



# Infoteca's E-Journal



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



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## Talking to Dogs, Without a Word

By JANET MASLIN

### THE STORY OF EDGAR SAWTELLE

By David Wroblewski

566 pages. Ecco. \$25.95.

“This will be his earliest memory,” “The Story of Edgar Sawtelle” says about its title character. “Red light, morning light. High ceiling canted overhead. Lazy click of toenails on wood. Between the honey-colored slats of the crib a whiskery muzzle slides forward until its cheeks pull back and a row of dainty front teeth bare themselves in a ridiculous grin.”

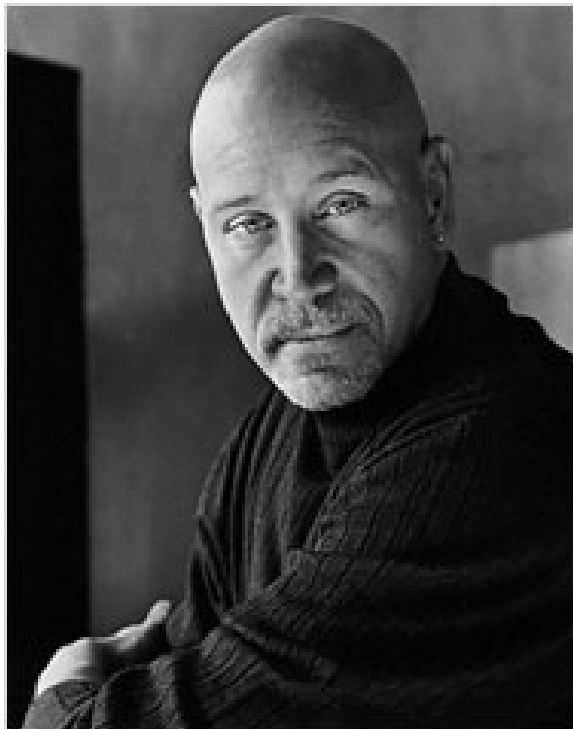
That’s a good way for a boy to meet a dog. It’s an even better way to get acquainted with the most enchanting debut novel of the summer. Written over a decade by the heretofore unknown David Wroblewski and arriving as a bolt from the blue, this is a great, big, mesmerizing read, audaciously envisioned as classic Americana. Absent the few dates and pop-cultural references that place the book somewhere in the post-Eisenhower 20th century, its unmannered style, emotional heft and sweeping ambition would keep it timeless.

Mr. Wroblewski happens to have borrowed, here and there, from Rudyard Kipling, William Shakespeare, Richard Russo, Stephen King and the 1934 dog-breeding book “Working Dogs.” And he writes as if he grew up in a library well stocked with great novels of the prairie. But the voice heard in “The Story of Edgar Sawtelle” sounds like no one else’s as this book creates its enthralling, warmly idiosyncratic story.

The narrative is of course centered on Edgar, a boy who reminds himself of Kipling’s Mowgli (from “The Jungle Book”) in his uncanny ability to communicate with dogs. Dog breeding is the family avocation. In the Sawtelles’ remote Wisconsin kennel, “they had photographs of every dog they’d ever raised but none of themselves.”

Mr. Wroblewski puts Edgar on a warm, cozy, paw-boxing basis with the Sawtelle dogs by rendering the boy mute from birth. Although Edgar’s condition is a terrible liability at certain crucial plot junctures, it is more often a blessing. Edgar speaks his own private sign language to people and dogs alike. He has no trouble making himself understood to his loved ones, whether they have two legs or four.

And Mr. Wroblewski has a deft, natural way of conveying Edgar’s relationship to language. Edgar speaks as clearly as any of the book’s other human characters do. It’s just that his dialogue, unlike theirs, is presented without quotation marks. Within the Sawtelle household, Edgar is by far the easiest person to understand.





That's because Mr. Wroblewski gives this family the "Hamlet" treatment, in general terms though not slavishly derivative ones. Edgar adores his mother, Trudy, and resents his long-lost uncle, Claude. When an unhappy fate befalls Edgar's father, Gar, the suspicions of this now 14-year-old boy are aroused. Trouble ensues. But "The Story of Edgar Sawtelle" is by no means "Hamlet" with hounds. This book's brief encounters with prophecy and the supernatural have as much to do with Mr. King's Maine as they do with Shakespeare's Denmark.

