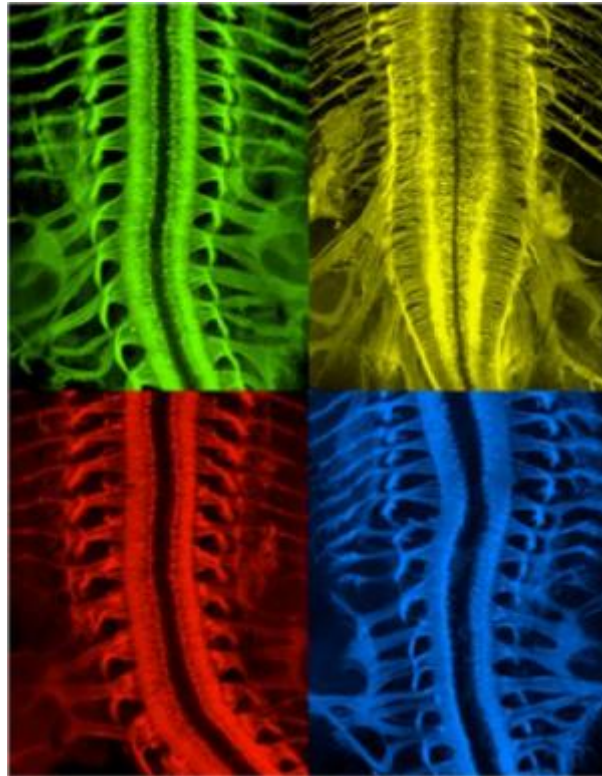
The process begins by dipping the glass into a solution of negatively charged tiny glass particle. After, it's dipped into another solution with positively charged polymers. Michael says: "We're forming what we call nanopores. The pores are so small that you can't see them with your eyes. They don't scatter light. But they're large enough so that when you put a drop of water onto the surface, it's drawn into those pores and spread across the surface instantaneously."

The effect allows you to continue seeing clearly through the piece of coated glass. This not only helps you at home, but even the military is looking for fog-free glass. Thomas Long, from Fosta-Tek Optics in Leominster, Mass., says, "The soldiers are faced with either having a foggy field of vision or taking those glasses off to improve their vision, but then being vulnerable to fragments of shrapnel ending their eyesight."

Michael says his coating promises to be long lasting for soldiers out in the field and to drivers just trying to see their way home. He's trying to find a cost-effective way to mass market the polymer coating and hopes it will be available in the next few years.

**[http://www.sciencedaily.com/videos/2006/0112-fogfree\\_glass.htm](http://www.sciencedaily.com/videos/2006/0112-fogfree_glass.htm)**

## Key Nerve Navigation Pathway Identified



*Motor nerves growing toward their muscle targets are detected with fluorescent protein in transgenic mouse embryos. A normal (wild type) embryo is shown in green and different mutants isolated in a genetic screen are shown in yellow (Columbus), red (Magellan), and blue (DeLeon). A variety of motor neuron growth and development defects are apparent in the mutants. (Credit: Joe Lewcock)*

ScienceDaily (Nov. 26, 2007) — Newly launched nerve cells in a growing embryo must chart their course to distant destinations, and many of the means they use to navigate have yet to surface. In a study published in the current issue of the journal *Neuron*, scientists at the Salk Institute for Biological Studies have recovered a key signal that guides motor neurons -- the nascent cells that extend from the spinal cord and must find their way down the length of limbs such as arms, wings and legs.

The Salk study, led by Samuel Pfaff, Ph.D, a professor in the Gene Expression Laboratory, identifies a mutation they christened *Magellan*, after the Portuguese mariner whose ship *Victoria* was first to circumnavigate the globe. The *Magellan* mutation occurs in a gene that normally pilots motor neurons on the correct course employing a newly discovered mechanism, their results demonstrate.

In the mutants, growing neurons can be seen leaving the spinal cord normally but then appear to lose direction. The elongating cells develop "kinks" and sometimes fold back on themselves or become entwined in a spiral, forming coils outside the spinal cord. "They appear to become lost in a traffic roundabout," described Pfaff, who observed the growing neurons with fluorescent technology.

Understanding how motor neurons reach the appropriate targets is necessary for the implementation of novel therapies, including embryonic stem cell replacement for the treatment of presently incurable disorders such as Lou Gehrig's disease, in which motor neurons undergo irreversible decay.

"Embryonic studies provide useful insights on how to replicate the system in an adult," said Pfaff. And, as he also pointed out, the mechanisms used by motor neurons are likely to be similar to those used in other parts of the central nervous system, such as the brain. The *Magellan* mutation discovered by Pfaff's group was found in mice, but the affected gene, called *Phr1*, has also been identified in other model systems, including fruit flies and the worm species *C. elegans*.



A growing nerve bears at its bow a structure called the growth cone, a region rich in the receptor molecules whose job is to receive cues from the environment, much as ancient mariners who observed the stars and set their course accordingly. During development, the growth cone continuously pushes forward, while the lengthening neuron behind it matures into the part of the cell called the axon. Once the growing cell "lands" at its target in a muscle cell, it is the axon that will relay the messages that allow an animal to control and move its limbs at will.

In Magellan mutants, Pfaff's team discovered that the growth cone becomes disordered. Rather than forming a distinct "cap" on the developing neuron, the cone is dispersed in pieces along both the forward end and the axon extending behind it.

"The defect is found in the structure of the neuron itself," said Pfaff, noting that the fundamental pieces, such as the receptors capable of reading cues, all seem to be present. Without the correct orientation of receptors, however, signals cannot be read accurately, resulting in growth going off course.

"A precise gradient normally exists across the cone," said Pfaff, "which is disrupted in the Magellan mutants." As a result, cells lose their polarity. They literally do not know the front end from the back end, according to Pfaff. This sense of polarity is a universal feature common to all growing neurons. Therefore, "Phr1 is likely to play a role in most growing neurons to ensure their structure is retained at the same time they are growing larger," he said.

Pfaff and his group identified Magellan using a novel system they had developed, in which individual motor neurons and axons can be visualized fluorescently. They were able to screen more than a quarter of a million mutations, and the mutations of interest were rapidly mapped to known genes as a result of the availability of the sequenced mouse genome -- a byproduct of the effort to sequence entire genomes such as that in the human.

The Magellan mutation is located in a gene known as Phr1, which is also active in other parts of the nervous system, indicating that it most likely functions to steer other types of neurons, such as those that enervate sensory organs or connect different regions of the brain. Studies of Magellan may therefore shed light on how a variety of neurological disorders might be treated with cell replacement strategies.

Lead author on the study is Joseph W. Lewcock, formerly a postdoctoral fellow in Pfaff's laboratory and currently at Genentech, Inc. Additional Salk authors include postdoctoral fellow Nicolas Genoud and senior research assistant Karen Lettieri.

The study, titled "The ubiquitin ligase Phr1 regulates axon outgrowth through modulation of microtubule dynamics," was supported by the National Institute for Neurological Disorders and Stroke.

*Adapted from materials provided by Salk Institute.*

**<http://www.sciencedaily.com/releases/2007/11/071121145008.htm>**



## Back Pain Relief

### Neurosurgeon Devises MRI-Based Technique to Diagnose Sciatica

*July 1, 2005* — Up to 40 million American suffer from sciatica pains, but the condition is often not diagnosed correctly. A new imaging technique uses a specially tuned MRI scan to image nerves and highlight them deep inside tissues. Called Magnetic Resonance Neurography, the new technique promises to diagnose conditions such as sciatica -- in which a compressed nerve in the buttock causes persistent lower-back and leg pain -- in up to 95 percent of cases that were previously undiagnosed.

LOS ANGELES -- Millions of Americans live with back and sciatica pain each day. Medication, therapy, even surgery doesn't help. Now one man's invention may ease your pain.

A car accident threatened to cut Donna Sachs' career short. For two years she lived in pain. Sachs' problem wasn't something she could just wash away. She describes the pain as "intense" saying, "It was like a constant, throbbing, shooting pain that just never subsided."

Neurosurgeon Aaron Filler of the Cedars-Sinai Institute of Spinal Disorders in Los Angeles, is behind the cutting-edge technology that helped Sachs. He developed the Magnetic Resonance Neurography or MRN.

Dr. Filler says, "This is the ability to image nerves inside the human body." MRN is really just an MRI scan finely tuned to highlight nerves -- something that has never been done before. Before the MRN, doctors would not have been able to see this. Sachs says, "You could actually see in the MRN where my problem was. They could actually see the nerve trapping the muscle."

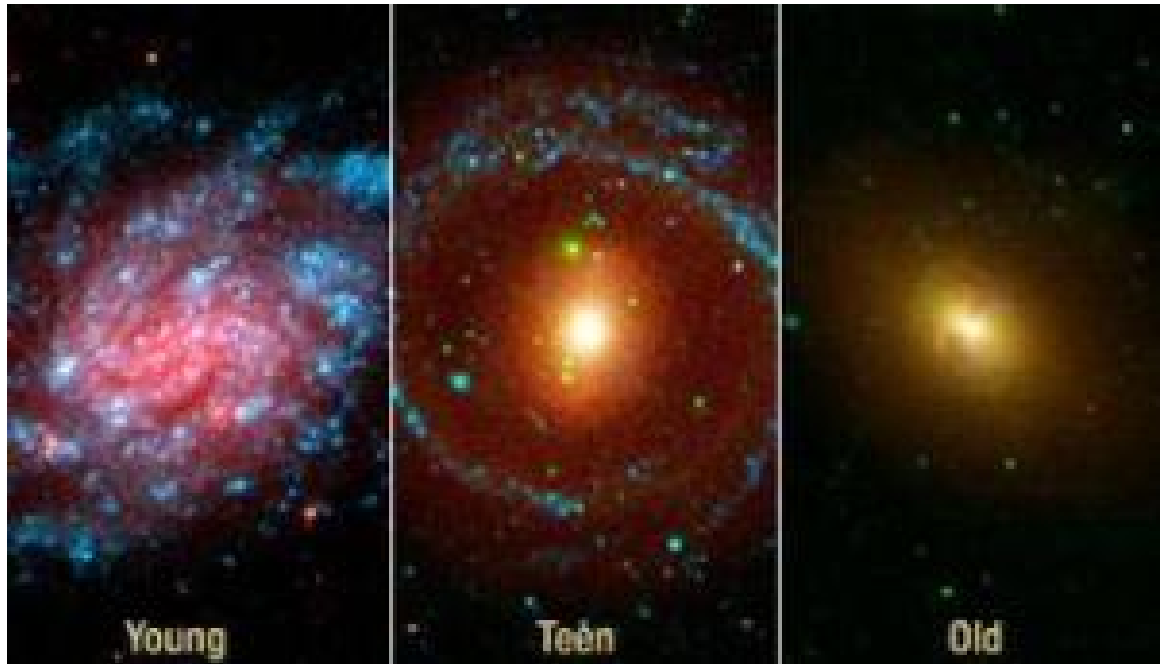
This new nerve imaging technology helped Dr. Filler diagnose Sachs' pain as Piriformis Syndrome. Dr. Filler explains the syndrome as a muscle in the pelvis, called the piriformis muscle, which crosses over the sciatic nerve and goes into chronic spasm and causes buttock and leg pain.

"I would walk around holding my buttocks saying, 'It feels like it's an unhappy nerve,' " says Sachs. But with Dr. Filler's help, Sachs' problem was solved and her life and job continued with no more pain.

Dr. Filler believes the new MRN can diagnose 90 percent to 95 percent of sciatica patients who couldn't be diagnosed by current methods. For more information on the MRN, check out Dr. Filler's new book, *Do You Really Need Back Surgery?*

[http://www.sciencedaily.com/videos/2005/0707-back\\_pain\\_relief.htm](http://www.sciencedaily.com/videos/2005/0707-back_pain_relief.htm)

## Watching Galaxies Grow Old Gracefully



New evidence from NASA's Galaxy Evolution Explorer supports the long-held notion that many galaxies begin life as smaller spirals before transforming into larger, elliptical-shaped galaxies. Examples of young, teenage and adult galaxies are shown here from left to right. The galaxy on the left is NGC 300, a spiral located about seven million light-years away in the constellation Sculptor. Younger galaxies like this one tend to form more stars, and since new stars give off more ultraviolet and blue light, the galaxies appear blue. The galaxy on the right is NGC 1316, located about 62 million light-years away in the constellation Fornax. It is an older elliptical. Older stars emit more red light, so this galaxy appears red. The galaxy in the middle of the diagram represents the teenagers, which are on their way from becoming blue to red. The relatively small patches of ultraviolet light in these transitional galaxies indicate that star formation is winding down. The galaxy at center is NGC 4569, located about four million light-years away in the constellation Virgo. (Credit: NASA/JPL-Caltech/Las Campanas Observatory, Caltech/Palomar, CTIO)

ScienceDaily (Nov. 26, 2007) — In the early 1900s, Edwin Hubble made the startling discovery that our Milky Way galaxy is not alone. It is just one of many galaxies, or "island universes," as Hubble dubbed them, swimming in the sea of space.

Now, a century later, NASA's Galaxy Evolution Explorer is helping piece together the evolution of these cosmic species. Since its launch in 2003, the mission has surveyed tens of thousands of galaxies in ultraviolet light across nine billion years of time. The results provide new, comprehensive evidence for the "nurture" theory of galaxy evolution, which holds that the galaxies first described by Hubble – the elegant spirals and blob-like ellipticals -- are evolutionarily linked.

According to this "nurture" theory, a typical young galaxy begins life as a spiral that is actively churning out stars. Over time, the spiral might merge with another spiral or perhaps an irregular-shaped galaxy, before kicking out a few more bursts of newly minted stars. Eventually, the galaxy slows down its production of stars and settles into later life as an elliptical.

"Our data confirm that all galaxies begin life forming stars," said Chris Martin, the principal investigator for the Galaxy Evolution Explorer at the California Institute of Technology in Pasadena, Calif. "Then through a combination of mergers, fuel exhaustion and perhaps suppression by black holes, the galaxies eventually stop producing stars."





When astronomers talk about galaxies today, they tend to refer to them by their color, either blue or red, instead of by their shape. Most blue galaxies are smaller spirals or irregulars, and most red galaxies are larger ellipticals, though there are some exceptions.

Why color-code the galaxies? Their color indicates how actively they are making new stars. Younger stars shine in ultraviolet or blue light, so galaxies that appear blue are busily producing stars. Older stars emit infrared or red light, so galaxies that look red have shut down their star-making factories. Roughly half of all galaxies are blue and half are red.

Scientists have long postulated that blue galaxies grow up to become red. They proposed that something happens to the blue galaxies to cause them to run out of star-making material, or gas, and mature into the passive red ones. For this "nurture" theory to be true, there should be a population of "teenage" galaxies in the process of transitioning from blue to red, or young to old. But such a cosmic metamorphosis should take billions of years. How can astronomers, with a significantly shorter lifespan, study a process that takes that long?

One solution is to look at lots and lots of galaxies. Imagine a hypothetical alien trying to figure out how and if humans age from only a handful of snapshots showing people of different ages. The aliens might assume that little people grow into big ones, but they could better piece together the life of a typical human if they could look through boxes and boxes of photographs.

The Galaxy Evolution Explorer was designed to provide astronomers with just such a massive portfolio of galaxies. Its troves of data have allowed scientists to find a significant number of teenage galaxies – and thus proof that youthful spiral, or blue, galaxies will eventually grow up to become the elderly elliptical, or red, galaxies.

"The nurture theory of galaxy evolution predicted that there would be galaxies in transition," said Martin. "Finding these galaxies required ultraviolet light, because they really stand out at this wavelength. And because they are rare, we had to look at many. The Galaxy Evolution Explorer allowed us to do this."

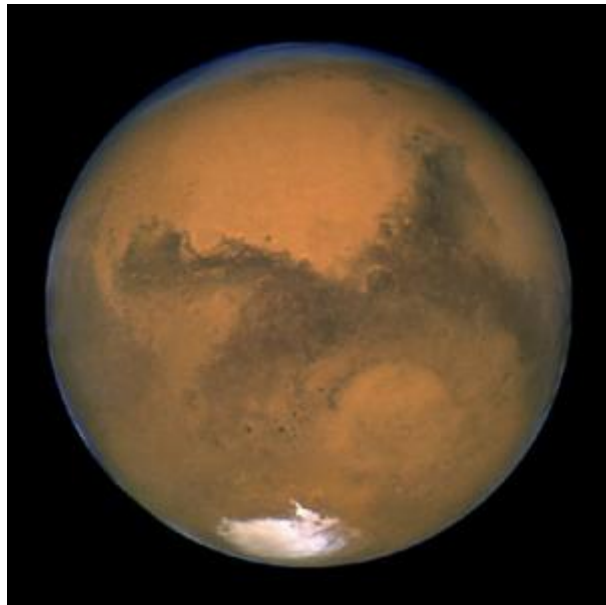
Visible-light data from the Sloan Digital Sky Survey also helped to establish the age of the teenage galaxies and the rates at which they are running out of star-making fuel. These findings suggest that some of the young galaxies are ripening into old age quickly, while others are leisurely strolling into their golden years.

Evidence for the "nurture" theory of galaxy evolution can be found in a report in the *Astrophysical Journal*. Martin is the lead author.

*Adapted from materials provided by National Aeronautics And Space Administration.*

<http://www.sciencedaily.com/releases/2007/11/071125181756.htm>

## New Light On Early Formation Of Earth And Mars



ScienceDaily (Nov. 25, 2007) — A team of scientists from NASA's Johnson Space Center (JSC) and the Lunar and Planetary Institute and the University of California, Davis (UCD) has found that terrestrial planets such as the Earth and Mars may have remained molten in their early histories for tens of millions of years. The findings indicate that the two planets cooled slower than scientists thought and a mechanism to keep the planet interiors warm is required.

These new data reveal that the early histories of the inner planets in the solar system are complex and involve processes no longer observed. Evidence of these processes has been preserved in Mars, while it has been erased in Earth. So Mars is probably the best opportunity to understand how Earth formed.

The formation of the solar system can be dated quite accurately to 4,567,000,000 years ago, said Qing-Zhu Yin, assistant professor of geology at UC Davis and an author on a new paper. Mars' metallic core formed a few million years after that. Previous estimates for how long the surface remained molten ranged from thousands of years to several hundred million years.

The persistence of a magma ocean on Mars for 100 million years is "surprisingly long," Yin said. It implies that at the time, Mars must have had a thick enough atmosphere to insulate the planet and slow down cooling, he said.

Scientists think that early crust formation alone cannot account for the slow cooling magma ocean seen in large planets. This new evidence instead implies that Mars, at one time, had a primitive atmosphere that acted as the insulator. "The primitive atmosphere was composed mostly of hydrogen left over from accretion into a rocky planet, but was removed, probably by impacts, about 100 million years after the planet formed," said Debaille.

Debaille and her colleagues performed precise measurements of neodymium isotope compositions of nine rare Martian meteorites called shergottites using mass spectrometers at JSC and UCD. Shergottites, named after the first-identified meteorite specimen that fell at Shergotty, India, in 1865, are a group of related meteorites from Mars composed primarily of pyroxene and feldspar.

The scientists examined shergottites because their large range in chemical compositions is thought to be a fingerprint of the formation of their deep sources very early in the history of Mars.

"These rocks were lavas that were made by melting deep in Mars and then erupted on the surface," said Brandon. "They were delivered to Earth as meteorites following impacts on Mars that exhumed



them and launched them into space." Mars meteorites are a treasure chest of information about that planet and have been the focus of extensive research by scientists.

The metallic element samarium has two radioactive isotopes that decay at a known rate to two daughter neodymium isotopes. By precisely measuring the quantities of neodymium isotopes, Debaille was able to use these two radiometric clocks to derive the times of formation of the different shergottite sources in the Martian interior.

"We expected to find that their sources all formed at the same time," said Debaille. "But what we found instead was that the shergottite sources formed at two different times. The oldest formed at 35 million years after the solar system began to condense from ice and dust into large planets about 4,567 million years ago. The youngest formed about 110 million years after the solar system began to condense."

Debaille and her colleagues found that the scenario that best fits the data is one where a global-scale magma ocean formed from melting in Mars during the final stages of accretion and then slowly solidified over this time period.

"The most recent physical models for magma oceans suggest they solidify on timescales of a few million years or less, so this result is surprising," said Brandon. "Some type of insulating blanket, either as a rocky crust or a thick atmosphere, is needed as an insulator to have kept the Martian interior hot."

Vinciane Debaille (LPI), Alan Brandon (JSC), Qing-zhu Yin and Ben Jacobsen (UCD) present these new findings in a paper published in the Nov. 22 issue of Nature.

*Adapted from materials provided by NASA, Johnson Space Center.*

**<http://www.sciencedaily.com/releases/2007/11/071121220939.htm>**



## 'Cooper Pairs' Can Be Found In Insulators As Well Superconductors

ScienceDaily (Nov. 24, 2007) — Nearly a century ago, Dutch physicist Kamerlingh Onnes discovered that some metals transform into perfect electrical conductors when cooled to temperatures near absolute zero. Once started, their currents of electrons can flow perpetually.

How electrons reorganize to produce this behavior remained mysterious until 1957, when theoretical physicists John Bardeen, Leon Cooper and Robert Schrieffer unveiled their BCS (Bardeen, Cooper, Schrieffer) theory of superconductivity. The theory shows that superconducting electrons form pairs, now known as Cooper pairs, that correlate their motion with other electron pairs to smoothly and infinitely flow. Cooper, currently the Thomas J. Watson, Sr. Professor of Science at Brown University, went on with his colleagues to win a Nobel Prize for this work.

Now, in the 50th anniversary year of BCS theory, Brown physicists are making a surprising addition to the scientific canon created by their famous colleague. In new work appearing in *Science*, the team shows that Cooper pairs not only form in superconductors, but can also form their opposite – electrical insulators. “Our finding is quite counterintuitive,” said James Valles, a Brown professor of physics who led the research. “Cooper pairing is not only responsible for conducting electricity with zero resistance, but it can also be responsible for blocking the flow of electricity altogether.”

Michael Stewart is a physics graduate student at Brown and the lead author of the *Science* article. Stewart started the research as a skeptic. He’d seen scientific papers suggesting that Cooper pairs might exist in electrical insulators under certain conditions. Stewart decided to test this unorthodox idea. “I’d would’ve put my money down,” he said, “that the answer was ‘no’.” To create an insulator for his experiments, Stewart chose bismuth, a rare metal that, when thick, serves as an excellent superconductor and, when thin, serves as an exceptional insulator. Stewart turned to Jimmy Xu, a Brown professor of engineering and physics and a pioneering nanotechnology researcher, to create a template for the special experimental film.

Xu supplied a template honeycombed with holes measuring only 50 nanometers in diameter. When coated with an ultra-thin coating of bismuth just four atoms thick, and cooled to super-low temperatures, the material could be transformed into either a superconductor to insulator. When the material was behaving as an insulator, and the researchers applied a magnetic field, they detected a telltale change in electrical current, which announced the presence of Cooper pairs.

While the team found that Cooper pairs are present in both superconductors and insulators, they believe that they behave differently in each instance. In superconductors, pairs link up with other pairs and move in a linear way to create a continuous stream of electric current. Think of a conga line. But in the insulating film, researchers believe the pairs spin solo. Think of couples twirling on a ballroom dance floor. The holes in their test material were the clincher, Valles and Stewart said, allowing them to detect the electron pairs. “Cooper pairs formed, but stayed segregated in these whirlpools,” Stewart said. “Because of that, the pairs can’t make a continuous line of current.”

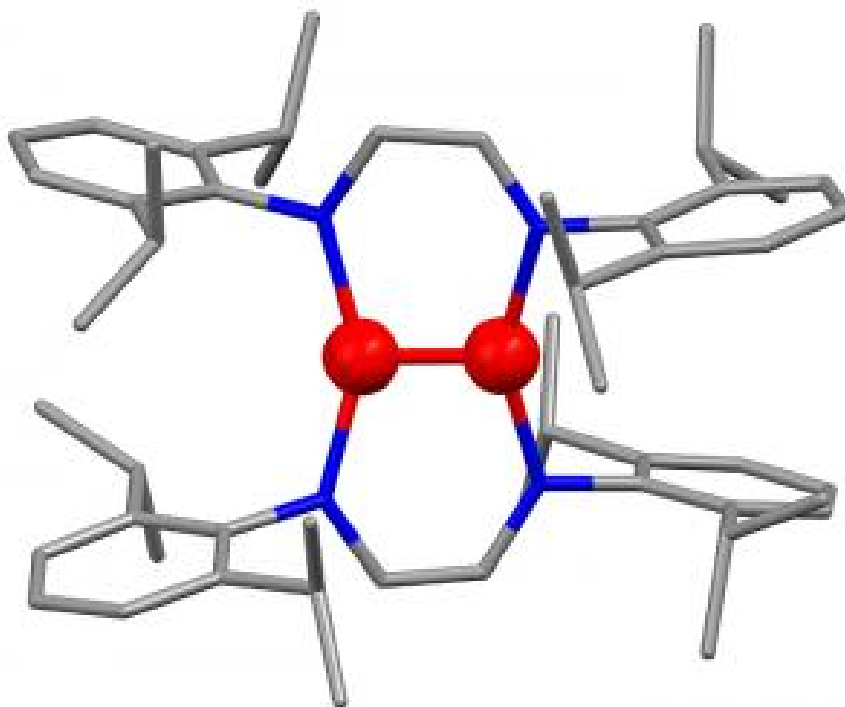
The findings could help researchers understand the limits of superconductivity and, perhaps, push them to create insulated wires that conduct electricity without heating up. Cooper said the work sheds important and intriguing new light on quantum effects. “This very interesting result reminds us that unexpected, important discoveries await if we continue to look,” Cooper said.

Aijun Yin, a senior research associate in engineering at Brown, assisted with the research. The National Science Foundation, the Air Force Research Laboratory, and the Office of Naval Research funded the work.

*Adapted from materials provided by Brown University.*

<http://www.sciencedaily.com/releases/2007/11/071122151144.htm>

## Chemists Set New World Record For Shortest Chemical Bond Between Metals



*This graphic depicts the bond between two atoms of chromium that has set a new record for the shortest chemical bond ever found between two metals. Using an analytical technique called X-ray diffraction, the scientists were able to look directly at the atomic structure of the new molecule and measure the distance between the chromium atoms. (Credit: Image courtesy of University of Delaware)*

ScienceDaily (Nov. 25, 2007) — Chemists from the University of Delaware, in collaboration with a colleague at the University of Wisconsin, have set a new world record for the shortest chemical bond ever recorded between two metals, in this case, two atoms of chromium.