In a coming-of-age book that pays rapt attention to the power of communication, there are things that Edgar at first simply cannot understand. His parents are beguiling but mysterious. (The only answer Edgar can get to the question of how they met is: "In a good way. You'd only be disappointed in the details.")

The family's philosophy of dog breeding is another thing Edgar takes time to fathom. But it is indeed a system of belief, first introduced by Edgar's grandfather. This expansive book has plenty of room for multiple generations. One of the great pleasures of "The Story of Edgar Sawtelle" is its free-roaming, unhurried progress, enlivened by the author's inability to write anything but guilelessly captivating prose.

One of Mr. Wroblewski's most impressive accomplishments here is to exert a strong, seemingly effortless gravitational pull. The reader who has no interest in dogs, boys or Oedipal conflicts of the north woods of Wisconsin will nonetheless find these things irresistible. Pick up this book and expect to feel very, very reluctant to put it down.

Whether it is capturing every nuance of puppy behavior ("when she ran a finger along his belly fur he squirmed to keep sight of her eyes"), following Edgar through the dictionary as he picks names for his first litter ("Essay," "Pout," "Tinder," "Opal," "Umbra") or delivering long sections of narrative that Mr. Wroblewski himself has named intriguingly ("Three Grievs," "What Hands Do"), this rich and hefty book never flags.

Its voice is so natural and unfettered, so free of metaphor or other baggage, that even the simplest moments can have extraordinary grace. After a long but gripping passage during which Edgar and three dogs wander through the wilderness, driven from home and without any means of survival, even their discovery of canned food in a cabin can seem like a great wonder. "Like a magician performing sleight-of-hand," Mr. Wroblewski writes of the starving Edgar, "he began working the opener over a can of pork and beans." He conveys every bit of Edgar's sudden elation.

The radiant early stages of "The Story of Edgar Sawtelle" are more languid than the heightened drama in which this story must culminate. But even when he more openly manipulates his characters, this fine new author (who, in another life, has a career developing software) invests their actions with intense emotion. When the dogs make a home for themselves in a new place, they do it with heart and soul.

"As they worked, they put the sky in place above, the trees in the ground," the book says, describing one of Edgar's training sessions. "They invented color and air and scent and gravity." And in a touch that is by no means unexpected, once Mr. Wroblewski's world has been entered and embraced, this book's saddest farewell ends a profound man-dog relationship. Not even Hamlet could have imagined the strength of their loyalty or the depths of their sorrow.

<http://www.nytimes.com/2008/06/13/books/13book.html?ref=arts>

## Darkness Was Muse for a Master of Light

By CAROL VOGEL



“The Starry Night,” van Gogh’s hypnotic canvas from 1889, is one of the Museum of Modern Art’s most popular paintings, attracting thousands of visitors every year since it entered the collection in 1941.

“I always tell my students that great art is art that never gets exhausted,” said Joachim Pissarro, a great-grandson of the artist Camille Pissarro who is an adjunct curator at the museum as well as an art history professor and gallery director at Hunter College. So when he and John Elderfield, the Modern’s chief curator of painting and sculpture, were brainstorming about small shows that might focus on a work from the permanent collection, Mr. Pissarro said, Mr. Elderfield suggested that he “take ‘Starry Night’ and see where you go with it.” That was four years ago.

Now, after studying some 45 works by van Gogh that are linked to the painting and scores of letters and drawings from the collection of the Van Gogh Museum in Amsterdam, Mr. Pissarro has ended up with something far bigger than he had envisioned: a sweeping show charting the artist’s obsession with the nocturnal world.

“Van Gogh and the Colors of the Night,” jointly organized with Sjraar van Heugten, head of collections at the Van Gogh Museum, will open at the Modern on Sept. 21 and remain on view till Jan. 5 before traveling to Amsterdam.



“We discovered a lot of new, unpublished research,” Mr. Pissarro said. Van Gogh’s preoccupation with the night, both real and imagined, lasted from around the age of 20 until his death at 37, he said. (He painted “The Starry Night” 13 months before he died, when he was living in an asylum in St. Rémy, France.)

Mr. Pissarro said that van Gogh’s fascination with the night surfaces repeatedly in letters to his brother, Theo, his mother and friends. In a letter dated Sept. 8, 1888, to Theo, for example, he wrote, “It often seems to me that the night is much more alive and richly colored than the day.”

Mr. Pissarro discovered that van Gogh would often hand-copy pages from novels he was reading that referred to both the physical and mystical aspects of the night. “As an imaginative force the night was a very big catalyst in his mind,” Mr. Pissarro said. “He lived his life by the night.”

The show includes about 40 works — paintings, drawings, books, letters— including some that have never been on view in the United States. In addition to “The Starry Night” there will be other seminal paintings like the Van Gogh Museum’s “Potato Eaters” (1885) and “Gauguin’s Chair” and “The Sower” (both 1888); “The Starry Night over the Rhône” (1888) from the Musée d’Orsay in Paris; and “The Night Cafe” (1888) from the [Yale University Art Gallery](#).

There will also be lesser-known works like “Landscape With Wheat Sheaves and Rising Moon” (1889) from the Kröller Müller Museum in Otterlo, the Netherlands. The exhibition will include letters to Theo and friends like Gauguin and Émile Bernard, on which van Gogh also scribbled drawings. And there will be books with nocturnal references that the artist owned, like [Hans Christian Andersen](#)’s “What the Moon Saw: And Other Tales” from 1866.

#### Jeff Koons as Collector

Record numbers of visitors — an average of 3,865 people a day — have trekked to the roof of the [Metropolitan Museum of Art](#) to see three sculptures by Jeff Koons since they went on view in April. One of the crowd pleasers is one of his famous “Balloon Dogs,” which stands more than 10 feet tall, took years to produce and is fashioned from reflective yellow stainless steel. In addition to the sculptures, which are on view through Oct. 26, Met visitors can also sample a bit of Mr. Koons’s taste in art. Hanging in the Dutch painting galleries is “Hercules and Achelous,” a 1590 painting by Cornelis van Haarlem that old master experts say Mr. Koons bought for \$8.1 million in April at Christie’s in New York.

Although he purchased the work anonymously and the Met would not confirm that he was the lender, Mr. Koons has a talent for drawing the attention of the public and super-rich collectors. His sculpture of a giant red hanging heart fetched \$23.5 million at Sotheby’s in November, and he is currently the focus of a retrospective at the [Museum of Contemporary Art](#) in Chicago.

But when it comes to his personal art collection he can be rather guarded. Over the years he has acknowledged acquiring works by artists he admires, among them Courbet, [Salvador Dalí](#) and Thomas Struth. But he would not publicly confirm his purchase of “Hercules and Achelous,” or another rarity that experts say he bought this year: a limewood figure of St. Catherine by the German Medieval sculptor Tilman Riemenschneider that went for \$6.3 million at Sotheby’s in January. (His studio said this week that he was out of the country, but that in any case he “didn’t want to talk about his collecting.”)

These may seem like unexpected purchases for an artist who makes lighthearted sculptures of dogs, hearts, flowers and diamonds. The van Haarlem depicts a scene from Ovid’s “Metamorphoses” in which Hercules and the river god Achelous, in the form of a bull, battle over the beautiful Deianeira. But the canvas, which is 8 feet wide by 6 feet high, is one of the most important Northern Mannerist paintings to come on the market in the last 20 years.



But experts familiar with Mr. Koons's thinking said he was probably drawn by the power and monumentality of van Haarlem's composition. And while the artist's own subjects might seem frivolous, Mr. Koons has said that they are a comment on love, life, sex, the human condition and on consumerism in today's popular culture.

The van Haarlem will be on view for the foreseeable future.

#### Christie's New Calendar

Three years after Christie's moved its important New York old master painting auctions from January to April, it has decided to return to its decades-old tradition of holding the sales in January.

When it shifted them to April in 2005, experts at this auction house reasoned that it would give them more time to gather material after a December round of old master auctions in London in December.