The distance? A minuscule 1.803 Ångstroms, which is on the order of a billionth of the thickness of a human hair.

The chemists weren't driven by the Guinness Book of World Records or even a friendly bet. As is often the case in science, they discovered the molecule, which has a quintuple (i. e., five-fold) bond, quite by accident.

“Sometimes things like this just happen,” said Klaus Theopold, professor and chairperson of the UD Department of Chemistry and Biochemistry.

Theopold and Kevin Kreisel, who graduated with his doctorate from UD in August and is now a postdoctoral researcher at the University of Wisconsin, made the finding, working with research associate Glenn Yap and postdoctoral fellow Olga Dmitrenko, both from UD, and Clark Landis, a colleague from the University of Wisconsin.

Theopold has been researching the chemistry of chromium for a long time. The metal is an important industrial catalyst for making plastics such as polyethylene.

“We discovered this interesting looking molecule and realized that it had an extremely short distance between the metal atoms,” Theopold said.

A rule-of-thumb in chemistry, Theopold said, is that bond length and bond strength go together, so it's likely that the metal-metal bond is a strong one, although Theopold said no one knows for sure.



“This molecule is probably not practically useful. We're not going to get a patent here or cure cancer,” Theopold noted. “Records define the range in which things can exist. It's just an interesting molecule from a fundamental scientific standpoint.”

And those teeny-tiny bonds do mark a new world record for chemistry.

Before the UD discovery, Theopold said, the last record, achieved by researchers at Texas A&M University, stood for nearly 30 years.

The research was reported in the Journal of the American Chemical Society.

*Adapted from materials provided by University of Delaware.*

**<http://www.sciencedaily.com/releases/2007/11/071121094742.htm>**

## Internet Users Give Up Privacy In Exchange For Trust

ScienceDaily (Nov. 26, 2007) — With public concern over online fraud, new research, funded by the Economic and Social Research Council, has revealed that internet users will reveal more personal information online if they believe they can trust the organisation that requests the information. 'Even people who have previously demonstrated a high level of caution regarding online privacy will accept losses to their privacy if they trust the recipient of their personal information' says Dr Adam Joinson, who led the study.

The findings of the study are vital for those aiming to create online services that pose a potential privacy threat, such as Government agencies involved in developing ID cards. The project found that even those people who declared themselves unconcerned about privacy would soon become opposed to ID cards if the way that they were asked for information made them feel that their privacy was threatened.

The 'Privacy and Self-Disclosure Online' project is the first of its kind, in that rigorous methods were used to measure internet users actual behaviour. Dr Joinson explains; 'For the first time we have research which actually analyses what people do online, rather than just looking at what they say they do.'

56 percent of internet users stated that they have concerns about privacy when they are online. The central issue was whether websites were seen as particularly trustworthy -- or untrustworthy -- causing users to alter their behaviour. When a website is designed to look trustworthy, people are willing to accept privacy violations. But, the same actions by an untrustworthy site leads to people behaving in a much more guarded manner.

In addition, the researchers looked at how the wording of questions and the design of response options further influenced levels of self-disclosure. If the response 'I prefer not to say' appears at the top of an options list, users are far less likely to disclose information. Similarly, if given the opportunity to remain vague in their responses, for instance in choosing how wide the scale that represents their salary is, they are more likely to opt for less disclosure -- in this case, users tended to opt for a broad scale, such as £10,000 - £50,000 per year.

'One of the most interesting aspects of our findings,' says Dr Joinson, 'is that even people who genuinely have a high level of concern regarding privacy online may act in a way that is contrary to their stated attitudes when they come across a particular set of conditions.'

The implications of this are wide ranging. Many services now require a level of online disclosure. According to this research, how a user assesses the trustworthiness of a website may have a real impact on the success of that service. In addition, research findings will be used to guide policy regarding how the public can be encouraged to make informed choices regarding online privacy.

The project has targeted a number of groups who can benefit from the findings, including health professionals, higher education professionals and survey bodies.

*Adapted from materials provided by Economic & Social Research Council.*

<http://www.sciencedaily.com/releases/2007/11/071122104159.htm>

## Surface Orbital 'Roughness' In Manganites Discovered

*John Hill and colleagues found that at the surface of the material the orbital order is more disordered than in the bulk material. This finding could have implications for the next generation of electronic devices, which will involve increasingly smaller components. (Credit: Image courtesy of DOE/Brookhaven National Laboratory)*

ScienceDaily (Nov. 26, 2007) — Researchers at the U.S. Department of Energy's Brookhaven National Laboratory have shown that in a class of materials called manganites, the electronic behavior at the surface is considerably different from that found in the bulk. Their findings could have implications for the next generation of electronic devices, which will involve increasingly smaller components.

As devices shrink, the proportion of surface area grows in comparison to the material's volume. Therefore, it's important to understand the characteristics of a material's surface in order to predict how those materials behave and how electrons will travel across an interface, said Brookhaven physicist John Hill.



Hill and his fellow researchers were particularly interested in how the outer electrons of atoms in a so-called manganite material are arranged. Manganites - consisting of a rare-earth element such as lanthanum combined with manganese and oxygen - show a huge change in electrical resistance when a magnetic field is applied. Taking advantage of this "colossal magnetoresistance effect" could be the key to developing advanced magnetic memory devices, magnetic field sensors, or transistors.

The research team, which also includes scientists from KEK (Japan), CNRS (France), Ames Laboratory, and Argonne National Laboratory, used x-ray scattering at Brookhaven's National Synchrotron Light Source and Argonne's Advanced Photon Source to study the orbital order - the arrangement of electrons in the outermost shell - of the material at the surface and in its bulk.

"When you cool down the bulk material to a particular temperature, all the orbitals arrange themselves in a very particular pattern," Hill said. "The question is, does the same thing happen at the surface? And if not, how is it different?"

The authors found that at the surface, the orbital order is more disordered than in the bulk material. And, even though the manganite's crystal surface is atomically smooth, the orbital surface is rough. These characteristics could affect the way electrons are transferred across a material's surface and provide fundamental information for future research and development. Next, the researchers plan to look for this surface orbital "roughness" in other materials and test its effect on magnetism.

This research was published online in the November 18, 2007, issue of *Nature Materials*.

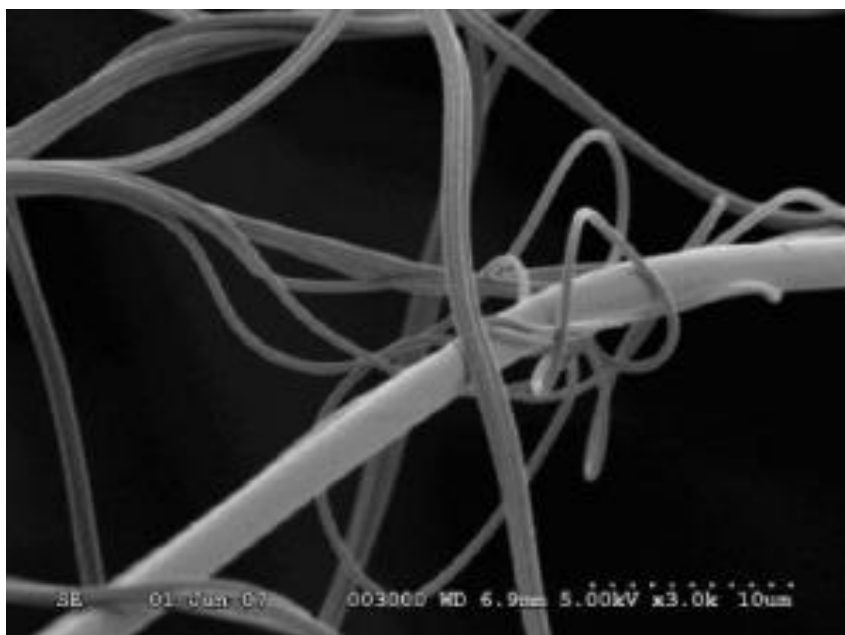
Funding for this research was provided by the Office of Basic Energy Sciences within in the U.S. Department of Energy's Office of Science.

*Adapted from materials provided by DOE/Brookhaven National Laboratory.*

<http://www.sciencedaily.com/releases/2007/11/071120195655.htm>



## Unraveling the Silky Spider Web



ScienceDaily (Nov. 25, 2007) — Web-making spiders employ a host of silk glands to synthesize a variety of silk filaments with different mechanical properties. Although it is widely believed that the aciniform glands are one such silk factory, there has been no hard evidence linking aciniform-derived proteins and silk --until now.

Craig Vierra and colleagues found that the aciniform gland in the Black Widow manufactures and extrudes a previously unidentified protein that is a component of multiple types of silk.

Vierra and colleagues used mass spectroscopy to analyze the protein content of two types of silk: the variety used for egg cases and the one used to wrap up prey. In both types they uncovered a thin protein fiber with a similar structure to another known silk protein called AcSp1. When they examined the expression of this new protein, termed AcSp1-like protein, in different silk glands, they found that mRNA levels were present at 1000-fold higher concentration in the aciniform gland compared to other glands.

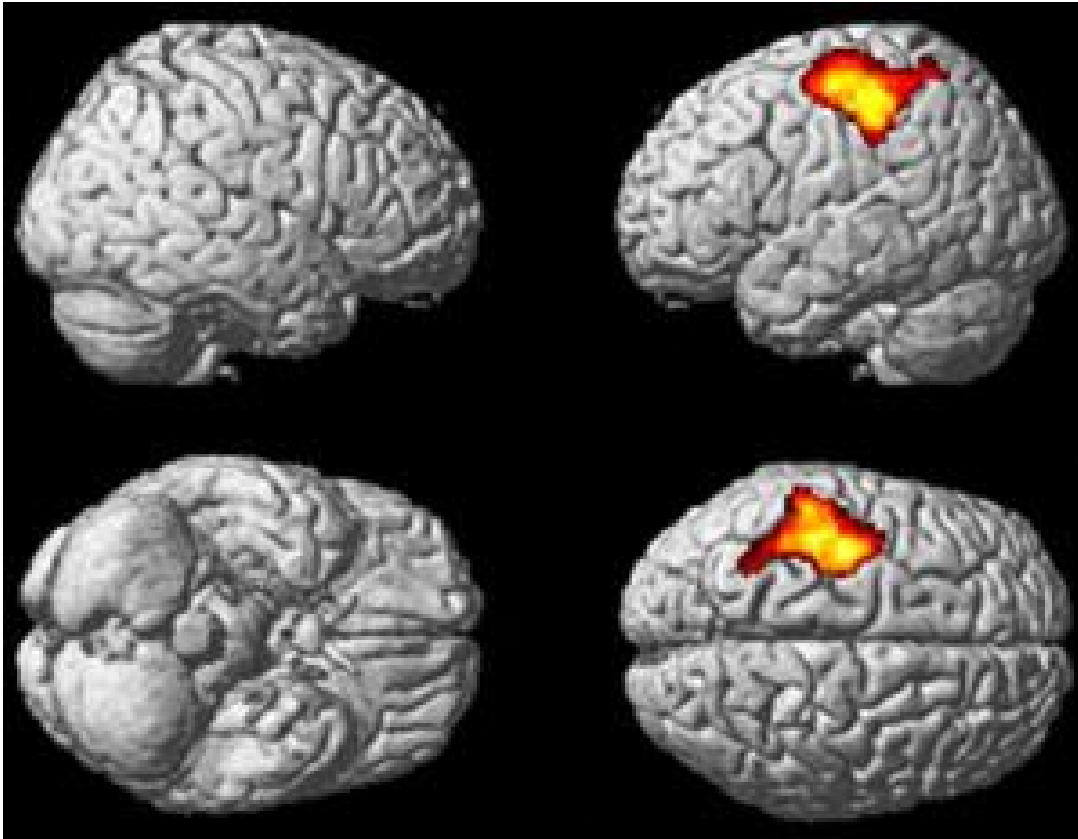
The researchers note this finding is intriguing since it shows that aciniform silk fibers are not made for one specific task but rather get integrated into multiple silk types. They plan to further characterize the mechanics of aciniform silk, but they propose that this thin fiber acts like twine to hold thicker silk fibers together.

Journal article: "Aciniform spidroin: A constituent of egg case sacs and wrapping silk fibers from the black widow spider, *Latrodectus Hesperus*" by Keshav Vasanthavada, Xiaoyi Hu, Arnold M. Falick, Coby LaMattina, Anne M.F. Moore, Patrick R. Jones, Russell Yee, Ryan Reza, Tiffany Tuton, and Craig A. Vierra

*Adapted from materials provided by American Society for Biochemistry and Molecular Biology.*

<http://www.sciencedaily.com/releases/2007/11/071121144937.htm>

### Is The Beauty Of A Sculpture In The Brain Of The Beholder?



*Brain activations in the contrasts "judged-as-beautiful vs. judged-as-ugly" and "judged-as-ugly vs. judged-as-beautiful" stimuli. Statistical parametric maps rendered onto the MNI brain template showing activity within left somatomotor cortex in the contrast of ugly vs. beautiful stimuli averaged across the three conditions. (Credit: Di Dio C, Macaluso E, Rizzolatti G, Image courtesy of PLoS One)*

ScienceDaily (Nov. 24, 2007) — Is there an objective biological basis for the experience of beauty in art? Or is aesthetic experience entirely subjective? This question has been addressed in a new article by Cinzia Di Dio, Emiliano Macaluso and Giacomo Rizzolatti. The researchers used fMRI scans to study the neural activity in subjects with no knowledge of art criticism, who were shown images of Classical and Renaissance sculptures.

The 'objective' perspective was examined by contrasting images of Classical and Renaissance sculptures of canonical proportions, with images of the same sculptures whose proportions were altered to create a comparable degraded aesthetic value. In terms of brain activations, this comparison showed that the presence of the "golden ratio" in the original material activated specific sets of cortical neurons as well as (crucially) the insula, a structure mediating emotions. This response was particularly apparent when participants were only required to observe the stimuli; that is, when the brain reacted most spontaneously to the images presented.

The 'subjective' perspective was evaluated by contrasting beautiful vs. ugly sculptures, this time as judged by each participant who decided whether or not the sculpture was aesthetic. The images judged to be beautiful selectively activated the right amygdala, a structure that responds to learned incoming information laden with emotional value.

These results indicate that, in observers naïve to art criticism, the sense of beauty is mediated by two non-mutually exclusive processes: one is based on a joint activation of sets of cortical neurons, triggered by parameters intrinsic to the stimuli, and the insula (objective beauty); the other is based on the activation of the amygdala, driven by one's own emotional experiences (subjective beauty). The



researchers conclude that both objective and subjective factors intervene in determining our appreciation of an artwork.

The history of art is replete with the constant tension between objective values and subjective judgments. This tension is deepened when artists discover new aesthetic parameters that may appeal for various reasons, be they related to our biological heritage, or simply to fashion or novelty. Still, the central question remains: when the fashion and novelty expire, could their work ever become a permanent patrimony of humankind without a resonance induced by some biologically inherent parameters?

Citation: Di Dio C, Macaluso E, Rizzolatti G (2007) The Golden Beauty: Brain Response to Classical and Renaissance Sculptures. PLoS One 2(11): e1201. doi:10.1371/journal.pone.0001201

<http://www.sciencedaily.com/releases/2007/11/071120201928.htm>



## Vitamin B12 Derivative Could Potentially Be Used To Treat Hypertension And Heart Disease

ScienceDaily (Nov. 26, 2007) — Investigators at the University of California, San Diego School of Medicine have developed a new drug called nitrosyl-cobinamide. Cobinamide is a vitamin B12 analog, and, in fact, is the penultimate compound in the biosynthesis of vitamin B12 by bacteria. The UCSD investigators have shown that cobinamide binds relatively tightly to nitric oxide (NO), forming nitrosyl-cobinamide.

Because the binding is reversible, nitrosyl-cobinamide can be used as a NO donor. NO is produced by most cells in the body, and helps regulate a variety of physiological functions including maintaining blood pressure, optimizing heart function, and serving as a neurotransmitter. The report on this study, led by Dr. Gerry R. Boss, will appear in the December 07 issue of *Experimental Biology and Medicine*.

Two NO donor drugs have been in clinical use for many years: nitroglycerin (and its derivatives), and sodium nitroprusside. Nitroglycerin is used to treat angina because it increases blood flow to the heart by dilating the coronary arteries and reduces the work load of the heart by reducing venous return to the heart (preload) and by reducing blood pressure (afterload). Sodium nitroprusside is used to treat acute hypertensive episodes because of its potent blood pressure lowering properties. Unfortunately, neither agent is ideal.

Nitroglycerin is an organic nitrate and requires biotransformation in the body; tolerance develops rapidly, in large part due to the biotransformation process. Nitroprusside releases five cyanide ions for every NO molecule released, and, therefore, drug treatment is limited by cyanide toxicity. A clear need exists for a non-toxic direct NO donor.

Nitrosyl-cobinamide may be such an agent, because Dr. Gerry R. Boss, Professor of Medicine at UCSD, and his colleagues showed that nitrosyl-cobinamide was active as an NO donor in several different biological systems: cultured rat pulmonary artery smooth muscle cells, *Drosophila* Malpighian tubules, isolated mouse hearts and aortas, and whole animal mouse studies. In the isolated mouse hearts and the whole animal studies, the UCSD team showed that nitrosyl-cobinamide was more effective than nitroglycerin in increasing coronary blood flow and lowering blood pressure, respectively.

Nitrosyl-cobinamide is a direct NO donor and does not require biotransformation. As a vitamin B12 analog, the parent compound cobinamide appears to be non-toxic at the doses that would be required to treat angina or acute hypertension; formal toxicology and pre-clinical pharmacokinetic studies of cobinamide are currently underway.

"Nitrosyl-cobamide is a new drug that could, in the future, be proven efficacious for the treatment of hypertension and heart disease" said Dr. Steven R. Goodman, Editor-in-Chief of *Experimental Biology and Medicine*. "Hypertension and heart disease impact the lives of such a large portion of the world's population that research into new and improved therapeutics is an international scientific priority. We are pleased to feature the article by Dr. Boss and colleagues in our December 07 issue".

*Adapted from materials provided by Society for Experimental Biology and Medicine.*

**<http://www.sciencedaily.com/releases/2007/11/071126115310.htm>**



## Storing Carbon Dioxide Deep In Earth May Be Safe Solution To Global Warming

ScienceDaily (Nov. 26, 2007) — Storing carbon dioxide deep below the earth's surface could be a safe, long-term solution to one of the planet's major contributors to climate change.

University of Leeds research shows that porous sandstone, drained of oil by the energy giants, could provide a safe reservoir for carbon dioxide. The study found that sandstone reacts with injected fluids more quickly than had been predicted - such reactions are essential if the captured CO<sub>2</sub> is not to leak back to the surface.

The study looked at data from the Miller oilfield in the North Sea, where BP had been pumping seawater into the oil reservoir to enhance the flow of oil. As oil was extracted, the water that was pumped out with it was analysed and this showed that minerals had grown and dissolved as the water travelled through the field. <sup>(1)</sup>

Significantly, PhD student Stephanie Houston found that water pumped out with the oil was especially rich in silica. This showed that silicates, usually thought of as very slow to react, had dissolved in the newly-injected seawater over less than a year. This is the type of reaction that would be needed to make carbon dioxide stable in the pore waters, rather like the dissolved carbonate found in still mineral water. <sup>(2)</sup>

The study gives a clear indication that carbon dioxide sequestered deep underground could also react quickly with ordinary rocks to become assimilated into the deep formation water.

The work was supervised by Bruce Yardley, Professor in the School of Earth and Environment at the University, who explained: "If CO<sub>2</sub> is injected underground we hope that it will react with the water and minerals there in order to be stabilized. That way it spreads into its local environment rather than remaining as a giant gas bubble which might ultimately seep to the surface.

"It had been thought that reaction might take place over hundreds or thousands of years, but there's a clear implication in this study that if we inject carbon dioxide into rocks, these reactions will happen quite quickly making it far less likely to escape."

Although extracting CO<sub>2</sub> from power stations and storing it underground has been suggested as a long-term measure for tackling climate change, it has not yet been put to work for this purpose on a large scale. "There is one storage project in place at Sleipner, in the Norwegian sector of the North Sea, and some oil companies have actually used CO<sub>2</sub> sequestration as a means of pushing out more oil from existing oilfields," said Prof Yardley.

In the UK the Prime Minister has recently announced a major expansion of energy from renewable sources and the launch of a competition to build one of the world's first carbon capture and storage plants. The Leeds study suggests the technique has long-term potential for safely storing this major by-product of our power stations, rather than allowing it to escape and further contribute to global warming.

### Notes

(1) The study covered samples of water pumped out from the Miller oilfield over a seven-year period. The data is routinely collected by BP to assess whether water-borne chemicals are liable to cause costly problems of scale to the drilling equipment. The Leeds scientists compared these with the composition of the water that was there before and the water that was injected. This showed that minerals had grown and dissolved as the water travelled through the field.

(2) Stephanie Houston worked on the project as part of an Industrial Case Studentship, funded by the Natural Environment Research Council and BP. Her work was supervised by Professor Bruce Yardley,



who is based in the Institute of Geological Sciences within the School of Earth and Environment at the University of Leeds.

The research received support from the Natural Environment Research Council. NERC funds world-class science in universities and its own research centres to increase knowledge and understanding of the natural world.

The paper "Rapid fluid-rock interaction in oilfield reservoirs" by SJ Houston, BWD Yardley, PC Smalley and I Collins is published by the Geological Society of America in the December issue of *Geology*.

*Adapted from materials provided by University of Leeds.*

**<http://www.sciencedaily.com/releases/2007/11/071126104418.htm>**



### City-dwelling Women At Greater Risk For Breast Cancer

ScienceDaily (Nov. 26, 2007) — Women who live in urban areas have denser breasts, making them more likely to develop breast cancer, according to a study presented November 26 at the annual meeting of the Radiological Society of North America.

"Women living in cities need to pay more attention to having regular breast screening," said Nicholas M. Perry, director of The London Breast Institute at The Princess Grace Hospital in London, U.K. "Currently, women who live in urban areas are known to have lower attendance for breast screening programs than women in outlying areas."

Breast tissue in women may be fatty or glandular or a mixture of both. Women with more glandular breasts show denser tissue on a mammogram and are known to have nearly four times the risk of developing breast cancer than women with fatty breasts. Dr. Perry and colleagues set out to determine if there was a relationship between breast density and area of residence.

The researchers analyzed digital mammograms of 972 women from urban, suburban and rural areas. They discovered that women who lived in London had significantly denser breasts than those living outside the city. The risk of increased density was twice as great in the 45- to 54-year-old group. Age-specific analyses suggested that overall differences by area were more pronounced in women under age 50.

Dr. Perry cautioned that more research is needed to determine the precise reason for this phenomenon, taking into account lifestyle factors, stress, workplace and other possible contributors, but he advised that all women maintain a recommended breast screening regimen, and that women with dense breasts be screened with digital mammography, which is more effective at detecting cancer in dense breast tissue.

"Regular breast screening with mammography saves lives," Dr. Perry said. "Access to breast screening for women living in cities must be prioritized."

Co-authors are P.C. Allgood, Ph.D., S.W. Duffy, M.D., S.E. Milner, B.Sc., and K. Mokbel, M.D.

*Adapted from materials provided by Radiological Society of North America.*

**<http://www.sciencedaily.com/releases/2007/11/071126100606.htm>**



## Grisly Court Evidence Makes Juries More Likely To Convict

ScienceDaily (Nov. 26, 2007) — Jurors presented with gruesome evidence, such as descriptions or images of torture and mutilation, are up to five times more likely to convict a defendant than jurors not privy to such evidence, research reveals.

The finding, from two published mock trial studies, lends support to concerns by the Australian Law Reform Commission that admitting gruesome evidence may prejudice juries by influencing them to make decisions based on emotion or a desire to punish defendants.

"The finding that gruesome evidence can be prejudicial suggests that such evidence should be excluded in court proceedings," says one of the research authors, David Bright, a UNSW PhD student.

"Gruesome information in the form of pictures or descriptions appears to influence jurors' decisions by increasing the incriminating value that they ascribe to such evidence.

"The results of our research and of other researchers suggest that the prejudicial influence of gruesome evidence on decision making occurs at an unconscious level. Jurors appear to be unaware of the extent to which they are susceptible to prejudice as a result of exposure to this type of evidence."

"Established safeguards, such as judicial directions that jurors should view such evidence in a calm and deliberate manner probably don't offer sufficient protection to defendants."

Provisions in Australian statutory and common law dictate that gruesome evidence is less likely to be excluded in jury trials. A review by Mr Bright and Dr Jane Goodman-Delahunty of cases that have considered the potential prejudicial impact of gruesome evidence, such as postmortem photographs, reveals that Australian trial and appellate judges are reluctant to exclude such material.

"Australian case law tends to assume that post-mortem photographs, for example, have little or no prejudicial impact on juries," says Dr Goodman-Delahunty, an Associate Professor in the UNSW School of Psychology. "Gruesome photographs have been considered for exclusion by NSW criminal courts on several occasions but in each case courts have held that the probative value of post-mortem photographs outweighed any prejudicial impact on jurors."

For example, in the criminal trial *R v Bowhay* (1998, NSWSC 782), Justice Dunford explained his admission of post-mortem photographs into evidence, saying: "In this day and age where people see 'blood and guts' on the television and on the movie screen day after day and week after week, I fail to see how it could be expected the jury would misuse this evidence".

During the 1996 trial of convicted serial killer, Ivan Milat, for the "backpacker murders" Milat's defence team challenged the admissibility of photographs of one of the victim's skeletal remains (*R v Milat* (1996) 87 A Crim R 446).

However, prosecutors argued that to connect the murder to other murders and to implicate Milat as the perpetrator, the photographs should be admitted to demonstrate the savagery and cruelty of the murders. Chief Justice Hunt ruled the photographs admissible, quoting from an earlier case to support his decision:

"If a photograph is of a particularly horrific nature, a question will no doubt arise as to whether its prejudicial shock effect is so great as to outweigh its probative value ... It is important ... (to consider) whether its prejudicial effect outweighs its probative value, not merely whether it merely accompanies such probative value .... The mere horrific nature of the photograph is not by itself a ground for its rejection." (*R v Allen*, December 1992, NSW CCA, p6).

Horror details are unlikely to be excluded from evidence so long as they have high "probative value" - meaning evidence that proves or disproves a controverted fact in a case, according to Mr Bright.



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Mr Bright says introducing gruesome evidence may influence juror decision-making by unfairly damaging a defendant's case in some unacceptable way, for example, by provoking an irrational, emotional response, or by giving undue weight to this evidence.

In a 2004 study, the researchers had 68 third-year UNSW psychology students read a transcript of a hypothetical trial involving a defendant charged with his estranged wife's murder. Participants were assigned to one of two evidence conditions: a gruesome or a non-gruesome evidence condition.

In the non-gruesome version, the victim was stabbed in the chest. In the gruesome version, the victim was "brutally tortured" for over 30 minutes, as numerous incisions were made to her body with a sharp instrument. The victim's face was "obliterated beyond recognition" and cuts were made to almost every part of her body. After her death, an attempt was made to decapitate the corpse.

After reading witness examinations by the prosecution and the defence, mock jurors read the judge's instructions outlining the role of jurors, the elements of the crime of murder and the definition of reasonable doubt -- instructions identical to those administered by judges in similar cases in criminal courts in New South Wales. Participants who reviewed gruesome evidence were more than twice as likely to find the defendant guilty (34.4%) than were participants who did not review gruesome evidence (13.9%).

In a 2006 study, the UNSW researchers found that mock jurors who saw gruesome photographs, compared with those who saw no photographs, reported experiencing significantly more intense emotional responses, including greater anger at the defendant.

As well, the conviction rate was significantly higher among jurors who witnessed visual evidence in the form of gruesome (41.2%) or neutral photographs (38.2%) compared to the conviction rate among those without photographic evidence (8.8%).

"The study revealed that mock jurors who viewed gruesome photographic evidence attributed significantly higher incriminating weight to the prosecution evidence than that by mock jurors who did not view any photographs," says Dr Goodman-Delahunty.

"Further analyses revealed that mock jurors who saw gruesome photographs rated the prosecution evidence as more adequate or sufficient to support a guilty verdict compared with mock jurors who saw no photographs or who saw neutral photographic evidence, because the nature of the photographs enhanced mock juror anger at the defendant."

This finding underscores the caution expressed by the Australian Law Reform Commission that admission of gruesome evidence in courts could be prejudicial against a defendant, especially "if it that appeals to jurors' sympathies, arouses a sense of horror, provokes an instinct to punish, or triggers other mainsprings of human action which may cause the fact-finder to base his decision on something other than the established propositions of the case". (ALRC, 1985, pp 351-2).



In the 2006 study, researchers randomly assigned 102 participants (UNSW psychology students aged 17-54 years) to one of four groups: verbal gruesome, verbal non-gruesome, color photographs and black-and-white photographs.

The gruesome version contained detailed descriptions of the wounds to the victim's neck. These detailed descriptions were omitted from the verbal non-gruesome trial excerpts.

Participants in the two photograph groups viewed 20 photographs from a real murder case tried in NSW (R v Valevski, 2000, NSWCCA 445.) in color or black and white, selected to include both neutral and differentially gruesome photographs (such as a close-up of a victim's neck wound versus blood-stained clothing).

This study indicates that photographic evidence, irrespective of whether this evidence is neutral or gruesome, can increase the likelihood of conviction, according to Mr Bright.

"Admitting gruesome photographic evidence appears to increase the incriminating value that jurors ascribe to prosecutorial evidence by influencing jurors' emotional state.

Although photographs of a gruesome and neutral nature appeared to have similar effects on mock juror overall emotional responses, emotional reactions to gruesome photographic evidence appear to lead to changes in the mental processing of evidence, and to an increased likelihood of conviction, compared with neutral and no photographs.

This research provides empirical support for concerns about prejudicial evidence outlined by the Australian Law Reform Commission and the Commonwealth Government's Advisory Committee on the Federal Rules of Evidence that prejudicial evidence such as gruesome photographs can damage a defendant's case by provoking an irrational, emotional response, or giving evidence more weight than it warrants.

*Adapted from materials provided by University of New South Wales.*

**<http://www.sciencedaily.com/releases/2007/11/071119100343.htm>**

## Undercover restorers fix Paris landmark's clock

'Cultural guerrillas' cleared of lawbreaking over secret workshop in Pantheon

**Emilie Boyer King in Paris**  
**Monday November 26, 2007**  
**The Guardian**



It is one of Paris's most celebrated monuments, a neoclassical masterpiece that has cast its shadow across the city for more than two centuries.

But it is unlikely that the Panthéon, or any other building in France's capital, will have played host to a more bizarre sequence of events than those revealed in a court last week.

Four members of an underground "cultural guerrilla" movement known as the Untergunther, whose purpose is to restore France's cultural heritage, were cleared on Friday of breaking into the 18th-century monument in a plot worthy of Dan Brown or Umberto Eco.

For a year from September 2005, under the nose of the Panthéon's unsuspecting security officials, a group of intrepid "illegal restorers" set up a secret workshop and lounge in a cavity under the building's famous dome. Under the supervision of group member Jean-Baptiste Viot, a professional clockmaker, they pieced apart and repaired the antique clock that had been left to rust in the building since the 1960s. Only when their clandestine revamp of the elaborate timepiece had been completed did they reveal themselves.

"When we had finished the repairs, we had a big debate on whether we should let the Panthéon's officials know or not," said Lazar Klausmann, a spokesperson for the Untergunther. "We decided to tell them in the end so that they would know to wind the clock up so it would still work.

"The Panthéon's administrator thought it was a hoax at first, but when we showed him the clock, and then took him up to our workshop, he had to take a deep breath and sit down."

The Centre of National Monuments, embarrassed by the way the group entered the building so easily, did not take to the news kindly, taking legal action and replacing the administrator.

Getting into the building was the easiest part, according to Klausmann. The squad allowed themselves to be locked into the Panthéon one night, and then identified a side entrance near some stairs leading



up to their future hiding place. "Opening a lock is the easiest thing for a clockmaker," said Klausmann. From then on, they sneaked in day or night under the unsuspecting noses of the Panthéon's officials.

"I've been working here for years," said a ticket officer at the Panthéon who wished to remain anonymous. "I know every corner of the building. And I never noticed anything."

The hardest part of the scheme was carrying up the planks used to make chairs and tables to furnish the Untergunther's cosy squat cum workshop, which has sweeping views over Paris.

The group managed to connect the hideaway to the electricity grid and install a computer connected to the net.

Klausmann and his crew are connoisseurs of the Parisian underworld. Since the 1990s they have restored crypts, staged readings and plays in monuments at night, and organised rock concerts in quarries. The network was unknown to the authorities until 2004, when the police discovered an underground cinema, complete with bar and restaurant, under the Seine. They have tried to track them down ever since.

But the UX, the name of Untergunther's parent organisation, is a finely tuned organisation. It has around 150 members and is divided into separate groups, which specialise in different activities ranging from getting into buildings after dark to setting up cultural events. Untergunther is the restoration cell of the network.

Members know Paris intimately. Many of them were students in the Latin Quarter in the 80s and 90s, when it was popular to have secret parties in Paris's network of tunnels. They have now grown up and become nurses or lawyers, but still have a taste for the capital's underworld, and they now have more than just partying on their mind.

"We would like to be able to replace the state in the areas it is incompetent," said Klausmann. "But our means are limited and we can only do a fraction of what needs to be done. There's so much to do in Paris that we won't manage in our lifetime."

The Untergunther are already busy working on another restoration mission Paris. The location is top secret, of course. But the Panthéon clock remains one of its proudest feats.

"The Latin Quarter is where the concept of human rights came from, it's the centre of everything. The Panthéon clock is in the middle of it. So it's a bit like the clock at the centre of the world."

**[http://arts.guardian.co.uk/art/heritage/story/0,,2217212,00.html?gusrc=rss&feed=40#article\\_continue](http://arts.guardian.co.uk/art/heritage/story/0,,2217212,00.html?gusrc=rss&feed=40#article_continue)**

## *The Gray Ghost of the Bowery*

### **An unsentimental valentine from the New Museum.**

- Published Nov 25, 2007 (Photo: Dean Kaufman)

over the Lower East Side. In the middle of the stack, one container has drifted to the north; it needs only a flick of Superman's finger to nudge it back into alignment. The west wall follows the Bowery's drunken skew across Manhattan's grid, creating a slightly off-kilter geometry. The glass storefront makes the hunk of shiny metal appear to levitate above the sidewalk. But what's an airborne set of seamless metal polyhedrons doing in this place of cracked curbs and gimpy lintels? Have the museum's administrators and architects never heard of the taverns and derelicts that once gave the Bowery its proud, seedy identity?

Indeed they have, and they responded with a magically unsentimental intrusion, an antidote to the generic luxury springing up around it. The New Museum—designed by the Tokyo partners Kazuyo Sejima and Ryue Nishizawa, who are jointly known as Sanaa—comes not to mourn Ye Olde Bouwerie, or even to sanitize it, but to contribute to its legacy of inspired idiosyncrasy. Sidle up to the museum and the hard edges soften, hazed by the mesh stretched over each surface like a fishnet stocking made of chain mail. It's a hide of aluminum scored by teeth that have plunged through and yanked, opening rows of symmetrical wounds. Sexy and defiant in this see-through armature, the museum challenges passersby to call it a freak, thereby earning a spot as a genuine New York institution.

The building's apparent randomness echoes the nearby stretch of tenements, some stumpy, some tall, almost all ungainly. Nothing quite lines up with anything, which is a fine way to be contextual in a corner of the city known for its endangered population of eccentrics. The rippled façade mutates through the day, starting out milky in the morning and shading to gunmetal by late afternoon. Of course, the surface will also catch the grit that hangs in the leaded air. Its long-term success depends on how well the coating wears, on whether pollution forms a patina or just an ugly scum, and on how regularly the building is scrubbed.

The museum's blend of delicacy and industrial brawn recalls the early-twentieth-century infatuation with the aesthetics of manufacture, embodied in the heroic photographs of factories Charles Sheeler took in the twenties. In much of lower Manhattan, that has devolved into the precious proletarian chic of warehouse boutiques and spare white lofts. The New Museum, though, has tried to preserve the equivalence of art with labor. It offers itself as a place where big, complicated things are assembled by dirty hands. The polished concrete floors, fluorescent tubes, and mesh ceiling panels are all homely and prematurely dingy, but they are also appurtenances of a workplace prepared to take a lot of punishment.

From a few blocks' distance, the new New Museum looks like a haphazard pile of welded boxes teetering





The quirks of form lead to oddities indoors, some appealing, other less so. The core—a vertical concrete tube crammed with elevators, plumbing, and electrical risers—pins down the building on one side rather than through the middle, leaving room for vast, column-free floors. These skylighted rooms are glorious in their sense of possibility and high-ceilinged spaciousness. Here art can sprawl, climb, or hang from thick steel beams. Behind the elevators, though, are commensurately skimpy spaces: a claustrophobic staircase, a throwaway corner, a tall, skinny niche carved out of dead space in the core. Most visitors won't see the offices or the education floor, which is a good thing, because neither is welcoming to adults. Seen from outside, the strip windows there emit a blurred glow through the mesh. But from within, the metal creates a dispiritingly correctional effect: Inmates look through the grate at a skyline partitioned into little diamonds. And the suspicion arises that maybe the coat of mail serves less to protect the museum than to shield the Bowery from the relentlessly gentrifying influence of art.

<http://nymag.com/arts/architecture/reviews/41267/>

## Shh! It's a Secret Kind of Outside Art



Florian Holzherr

By JORI FINKEL

Published: November 25, 2007

Los Angeles

TWO years ago, not long after he turned 45, Ed Sweeney made a list of things to do before he died. Take his wife to Machu Picchu. Take his young son to see the space shuttle launch. And, what is proving to be most challenging, visit the Roden Crater, an extinct volcano northeast of Flagstaff, Ariz., that James Turrell has been transforming into a work of perceptual and celestial art since the late 1970s.

A corporate pilot who lives near Los Angeles, Mr. Sweeney often flies over the volcano field near Flagstaff en route to Florida or Texas. He believes he has seen the Roden Crater from the air. He has followed Mr. Turrell's work for several years, he said, and was moved by a recent exhibition in London. But he is having a hard time getting in the crater's front door.

In July Mr. Sweeney stopped in Flagstaff while on a road trip to Santa Fe, N.M. He placed an ad on craigslist.org that said: "Anybody know Jim Turrell or someone who can get access to his crater?? It's on my list of 20 things to do before I die."

He received a handful of responses, none particularly helpful. Someone sent back-road directions, which he didn't want to use. "I wanted some sort of approval before I stumbled onto the land," he said. Eventually he visited the Flagstaff Chamber of Commerce, which gave him the number of the Skystone Foundation, which administers Mr. Turrell's crater project.

A woman answered the phone. "Once she figured out that I didn't come bearing bags of money," Mr. Sweeney said, "she gave me the 'Due to construction and safety concerns, we can't let you see the site. Thank you for your interest.'" Mr. Sweeney also received the official line: The crater would not be open to the public until 2011.

This makes the crater, in the logic of the art world, one of the hottest tickets around. Since Mr. Turrell bought the 400,000-year-old, two-mile-wide crater in 1979 and began moving tons of earth to carve out different kinds of viewing chambers and tunnels — making his art of light, sky and astronomical events instead of, say, paint and canvas — anticipation has been building. Writers have compared it to Stonehenge and the Mexican pyramids; in *Interview* magazine Ingrid Sischy once predicted that someday the work “could have more fans than ‘Star Wars.’”

The question is when. After early reports that it would be completed in the late 1980s, that date has been pushed back several times for financial and artistic reasons. Some suspect that the monumental work will be “finished” only with the artist’s death.

Yet many art world V.I.P.’s have already seen the light inside the crater. Two Los Angeles museum directors, Ann Philbin of the Hammer and Michael Govan of the Los Angeles County Museum of Art, flew out together this summer for a visit. Several art critics have made the trip. So have a number of collectors, because commissioning a major work by Mr. Turrell typically prompts an invitation.

It’s a matter of resources, said his Los Angeles dealer, Bill Griffin, who fields weekly requests for visits. “At this point he has to focus all of his time and energy on the completion of the project.”

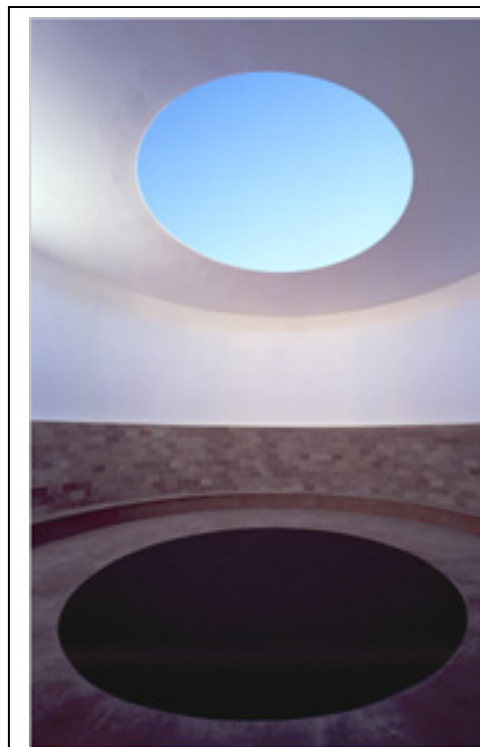
Mr. Turrell confirmed as much in a statement issued by e-mail: “Visits are now restricted to those who already have supported my work or the work on the Crater. This is how it gets done. It will open to the public when finished. Your patience is no greater than mine.” He signed the message with a tag line he has used on T-shirts: “Sooner or later {hellip} Roden Crater.”

But what about people who don’t have a million dollars to donate to the project? Or the patience to wait it out? It appears that Mr. Turrell’s single-minded dedication has been inspiring something similar from his fans, who in some cases have resorted to trespassing.

In August a Bay Area photographer hiked up the crater with a small crew and posted several pictures from the trip on the image-sharing Web site [Flickr.com](http://Flickr.com). “We started up the volcano at dusk,” he wrote online under the screen name very1silent, “climbing in silence since we had not arranged for a tour. Part way up, in the darkness, we found a door in the cinders, but it proved locked. Scrambling over the crater lip, we saw two discs of glowing light down beneath us.”

He wound up sleeping inside the crater and waking up to dramatic views. But he ended his account by warning others not to try the same thing. “Be aware that the desert is not a forgiving place, and that the crater is remote, many miles from the nearest paved road,” he wrote. “You can die trying to get there.” He added that he restricted access to all but four photographs “for fear of inducing the unprepared to attempt a trek across the desert.”

Other Flickr photos come from people who have received official invitations. One is Chris Cogburn, a percussionist from Austin, Tex., known online as Ten Pounds to the Sound. Part of a “poetry bus” that performed across the country last year, he played a snare drum inside the Roden Crater. “It was a great acoustic experiment,” he said.



Florian Holzher

A 2002 view of the Crater's Eye, at the center of the bowl.





Then there's Heidi Pollock, a mobile Web developer from San Francisco who in July posted more than two dozen photos on Flickr. Her ticket in? Her grandmother Helen McPherson had owned the crater, which Mr. Turrell spotted from the air while piloting a single-engine plane.

These visitors spoke in glowing terms about their experience inside the crater, with its assorted tunnels, viewing chambers and an otherworldly bronze staircase leading up to open sky. One visitor recalled an echo chamber that brings in noises from outside, even the softest rustling of an insect. But most were careful not to give away too many details — who wants to be a Harry Potter spoiler? — and they described their trips as a form of homage or pilgrimage.

This was the case with Eric Lindeman, an environmental designer from Los Angeles who visited the crater a few years ago when he was a student at Art Center College of Design in Pasadena. He had some time between a friend's bachelor party in Las Vegas and the wedding in Phoenix, and toured the region with two friends and his sister in his Chevy Suburban. After stopping at the Grand Canyon he persuaded them to try to find the Roden Crater.

Given the lack of detailed maps it was not easy. They had to do some sleuthing, matching topographical maps in the Flagstaff library to an image once published in a magazine. They started driving in the general vicinity, until it got dark and they decided to camp out. When they woke, they realized they were closer than they thought.

“It was the most surreal, magical moment,” Mr. Lindeman said. “As the sun was coming up, we realized we were on the south side of the crater looking north at it.”

From there, he said, luck was on his side; every path led to the lip of the crater, and every gate happened to be open. What's more, when he reached a landing, a stonemason working there waved him on, apparently mistaking his vehicle for the white truck of a survey crew expected that day. It was only when they stopped the car — and “a bunch of ragtag art students piled out” — that a construction manager started grilling them. Evidently he liked their answers and enthusiasm enough to give them a tour on the spot, while waiting for the real surveyors.

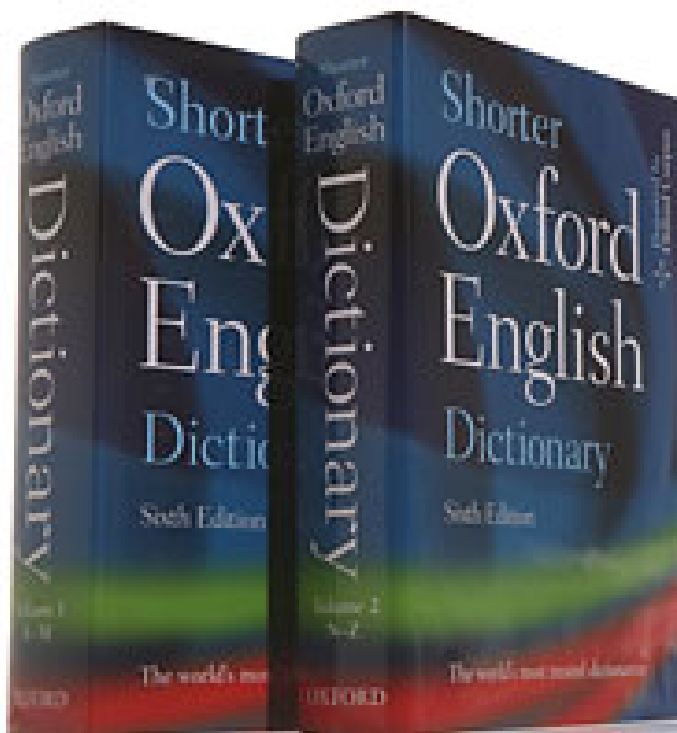
Mr. Lindeman called the experience unforgettable. “To me it's a great example of art and architecture becoming one,” he said. “I would not hesitate to call it one of the natural wonders of the world.”

Sure enough, when he made it back home, he became the talk of the campus. “I told a professor about it, and she instantly made me give a slide show and invited the whole school.”

Mr. Lindeman said he would love to visit again before the crater officially opens, whenever that may be. As for Mr. Sweeney, he has not given up hope. Knowing that Mr. Turrell is an amateur pilot, he hopes to have the chance one day to talk to him about their shared passion for aviation.

Or else, he said, there's always the old dating trick. “Maybe I'll rent a little plane one day just to fly closer to it — until I run out of gas and have to land.”

[http://www.nytimes.com/2007/11/25/arts/design/25fink.html?\\_r=1&ex=1353733200&en=baf99e9fdda42fe6&ei=5088&partner=rssnyt&emc=rss&oref=slogin](http://www.nytimes.com/2007/11/25/arts/design/25fink.html?_r=1&ex=1353733200&en=baf99e9fdda42fe6&ei=5088&partner=rssnyt&emc=rss&oref=slogin)

**Menagerie, Not Museum, for Words That Live**By **EDWARD ROTHSTEIN**

In his 1755 dictionary Samuel Johnson defined the lexicographer as “a writer of dictionaries; a harmless drudge, that busies himself in tracing the original, and detailing the signification of words.” Unfortunately Johnson was uncharacteristically wrong. A lexicographer, if any good, is hardly a drudge, and if bad, is hardly harmless.

Nor, for that matter, are dictionaries “written” anymore. They are “compiled,” a word that, according to the newly published Sixth Edition of the Shorter Oxford English Dictionary, comes from the Latin, *compilare*, meaning to plunder or plagiarize.

Of that, this two-volume dictionary may be partly guilty, since it is partly plundered. The mother lode (“a principal or rich source”) is, of course, the great 1928 first edition of the Oxford English Dictionary, which defined 414,000 words in 15,490 pages. That dictionary, like this, its latest spinoff (“a byproduct or an incidental development from a larger project”), was created “on historical principles.” This means that it not only defined the words but also cited their earliest known uses, drawn from what the first volume of that first edition, published in 1888, called “all the great English writers of all ages.”

Much has changed since then, when Walter Scott — now a literary wraith — was the dictionary’s second most-quoted English writer after Shakespeare. And the new Shorter Oxford provides a telling example of those changes, reflecting, and partly anticipating, the transformations unfolding in the unabridged third edition of the O.E.D. (as the project is called). That new O.E.D. began in 2000 with the letter M, and, as of September 2007, reached the word *purposive*, each successive change made available for the dictionary’s online subscribers. (See [oed.com](http://oed.com).)



The first edition grew out of a different conceptual universe. James Murray, its remarkable editor, said in 1900 that the O.E.D. was “permeated” with “the scientific method of the century.” Charlotte Brewer points out in a valuable forthcoming book, “Treasure-House of the Language: The Living OED” (Yale), that meant illuminating the evolution of English, chronicling the origins of its linguistic species and surveying their habitats. Historical quotations were as crucial as current definitions.

This also meant that from the very start the dictionary’s creators were engaged in a debate. Would this dictionary, with its display cases of literary specimens, demonstrate the natural history of English, constructing a “treasure-house of the language,” as Ms. Brewer’s title puts it? Or would it show something more like an open-air menagerie pulsing with ever-changing life, admitting even the newest words and meanings? Was the dictionary to be prescriptive, showing how language should be used, or descriptive, reflecting how it actually was used?

The first edition tended to prove the inadequacy of the first position. Murray, for example, refused to include the word *appendicitis*, criticizing ugly Latinizations of words by the medical profession. Aesthetics, however, did not prevent the word from entering popular awareness in 1902 when Edward VII had to postpone his coronation because of that diagnosis.

The sheer length of time it took to produce the first edition — 40 years of cataclysmic history unfolded between the appearance of its first volume and the publication of the last — demonstrated just how mercurial the language was and how difficult to codify. The O.E.D. was antique before its completion, requiring an immediate supplement that incorporated words from radium to robot.

The second supplement required four volumes and 29 years, and was completed in 1986; its changes were then folded into the original O.E.D., creating a 20-volume second edition in 1989 (available on a \$295 CD-ROM). The continually evolving third edition is being overseen by John Simpson and more than 70 lexicographers. In the meantime this Shorter O.E.D. (\$175, including a CD-ROM), with about 600,000 definitions, is a remarkable resource, but it also offers some glimpses of the issues being faced.

For included here are 2,500 new entries that treat language more as living menagerie than as natural history museum. Along with *restless leg syndrome* and *flatline* come more questionable entries, where use becomes the main criterion for inclusion.

“Generic,” for example, has given birth to a verb that makes even *appendicitis* seem attractive: “genericize.” Bureaucratic identifications make the cut, however local and obscure: “P45” is defined as a certificate given to an employee in Britain and Ireland “at the end of a period of employment, providing details of his or her tax code.”

But once description trumps prescription and currency eclipses timelessness, it becomes difficult to capture the slippery shifts in tone and fashion that accompany new words. “Ghetto fabulous” is defined here as “pertaining to or favoring an ostentatious style of dress associated with the hip-hop subculture,” though its use now is broader and sometimes more ambiguous. And “ghetto blaster” should probably be marked obs. (for obsolete).

But the biggest difficulties are in the “historical principles,” which seem to have become historical themselves — held over from the past, only to be jettisoned when inconvenient. This is clearest in the use of quotations. Of course the first O.E.D. was skewed in its choices, reflecting few writers of the 18th century, and offering a selection not fully representative of the language’s powers. But now the O.E.D. does not even pretend to offer “all the great English writers of all ages.”

Diversity becomes a greater priority. The Shorter dictionary has 1,300 new quotations from writers like Susan Faludi, Spike Lee, Isaac Bashevis Singer and Zadie Smith, and the editors emphasize their broad demographic intentions. This can be illuminating. I like, for example, the Shorter’s definition for “mook” (“a stupid or incompetent person”) with an illustration from Mr. Lee, “Who are you gonna listen to, me or that mook?” But in that case, there is also too little information: Only cross-references lead the reader to guess that the word evolved out of a racial slur.



And while it may be fine, in the old O.E.D., to cite authors like Shakespeare or Tennyson by first initial and last name, once the floodgates are opened, undated identifications become bewildering.

A. Cohen, for example, turns out to be the writer Arthur Cohen. But in what way does his quotation, “He could make no promises,” illuminate the evolution of the language or masterly use of the word promise? Similarly, the word smile is illustrated by a quotation from *The Japan Times*: “A smile creases his ...face.” There is no distinction in these examples other than the lexicographers’ desire to certify their broad representation of sources. To what linguistic end?

Does it matter, for example, that the word *entrust* is *entrusted* with a quote from L. Bruce — “I was entrusted with the unromantic job of weeding” — even if the L. in question is Lenny? As for a more obscure word, like *enubilate*, it might have been made as clear as its meaning (“make clear”) by providing some appropriate examples. For that you must turn to the unabridged O.E.D., where a 1903 citation from *The Saturday Review* establishes an enchantingly ornate context: “Maeterlinck is gradually enubilating himself from those enchanting mists in which first he strayed.”

Of course this Shorter is necessarily a snapshot — a glimpse of a very great dictionary grappling with its tradition and ambitions, offering much that fascinates, along with much that vexes or perplexes. For more detail look at Ms. Brewer’s book, or at her illuminating Web site ([oed.hertford.ox.ac.uk](http://oed.hertford.ox.ac.uk)), in which the O.E.D.’s third edition is being closely scrutinized.

By the time that edition is complete, perhaps decades hence, it may never even be printed. The Internet is now the O.E.D.’s perfect home — as revisable and seemingly beyond codification as language itself. But the new O.E.D. also seems tempted by the unbounded possibility of that infinite revision, as if the very idea of a “treasure-house of the language” were somewhat quaint. And to that one can only respond with an exclamation that has just made it into the O.E.D.’s third edition: “Puh-leeze!”

**<http://www.nytimes.com/2007/11/26/arts/26conn.html?pagewanted=print>**

## Inside the tomb of tomes

This warehouse is being built to house the books and journals that no one wants. With the British Library's UK collection growing at a rate of 12.5km of shelf space a year, is the notion of the copyright library really sustainable? Stuart Jeffries reports

**Saturday November 24, 2007**  
**The Guardian**

We used to build cathedrals. Now we build warehouses. One of the most extraordinary examples of our costly new dalliance with warehouse technology is rising on an industrial estate in West Yorkshire. As I drive past Leeds United's training ground and past HM Prison Wealstun, an epic grey corrugated temple looms ominously. It dominates the landscape around Boston Spa, just as Ely Cathedral commands the Fens or as Chartres Cathedral surmounts the countryside for miles around. All it needs is a spire.

The warehouse is extraordinary because, unlike all those monstrous Tesco and Amazon depositories that litter the fringes of the motorways of the Midlands, it is being meticulously constructed to house things that no one wants. When it is complete next year, this warehouse will be state-of-the-art, containing 262 linear kilometres of high-density, fully automated storage in a low-oxygen environment. It will house books, journals and magazines that many of us have forgotten about or have never heard of in the first place.

Chris Fletcher, the warehouse's project manager for the past 11 months, is extremely proud of it. "Normal atmosphere consists 20% oxygen. This will regulate oxygen in the warehouse to between 15.8 and 16.2%, with a mean of 16%, which will ensure minimal damage to the books in store. The air-conditioning will ensure 52.5% humidity plus or minus 5%. It will ensure a steady state temperature. The whole building will be sealed to protect the contents. It will," he says puffing his chest a little, "comply with British Standard 5454. Amazing, isn't it?" It certainly is. We're standing in hard hats and wellies inside the warehouse, which at present is a huge shell. It reminds me of visiting an empty power station in south London before they started filling it with art galleries and calling it Tate Modern: the scale induces awe. This will be the £20 million new depository at the British Library's Yorkshire complex in Boston Spa near Leeds. It is where, before this century reaches its teens, copies of books spared a quick death at the pulping plant - thanks to the grace of the provisions of the 1911 Copyright Act and later government legislation - will go to serve their life sentences in a secure environment. "We need this warehouse," says Steve Morris, the British Library's head of finance, "not just because it is cheaper than existing rented warehouses we use in London, but also because we are





statutorily obliged to house more and more material. Seven million items, many of them books, will go there. The death of the book has been grossly exaggerated, you see."

Indeed, the problem for our great libraries is that books won't stop coming. The British Library's UK national collection is currently expanding at the rate of 12.5 kilometres of shelf space a year, and somewhere has to be found to put it all. In 1911, the notion of the copyright library was born, when Parliament decided that the British Library along with five others in Great Britain and Ireland would be entitled to receive a free copy of every item published. But, while the other five - the Bodleian at Oxford, Cambridge University Library, Trinity College Library in Dublin, and the National Libraries of Scotland and Wales - have a right to claim any book published in the UK, in practice not all are. Cambridge University Library, for example, estimates that only between 70% and 80% of everything published in the UK are deposited there (they can also request anything within one year of publication). By contrast, the British Library must receive a copy of everything published in the UK each year. The British Library, you see, strives to live up to its self-imposed title of "the world's knowledge". That knowledge, though, is an odd thing. Along with the Magna Carta and the Gutenberg Bible, it includes Everybody Poos, by Taro Gomi (to help kids over toilet phobias). Not to mention Wayne Rooney's autobiography, Jordan's novel and a book called Do Ants Have Arseholes And 101 Other Bloody Ridiculous Questions. The MPs who in 1911 established the legal deposit principle for the five greatest libraries in the British Isles probably didn't realise the full consequences of their decision.

Peter Fox, head librarian at Cambridge University Library, reckons between 60,000 and 100,000 books are published each year, and anticipates no decline any time soon. What's more, the British Library commissioned research into publishing trends up to 2020 and found that the annual UK output of monographs, currently standing at 150,000 a year, is set to increase by 100% between now and 2020. You might think that the evolution of publishing into cyberspace might soothe the headaches of those librarians charged with deciding where all this stuff can be housed, but you would be wrong. True, the British Library reckons that by 2020 25% of newspapers will be published solely in e-format with virtually none published solely in print, and that by the same year 40% of UK monographs will be in e-format only, but current library policy is to acquire a printed format of a publication even when it exists in electronic form, partly because there isn't yet sufficient confidence in digital formats to justify doing otherwise. Think about it: CD-ROMs used to be the future. Now they join VCRs, Walkmans and 8-track machines in the technological dustbin. Indeed, the CD-ROM became outmoded so quickly that it is difficult to transfer material from them to more modern digital formats. Who knows which current digital formats will go the way of CD-ROMs in future? "PDFs seem pretty good, but who knows?" Fox says. So, for a few more decades, at the very least, our great libraries will not give up on the printed form. As a result, their employees will have to worry about where to put them, as well as how to conserve their extant, priceless collections as well as possible. What, in these challenging times for our libraries, will wind up in this vast new warehouse? Books that no one reads, magazines that have never been opened, abstruse journals with even pottier titles than the ones satirised on *Have I Got News For You*. If *Potato Farmers' Weekly*, *Nylon Jumpsuit Enthusiasts' Quarterly* or *Postcard Collectors' Digest* exist, then they will surely find a place to languish in optimum conservation conditions in this postmodern temple. They will be kept in plastic totes that can be removed from their stacks. If, for example, someone is doing a PhD on the evolution of TV listings in the late 20th century, a tote containing *TV Quicks* from June 1997 would be lifted from their shelves, the magazines disinterred from their plastic tomb, and, most likely, put on the daily shuttle to the Library's reading room in St Pancras, London, 250 miles away. But, no doubt, only after some of the eight British Library staff who will work in the depository have raised their eyebrows at the thought of someone actually wanting to read this stuff.

"We're essentially relocating nil to low use material from rented warehouses in London to a cheaper facility where the material will be kept in conditions that ensure it is kept as pristine as possible," says Dawn Olney, head of collection storage at the British Library, and thus one of the key people responsible for the mind-bending logistical problems of deciding what - of the Library's collection of 13 million books, 920,000 journal and newspaper titles, 57 million patents, three million sound recordings, not to mention publications that exist only in cyberspace - should go where.



Can't you just decide that Barbara Cartland's 95th novel is rubbish and so store it in a pit for all eternity? "It doesn't work like that," Olney giggles. "We have to use objective criteria. We divide the material into metres and if there are no uses per metre per year, it is categorised nil use. If it's zero to three uses per metre per year, it's low use. Three to five uses is medium use and will be kept at St Pancras. More ephemeral material of low appeal now will go north."

Please tell me my book isn't nil use, I bleat. Sensibly, Olney won't be drawn. "It's actually quite surprising what is low use. We'll be shipping north lots of periodicals like *Time Out* and those sorts of magazines. We'll have magazines like *Country Life*, which are very valuable but low use. All those magazines with CDs we'll be sending up north - with the CDs attached.

"What we found when we moved to St Pancras is that some material you'd expect to be low use is high use, such as car manuals and travel guides." But surely nil-use books aren't doomed to languish in Boston Spa's book mausoleum for ever. "Of course not. What's nil use one year may not be in following years. It's a very flexible system."

The British Library isn't the only one of our great libraries building new warehouses on an industrial estate in the face of unprecedented supply-side problems. In September, the University of Oxford was given planning permission to build a £29m book depository for the Bodleian, Britain's second largest library. Objectors claimed that the site at Osney Mead would be subject to flooding and that the thumping great building would spoil views of the city's dreaming spires. But Sarah Thomas, the Bodleian's head librarian, argues that the new building gives her library the chance to house all its modern collections in a secure, modern depository, rather than continue struggling in their current buildings.

"We are simply getting to the point where we cannot fulfill the purpose for which we were created in these buildings," Thomas says. By "these buildings", she means some of Oxford's most beautiful examples of architecture, that, from the Bodleian's inception in 1602, have housed the second greatest collection of books in Britain. Buildings such as the Old Schools Quadrangle, the Radcliffe Camera (Britain's first circular library), Hawksmoor's lovely 18th-century Clarendon Building, as well as nine other libraries dotted around the city.

She also means Giles Gilbert Scott's New Bodleian Library, across Broad Street from the library's loveliest old buildings, which was supposed to satisfy the library's need for expansion for ever. That need has arisen again and again since the Bodleian was founded in 1602, and particular since 1610 when Thomas Bodley made his historic agreement with the Stationers' Company in London (a guild given a monopoly over printing in England in the 16th century) to place a copy of every book registered with them in his new library. This agreement was the precursor of today's legal deposit system (as the copyright system is more accurately called). When the New Bodleian opened, it was at the cutting edge of library design. Scott's ziggurat consisted of 11 storeys of books stacks, three of them underground. A tunnel under Broad Street connected new and old buildings with a pedestrian walkway and a mechanical book conveyor known as "the bicycle chain". But the New Bodleian is now regarded as a fire hazard and a conservation nightmare. One report described it as "130% full". Hundreds of thousands of less frequently used books are stored in Wiltshire, and in a salt mine in Cheshire.

"This is one of the greatest libraries in the world, but we can't just operate as a books warehouse, we must be a national and international centre for the study of the books," says Sarah Thomas. She wants the New Bodleian to be gutted (once they've got the books out first, of course) and then used as a centre for scholars and as a conservation studio. As a library, it is finished.

"With all due respect," says Peter Fox, librarian of Cambridge University Library, "in hindsight it's clear the Bodleian made a terrible mistake before the war when it built the New Bodleian in the city centre. At that time, both Oxford and Cambridge desperately needed to expand, but Cambridge couldn't expand in the city centre, so we built a new university library outside it. It turns out we were lucky." The location of Scott's new building meant that the University Library could expand - and



indeed has been expanding - to house more and more. On his desk, he has a model of the development of the University Library, phased wings dropping neatly into place over time as the need dictates.

We're standing on the 14th floor of Giles Gilbert Scott's university library tower, which teems with low-use, probably utterly forgotten but rather lovely first editions of 20s novels I've never heard of. I pull out at random a copy of Harold Bindloss's *Sour Grapes*, a 1926 romantic adventure set, singularly, in Manitoba and along the Solway Firth. I put it back, and pull out instead Patsy's *Brother*, by Harriette R Campbell, the sequel, as you know, to the *Little Great Girl*, which was published in the *Books For Girls* series in the same year. It looks like a delightful girly romp: if only I had been an eight-year-old girl in 1926. It may be the first time in 80 years that these volumes have received such close attention. Fox then takes me to the latest extension of the library where we find new paperback books housed in rather beautiful stacks, all moving easily on manually-operated tracks. We remove a box, designed to repel acid (paperback books need to be kept this way if their shelf life is to consist of more than a few years). Inside, we find not only a marvellous new book about the Port of Ayr, but also a book called *Momentum In Football*, featuring a foreword by Sven-Göran Eriksson. Wouldn't it be great if you could just sell this stuff on eBay or recycle it sensibly? Wouldn't it be wonderful if you could digitise such books and pulp the hard copy? Think of all the shelf space you'd save.

"Trust me, it isn't as simple as that," Peter Fox replies.

I visit the British Library's digitisation studio in St Pancras to be disabused of my barmy idea that transferring books and journals into cyberspace would be a cheap and painless solution to the problem of where to store the ever-growing mountains of printed material. There, the British Library is working with Microsoft on a project to digitise 25 million pages of 19th-century literature - 100,000 books from the Library's collections. It is a semi-automated process during which 1,000 to 1,200 pages can be scanned an hour, 50,000 a day, or one million a month. Why were 19th-century books chosen for the British Library-Microsoft project? "One key reason is copyright," says Neil Fitzgerald, digitisation project manager. "Nineteenth-century material is generally outside copyright restrictions. The publishers of more recent books may well think there is money to be made by digitising certain books themselves and publishing them, rather than allowing us to put books free online." That said, more and more of the British Library's collections are available on the internet. Rare historic manuscripts such as William Caxton's two editions of Chaucer's *Canterbury Tales* can be consulted online if you go to [bl.uk](http://bl.uk) and follow the links. Soon Sir Thomas Malory's stories about King Arthur, known as the *Winchester Manuscript*, later printed by William Caxton as *Le Morte D'Arthur*, will be available online, too. The money for such projects tends to come from private investors. For instance, Google and the University of Oxford recently came to an agreement to digitise one million of the Bodleian's books printed before 1885, and to make them freely available online through Google and the OU's websites. Google has similar agreements with Harvard University, Stanford University, Michigan University and the New York Public Library. One can search these digitised texts for keywords online. "These developments are quite exciting in terms of access," says Rory McLeod, digital preservation manager at the British Library. "Originally our collections were for the cognoscenti who could make it to Bloomsbury. Now, increasingly, they're for everybody, wherever they are in the world."

But, as we sit in the British Library cafe in the shadow of the beautiful King's Library (the collection of George III's books), McLeod nearly gags on his americano when I suggest he should digitise everything and, apart from some particularly lovely manuscripts and books, make a huge bonfire of the rest of the stuff, or at least of every autobiography by a footballer under 30. "It's been estimated that €3bn are lost across Europe entirely due to bad management of digital files in libraries," he says and then asks challengingly: "Would we have enough confidence to throw everything away? Would you?" The other question is whether legal deposit libraries are sustainable in an era when, one might think, unprecedented levels of trash are published and cash-strapped organisations such as the British Library are responsible for the costs of housing them. "I think the legal deposit system is a good one, and we should keep with it," Rory McLeod says. "After all, what is trash today could become fundamental for tomorrow's historians. Even Katie Price's novels or ephemeral stocking fillers could become essential raw material for understanding our society."

<http://arts.guardian.co.uk/art/architecture/story/0,,2216165,00.html>





## **In the lines of fire**

### ***Soldiers take to fiction writing contest to help combat the stress of war***

By Danielle M. Capalbo, Globe Correspondent | November 24, 2007

Since March, Bowie Sessions has worked with the 28th Combat Support Hospital at an emergency room in Baghdad. There, the 23-year-old Army medic treats wounded combatants and civilians, he said, so they can live to surgery. In the end, he and his colleagues can't save every life.

"I can't tell you how many men I've watched die," he wrote. "How many black bags I've pulled up the zippers of."

When the day is done, Sessions leaves the ER to return to his quarters, a tent he shares with 30 other men, around which massive blast shields protect the medics from mortars or improvised explosive devices. Then, he writes by e-mail, he carries a folding chair from beside his cot to the hallways of a building nearby. Settled, he opens his laptop, and types well into the night, writing page after page of his novel.

His goal is to write 3,000 words a night. At that pace, he'll have all the words he needs by deadline: 50,000 by Nov. 30.

Sessions is among a booming group of military personnel on tour of duty who have taken the challenge of National Novel Writing Month. More than 96,000 adults across 73 countries are registered for the event, an ambitious call for anyone, anywhere to start and finish a 50,000-word novel in 30 days. This year the story isn't necessarily the numbers - of words or participants - but the places: Writers are popping up on US military bases in foreign countries.

War has long given rise to literature, transforming the men and women it affects into haunting, haunted storytellers, the bearers of a complex horror, from the scribes of ancient war texts to Vietnam veteran Tim O'Brien. "Why do people write about war?" said Charles S. Maier, a professor of history at Harvard University. "The same reason they write about love: It's a big experience."

To make sense of the experience and depart from the monotony of war every day, Major Brad Leighton said he encourages troops to be creative.

"We want them to express themselves and tell people how they feel, even if it's just for themselves, just writing a journal," said Leighton, a press desk officer from Claremont, N.H., stationed in Baghdad. Leighton is a writer himself, with 12 years of experience reporting and editing as a journalist, understands the value of process. "This is something that's going to be a part of their lives that, for good or bad, will always stick with them."

### **Informed by war**

NaNoWriMo, as it's called, doesn't demand that troops address war. Their options are expansive, from sci-fi to comedy or romance. But striking a balance between their intense day jobs and exquisite literary expression often transcends a simple equilibrium. The daily experience of war can't help but inform their stories.

"The man wasn't sure what he was searching for, but he knew that it wasn't here; some kind of answer. Maybe he was looking for some kind of explanation for all this, maybe they hoped Chance had come back."

By the glow of his laptop, Sessions, who is from Oakland, Calif., churns out pieces of his novel - "a dystopian modern fantasy," he wrote, in which massive tears in the fabric of reality release a horde of demons into the world. In turn, everyone entrusts their world's fate to a strange benefactor who calls himself Chance.



Already, his story has seen the effects of his grisly work in the emergency room. In a scene excerpted in his profile at NaNoWri Mo.org, the protagonist discovers a bloodbath on a train car, bodies strewn about, with ghastly sights and smells that Sessions vividly narrates. "Something I wouldn't have so easily been able to describe [before]," he said.

Specialist Eric Rutherford, 30, of Salem, Ore., says writing a novel about zombies helps him cope with the painful images he must capture as an Army photojournalist with the 115th Mobile Public Affairs Detachment. Not everything Rutherford photographs is carnage, he said, and the specialist strives to illuminate and preserve through his work the positive dimensions of life in Iraq that mainstream media often ignore. Still, there are images he can't easily erase from his memory. The hardest part, he said, is covering memorials for soldiers killed in duty.

"[It's] sad as hell," he said in an e-mail interview from Tikrit, Iraq. "Last week I had to do one. The first I have done in quite a while. . . . I sat down that night and cranked out about 5,000 passionate words."

"Nobody knows where it started, or where," his novel begins. "Some say it was a bio-weapon that got out of hand. Others hold that it came from China. Quite a few even believe that it was punishment from God for how we had become as a society . . . Maybe the war will never be over. Maybe they never will be stopped. Maybe this is the end for mankind forever. I don't have time for maybe anymore. These days, I just try to make it to tomorrow."

#### **A military writers' forum**

Since NaNoWriMo founder Chris Baty held the first monthlong write-athon in 1999, military personnel have been registering to write in growing numbers. The trend caught Baty's attention last month after a military chat forum was added to the official NaNoWriMo website.

"Soldiers that are stationed in Germany or Iraq don't have the same sort of in-person community as a lot of us here," said Baty, who lives in Oakland, Calif. "If you're in Baghdad, you can't go out to the local coffee shop with your laptop." The chat forum gave troop members a place to connect. "Some had thought they were the only military personnel participating."

Now, they can communicate regularly. Some even plan to stage "write-ins" on their bases.

"I want them to feel like, here's something affirming," said Cybele May, the NaNoWriMo moderator who opened the military forum. "Here's something you can do, when everything else seems so hopeless sometimes." May knows of at least 100 deployed military personnel who use the forums regularly, and she says civilian participants leave uplifting posts of support for the troops.

As for Sessions, the forum is a useful place to swap information with colleagues, but that's about it. The focal point of his first NaNoWriMo is the writing itself.

"Unfortunately, for most of my tour, I couldn't write - because while I wanted to 'exorcise my demons,' through writing, it also destroyed me somewhat emotionally," said the medic.

Now that he can write again, in the stony dark of his concrete base, at the center of the capital of war-torn Iraq, Sessions said he won't stop until the book is done. ■

[http://www.boston.com/ae/books/articles/2007/11/24/in\\_the\\_lines\\_of\\_fire/](http://www.boston.com/ae/books/articles/2007/11/24/in_the_lines_of_fire/)



## Art\$ deliver more than entertainment

**By Andrew Adler**

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Courier-Journal Critic

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In the arts, as well as in doing your laundry, inertia is the enemy of progress. Nothing much is accomplished by sitting around in a state of passive acceptance, quiet grumbling, or similar states of dull resignation.

Want something done? Then stand tall, lift your voice and start agitating. Better yet, join your voice with those of people who share your values. There's leverage in numbers.

Few organizations understand this better than Americans for the Arts, the Washington, D.C.-based lobbying group that uses top-down exposure to push for bottom-up improvement. Established in 1960, AFA boasts 30,000 "citizen-members" who actively support -- and push hard -- for the arts to be an intrinsic component of every community.

Earlier this month, AFA's articulate director, Robert Lynch, was in town to share his vision of the arts, not just to nourish the soul, but to re-energize entire cities. A lot of what he said wasn't new -- we've been hearing the mantra of "arts as an economic engine" for much of the past decade. But Lynch, in his understated way, genuinely makes you appreciate what's to be gained, and what could be lost.

He began by pointing out a number -- a big number: \$166.2 billion, which is how much not-for-profit arts generate every year in the United States. It's "a figure much bigger than most people realize," Lynch told a Fund for the Arts-hosted gathering, adding that those dollars "support 5.7 million jobs, almost 8,000 of them here in Louisville."

Since all politics (and arts politics) is local, listen to what Lynch had to say a moment later: Each year, the arts return \$3.3 million to Louisville and \$7 million to the state. "You compare pretty well -- very well -- to other cities across the country." In large measure because of the arts, "a lot of jobs are being created that a lot of cities would be hungry for."

All this "clearly demonstrates that nonprofit organizations are businesses," Lynch says. And "when a community attracts cultural tourists, it reaps substantial other economic rewards. ... Greater investment in the arts will lead to an even greater return to the community. It's illogical not to increase government funding (of the arts). We pay back."

Some artists grumble at "support the arts for the sake of commerce" strategy, saying that by trumpeting the economic-engine argument, the arts-for-aesthetics-sake notion gets rudely pushed aside. Lynch acknowledges their unhappiness, but emphasizes the need to target the message to the recipient. If a member of the U.S. Congress will likely be swayed by the arts-promote-business approach, well, then go that route.

Lynch reminded his audience just such a methodology helped persuade Congress to support a \$35 million increase -- a tremendous achievement -- in the proposed upcoming budget for the National Endowment for the Arts. It's all a matter of finding the right way "to frame a policy objective." At the AFA, "we do research, form alliances, train our members, (work toward) national-visibility promotion, and then old-fashioned lobbying."

Remember this, Lynch urges:



"Leaders who care about community, and who care about economic development, can feel good about investing in the arts.

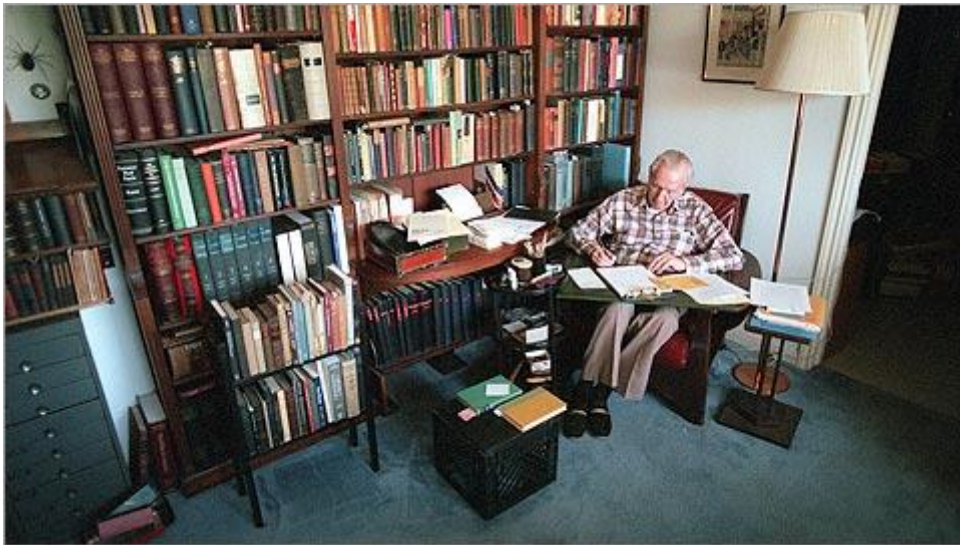
"It's a myth-buster," he says of the dollar-based evidence. "It alters the perception that arts are a luxury. Support for the arts doesn't come at the expense of economic development, but rather, it's an industry -- the cornerstone of tourism (that) drives a creative-based economy."

Reporter Andrew Adler can be reached at (502) 582-4668.

<http://www.courier-journal.com/apps/pbcs.dll/article?AID=/20071125/SCENE05/711250311/>

## **Jacques Barzun turns 100**

Web Posted: 11/24/2007 10:17 PM CST



(Express-News File Photo)

Historian and author Jacques Barzun completed 'From Dawn to Decadence: 500 Years of Western Cultural Life' in San Antonio, where he has lived since 1997.

### **Mike Greenberg** **Express-News Senior Critic**

One would be hard-pressed to name a living scholar who has been more widely or more justly celebrated than Jacques Barzun.

On the occasion of his centennial, his many students, readers and friends celebrate his life and work once again, not because he needs yet another accolade, but because the world needs the example that he presents to us of a life devoted to learning and teaching, to honesty and tenacity, to beauty and wit, to conversation and friendship.

Even more important than these personal and academic qualities is the wisdom underlying the great themes that run throughout his work. He has been a champion for the values of pluralism and pragmatism, for a mode of thought that balances cold reason with feeling and interest, and for a kind of scholarship that seeks connections across disciplinary boundaries.

Barzun was born on Nov. 30, 1907, in Creteil, near Paris. His father, Henri Martin Barzun, was a prominent French writer and diplomat. The artistic avant-garde was part of Jacques' childhood in the years before World War I — the poet Guillaume Apollinaire, the artists Fernand Leger, Marcel Duchamp and Albert Gleizes. (Gleizes' portrait of Barzun's mother hangs in the living room of his Oakwell Farms home in San Antonio.)

Young Jacques joined his father on a diplomatic mission to the United States and stayed to enter Columbia University at age 15. There, he came under the influence of teachers James Harvey Robinson and Carlton J.H. Hayes, inventors of a new approach to historical scholarship.

"When I saw that history could be conceived as cultural history — which didn't exist, there were no courses in that subject — all my prewar experience of the arts took on a new aspect," Barzun recalled of that time in a 1998 interview with the San Antonio Express-News.



Barzun embarked on a path that would make him one of the world's most eminent and wide-ranging practitioners of cultural history, and America's best-known intellectual: When Time magazine surveyed the role of intellectuals in American life, in June of 1956, Barzun's face was on the cover to represent the species.

By that time he had already produced a dozen books, including "Darwin, Marx, Wagner," a critique of the mechanistic worldview; "Teacher in America," a defense of the teaching profession against the education establishment; "God's Country and Mine," a delicious rumination on Barzun's adopted country; and the magnum opus of the first half of his life, "Berlioz and the Romantic Century," a landmark study that was both a meticulously researched biography of the composer and a closely argued re-evaluation of 19th-century romanticism, which was then far out of fashion.

Still to come were "The House of Intellect," a withering (and still trenchant) critique of the journalistic, educational and scientific establishments of the 1950s; "The Delights of Detection," a guilt-free appreciation of detective fiction; and the best-selling magnum opus of Barzun's later years, "From Dawn to Decadence: 500 Years of Western Cultural Life."

Along the way, he managed to serve Columbia University as its provost, and upon retirement he began a second career as a literary adviser to his friend Charles Scribner's publishing house.

In early 1997, Barzun abandoned New York and moved to San Antonio with his wife, Marguerite, a former American studies teacher at Trinity University.

They had met in 1976, when she introduced him to the audience for a lecture at Trinity. They married in 1981, after the death of Barzun's first wife, the former Mariana Lowell of the distinguished Boston family of poets and intellectuals.

It was here that he completed "From Dawn to Decadence," surely one of the fastest 800-page reads in the history of scholarly books. At the core of Barzun's way of thinking is his use of language. He is an amazing writer — peerless in vigor and clarity, eminently readable even when dealing with the most complex and difficult subjects.

Hardly a paragraph passes without at least one sentence that sings, zings and, sometimes, stings. Far from the stereotype of the dry academic, he is often acerbically funny. Always, his writing is a model of precision, of relevance and of warranted assertability.

No one would accuse him of blandness or absence of fighting spirit. He holds strong and challenging views. He has written stirringly against political correctness, moral absolutism, the use of multiple-choice tests and the elevation of minority dialects over the standard tongue in the schools. Some of his opinions might be considered idiosyncratic: He demotes Brahms and Debussy several pay grades, for example.

One might differ with some of his conclusions, and he does not demand agreement. But if you are going to disagree with Jacques Barzun, you had better arm yourself as he does, with knowledge and common sense — not with clichés or cant or ideology.

Barzun places a high standard in front of us, but he is above all a good teacher, and as a good teacher he lets us know that the standard he sets is neither uncomfortably confining nor impossibly high.

It is because we need that standard, to find liberation and joy in it, and to hope that we can attain it in a community of thought and action, that we thank Jacques Barzun for a long and generous life in our midst.

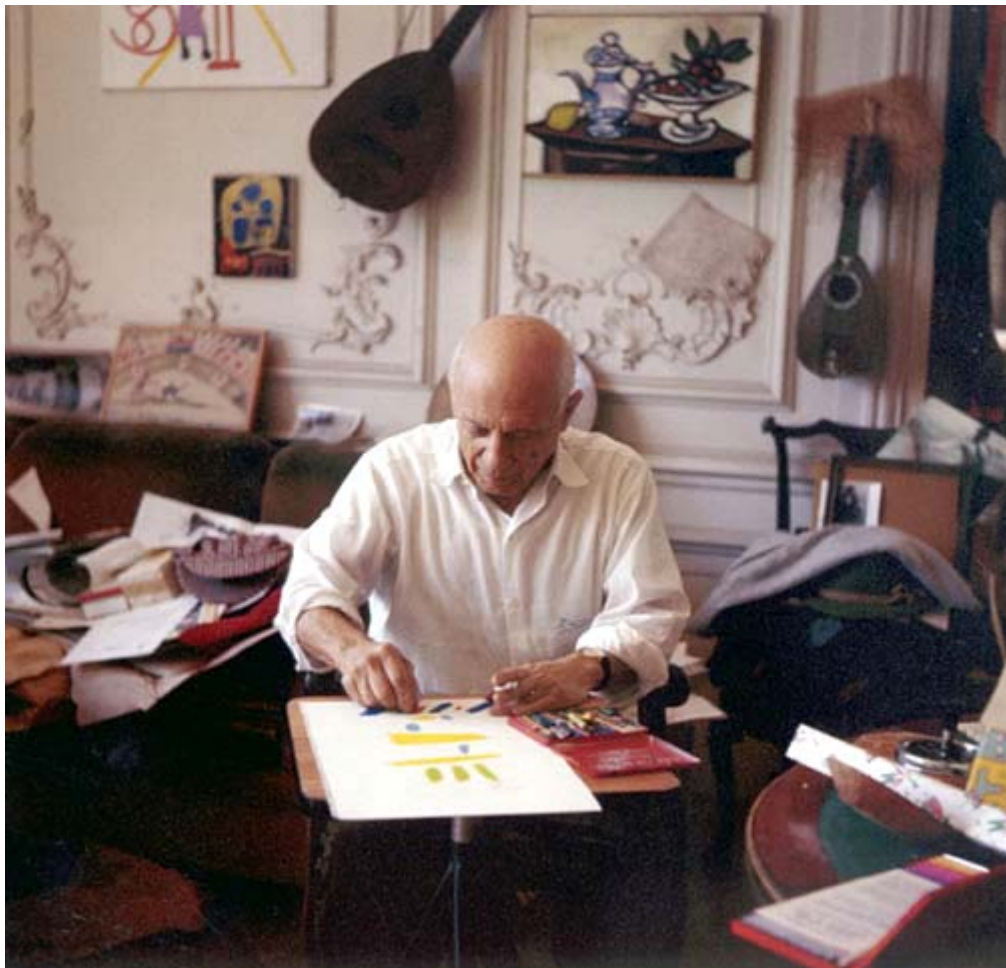
<http://www.mysanantonio.com/entertainment/stories/MYSA112507.01P.barzun.1789a60.html>

## The surreal life

**BIOGRAPHY | Third volume of John Richardson's impressive work delves into Picasso's loves**

November 25, 2007

BY HEDY WEISS [hweiss@suntimes.com](mailto:hweiss@suntimes.com)



The world of Pablo Picasso, that most protean of artists, in many ways echoed the world of Europe over the course of the tumultuous 20th century. So it should come as no surprise that when John Richardson set out to write his biography of the artist he envisioned it as a monumental undertaking -- one that would capture a century's worth of stunning innovation and unparalleled destruction as embodied in the creative output of the artistic genius who most vividly encapsulated it all.

Now, with the publication of *A Life of Picasso: The Triumphant Years, 1917-1932* -- the third of a projected four-volume chronicle of the artist's life, times and artistic progress -- we have a fresh reminder of just how massive a project Richardson constructed for himself.

### **A LIFE OF PICASSO**

**THE TRIUMPHANT YEARS, 1917-1932**

By John Richardson

Alfred A. Knopf, 608 pages, \$40

By the end of the two earlier volumes -- *The Prodigy, 1881-1906* and *The Cubist Rebel, 1907-1916* (both available in paperback) -- Picasso had made his way from Spain to Paris, then the center of the art world. The teenage prodigy had already attracted attention, creating the darkly moody and socially aware paintings of what was to be dubbed his Blue Period and the more sweetly lyrical if rueful



paintings of harlequins and circus performers of the Rose Period. Then, with that stunning 1907 masterwork "Les Femmes d'Alger (O. J.)," he blew open the door to his (and Georges Braque's) audacious experiments in cubism.

*The Triumphant Years* begins when the artist is 36 (he would live to be 91). He heads off to Rome with Jean Cocteau, poet and fellow artistic gadfly, where they team up with that ever-daring impresario Sergei Diaghilev and his Ballets Russes. Fans of Chicago's Joffrey Ballet will recognize the output of this period first hand, as this is when Picasso designed the groundbreaking sets and costumes for the charming cubist-style ballet, "Parade" (choreographed by Leonid Massine, and set to a score by Stravinsky, who was to become a lifelong friend of Picasso), and a number of other theatrical pieces.

The Italian trip also would have an enormous impact on the artist's personal life. For it was in Diaghilev's company that Picasso spotted a 25-year-old Russian-bred dancer, Olga Khokhlova, the "adamantly chaste" and ladylike ballerina who was to become his first wife and the mother of his only legitimate child, Paulo.

"Picasso fell for Olga's vulnerability," writes Richardson. "He sensed the victim within ... [and this] would have appealed to Picasso's sadistic side. (The women in his life were expected to read the Marquis de Sade.)" The couple's circle of friends would eventually embrace the whole grand whirl of bohemia and high society of the period, including F. Scott and Zelda Fitzgerald, Gerald and Sara Murphy (subjects of Fitzgerald's novel *Tender is the Night*), Hemingway and a slew of other American expats. And they would gather on the French Riviera, which was just becoming a playground for the chic and restive.

Although Picasso's marriage continued in a legal sense until Olga's death in 1955, by 1927 Picasso (then 45) was already involved with Marie-Therese Walter, whom the author describes as "the femme enfant of his dreams: an adolescent blonde with piercing, cobalt blue eyes and a precociously voluptuous body ... the antithesis of skinny Olga and the boyish, flat-chested flapper look that was de rigueur in the 1920s." Marie-Therese very quickly appears in Picasso's paintings (all lush, exuberant, fully rounded yet abstracted forms), squeezing Olga out of the frame and suggesting a very different sort of dancer. The pattern would be repeated with the arrival of each subsequent lover for decades to come.

Whatever went on "at home," however, it is a good bet that barely a day passed when Picasso didn't pick up a paint brush, or sketch out plans for a sculpture, or think about a new way in which to morph the human form -- all of which is exuberantly described by Richardson, with hundreds of reproductions and archival photos to help tell the story.

Of course by 1932, some monstrous politicians began rearing their own twisted heads. The Spanish Civil War would eventually politicize a previously unpolitical Picasso. And in Richardson's next installment we will no doubt hear about the making of "Guernica." And much, much more.

*Hedy Weiss is the Sun-Times theater and dance critic.*

<http://www.suntimes.com/entertainment/weiss/666595,CST-BOOKS-richardson25.article>



## 'Super' scanner shows key detail

### Animated images produced by the new scanner

**A new scanner has been unveiled which can produce 3D body images of unprecedented clarity while reducing radiation by as much as 80%.**



The new 256-slice CT machine takes large numbers of X-ray pictures, and combines them using computer technology to produce the final detailed images.

It also generates images in a fraction of the time of other scanners: a full body scan takes less than a minute.

The Philips machine was unveiled at the Radiological Society of North America.

Because the images are 3D they can be rotated and viewed from different directions - giving doctors the greatest possible help in looking for signs of abnormalities or disease.

All images also can be accessed on any computer in a hospital or by colleagues and researchers remotely, to make it easier for the whole team to share information.

The scan is much quicker than current technology, as the machine's X-ray emitting gantry - the giant ring-shaped part that surrounds the patient - can rotate four times in a single second - 22% faster than current systems.

The cost of the equipment - known as the Brilliance CT - is unclear.

At present, it is only being used in one hospital: the Metro Health medical centre in Cleveland, Ohio, which has been using it for the past month.

"This scanner allows radiologists to produce high quality images and is also designed to reduce patients' exposure to X-rays," Steve Rusckowski, chief executive of Philips Medical Systems, said.

"It is so powerful it can capture an image of the entire heart in just two beats."



The record company EMI was behind the first commercially viable CT scanner, which was invented by Sir Godfrey Newbold Hounsfield in Hayes, United Kingdom at the company's laboratories and unveiled in 1972.

At the same time, Allan McLeod Cormack of Tufts University independently invented a similar machine, and the two men shared the 1979 Nobel Prize in Medicine.

"This is a quantum shift from the first CT scanners as it gives a lot more detail," says Dr Keith Prowse, Chairman of the British Lung Foundation.

"It seems to be another step beyond what we were previously able to do. The high resolution enables you to see smaller things in both the lungs and the airways and then decide whether there is anything there and how best to get at it.

"In the case of cancer, it will help us see how far it has spread. It will also help us pick up new patterns of abnormality. It promises to be a significant advance."

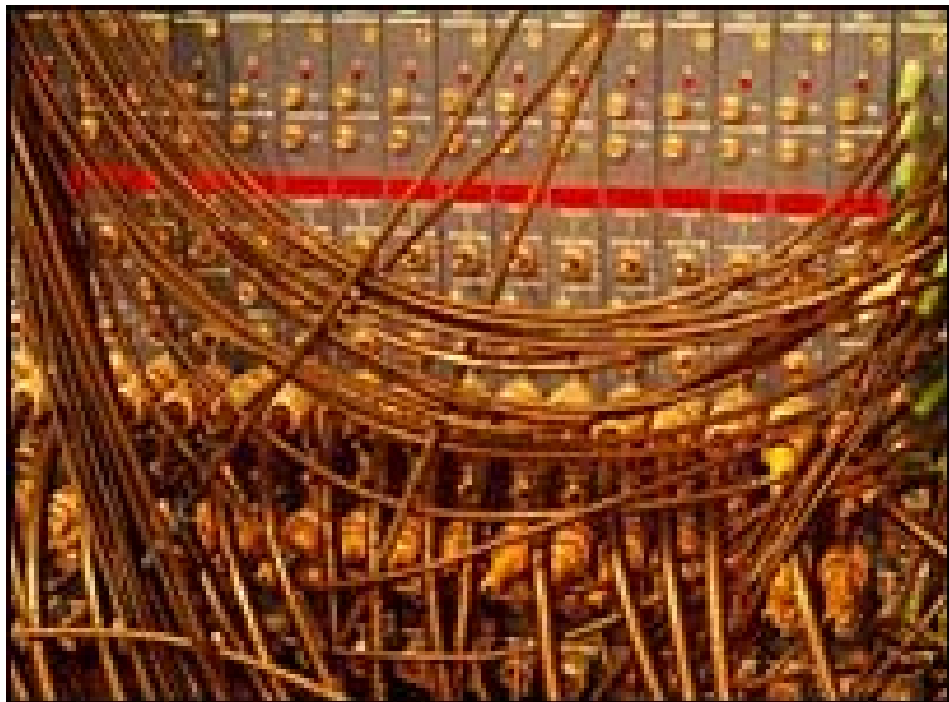
Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7112688.stm>

Published: 2007/11/26 10:38:54 GMT

**UK net numbering project starts**

**Staying in touch via phone or web could soon get easier as work starts on a way to unite the internet and the telephone network.**



When finished the UK's national Enum directory will make looking up net phone numbers like finding a website.

Initially the directory will target the UK's net telephony networks so calls can cross between them more easily.

But the directories are expected to one day hold details of the many different ways almost anyone can be contacted.

**Call and connect**

Enum, or Telephone Number Mapping, aims to do for phone numbers of any kind what the Domain Name System did for the World Wide Web.

The DNS is a giant distributed directory your computer consults when it does not know the location of a website you want to visit.

The UK's Enum directory will be run by Nominet - which administers the .uk internet domain.

Jay Daley, technology director at Nominet, said the directory would be populated with numbers for the UK's voice over IP (voip) networks that route telephone calls through the net.

Although voip was widely used in business, said Mr Daley, it was typically only used within firms rather than between them.

Before now, he said, it was not easy for the various voip servers of companies or net telephony firms to find each other and connect callers between them.



"That bit of magic is missing," he said. "There's no way for one to find another if it only has a telephone number."

While interconnect agreements did exist between voip suppliers, said Mr Daley, they were ad hoc agreements. Most relied on a caller knowing which voip supplier someone used so they could add extra digits before dialling.

In contrast to that stood the directory systems behind websites and e-mail which will get a person to a website or deliver a message by looking up the domain or address.

Enum, he said, would try to do the same for telephone numbers.

Having an easy way for those networks to interconnect could prompt a boom in net telephony, said Mr Daley adding that the situation was comparable to the moment when mobile phone operators let text messages travel between their networks.

He said: "It's going to change the business model for communication providers quite seriously."

Mr Daley said many other nations, such as Germany, Australia and Ireland, had already started work on their national Enum directories.

Work had also begun to get hi-tech firms, such as voip hardware makers, net service providers and handset makers, to include the Enum technology in their products.

Once those global Enum directories were in place, he said, many other applications were likely to spring up.

Although it was hard to predict, he said, the directories could one day list all the ways that someone can be contacted so calls, e-mails or other messages always get through.

But, said Mr Daley, work would have to be done to ensure that personal privacy is preserved.

"Do I really want people to find out which of my devices I am on at the moment?" he asked "Or which IP address I'm on at any one time?"

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/7107973.stm>

### **Better ocean monitoring 'vital'**

#### **Let's complete the task before we are struck by more tsunamis or comparable calamities**

Dr Tony Haymet, Pogo executive committee chairman

#### **Warming seas, overfishing and pollution mean it is vital to improve the system for monitoring the world's oceans, says a group of distinguished scientists.**

The researchers say more data is needed to ensure the world is able to respond effectively to any potential threats. An "adequate initial system" would include an integrated network of buoys, research vessels, satellites and tagging marine animals, they added.

The scientists want the global scheme to be completed within the next decade. The call for action has been made by the Partnership for Observation of the Global Oceans (Pogo), which includes many of the world's leading oceanographic research centres. A delegation of Pogo members will make their case at the annual ministerial meeting of the international Group on Earth Observations (Geo) in Cape Town, South Africa.

### **Ten-year plan**

Tony Haymet, chairman of the Pogo's executive committee, said the international community had agreed to "construct a comprehensive, integrated ocean observing system two decades ago".

But he added that the venture was less than half completed. "The good news is that we have demonstrated that a global ocean observing system can be built, deployed and operated with available technologies," said Dr Haymet, director of the US's Scripps Institution of Oceanography.

"Now we must move from experiment and proof-of-concept to routine use. Let's complete the task before we are struck by more tsunamis or comparable calamities." According to Pogo, completing such a system over the next 10 years would cost an estimated \$2-3bn (£1-1.5bn), and would include:

- **A network of satellites** - to survey the oceans' vast surfaces
- **Fixed monitoring stations** - for continuous measurements on the sea bed, water columns and surface
- **Small robot submarines** - some will drift with ocean currents, while others will follow pre-determined routes
- **Tagging** - electronic devices will relay information about the areas marine animals visit
- **Research vessels** - to be used for scientific surveys

The scientists say a better understanding of how the oceans behave would have a range of benefits, from improving short-term forecasting of potentially devastating storms and hurricanes, to the possible impact of warming waters on marine and coastal ecologies.

"Marine scientists could authoritatively diagnose and anticipate changing global ocean conditions - something akin to the system that enables meteorologists to predict weather," Dr Haymet explained.

The Pogo delegation will present its case on Friday to the GEO ministerial meeting, which will review progress on the Global Earth Observation System of Systems (GEOSS) and agree a roadmap for the coming decade.

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7109354.stm>

<http://news.bbc.co.uk/2/hi/science/nature/7109354.stm>

**Galileo 'compromise' is emerging**  
**The European Commission has put forward a new tendering process for the stalled Galileo satellite-navigation project.**

No one company will be allowed to win more than two of the six segments of work offered to build the system.

The commission hopes the arrangement will pacify countries such as Germany which wants assurances about the distribution of industrial contracts.

Germany has been holding out against a refinancing of Galileo, which is likely to cost close to 4bn euros (£3bn).

Galileo's planned network of 30 satellites will beam radio signals to receiving devices on the ground, helping users pinpoint their locations and know the precise time. The European system's technologies promise greater accuracy and reliability than is afforded by the current American network (GPS) alone.



**GALILEO UNDER CONSTRUCTION**

- A European Commission and European Space Agency project
- 30 satellites to be launched in batches by end of 2011-12
- Will work alongside US GPS and Russian Glonass systems
- Promises real-time positioning down to less than a metre
- Guaranteed under all but most extreme circumstances
- Suitable for safety-critical roles where lives depend on service

But Galileo has been beset with industrial and political squabbling across EU member states, and its timeline has repeatedly slipped as a result. A private consortium charged with building two-thirds of the network collapsed earlier this year, and now the commission is trying to rescue Galileo using public funds. However, its suggestion of using unused agricultural and administrative funds from within the EU's budget has been opposed by a number of countries - notably Germany.

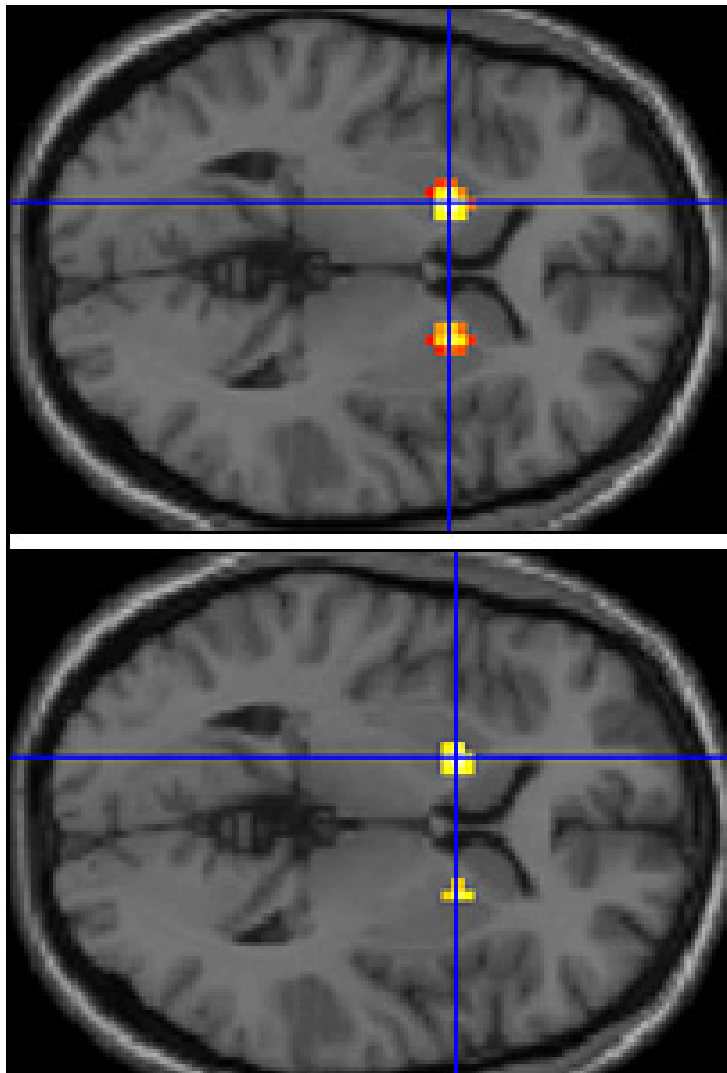
Friday's new proposal aims to ensure fair competition in the bidding for new contracts, and the German transport Ministry welcomed it as an acceptable compromise. A large order for spacecraft must be placed very soon with contractors if Galileo is to keep to its present 2011-12 target for full operational deployment. A final decision on funding could come from the EU leaders at a mid-December summit in Brussels.

"If we don't have a clear agreement before the end of the year, then this would mean that we will have to put an end to our efforts because this would be clearly too late," a spokesman for EU Transport Commissioner Jacques Barrot said. Story from BBC NEWS:  
<http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7109971.stm>

<http://news.bbc.co.uk/2/hi/science/nature/7109971.stm>

**Men motivated by 'superior wage'**

**On receiving a paypacket, how good a man feels depends on how much his colleague earns in comparison, scientists say.**



Scans reveal that being paid more than a co-worker stimulates the "reward centre" in the male brain.

Traditional economic theory assumes the only important factor is the absolute size of the reward.

But researchers in the journal *Science* have shown the relative size of one's earnings play a major role.

In the study, 38 pairs of male volunteers were asked to perform the same simple task simultaneously, and promised payment for success.

Both "players" were asked to estimate the number of dots appearing on a screen. Providing the right answer earned a real financial reward between 30 (£22) and 120 (£86) euros. Each of the participants was told how their partners had performed and how much they were paid.

**'Brain scan'**



Using magnetic resonance tomographs, the researchers examined the volunteers' blood circulation throughout the activities. High blood flow indicated that the nerve cells in the respective part of the brain were particularly active.

Neuroscientist Dr Bernd Weber explains: "One area in particular, the ventral striatum, is the region where part of what we call the 'reward system' is located. In this area, we observed an activation when the player completed his task correctly."

A wrong answer, and no payment, resulted in a reduction in blood flow to the "reward region". But the area "lit up" when volunteers earned money, and interestingly showed far more activity if a player received more than his partner.

This indicated that stimulation of the reward centre was not merely linked to individual success, but to the success of others.

While behavioural experiments have suggested relative rewards may play a role in economic motivation, economist Professor Dr Armin Falk, co-author of the paper, said: "It is the first time this hypothesis has been challenged using such an experimental approach."

The professor emphasised to BBC News, that unlike behavioural experiments, brain scans had "no cognitive filter; we were monitoring immediate brain reaction".

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7108347.stm>



## New T-ray Source Could Improve Airport Security, Cancer Detection

ScienceDaily (Nov. 27, 2007) — Going through airport security can be such a hassle. Shoes, laptops, toothpastes, watches and belts all get taken off, taken out, scanned, examined, handled and repacked. But "T-rays", a completely safe form of electromagnetic radiation, may reshape not only airport screening procedures but also medical imaging practices.

Scientists at the U.S. Department of Energy's Argonne National Laboratory, along with collaborators in Turkey and Japan, have created a compact device that could lead to portable, battery-operated sources of T-rays, or terahertz radiation. By doing so, the researchers, led by Ulrich Welp of Argonne's Materials Science Division, have successfully bridged the "terahertz gap" – scientists' name for the range of frequencies between microwaves (on the lower side) and infrared (on the higher side) of the electromagnetic spectrum.

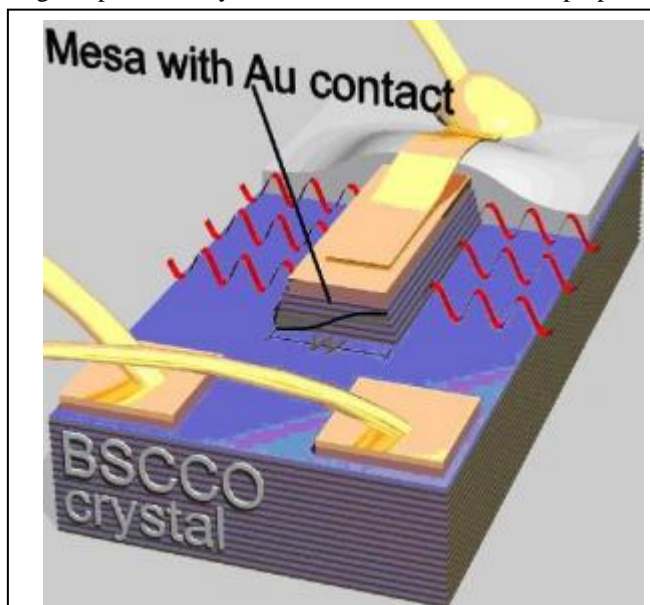
While scientists and engineers have produced microwave radiation using conventional electric circuits for more than 50 years, Welp said, terahertz radiation could not be generated that way because of the physical limitations of the semiconducting circuit components.

"Right around 1 terahertz, you have a range of frequencies where there have never been any good solid-state sources," he added. "You can make those frequencies if you are willing to put together a whole table full of expensive equipment, but now we've been able to make a simple, compact solid-state source."

Unlike far more energetic X-rays, T-rays do not have sufficient energy to "ionize" an atom by knocking loose one of its electrons. This ionization causes the cellular damage that can lead to radiation sickness or cancer. Since T-rays are non-ionizing radiation, like radio waves or visible light, people exposed to terahertz radiation will suffer no ill effects. Furthermore, although terahertz radiation does not penetrate through metals and water, it does penetrate through many common materials, such as leather, fabric, cardboard and paper.

These qualities make terahertz devices one of the most promising new technologies for airport and national security. Unlike today's metal or X-ray detectors, which can identify only a few obviously dangerous materials, checkpoints that look instead at T-ray absorption patterns could not only detect but also identify a much wider variety of hazardous or illegal substances.

T-rays can also penetrate the human body by almost half a centimeter, and they have already begun to enable doctors to better detect and treat certain types of cancers, especially those of the skin and breast, Welp said. Dentists could also use T-rays to image their patients' teeth.



*Schematic of the terahertz-source, which was fabricated on the top of an atomically layered superconducting crystal. The applied current excites the fundamental cavity mode (solid half-wave) on the width  $w$  of the mesa, and high-frequency electromagnetic radiation is emitted from the side faces (red waves). (Credit: Image courtesy of DOE/Argonne National Laboratory)*



The new T-ray sources created at Argonne use high-temperature superconducting crystals grown at the University of Tsukuba in Japan. These crystals comprise stacks of so-called Josephson junctions that exhibit a unique electrical property: when an external voltage is applied, an alternating current will flow back and forth across the junctions at a frequency proportional to the strength of the voltage; this phenomenon is known as the Josephson effect.

These alternating currents then produce electromagnetic fields whose frequency is tuned by the applied voltage. Even a small voltage – around two millivolts per junction – can induce frequencies in the terahertz range, according to Welp.

Since each of these junctions is tiny – a human hair is roughly 10,000 times as thick – the researchers were able to stack approximately 1,000 of them on top of each other in order to generate a more powerful signal. However, even though each junction would oscillate with the same frequency, the researchers needed to find a way to make them all radiate in phase.

"That's been the challenge all along," Welp said. "If one junction oscillates up while another junction oscillates down, they'll cancel each other out and you won't get anything."

In order to synchronize the signal, Argonne physicist Alexei Koshelev suggested that the stacks of Josephson junctions should be shaped into resonant cavities, which visiting scientist Lufti Ozyuzer of the Izmir Institute of Technology, Turkey, and graduate student Cihan Kurter then fashioned. When the width of the cavities was precisely tuned to the frequencies set by the voltage, the natural resonances of the structure synchronized the oscillations and thus amplified the T-ray output, in a method similar to the production of light in a laser.

"Once you apply the voltage," Welp said, "some junctions will start to oscillate. If those have the proper frequency, an oscillating electric field will grow in the cavity, which will pull in more and more and more of the other junctions, until in the end we have the entire stack synchronized."

By keeping the length and thickness of the cavities constant while varying their width between 40 and 100 micrometers, the researchers were able to generate frequencies from 0.4 to 0.85 terahertz at a signal power of up to 0.5 microwatts. Welp hopes to expand the range of available frequencies and to increase the strength of the signal by making the Josephson cavities longer or by linking them in arrays.

"The more power you have, the easier it is to adopt this technology for all sorts of applications," he said. "Our data indicate that the power stored in the resonant cavities is significantly larger than the detected values, though we need to improve the extraction efficiency. If we can get the signal strength up to 1 milliwatt, it will be a great success."

Collaborators on this research were Lutfi Ozyuzer, Alexei Koshelev, Cihan Kurter, Nachappa (sami) Gopalsami, Qing'An Li, Ken Gray, Wai-Kwong Kwok and Ulrich Welp of Argonne; Masashi Tachiki from the University of Tokyo; Kazuo Kadowaki, Takashi Yamamoto, Hidetoshi Minami and Hayato Yamaguchi from the University of Tsukuba; and Takashi Tachiki from the National Defense Academy of Japan.

The research was supported by DOE's Office of Basic Energy Sciences and by Argonne's Laboratory Directed Research and Development funds.

A scientific paper based on their research, "Emission of Coherent THz Radiation from Superconductors," appears in the November 23 issue of Science.

*Adapted from materials provided by DOE/Argonne National Laboratory.*

<http://www.sciencedaily.com/releases/2007/11/071126121732.htm>

## Mediterranean Sea: Most Dangerous Place On Earth For Sharks And Rays

ScienceDaily (Nov. 27, 2007) — The first complete IUCN Red List assessment of the status of all Mediterranean sharks and rays has revealed that 42% of the species are threatened with extinction. Overfishing, including bycatch (non-target species caught incidentally), is the main cause of decline, according to the research.

The report, released November 15 by the IUCN Shark Specialist Group and the IUCN Centre for Mediterranean

Cooperation, shows that the region has the highest percentage of threatened sharks and rays in the world.

“From devil rays to angel sharks, Mediterranean populations of these vulnerable species are in serious trouble,” said Claudine Gibson, Programme Officer for the IUCN Shark Specialist Group and co-author of the report. “Our analyses reveal the Mediterranean Sea as one of the world’s most dangerous places on Earth for sharks and rays. Bottom dwelling species appear to be at greatest risk in this region, due mainly to intense fishing of the seabed.”

The report also identifies habitat degradation, recreational fisheries, and other human disturbances as significant threats to the sharks and rays of the Mediterranean.

These are the findings of an expert workshop at which 71 Mediterranean species of sharks, rays and chimaeras (cartilaginous fishes) were assessed using IUCN Red List categories and criteria. Participants deemed 30 species as threatened with extinction, of which 13 are classified at the highest threat level of Critically Endangered, eight as Endangered and nine as Vulnerable. Another 13 species were assessed as Near Threatened, while a lack of information led to 18 species being classified as Data Deficient. Only 10 species are considered to be of Least Concern.

The Maltese Skate (*Leucoraja melitensis*), found only in the Mediterranean, is assessed as Critically Endangered. Bottom trawl fisheries are the main cause for population declines of 80%. The angular roughshark (*Oxynotus centrina*) and three species of angel sharks (*Squatina* spp.) are also Critically Endangered.

The giant devil ray (*Mobula mobular*), which occurs primarily in the Mediterranean, is considered Endangered. Females can grow to five meters (17 feet) and give birth to only one pup per pregnancy. This large size and low reproductive capacity make devil rays especially vulnerable to capture and entanglement in various net fisheries, including illegal driftnets.

The shortfin mako (*Isurus oxyrinchus*) and porbeagle (*Lamna nasus*), both prized for their meat and fins, were found to be Critically Endangered in the Mediterranean. The sandbar shark (*Carcharhinus*



*Three species of angel sharks (Squatina spp.) found in the Mediterranean are critically endangered. (Credit: Image courtesy of World Conservation Union)*

plumbeus) is listed as Endangered in the region and even the relatively prolific blue shark (*Prionace glauca*) is considered Vulnerable to extinction here.

“We are particularly concerned about the porbeagle and mako sharks in the Mediterranean,” warned Dr Alen Soldo of the University of Split in Croatia, an expert on oceanic sharks who participated in the workshop. “Our studies reveal persistent fishing pressure well in excess of the reproductive capacity of the species, which led to our decision to categorize them in the highest threat category under the Red List criteria.”

Only one species, the Portuguese dogfish (*Centroscyrnus coelolepis*), has a better conservation status inside the Mediterranean Sea, where it is considered of Least Concern, than globally (Near Threatened). This deep sea shark is found at depths of nearly 4,000 meters and may be protected by a 2005 ban on fisheries below 1,000 meters by the General Fisheries Commission of the Mediterranean (GFCM).

### **Protection measures in place and more needed**

This deepwater fishing ban, along with prohibitions on driftnets and shark finning (slicing off a shark’s valuable fins and discarding the body at sea) may help to lift some of the pressure on sharks and rays in the Mediterranean. However, better enforcement is required to give cartilaginous fish populations a chance to recover.

There are no catch limits for fished species of Mediterranean sharks and rays. Eight species of sharks and rays have been listed on the four international conventions relevant to Mediterranean wildlife conservation, but only three species have received any protection as a result: white and basking sharks are protected in Croatian and European Community waters, while Malta and Croatia protect the giant devil ray.

This week, in Turkey, international fisheries managers are expected to discuss limits on fishing for porbeagle and shortfin mako sharks at the annual meeting of the International Commission for the Conservation of Atlantic Tunas (ICCAT), which guides Mediterranean rules for species taken in tuna fisheries.

“Never before have Mediterranean countries had more reason or opportunity to safeguard the region’s beleaguered sharks and rays,” said Sonja Fordham, Deputy Chair of the SSG and Policy Director for the Shark Alliance. “Country officials should heed the dire warnings of this report and act to protect threatened sharks and rays through regional fisheries agreements, international wildlife conventions, and national legislation. Such action is necessary to change the current course toward extinction of these remarkable ocean animals.”

The report aims to assist in policy development for the conservation and sustainable use of Mediterranean cartilaginous fishes and provides a range of recommendations to that end. Conservation and fisheries organizations need to collaborate to ensure these measures are urgently implemented to curb the decline of sharks and rays in the region and to also guarantee the sustainability of marine resources - fundamental to the livelihoods of Mediterranean societies.

“Once again, the main concern is not only for each individual species – as important as they are – but for the cumulative impact of this loss of biodiversity,” said Annabelle Cuttelod, Mediterranean Red List Coordinator at the IUCN Centre for Mediterranean Cooperation. “We are observing serious changes which will have major consequences over time on all animal life and, ultimately, on the livelihoods of people around the Mediterranean.”

The IUCN Centre for Mediterranean Cooperation is currently assessing the status of marine fish in the Mediterranean, in collaboration with the IUCN Species Programme and the Turkish Marine Research Foundation (TUDAV). About 30 experts are meeting in Istanbul, Turkey, from 12 to 16 November to analyze this issue.



The report is entitled “Overview of the Conservation Status of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean Sea” by Rachel D. Cavanagh and Claudine Gibson and is the third in a series of Mediterranean Regional Assessments.

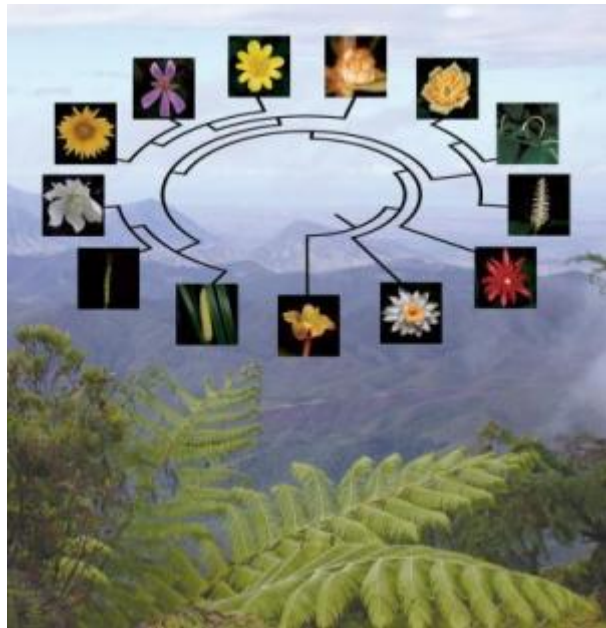
#### **About sharks in the ecosystem**

- Most sharks and rays are exceptionally vulnerable to overfishing because of their tendency to grow slowly, mature late, and produce few young.
- Most sharks play key roles as top predators in marine food webs. By feeding on the weak and wounded of prey species, sharks help maintain ocean ecosystem function.

*Adapted from materials provided by World Conservation Union.*

**<http://www.sciencedaily.com/releases/2007/11/071126141041.htm>**

## Flowering Plants Evolved Very Quickly Into Five Groups



*Phylogenetic relationships among the major lineages of flowering plants based on plastid genome sequences. Pictured counter-clockwise from the root at the base of the circle tree are: Amborella trichopoda, Nymphaea odorata, Illicium floridanum, Chloranthus angustifolius, Piper longum, Liriodendron tulipifera, Ceratophyllum demersum, Ranunculus ficaria, Pelargonium exstipulatum, Helianthus annuus, Yucca filamentosa, Triticum aestivum, and Acorus americanus. New Caledonia, home to Amborella trichopoda, is shown in the background. (Credit: Gwen Gage)*

ScienceDaily (Nov. 27, 2007) — University of Florida and University of Texas at Austin scientists have shed light on what Charles Darwin called the "abominable mystery" of early plant evolution.

The scientists are reporting that the two largest groups of flowering plants are more closely related to each other than any of the other major lineages. These are the monocots, which include grasses and their relatives, and the eudicots, which include sunflowers and tomatoes.

Doug and Pam Soltis, a UF professor of botany and curator at UF's Florida Museum of Natural History, respectively, also showed that a stunning diversification of flowering plants they are referring to as the "Big Bang" took place in the comparatively short period of less than 5 million years -- and resulted in all five major lineages of flowering plants that exist today.

"Flowering plants today comprise around 400,000 species," said Pam Soltis. "So to think that the burst that give rise to almost all of these plants occurred in less than 5 million years is pretty amazing -- especially when you consider that flowering plants as a group have been around for at least 130 million years."

The lead author of the UF paper is Michael Moore, a former postdoctoral associate in the Soltis lab and current faculty member at Oberlin College. Charles Bell, the fourth author, is another former Soltis postdoctoral associate, now at the University of New Orleans.

Robert Jansen, professor of integrative biology at The University of Texas at Austin, said the two papers set the stage for all future comparative studies of flowering plants.

"If you are interested in understanding the evolution of flowering plants, you can't do that unless you understand their relationships," he said.



Botanists predating Darwin have long recognized that flowering plants, which comprise at least 60 percent of all green plant species, diversified abruptly shortly after they appeared.

The details, and especially the cause of, this diversification -- Darwin's "abominable mystery" -- has been a hot topic in botany ever since.

"One of the reasons why it's been hard to understand evolutionary relationships among the major groups of flowering plants is because they diversified over such a short time frame," Jansen said.

Seeking to distill the cloudy picture into a clear one, the UF and UT researchers analyzed DNA sequences from the completely sequenced genomes of the chloroplast. That organelle, responsible for plants' ability to photosynthesize, is shared by all green plants.

Jansen and his UT Austin colleagues analyzed DNA sequences of 81 genes from the chloroplast genome of 64 plant species, while the UF researchers analyzed 61 genes from 45 species. The two groups also performed a combined analysis, which produced evolutionary trees that included all the major groups of flowering plants.

The analyses also confirmed that a unique species of plant called *Amborella*, found only on the Pacific island of New Caledonia, represents the earliest diverging lineage of flowering plants.

By laboriously arranging the sequences, the researchers slowly built a kind of family tree for plants -- a diagram of relationships among plant lineages showing diversification over the eons. Based on known rates of genetic change double-checked against fossils of known ages, they established a time scale that revealed the dates of major branching events.

Based on the Soltises' and their collaborators' research in previous years, it was known that flowering plants split into three branches shortly after they appeared about 130 million years ago. That process was relatively gradual, at least compared with the rapid radiation that happened next. The details of that radiation have long been murky. The latest research clears the picture by showing that all plants fall into five major lineages that developed over the relatively short period of 5 million years, or possibly even less.

As for the diversification's cause, it remains mysterious, Pam and Doug Soltis said.

It's possible it was spurred by some major climatic event. It's also possible that a new evolutionary trait -- a water-conducting cell that transfers water up plant stems -- proved so effective that it spurred massive plant species diversification. The cell is either not present, or is poorly developed, in the first three flowering plant lineages, Doug Soltis said. The earliest flowering plant lineages also did not have a completely fused ovary, which in later flowering plants may better protect the seeds, Pam Soltis said.

Two papers on this research are set to be published in the beginning of December in the Proceedings of the National Academy of Sciences.

*Adapted from materials provided by University of Florida.*

**<http://www.sciencedaily.com/releases/2007/11/071126170900.htm>**

## 'Ultrasound' Of Earth's Crust Reveals Inner Workings Of A Tsunami Factory

ScienceDaily (Nov. 27, 2007) — Research just announced by a team of U.S. and Japanese geoscientists may help explain why part of the seafloor near the southwest coast of Japan is particularly good at generating devastating tsunamis, such as the 1944 Tonankai event, which killed at least 1,200 people. The findings will help scientists assess the risk of giant tsunamis in other regions of the world.

Geoscientists from The University of Texas at Austin and colleagues used a commercial ship to collect three-dimensional seismic data that reveals the structure of Earth's crust below a region of the Pacific seafloor known as the Nankai Trough. The resulting images are akin to ultrasounds of the human body.

The results, published in the journal *Science*, address a long standing mystery as to why earthquakes below some parts of the seafloor trigger large tsunamis while earthquakes in other regions do not.

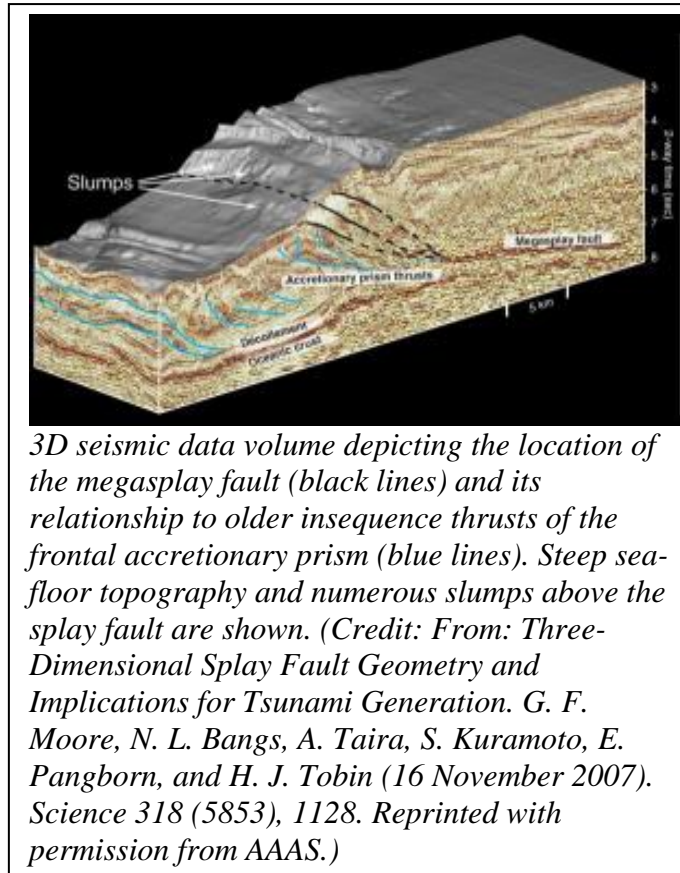
The 3D seismic images allowed the researchers to reconstruct how layers of rock and sediment have cracked and shifted over time. They found two things that contribute to big tsunamis. First, they confirmed the existence of a major fault that runs from a region known to unleash earthquakes about 10 kilometers (6 miles) deep right up to the seafloor. When an earthquake happens, the fault allows it to reach up and move the seafloor up or down, carrying a column of water with it and setting up a series of tsunami waves that spread outward.

Second, and most surprising, the team discovered that the recent fault activity, probably including the slip that caused the 1944 event, has shifted to landward branches of the fault, becoming shallower and steeper than it was in the past.

"That leads to more direct displacement of the seafloor and a larger vertical component of seafloor displacement that is more effective in generating tsunamis," said Nathan Bangs, senior research scientist at the Institute for Geophysics at The University of Texas at Austin who was co-principal investigator on the research project and co-author on the *Science* article.

The Nankai Trough is in a subduction zone, an area where two tectonic plates are colliding, pushing one plate down below the other. The grinding of one plate over the other in subduction zones leads to some of the world's largest earthquakes.

In 2002, a team of researchers led by Jin-Oh Park at Japan Marine Science and Technology Center (JAMSTEC) had identified the fault, known as a megathrust or megasplay fault, using less detailed two-dimensional geophysical methods. Based on its location, they suggested a possible link to the 1944 event, but they were unable to determine where faulting has been recently active.



*3D seismic data volume depicting the location of the megasplay fault (black lines) and its relationship to older insequence thrusts of the frontal accretionary prism (blue lines). Steep seafloor topography and numerous slumps above the splay fault are shown. (Credit: From: Three-Dimensional Splay Fault Geometry and Implications for Tsunami Generation. G. F. Moore, N. L. Bangs, A. Taira, S. Kuramoto, E. Pangborn, and H. J. Tobin (16 November 2007). *Science* 318 (5853), 1128. Reprinted with permission from AAAS.)*





"What we can now say is that slip has very recently propagated up to or near to the seafloor, and slip along these thrusts most likely caused the large tsunami during the 1944 Tonankai 8.1 magnitude event," said Bangs.

The images produced in this project will be used by scientists in the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE), an international effort designed to, for the first time, "drill, sample and instrument the earthquake-causing, or seismogenic portion of Earth's crust, where violent, large-scale earthquakes have occurred repeatedly throughout history."

"The ultimate goal is to understand what's happening at different margins," said Bangs. "The 2004 Indonesian tsunami was a big surprise. It's still not clear why that earthquake created such a large tsunami. By understanding places like Nankai, we'll have more information and a better approach to looking at other places to determine whether they have potential. And we'll be less surprised in the future."

Bangs' co-principal investigator was Gregory Moore at JAMSTEC in Yokohama and the University of Hawaii, Honolulu. The other co-authors are Emily Pangborn at the Institute for Geophysics at The University of Texas at Austin, Asahiko Taira and Shin'ichi Kuramoto at JAMSTEC and Harold Tobin at the University of Wisconsin, Madison. Funding for the project was provided by the National Science Foundation, Ocean Drilling Program and Japanese Ministry of Education, Culture, Sports and Technology.

*Adapted from materials provided by University of Texas at Austin.*

**<http://www.sciencedaily.com/releases/2007/11/071115164101.htm>**

## Climate Change Triggers Wars And Population Decline, Study Shows

ScienceDaily (Nov. 26, 2007) — Climate change may be one of the most significant threats facing humankind. A new study shows that long-term climate change may ultimately lead to wars and population decline.

The study revealed that as temperatures decreased centuries ago during a period called the Little Ice Age, the number of wars increased, famine occurred and the population declined.

Data on past climates may help accurately predict and design strategies for future large and persistent climate changes, but acknowledging the historic social impact of these severe events is an important step toward that goal, according to the study's authors.



*A new study shows that reduced agricultural productivity caused by climate change triggered wars and population decline during the Little Ice Age. (Credit: Peter Webster)*

"Even though temperatures are increasing now, the same resulting conflicts may occur since we still greatly depend on the land as our food source," said Peter Brecke, associate professor in the Georgia Institute of Technology's Sam Nunn School of International Affairs and co-author of the study.

This new study\* expands previous work by David Zhang of the University of Hong Kong and lead author of the study.

"My previous research just focused on Eastern China. This current study covers a much larger spatial area and the conclusions from the current research could be considered general principles," said Zhang.

Brecke, Zhang and colleagues in Hong Kong, China and the United Kingdom perceived a possible connection between temperature change and wars because changes in climate affect water supplies, growing seasons and land fertility, prompting food shortages. These shortages could lead to conflict -- local uprisings, government destabilization and invasions from neighboring regions -- and population decline due to bloodshed during the wars and starvation.

To study whether changes in temperature affected the number of wars, the researchers examined the time period between 1400 and 1900. This period recorded the lowest average global temperatures around 1450, 1650 and 1820, each separated by slight warming intervals.

The researchers collected war data from multiple sources, including a database of 4,500 wars worldwide that Brecke began developing in 1995 with funding from the U.S. Institute of Peace. They also used climate change records that paleoclimatologists reconstructed by consulting historical documents and examining indicators of temperature change like tree rings, as well as oxygen isotopes in ice cores and coral skeletons.

Results showed a cyclic pattern of turbulent periods when temperatures were low followed by tranquil ones when temperatures were higher. The number of wars per year worldwide during cold centuries was almost twice that of the mild 18th century.



The study also showed population declines following each high war peak, according to population data Brecke assembled. The population growth rate of the Northern Hemisphere was elevated from 1400-1600, despite a short cooling period beginning in the middle of the 15th century. However, during the colder 17th century, Europe and Asia experienced more wars of great magnitude and population declines.

In China, the population plummeted 43 percent between 1620 and 1650. Then, a dramatic increase in population occurred from 1650 until a cooling period beginning in 1800 caused a worldwide demographic shock.

The researchers examined whether these average temperature differences of less than one degree Celsius were enough to cause food shortages. By assuming that agricultural production decreases triggered price increases, they showed that when grain prices reached a certain level, wars erupted. The ecological stress on agricultural production triggered by climate change did in fact induce population shrinkages, according to Brecke.

Global temperatures are expected to rise in the future and the world's growing population may be unable to adequately adapt to the ecological changes, according to Brecke.

"The warmer temperatures are probably good for a while, but beyond some level plants will be stressed," explained Brecke. "With more droughts and a rapidly growing population, it is going to get harder and harder to provide food for everyone and thus we should not be surprised to see more instances of starvation and probably more cases of hungry people clashing over scarce food and water."

\*This new study was published November 19 in the early edition of the journal Proceedings of the National Academy of Sciences.

*Adapted from materials provided by Georgia Institute of Technology.*

**<http://www.sciencedaily.com/releases/2007/11/071121112917.htm>**

## Scientists Melt Million-year-old Ice In Search Of Ancient Microbes

ScienceDaily (Nov. 26, 2007) — Researchers from the University of Delaware and the University of California at Riverside have thawed ice estimated to be at least a million years old from above Lake Vostok, an ancient lake that lies hidden more than two miles beneath the frozen surface of Antarctica.

The scientists will now examine the eons-old water for microorganisms, and then through novel genomic techniques, try to figure out how these tiny, living “time capsules” survived the ages in total darkness, in freezing cold and without food and energy from the sun.



*Ice cores inside the melting chamber. (Credit: Image courtesy of University of Delaware)*

The research is designed to provide insight into how organisms adapted to live in extreme environments.

“It’s some of the coolest stuff I have ever worked on,” said Craig Cary, professor of marine biosciences at UD. “We are going to gain access to the genetics of organisms isolated for possibly as long as 15 million years.”

The collaborative research team includes Cary and doctoral student Julie Smith from UD’s College of Marine and Earth Studies; project leader Brian Lanoil, assistant professor of environmental sciences at the University of California at Riverside, and doctoral student James Gosses; and Philip Hugenholtz and postdoctoral fellows Victor Kunin and Brian Rabkin at the U.S. Department of Energy’s Joint Genome Institute.

Last week in Lanoil’s laboratory in California, segments of a tube-like ice core were thawed under meticulous, “clean lab” conditions to prevent accidental contamination, a process that required nearly a year of preparation.

“It was very exciting to see the Vostok ice, knowing how old it is and how much it took to get that ice to the lab,” Smith said. “The ice core itself was incredibly clear and glasslike, reflecting the light like a prism.”

The segments of ice were cut from an 11,866-foot ice core drilled in 1998 through a joint effort involving Russia, France and the United States. The core was taken from approximately two miles below the surface of Antarctica and 656 feet (200 meters) above the surface of Lake Vostok and has since been stored at -35 degrees C at the National Ice Core Laboratory in Denver.

“This ice was once water in the lake that refroze onto the bottom of the ice sheet,” Cary explained. “We have no direct samples of the lake itself, only this indirect sampling of the refrozen ice above it because drilling into the lake without taking extensive precautions could lead to the lake’s contamination. The borehole made to collect the ice is filled with a mixture of jet fuel, kerosene, and CFCs to keep it from closing,” Cary noted. “Since the lake has not had direct contact with the surface world for at least 15 million years, this would be a contamination of one of the most pristine environments on Earth,” he said.

Cary said the decontamination procedure was “the most complicated and complete ever attempted,” requiring the use of an isolation chamber for the actual melting, concentration of the meltwater through



a special filtering system, use of bleaching solutions for the destruction of any contaminating bacteria or DNA from the outside of the core, and the wearing of sterile jump suits for all of the laboratory personnel, among other measures.

Although other scientific projects have identified the microorganisms living in the Vostok water, they have not revealed what these little one-celled organisms do or how they have become adapted to an environment that is eternally dark, cold and so isolated that food and energy sources are likely rare and hard to come by.

“This research is important because it will give us insight into how microbes can survive in a very energy-limited system,” Smith said. She intends to pursue a career in academia after she completes her doctorate at UD's College of Marine and Earth Studies.

“Most of our planet is permanently cold and dark, so it makes sense that we should study how life exists under these conditions. In addition, enzymes produced by these microorganisms may be useful in industrial applications down the road,” Smith noted.

The Vostok water contains only between 10-100 microbes per milliliter compared to approximately 1 million microbes per milliliter for most lakes, Cary said.

Novel “whole genome amplification” techniques will be applied, which provide insight into the genetic diversity of a community of organisms when only small numbers of organisms are available.

A veteran of research expeditions around the globe, Cary is an expert on “extremophiles”--organisms that thrive in the harshest environments on the planet, ranging from the dry, frigid desert of Antarctica, to geyser-like hydrothermal vents spewing toxic chemicals from the ocean floor.

In the case of Lake Vostok, scientists speculate that it stays in a liquid state underneath miles of ice due to one of the Earth's natural “furnaces”--hydrothermal vents. Superheated water erupts from these cracks in the seafloor which form where the plates that form the Earth's crust pull apart.

“We hope that by being so isolated for millions of years, these microorganisms from Vostok will be able to tell us about their life and conditions through the ages,” Cary said.

This research is sponsored by the National Science Foundation and is part of the International Polar Year.

*Adapted from materials provided by University of Delaware.*

**<http://www.sciencedaily.com/releases/2007/11/071126115305.htm>**



## Depression Linked To Bone-thinning In Premenopausal Women

ScienceDaily (Nov. 27, 2007) — Even in young women, depression is as potent a risk factor for osteoporosis as are low calcium intake, smoking, and lack of exercise, researchers have found. Imbalances in the immune system appear to be involved. Depression generally isn't on clinicians' radar screens as a risk factor for bone-thinning -- but it should be.

Premenopausal women with even mild depression have less bone mass than do their nondepressed peers, a study funded in part by the National Institute of Mental Health (NIMH), part of the National Institutes of Health (NIH), shows. The level of bone loss is at least as high as that associated with recognized risk factors for osteoporosis, including smoking, low calcium intake, and lack of physical activity.

Hip bones, the site of frequent fractures among older people, were among those showing the most thinning in depressed premenopausal women. The reduced bone mass puts them at higher risk of these costly, sometimes fatal fractures and others as they age, the researchers note.

"Osteoporosis is a silent disease. Too often, the first symptom a clinician sees is when a patient shows up with a broken bone. Now we know that depression can serve as a red flag -- that depressed women are more likely than other women to approach menopause already at higher risk of fractures," said NIMH Deputy Director Richard Nakamura, PhD.

After bone mass reaches its peak in youth, bone-thinning continues throughout life, accelerating after menopause. Preliminary studies had suggested that depression may be a risk factor for lower-than-average bone mass even in young, premenopausal women. Results of the current study lend considerable weight to those earlier findings. The study's design reduced the possibility that the lower bone mass was linked to factors other than depression.

Study participants included 89 depressed women and 44 nondepressed women, for comparison. All were between 21 and 45 years old and were premenopausal. Except for depression, the two groups were similar in risk factors, including calcium, caffeine, and alcohol intake; smoking; level of physical fitness; use of oral contraceptives; and age of first menstrual period. Both groups were of relatively high socioeconomic status and were well nourished.

One difference was that the depressed women were taking antidepressant medications. A previous study suggested that older adults taking antidepressants called selective serotonin reuptake inhibitors had more bone fractures than others. However, the current study showed that these medications were not linked to low bone mass in premenopausal women.

The researchers found that 17 percent of the depressed women had thinner bone in a vulnerable part of the hip called the femoral neck, compared with 2 percent of those who were not depressed. Low bone mass in the lumbar spine, in the lower back, was found in 20 percent of depressed women, but in only 9 percent of nondepressed women. Bone mass was measured via an X-ray technique called DXA scanning.

There was no significant link between the degree of bone loss and the severity of depression or the cumulative number of depressive episodes, the researchers found. The depressed women had been diagnosed with mild depression and were having, or had recently had, a depressive episode.

"Depression generally isn't on clinicians' radar screens as a major risk factor for osteoporosis, particularly for premenopausal women. It should be," said Cizza.

Blood and urine samples also showed that depressed women have imbalances in immune-system substances, including those that produce inflammation, compared to their healthy peers. This additional finding strengthens the case for a suspected link between depression-induced imbalances in the immune system and accelerated bone loss. The blood and urine samples were taken every hour for



a full day, providing a truer picture than does less frequent testing, as had been done in previous studies.

The immune-system imbalances may be tied to excess adrenalin, since the part of the nervous system that produces adrenalin is over-active in depressed people. Increased adrenalin can over-stimulate the immune system. Compared to the others, the depressed women in this study had higher levels of immune-system proteins that promote inflammation, and lower levels of those that prevent it.

One of these inflammation-promoting proteins, IL-6, is known to promote bone loss. At the molecular level, bones routinely break down, and their minerals, notably calcium, are reabsorbed into the blood, where they travel throughout the body to perform crucial functions in cells. At the same time, the body builds the bone back up. Imbalances in this normal loop of bone re-absorption and build-up, such as high levels of IL-6, could promote bone loss, the researchers suggest.

This research was published in the Archives of Internal Medicine. The report was submitted by Giovanni Cizza, MD, PhD, MHSc, of NIMH and the NIH National Institute of Digestive Disorders and Kidney Diseases (NIDDK); Farideh Eskandari, MD, MHSc, of NIMH; and colleagues.

Other NIH contributors to the study, in addition to NIMH and NIDDK, included the NIH Clinical Center and the National Center for Complementary and Alternative Medicine.

Journal reference: Eskandari F, Martinez P, Torvik S, Phillips TM, Sternberg EM, Mistry S, Ronsaville D, Wesley R, Toomey C, Sebring NG, Reynolds JC, Blackman MR, Calis KA, Gold PW, Cizza G, for the P.O.W.E.R. (Premenopausal, Osteoporosis Women, Alendronate, Depression) Study Group. Low Bone Mass in Premenopausal Women with Depression. Archives of Internal Medicine, November 26, 2007.

*Adapted from materials provided by NIH/National Institute of Mental Health.*

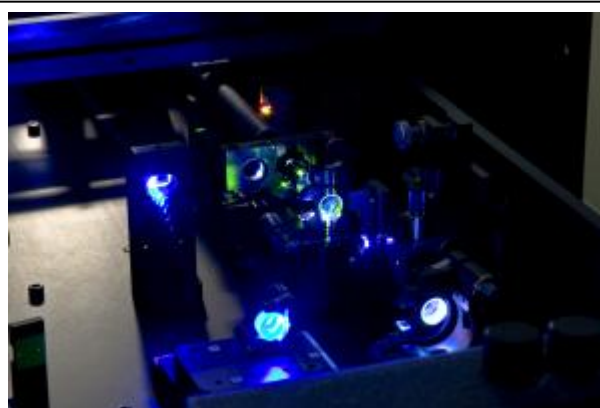
**<http://www.sciencedaily.com/releases/2007/11/071126162612.htm>**

## Powerful Microscope May Help Cancer Research

ScienceDaily (Nov. 27, 2007) — The Centenary Institute unveiled a powerful microscope unlike any other in Australia. Representing the cutting edge in medical technology and microscopy, the unique imaging features of the multiphoton microscope will enable scientists at the Centenary Institute unprecedented access to the secret workings of living tissues at the cellular and molecular level.

The Centenary Institute is equally excited about the arrival of Austrian Professor Wolfgang Weninger, one of only a handful of people in the world who specialises in using the multiphoton microscope in the immunology field to view immune responses in real-time in living tissue.

At the Centenary, Professor Weninger will lead a team of researchers to study the dynamics of the immune system's response to cancer and infectious diseases.



*The laser photographed is part of the Centenary Institute's powerful new multiphoton microscope which has unique features unlike any other in Australia. The laser has been enhanced with a unit called an OPO that produces longer wavelengths of light than those used in other microscopes. (Credit: Image courtesy of Centenary Institute)*

Professor Weninger said, "Cancer is still a leading cause of death in Australia. There is a need to develop improved anti-cancer therapies based on the use of the body's own resources - namely our immune system. This type of microscope is an outstanding tool to study how our bodies fight cancer both in early and advanced stages. If we can learn more about how our immune system attacks cancer cells directly in the context of intact tissues, we hope to develop improved immuno-therapies."

Using the multiphoton microscope, Professor Weninger's team pioneered ground-breaking imaging models to record how the body's defences fight tumours and infectious diseases. He has made real-time videos of white blood cells invading and destroying cancer cells in living tissue.

I am confident that the results of his team's research will vastly improve our understanding of how the body's immune system fights cancer and infectious diseases. The multiphoton microscope will also support the research of other Centenary scientists particularly in autoimmune and liver diseases."

The multiphoton microscope at the Centenary Institute has two unique features, its imaging mode and laser. The unique imaging mode uses multiple laser beams and means fast moving objects and dynamic processes in living tissue can be viewed, for example, cells in the blood stream. The laser has been enhanced with a unit called an OPO that produces longer wavelengths of light than those used in other microscopes enabling researchers to potentially look deeper into living tissue than ever before.

*Adapted from materials provided by Centenary Institute.*

<http://www.sciencedaily.com/releases/2007/11/071126100608.htm>





## For Treating Malaria, Less Drugs May Be Best Drugs

ScienceDaily (Nov. 27, 2007) — The current dosage of drugs used in treating malaria may be helping the parasites become resistant to the drugs faster, without improving the long-term outcome in patients. According to evolutionary biologists, studies using mice suggest that the optimal use of the drugs might slow the spread of drug resistance while making the patient just as healthy.

Most malaria infections in the world comprise a mix of parasites, so that as resistant parasites spread in a population, they usually share their human hosts with other parasites that are susceptible to drugs. Over the course of infection, these bugs are locked in competition for the same space -- and the same blood cells -- within the body.

Normally in the absence of drugs, the susceptible pathogens keep the resistant ones from proliferating. But when infections are treated with drugs, the dynamic changes.

"Drugs kill off the susceptible parasites letting their competitors, the resistant ones, fill the vacant space and expand their numbers," said Andrew Read, professor of biology at Penn State, and an associate at the Center for Infectious Disease Dynamics.

Mutations within the parasites create new resistant strains all the time but scientists argue that the ways drugs are currently used could be accelerating the spread of such strains after they have arisen.

Read and his colleagues Andrew R. Wargo, now a post-doctoral researcher at the University of Washington, Seattle, Jacobus C. de Roode, now an assistant professor at Emory University, and Silvie Huijben and James Shephard, doctoral student and undergraduate student respectively at the University of Edinburgh, infected mice with malaria to see how the parasites respond to drug treatment.

They found that once the drugs eliminated the susceptible microbes, the number of resistant bugs increased twice as much, compared to when the susceptible microbes were present, or when the infections comprised only resistant bugs.

"The more drugs you use, the worse you make the situation in terms of the evolution of drug resistance," said Read, whose findings appear online in the Proceedings of the National Academy of Sciences. "This massively increases the rate of spread of resistance, so the drugs become less and less useful," he added.

Researchers also found the spurt in parasite numbers to be directly proportional to the duration of drug treatment. The resistant bugs reproduced normally after a day of treatment. But after two days of antimalarial treatment, their numbers increased significantly, compared to infections in which they were the sole type of parasite.

"Resistant parasites not only survive but do much better because the drugs have successfully removed their competitors," Read explained. "We suspect this is what is causing the short lifespan of many antimalarial drugs," he added.

For instance, the Penn State researcher pointed out, the usefulness of antimalarial drugs such as chloroquine lasted for decades, while other drugs such as pyrimethamine have been effective for less than a decade.

If the infections in mice mirror malarial infections in humans, the findings may offer a promising solution in slowing the spread of such drug resistance.

According to Read, public health policy places an undue attention on killing every last parasite in a person and that creates a massive selection for resistance because the drugs remove just those parasites that are susceptible to treatment.



"We should examine patterns of drug use that lead to stronger or less stronger selection for drug resistance," said Read. "What you actually want is to use less drugs, after the point where you are still making people healthy."

In other words the idea is to kill just enough pathogens to make a person healthy, but still save an ample number of them to compete with the resistant strain.

"The standard claim that one should take a very large dose designed to annihilate every single parasite in the body... might not always be the best thing to do," he added.

*Adapted from materials provided by Penn State.*

**<http://www.sciencedaily.com/releases/2007/11/071126170857.htm>**

## Thermoelectric Materials Are One Key To Energy Savings

ScienceDaily (Nov. 27, 2007) — Breathing new life into an old idea, MIT Institute Professor Mildred S. Dresselhaus and co-workers are developing innovative materials for controlling temperatures that could lead to substantial energy savings by allowing more efficient car engines, photovoltaic cells and electronic devices.

Novel thermoelectric materials have already resulted in a new consumer product: a simple, efficient way of cooling car seats in hot climates. The devices, similar to the more-familiar car seat heaters, provide comfort directly to the individual rather than cooling the entire car, saving on air conditioning and energy costs.



*Professor Mildred Dresselhaus, in the spectroscopy lab at MIT. (Credit: Photo / Donna Coveney)*

The research is based on the principle of thermoelectric cooling and heating, which was first discovered in the early 19th century and was advanced into some practical applications in the 1960s by MIT professor (and former president) Paul Gray, among others.

Thermoelectric devices are based on the fact that when certain materials are heated, they generate a significant electrical voltage. Conversely, when a voltage is applied to them, they become hotter on one side, and colder on the other. The process works with a variety of materials, and especially well with semiconductors -- the materials from which computer chips are made. But it always had one big drawback: it is very inefficient.

The fundamental problem in creating efficient thermoelectric materials is that they need to be very good at conducting electricity, but not heat. That way, one end of the apparatus can get hot while the other remains cold, instead of the material quickly equalizing the temperature. In most materials, electrical and thermal conductivity go hand in hand. So researchers had to find ways of modifying materials to separate the two properties.

The key to making it more practical, Dresselhaus explains, was in creating engineered semiconductor materials in which tiny patterns have been created to alter the materials' behavior. This might include embedding nanoscale particles or wires in a matrix of another material. These nanoscale structures -- just a few billionths of a meter across -- interfere with the flow of heat, while allowing electricity to flow freely. "Making a nanostructure allows you to independently control these qualities," Dresselhaus says.

She and her MIT collaborators started working on these developments in the 1990s, and soon drew interest from the US Navy because of the potential for making quieter submarines (power generation and air conditioning are some of the noisiest functions on existing subs). "From that research, we came up with a lot of new materials that nobody had looked into," Dresselhaus says.

After some early work conducted with Ted Harman of MIT Lincoln Labs, Harman, Dresselhaus, and her student Lyndon Hicks published an experimental paper on the new materials in the mid 1990s. "People saw that paper and the field started," she says. "Now there are conferences devoted to it."



Her work in finding new thermoelectric materials, including a collaboration with MIT professor of Mechanical Engineering Gang Chen, invigorated the field, and now there are real applications like seat coolers in cars. Last year, a small company in California sold a million of the units worldwide.

### **Potential applications**

The same principle can be used to design cooling systems that could be built right into microchips, reducing or eliminating the need for separate cooling systems and improving their efficiency.

The technology could also be used in cars to make the engines themselves more efficient. In conventional cars, about 80 percent of the fuel's energy is wasted as heat. Thermoelectric systems could perhaps be used to generate electricity directly from this wasted heat. Because the amount of fuel used for transportation is such a huge part of the world's energy use, even a small percentage improvement in efficiency can have a great impact, Dresselhaus explains. "It's very practical," she says, "and the car companies are getting interested."

The same materials might also play a role in improving the efficiency of photovoltaic cells, harnessing some of the sun's heat as well as its light to make electricity. The key will be finding materials that have the right properties but are not too expensive to produce.

Dresselhaus and colleagues are now applying nanotechnology and other cutting-edge technologies to the field. She'll describe her work toward better thermoelectric materials in an invited talk on Monday, Nov. 26, at the annual meeting of the Materials Research Society in Boston.

Dresselhaus and colleagues are continuing to probe the thermoelectric properties of a variety of semiconductor materials and nanostructures such as superlattices and quantum dots. Her research on thermoelectric materials is presently sponsored by NASA.

*Adapted from materials provided by Massachusetts Institute of Technology.*

**<http://www.sciencedaily.com/releases/2007/11/071120195658.htm>**



### **Middle School Students 'Extremely Overconfident' In Their Own Learning**

ScienceDaily (Nov. 27, 2007) — Given national mandates to 'leave no child behind,' grade-school students are expected to learn an enormous amount of course material in a limited amount of time.

"Students have too much to learn, so it's important they learn efficiently," says Dr. John Dunlosky, Kent State professor of psychology and associate editor of *Journal of Experimental Psychology: Learning, Memory and Cognition*. Today, students are expected to understand and remember difficult concepts relevant to state achievement tests.

However, a major challenge is the student's ability to judge his own learning. "Students are extremely over confident about what they're learning," says Dunlosky.

Dunlosky and his colleague, Dr. Katherine Rawson, Kent State assistant professor of psychology, study metacomprehension, or the ability to judge your own comprehension and learning of text materials. Their research primarily focuses on fifth, seventh and eighth graders as well as college-aged students, and how improving metacomprehension can, in turn, improve students' self-regulated learning.

One way to improve this issue is to self-test, says Rawson. After reading or studying information, wait for a short time; then try to recall or summarize the information from memory. Next, check the information recalled against the original source material. Adds Rawson: "Our research consistently shows that without checking, people often believe they've remembered something correctly when in fact they haven't."

Currently, Dunlosky and Rawson are developing a "study buddy" that combines accurate monitoring with effective schedules of learning. When the guide is completed, they hope to provide it to schools across the state of Ohio.

Dr. John Dunlosky, Kent State professor of psychology, and his colleague, Dr. Katherine Rawson, Kent State assistant professor of psychology contributed to this work. It was funded by the US Department of Education.

*Adapted from materials provided by Kent State University.*

**<http://www.sciencedaily.com/releases/2007/11/071126162526.htm>**



**'Human-centric' mapping is proposed**

MONTREAL, Nov. 27 (UPI) -- Canadian and U.S. scientists are criticizing ecologists for focusing on rare "pristine" ecosystems while ignoring the influence of humans on the environment.

Assistant Professor Navin Ramankutty of McGill University in Montreal and Professor Erle Ellis of the University of Maryland-Baltimore said the current system of classifying ecosystems into biomes, or "ecological communities" such as tropical rainforests, grasslands and deserts, might be misleading. Instead, they propose a new model of human-centered "anthropegenic" biomes.

"Ecologists go to remote parts of the planet to study pristine ecosystems, but no one studies it in their back yard," said Ramankutty. "It's time to start putting instrumentation in our back yards -- both literal and metaphorical -- to study what's going on there in terms of ecosystem functioning."

The research is presented in the Nov. 19 issue of the journal *Frontiers in Ecology and the Environment*.

<http://www.newsdaily.com/Science/UPI-1-20071127-10385200-bc-canada-humancentric.xml>

## Early Academic Skills, Not Behavior, Best Predict School Success

ScienceDaily (Nov. 19, 2007) — Children entering kindergarten with elementary math and reading skills are the most likely to do well in school later, even if they have various social and emotional problems, say researchers who examined data from six studies of close to 36,000 preschoolers. Children's attention-related skills also mattered, the researchers found.

"We find the single most important factor in predicting later academic achievement is that children begin school with a mastery of early math and literacy concepts," said Northwestern University researcher Greg Duncan and the study's primary author. Attention-related skills, though more modestly, also consistently predict achievement.

But it is the seeming lack of association between social and emotional behaviors and later academic learning that most surprised the researchers -- a lack of association as true for boys as for girls and as true for children from affluent families as for those from less affluent families.

"Children who engage in aggressive or disruptive behavior or who have difficulty making friends wind up learning just as much as their better behaved or more socially adjusted classmates provided that they come to school with academic skills," said Northwestern's Duncan. "We do not know if their behavior affects the achievement of other children."

Appearing in the journal *Developmental Psychology*, the study findings are based on an analysis of existing data from more than 35,000 preschoolers in the United States, Canada and England.

"The paramount importance of early math skills -- of beginning school with a knowledge of numbers, number order and other rudimentary math concepts -- is one of the puzzles coming out of the study," said Duncan, Northwestern's Tarry Professor of Education and Social Policy and a Faculty Fellow at the Institute for Policy Research.

Controlling for IQ, family income, gender, temperament, type of previous educational experience, and whether children came from single or two parent families, the study found that the mastery of early math concepts on school entry was the very strongest predictor of future academic success.

"Mastery of early math skills predicts not only future math achievement, it also predicts future reading achievement," Duncan said. "And it does so just as reliably as early literacy mastery of vocabulary, letters and phonetics predicts later reading success." The opposite -- reading skills predicting math success -- does not hold up.

The study's conclusions about the importance of early academic and attention skills are consistent with recommendations from expert panels of early mathematics and literacy professionals. The study's authors did not look at curricula.

"Certainly we're not suggesting that preschool programs abandon play and impose dull 'drill-and-practice' curricula," Duncan said. "Play-based curricula designed with the developmental needs of



*Children entering kindergarten with elementary math and reading skills are the most likely to do well in school later, even if they have various social and emotional problems, say researchers who examined data from six studies of close to 36,000 preschoolers. (Credit: iStockphoto)*



children in mind can foster the development of academic and attention skills in ways that are engaging and fun."

Using six longitudinal studies, the authors of "School Readiness and Later Achievement" measured school readiness skills and behaviors when a child entered school (at around age 5) and measured for later academic achievement between ages 7 and 14.

Support for the study came from the Center for the Analyses of Pathways from Children to Adulthood at the University of Michigan, a National Science Foundations-funded Developmental Science Center.

Article: "School Readiness and Later Achievement," Greg J. Duncan, PhD, Amy Claessens, PhD, Mimi Engel, Northwestern University; Chantelle J. Dowsett, PhD, and Aletha C. Huston, PhD, University of Texas-Austin; Katherine Magnuson, PhD, University of Wisconsin-Madison; Pamela Klebanov, PhD, Princeton University, Linda S. Pagani, PhD, Université de Montreal; Leon Feinstein, PhD, and Kathryn Duckworth, University of London; Jeanne Brooks-Gunn, PhD, Columbia University; Holly Sexton, University of Michigan; Crista Japel, Université de Quebec a Montreal; *Developmental Psychology*, Vol. 43, No. 6.

*Adapted from materials provided by Northwestern University.*

**<http://www.sciencedaily.com/releases/2007/11/071112182442.htm>**



## Hormone Of Darkness: Melatonin Could Hurt Memory Formation At Night

ScienceDaily (Nov. 17, 2007) — What do you do when a naturally occurring hormone in your body turns against you? What do you do when that same hormone – melatonin – is a popular supplement you take to help you sleep? A University of Houston professor and his team of researchers may have some answers.

Gregg W. Roman, assistant professor in the department of biology and biochemistry at UH, describes his team's findings in Science.

Frequently called “the hormone of darkness,” melatonin is a hormone the body produces that may regulate patterns of sleeping and awakening in humans. In almost all organisms tested, this antioxidant's natural levels are high during the night and low during the day. In addition to what the body produces naturally, many people also take melatonin supplements to fight jet lag, balance out seasonal affect disorder and regulate nighttime dementia.



*In a study with zebrafish (Danio rerio), Gregg W. Roman, assistant professor in the Department of Biology and Biochemistry at the University of Houston, has found that melatonin directly inhibits memory formation at night. (Credit: Thomas Shea)*

Roman says, however, that melatonin could actually be hurting you at night, finding in a study with zebrafish (*Danio rerio*) that melatonin directly inhibits memory formation.

“This work is about the mechanism by which the biological clock controls the formation of new memories,” Roman said. “We were interested in the circadian control – the day-night cycle control – of learning and memory formation. We found zebrafish are capable of learning very well during their active phase during the day, but learn very poorly at night during their sleep or quiet phase.”

The experiments were performed using zebrafish for several reasons. They're small and breed in large numbers (thereby being less expensive to use), and they are diurnal, having the same activity rhythms as people. Zebrafish are most active during the day and less active at night, whereas many other vertebrate model systems, such as rodents, are nocturnal. Roman reasons that if you are interested in how the biological clock regulates cognitive function in humans, you should use a model system that reacts to the clock the same way people do.

More than two years worth of work, including the discovery that the ability to learn and remember was controlled by an endogenous (or internal) clock originating within the zebrafish, led Roman and his colleagues to hypothesize that melatonin may be responsible for poor learning and memory formation during the night. In order to test whether melatonin was involved in inhibiting nighttime learning and memory formation, they treated the zebrafish during the day with this hormone to see how the fish performed. Interestingly, melatonin failed to affect learning, but dramatically inhibited the formation of new memories, with the melatonin-treated fish resembling fish trained during the night in a test for 24-hour memory.

“The next step was to inhibit melatonin signaling during the night with a melatonin receptor antagonist and test for effects on memory formation,” Roman said. “It was tremendous – the results were, excuse the expression, like night and day. We saw dramatic improvements in nighttime memory formation by inhibiting melatonin signaling, indicating that the reason the zebrafish did not form memories at night was because of the melatonin hormone.”



Next, with the pineal gland being the primary source of melatonin in fish and in people, Roman's student Oliver Rawashdeh removed this gland from the fish and found they could now form memories at high levels even during the night. Removing this melatonin-producing gland allowed the researchers to alleviate the hormone's negative side effects, further demonstrating that melatonin inhibits the formation of new memories during the night.

With these findings, Roman hopes to be able to retain the beneficial effects of melatonin's antioxidant properties. Such benefits include fighting free radical damage to slow some forms of neurodegeneration, such as in Parkinson's and Alzheimer's diseases, and stopping DNA damage, which has potential to act as a preventative against cancer. And, since the positive antioxidant effect is direct and independent of receptor signaling, there is hope that removing the melatonin receptor signaling will combat only this hormone's negative effects on cognitive function.

Additionally, Roman said that inhibiting melatonin signaling with receptor antagonists may help with a large number of nighttime cognitive tasks, helping such people as students studying for finals, airplane pilots, ER physicians and night-shift workers. Roman also thinks that a natural role of melatonin may be to facilitate the storage of memories made during the day and that more studies are required to understand the ultimate role melatonin has in memory formation.

"The value of melatonin as a supplement is largely due to its antioxidant properties," Roman said. "The use of melatonin receptor antagonists will not affect this attribute, but may alleviate an important side effect on nighttime cognitive function."

In other words, a 'best of both worlds' scenario could result, taking advantage of melatonin's antioxidant benefits while improving nighttime memory formation that is now inhibited by it.

Roman's team at UH for this breakthrough study includes Gregory M. Cahill, associate professor of biology and biochemistry, and two of their students and research assistants, Oliver Rawashdeh and Nancy Hernandez de Borsetti.

The Science article is entitled "Melatonin Suppresses Nighttime Memory Formation in Zebrafish," and will be published Nov. 16.

*Adapted from materials provided by University of Houston.*

**<http://www.sciencedaily.com/releases/2007/11/071115164438.htm>**

## How Violent Video Games Are Exemplary Aggression Teachers

ScienceDaily (Nov. 14, 2007) — Like other fathers and sons, Douglas Gentile and his father have spent many hours arguing about video games. What makes them different is that Douglas, an Iowa State University assistant professor of psychology, is one of the country's top researchers on the effects of media on children. His father, J. Ronald Gentile, is a leading researcher on effective teaching and a distinguished teaching professor emeritus of educational psychology at the University of Buffalo, State University of New York.

Through their discussions, they realized that video games use the same techniques that really great teachers use.

"That realization prompted us to ask the question, 'Should we therefore be surprised that violent video games could teach aggression to players?'" said Doug Gentile, who is also director of research for the National Institute on Media and the Family.

### **Violent video games teach aggression**

The Gentiles decided to test that hypothesis. Through a study of nearly 2,500 youths, they found that video games are indeed effective teaching tools. Students who played multiple violent video games actually learned through those games to produce greater hostile actions and aggressive behaviors over a span of six months.

"We know a lot about how to be an effective teacher, and we know a lot about how to use technology to teach," said lead author Douglas Gentile. "Video games use many of these techniques and are highly effective teachers. So we shouldn't be surprised that violent video games can teach aggression."

The paper presents conceptual and empirical analyses of several of the "best practices" of learning and instruction, and demonstrates how violent video games use those practices effectively to teach aggression. It documents how violent video games motivate learners to persevere in learning and mastering skills to navigate through complex problems and changing environments -- just like good teachers do.

The study describes seven parallels between video games and effective teachers, including the ability to adapt to the level of each individual learner -- requiring practice distributed across time -- and teaching for transfer to real-world situations.

### **Studying nearly 2,500 youths**



*Students who played multiple violent video games actually learned through those games to produce greater hostile actions and aggressive behaviors over a span of six months, researchers have found. (Credit: iStockphoto/Quavondo Nguyen)*



To test their hypothesis, the Gentiles studied three groups of youths -- 430 third through fifth-graders; 607 eighth and ninth graders; and 1,441 older adolescents with an average age of 19. Elementary and middle school children were recruited from nine Minnesota schools, and older adolescents from Iowa State University.

In the longitudinal elementary school sample, students, their peers, and their teachers completed surveys at two points during the school year. The surveys assessed the subject's aggressive thoughts and self-reported fights, and their media habits -- including violent video game exposure. Teachers and peers were also asked to rate the participants' aggressive behavior.

Controlling for age, race, sex, total amount of time spent playing all video games, and prior aggressive behaviors, the research found that the amount of rated violence in the games played predicted increased aggression. Among elementary students, playing multiple violent video games increased their risk of being highly aggressive -- as rated by peers and teachers -- by 73 percent, when compared to those who played a mix of violent and non-violent games, and by 263 percent compared to those who played only non-violent games.

"Because we had longitudinal data, we were able to show that students who play multiple violent games actually changed to have a greater hostile attribution bias, which also increased their aggressive behaviors over prior levels," the researchers wrote.

And because learning occurs from video games, regardless of whether the effects are intentional or unintentional, the Gentiles added that this "should make us more thoughtful about designing games and choosing games for children and adolescents to play."

But this study is not all bad news for video game technology. Because video games were found to be such effective teaching tools, the Gentiles propose greater educational use of today's smarter technology found in those games -- technology that "thinks" along with students, adapting instruction to each student's current skills, strategies or mistakes.

While some schools are already incorporating this type of educational programming, the researchers report that it's not widely used. The authors urge educators not to wait for more advancement before using such technology with students in the classroom.

They co-authored a paper on their research titled "Violent Video Games as Exemplary Teachers: A Conceptual Analysis," which will be published in an upcoming issue of the *Journal of Youth and Adolescence*. It is already available online to the journal's subscribers.

*Adapted from materials provided by Iowa State University.*

**<http://www.sciencedaily.com/releases/2007/11/071113160359.htm>**



## Gadgets Getting Smaller

### Electrical Engineers Envision Broad, Transformational Use of Flash Memory

*March 1, 2006* — With their high capability and no moving parts, flash drives safely store data in camera memory sticks and in some MP3 players, and they also hide in gadgets such as cell phones. Experts say once prices go down enough, flash drives will even start replacing hard drives in laptops.

SUNNYVALE, Calif.--Experts say we're no longer in the technology revolution, but in the technology evolution. The next step is to make everything we use shrink. That's why gadgets like cell phones, laptops, and MP3 players get smaller and smaller, yet can do more.

Zack Weisfeld, general manager of M-Systems in Sunnyvale, Calif., says, "I just need a screen, I need a keyboard, and basically, I carry my computer with me."

A USB flash drive uses a flash memory chip to store all of your computer applications and files just like a hard drive. Weisfeld says, "A USB flash drive means you can store a thousand disks in a little thing."

Not only can a flash memory chip hold a huge amount of information, but it also protects your information better. Unlike a hard drive, it has no moving parts inside to damage the memory. And the chip is smaller than a push pin.

"What many people don't realize is they use a lot of flash every day," Weisfeld tells DBIS. The tiny little chip is a household item and often goes unnoticed because it's buried inside devices. Flash memory technology makes it possible to have small cell phones capable of Internet access and video games.

Experts say that next, flash memory will appear in laptops. Esther Spanjer, an electrical engineer for M-Systems, says, "In another year or so, you will see the first commercial flash disk drives on the market that you will put in your laptop vs. a standard hard disk drive." They say as the size goes down, the power of these devices will continue to grow.

The only limitation of flash right now is the price, which is comparable to a hard drive with up to 60 gigabytes of memory. Flash technology is also used in memory sticks for cameras and in cars that have info-tainment and GPS systems.

[http://www.sciencedaily.com/videos/2006/0309-gadgets\\_getting\\_smaller.htm](http://www.sciencedaily.com/videos/2006/0309-gadgets_getting_smaller.htm)



## **Longer-Lasting Battery Engineers Double Life of Alkaline Batteries**

*June 1, 2005* — By packing batteries with twice as much energy-storing material, engineers have developed a new generation of alkaline batteries that can double the battery life of your MP3 players, digital cameras, and other gadgets. The new batteries also produce a higher voltage -- so flashlights shine brighter, and camera flashes recover quicker.

We live in a digital world, relying on batteries to power everything from laptops to digital cameras and MP3. Standard batteries drain under the strain. Now engineers have developed a longer-lasting battery just for these digital demands.

Ben Stein likes catching picture-perfect moments on his digital camera but has one big frustration. "The battery life is not reliable," he says. "I never know when it's going to die."

But now, engineers are unveiling a new battery -- called Oxyride -- that boasts almost double the power and life of regular batteries.

"If you use this battery in a digital still camera, you'll receive -- minimum -- twice as many photos as compared to alkaline batteries," Brian Kimberlin, of Panasonic Battery Group in Secaucus, N.J., tells DBIS.

Using a finer, more concentrated material inside the battery, engineers have developed a way to fit more electrolyte -- a key ingredient for carrying electricity -- into the same size battery cell. The new battery is packed with more power and longer life.

Kimberlin says, "We're putting a little more juice in the battery, and the components are stronger and better."

The new battery also produces a higher voltage. With it, flashlights shine brighter, and camera flashes recover quicker.

"If something lasted twice as long, that maybe means I'll have half as many worries," Stein says. And for him, using it may mean not missing any more great shots.

The Oxyride battery is also ideal for music players and digital games. It hits the shelves this summer, but will cost about 20 percent more than regular alkaline batteries.

**[http://www.sciencedaily.com/videos/2005/0606-longerlasting\\_battery.htm](http://www.sciencedaily.com/videos/2005/0606-longerlasting_battery.htm)**



## Cancer-resistant Mouse Developed By Adding Tumor-suppressor Gene

ScienceDaily (Nov. 27, 2007) — A mouse resistant to cancer, even highly-aggressive types, has been created by researchers at the University of Kentucky. The breakthrough stems from a discovery by UK College of Medicine professor of radiation medicine Vivek Rangnekar and a team of researchers who found a tumor-suppressor gene called "Par-4" in the prostate.

The researchers discovered that the Par-4 gene kills cancer cells, but not normal cells. There are very few molecules that specifically fight against cancer cells, giving it a potentially therapeutic application.

Rangnekar's study is unique in that mice born with this gene are not developing tumors. The mice grow normally and have no defects. In fact, the mice possessing Par-4 actually live a few months longer than the control animals, indicating that they have no toxic side effects. "We originally discovered Par-4 in the prostate, but it's not limited to the prostate. The gene is expressed in every cell type that we've looked at and it induces the death of a broad range of cancer cells, including of course, cancer cells in the prostate," said Rangnekar. "The interesting part of this study is that this killer gene is selective for killing cancer cells. It will not kill normal cells and there are very, very few selective molecules out there like this."

To further investigate the potential therapeutic benefits of this gene, Rangnekar's team introduced it into the egg of a mouse. That egg was then planted into a surrogate mother.

"The mouse itself does not express a large number of copies of this gene, but the pups do and then their pups start expressing the gene," Rangnekar said. "So, we've been able to transfer this activity to generations in the mouse." The implications for humans could be that through bone marrow transplantation, the Par-4 molecule could potentially be used to fight cancer cells in patients without the toxic and damaging side effects of chemotherapy and radiation therapy.

"When a cancer patient goes to the clinic, they undergo chemotherapy or radiation and there are potential side effects associated with these treatments," Rangnekar said. "We got interested in looking for a molecule which will kill cancer cells and not kill normal cells, but also would not be toxic with regard to the production of side effects to the entire organism. We are thinking of this in a holistic approach that not only would get rid of the tumor, but also not harm the organism as a whole. Before this animal study, we published a lot of work indicating that in cell culture, there's no killing of normal cells. This is the proof that it doesn't kill normal cells because the mouse is alive and healthy."

Rangnekar admits there is much more work to be done before this research can be applied to humans, but agrees that is the most logical next step.

"I look at this research from the standpoint of how it can be developed to the benefit of the cancer patient and that's really what keeps us focused all this time," said Rangnekar. "If you look at the pain that cancer patients go through, not just from the disease, but also from the treatment -- it's excruciating. If you have someone in your family, like I did, who has gone through that, you know you can see that pain. If you can not only treat the cancer, but also not harm the patient, that's a major breakthrough. That's happening with these animals and I think that's wonderful."

The research was published in the October edition of the journal *Cancer Research*. Dr. Rangnekar holds the Alfred Cohen, M.D., Endowed Chair in Oncology Research, and serves as the associate director (for translational research), at the Markey Cancer Center. It was funded by several grants from the National Institutes of Health.

*Adapted from materials provided by University of Kentucky.*

<http://www.sciencedaily.com/releases/2007/11/071127080344.htm>

## Structure Of Largest Nonvirus Particle Ever Crystallized Modeled



*Model of the vault derived by UCLA researchers, with applications to drug delivery. (Credit: UCLA)*

ScienceDaily (Nov. 27, 2007) — Researchers at UCLA's California NanoSystems Institute, the David Geffen School of Medicine at UCLA and the Howard Hughes Medical Institute have modeled the structure of the largest cellular particle ever crystallized, suggesting ways to engineer the particles for drug delivery.

The research study focuses on new engineered nanomaterial vaults for use as a drug-therapy vehicle.

The team of researchers at UCLA is led by David Eisenberg and Leonard H. Rome of the departments of biological chemistry at the Geffen School of Medicine and the California NanoSystems Institute and associate researchers Daniel H. Anderson, Valerie A. Kickhoefer and Stuart A. Sievers. Eisenberg, Anderson and Sievers are also members of the Howard Hughes Medical Institute and the UCLA--U.S. Department of Energy Institute for Genomics and Proteomics.

Vaults are large, barrel-shaped particles found in the cytoplasm of all mammalian cells; they may function in innate immunity. As naturally occurring nanoscale capsules, vaults may be useful to engineer as therapeutic delivery vehicles. For the study, the team of researchers proposed an atomic structure for the thin outer shell of the vault.





Using X-ray diffraction and computer modeling, the research team developed a draft atomic model for the major vault protein, which forms the shell-like enclosure of the vault.

"Our draft model is essentially an atomic-level vault with a completely unique structure, like a barrel with staves. It is unlike any other large structure found in nature," Rome said. "The outside of the vault structure is like an eggshell -- a continuous protective barrier with no gaps."

The shell is made up of 96 identical protein chains -- each made of 873 amino acid residues -- folded into 14 domains. Each chain forms an elongated stave of half the vault, as well as the cap of the barrel-like shell.

"These nanostructured vaults offer a human-friendly nanocontainer, like a molecular-level C-5A transport jet, with a cargo hold large enough to encompass a whole ribosome with its hundreds of proteins and nucleic acids, or enough drugs to control a cell," Eisenberg said.

The construction of the draft atomic model lays the foundation for further studies of vaults and will guide vault engineering projects focused on the targeted release of vault contents for drug delivery.

Journal citation: Anderson DH, Kickhoefer VA, Sievers SA, Rome LH, Eisenberg D (2007) Draft crystal structure of the vault shell at 9-Å resolution. PLoS Biol 5(11): e318.  
doi:10.1371/journal.pbio.0050318

The research is supported by a National Science Foundation Nanoscience Interdisciplinary Research Team Grant, the Howard Hughes Medical Institute, the National Institutes of Health and the Department of Energy.

*Adapted from materials provided by University of California - Los Angeles.*

**<http://www.sciencedaily.com/releases/2007/11/071126201401.htm>**

## City Ballet and Opera Now Agree on Theater

By **ROBIN POGREBIN**

Nearly a year after the New York City Opera gave up on the idea of leaving Lincoln Center to build its own home, the opera and the New York City Ballet have agreed on making changes to the New York State Theater, which they share at the center. The changes include a modular acoustical system that can be moved in for the opera and out for the ballet.



The two parties are scheduled to present a progress report to Lincoln Center on Thursday.

The productivity of the recent talks between the opera and the ballet signals a decisive shift in relations between the tenants, which alternate seasons at the State Theater. The organizations had tried to come to terms on renovation plans several years ago in the early stages of Lincoln Center's redevelopment effort. But discussions fell apart over issues like whether to create a center aisle (the opera was strongly in favor; the ballet, adamantly opposed) and how to adjust the acoustics (the opera believes they are in dire need of redress; the ballet thinks they're fine).

But various developments have brought the parties back to the table. Both boards are now led by new chairmen: Barry S. Friedberg at the ballet and Susan L. Baker at the opera. The two met for lunch in March at Jean Georges restaurant, together with Peter Martins, City Ballet's ballet master in chief, and Gerard Mortier, City Opera's incoming general manager and artistic director. "That meeting set the tone between Gerard and Peter that we would try to find something that would work for both of us," Mr. Friedberg said.

When Mr. Mortier was selected, he made a strong case for staying at the State Theater, a marked shift from the stance of his predecessor, Paul Kellogg, who had spearheaded the search for a new home.

And Lincoln Center has pushed the process along by issuing a deadline of sorts in a letter sent to the ballet and the opera this year asking for a progress report before 2008. "What we asked for was basic concepts: what do you want to accomplish?" Reynold Levy, the president of Lincoln Center, said.

Lincoln Center's redevelopment is now in high gear, with a thorough overhaul of West 65th Street under way and scheduled to be completed by 2010.

Also at stake was Lincoln Center's matching grant for constituent groups at the center: 20 percent of the first \$25 million raised and 15 percent of everything over that amount. "The executive committee



discussed the fact that it was unfair to Lincoln Center to provide an open-ended offer of a match to the constituents that would go on forever,” Mr. Levy said.

But Mr. Levy said he understood that the opera was in a leadership transition. Mr. Mortier’s contract as director of the Paris National Opera does not expire until 2009, although he has already been active at City Opera.

“We’ll be patient if it takes another quarter,” Mr. Levy said.

The opera and ballet have agreed to create a larger orchestra pit that can move up and down; to upgrade the seating, carpeting and box office; and to rewire the theater to improve lighting and media capabilities.

“We can’t do anything unless both of us agree,” said Mr. Friedberg, of the ballet. “This is 100 percent consensus, or it doesn’t happen.”

The center aisle is not up for discussion. “We quite early took it off the table,” Ms. Baker said, “because it had been such an emotional subject, I’m told, in earlier conversations with prior generations of leadership.”

There will be several naming opportunities, including the promenade and the foyer. The city, which owns the State Theater, would need to approve any changes to the building; the ballet and the opera hope that the city will offer financial support.

The theater consulting firm Schuler Shook has been retained for the project, along with JCJ Architecture and Müller-BBM acoustics.

The project is expected to cost \$30 million to \$60 million, with fund-raising shared by the opera and the ballet. The expense is considerably less than the \$350 million City Opera was prepared to raise to build a new home.

In large part because Mr. Mortier believed that City Opera should stay put, that company decided to abandon its search for a new location, having seriously explored options like the World Trade Center site in Lower Manhattan and the American Red Cross building on Amsterdam Avenue at West 66th Street.

The current acoustical system was revamped twice before amplification was added in 1999. A new one can be installed and removed and “will enable the opera to have excellent acoustics and enable the ballet to have what it has today,” Ms. Baker said. “I’m thrilled that we found a way to do this.”

The ballet board was slower to come around to the idea of making acoustical adjustments because the stage was designed to muffle footfalls and is considered ideal for dance.

At the ballet’s opening-night gala last week, Lincoln Kirstein — a founder of City Ballet with George Balanchine — said in a video clip from his 80th-birthday celebration in 1987, “I don’t know of any theater that is more flattering to the dance than this theater here.”

**[http://www.nytimes.com/2007/11/27/arts/music/27oper.html?\\_r=1&oref=slogin](http://www.nytimes.com/2007/11/27/arts/music/27oper.html?_r=1&oref=slogin)**



### ***Mailer wins Bad Sex in Fiction Award***

Reuters

November 27, 2007 at 5:16 PM EST

LONDON — Writer Norman Mailer, a giant of the American literary scene and twice a winner of the Pulitzer Prize, was posthumously given the Bad Sex in Fiction Award on Tuesday.

"We are sure that he would have taken the prize in good humour," the judges said of the award to Mailer, who died on Nov 10 of kidney failure at the age of 84.

They paid homage to Mailer as a great American man of letters and hailed his "innovative journalism, his combative spirit and his love of life".

However, they could not resist awarding him the prize for a graphic passage in his novel "The Castle in the Forest."

The award most dreaded by authors was established in 1993 by the late Auberon Waugh when he was editor-in-chief of The Literary Review. Previous winners have included U.S. writer Tom Wolfe and British author Sebastian Faulks.

Mailer, renowned for his biting prose, penchant for controversy and larger-than-life personality, had provoked and enraged readers with his acerbic views on U.S. politics and the wars in Vietnam and Iraq.

The winning passage, which leaves little to the imagination, begins: "So Klara turned head to foot and put her most unmentionable part down on his hard-breathing nose and mouth and took his old battering ram into her lips."

**<http://www.theglobeandmail.com/servlet/story/RTGAM.20071127.wbadsex1127/BNStory/Entertainment/?page=rss&id=RTGAM.20071127.wbadsex1127>**



## Reading Lists

The National Book Critics Circle queried its members this month about what titles from this year they would recommend, then had a poll to narrow down the list. My enthusiasm for Julian Bourg's *From Revolution to Ethics: May 1968 and Contemporary French Thought* (McGill-Queens University Press) was bound to be a minority judgment in the best of cases. Anyway, I've been sent a copy of the final list (in descending order of votes per category) and will set it so that this item posts automatically after the embargo lifts.

### Fiction

- 1) Junot Diaz, *The Brief Wondrous Life of Oscar Wao* (Riverhead)
- 2) Denis Johnson, *Tree of Smoke* (Farrar, Straus & Giroux)
- 3) Michael Chabon, *The Yiddish Policeman's Union* (HarperCollins)
- 4) Philip Roth, *Exit Ghost* (Houghton Mifflin)
- 5) Per Petterson, *Out Stealing Horses* (Graywolf)

### Nonfiction

- 1) Edwidge Danticat, *Brother, I'm Dying* (Knopf)
- 2) Alan Weisman, *The World Without Us* (St. Martin's)
- 3) Naomi Klein, *The Shock Doctrine* (Metropolitan)
- 4) David Michaelis, *Schulz and the Peanuts* (HarperCollins)
- 5) Tim Weiner, *Legacy of Ashes* (Doubleday)

### Poetry

- 1) Robert Hass, *Time and Materials: Poems 1997-2005\**
- 2) Zbigniew Herbert, *Collected Poems: 1956-1998 (Ecco)\**
- 3) Robert Pinsky, *Gulf Music* (Farrar Straus & Giroux)\*
- 4) Rae Armantrout, *Next Life* (Wesleyan)
- 5) Mary Jo Bang, *Elegy* (Graywolf)

\*there was a three-way tie for first in poetry.

[http://www.artsjournal.com/quickstudy/2007/11/reading\\_lists.html#more](http://www.artsjournal.com/quickstudy/2007/11/reading_lists.html#more)