Sotheby's in the meantime held tight to its January sale date, saying that among other reasons, April, being tax time, was perhaps not a month when people would feel flush enough to buy art. Nicholas Hall, an international director of Christie's old master paintings department, said that the auction house had ultimately decided that maintaining a different schedule from Sotheby's did not make sense. "Many of our European clients felt it was very inconvenient to have old master sales at a completely different time from Sotheby's," he said.

<http://www.nytimes.com/2008/06/13/arts/design/13voge.html?ref=design>

**'EMINENT DOMAIN'****Staking Claim to a City, With Camera in Hand****By KAREN ROSENBERG**

The title “Eminent Domain: Contemporary Photography and the City” suggests a history of contested municipal development projects like the Atlantic and Hudson Yards. Instead, this show at the New York Public Library is about the photographer’s proprietary claim to the urban landscape. That claim was briefly threatened last year by a Bloomberg administration proposal that would have required a permit to film and take pictures in public places.

Organized by Stephen C. Pinson, the library’s Robert B. Menschel curator of photography, the exhibition highlights recent work by five New York artists. None of them are street photographers in the conventional sense. Broadly speaking, “Eminent Domain” is a series of responses to change in the city (the source of which might be anything from gentrification to globalization).

Weaving the five projects together is an autobiographical text by the artist Glenn Ligon, “Housing in New York: A Brief History” (2007), in which he reminisces about the various New York City apartments he has occupied over the course of his life. This entertaining digression, which begins in a Bronx housing project and ends in a Chinatown co-op, almost steals the show.

Mr. Ligon’s current neighborhood is also the subject of Thomas Holton’s series “The Lams of Ludlow Street” (2003-5), which documents the activities of a Chinese family of five squeezed into a two-room apartment. Mr. Holton, who is half Chinese, says in the catalog that his objective was “to get behind closed doors and photograph more than the stereotypical images of Chinatown’s street scenes.” His curiosity is shared by many New Yorkers with no particular connection to the area.



In the Lam apartment, space is multifunctional and psychologically layered; winter coats hang above the dining table, and the bathtub doubles as a laundry station. The intimate glimpse of family life includes Polaroids taken by the three Lam children, who don't seem to mind living (and bathing) in such close proximity and in the presence of an interloper. Mr. Holton makes the Lams' apartment seem like an entire city, at least until his camera follows the family to the observation deck of the Empire State Building.

Other artists view the essence of the city as sprawl rather than dense concentration. For her project "borough edges, nyc" (2004-7), Bettina Johae mapped the five boroughs from a bicyclist's perspective. Getting as close as she could to the waterfront and other border areas, Ms. Johae recorded more than 2,400 digital images. At the library she presents 40 photographs (eight from each borough) in a flip-book style that recalls Ed Ruscha's surveys of Los Angeles gas stations and apartment buildings.



Video might have better conveyed the experience of biking along the city's periphery, but Ms. Johae's shots do present a counterintuitive view. The "Manhattan" section shows views from Wards and Roosevelt Islands; "Brooklyn" features tidy row houses in East New York and a trash-strewn lot in Greenpoint. The construction of high-rise condominiums is conspicuously absent from scenes of the Brooklyn and Queens waterfronts.

The city's two most populous boroughs also figure in the work of Ethan Levitas, who photographs trains on elevated sections of the J, M and Z lines. His large color prints isolate the subway cars on white backgrounds, focusing on the weathered and graffitied exteriors of the trains and the interactions of passengers.

In one photograph taken in the winter, a man risks a fatal slip as he crosses between ice-clad cars; in another, a woman in an American-flag T-shirt scowls at the photographer through the doors. Mr. Levitas has an eye for gesture, but he ignores the most interesting aspects of New York's elevated subways: the unusual views they afford and the manner in which they cut a swath, financially and aesthetically, through neighborhoods.

Zoe Leonard has photographed mom-and-pop storefronts on the Lower East Side and in Brooklyn over the past decade. Her dye-transfer prints (an outdated technique) have a self-consciously retro quality, and Ms. Leonard sometimes seems too determined to conjure Eugène Atget and Walker Evans. Her careful attention to hand-lettered signs and reflections in store-window displays is almost uncanny. Having lived on the Lower East Side since 1977, however, Ms. Leonard comes by her nostalgia honestly.

Using a 19th-century camera and 8-by-10 black-and-white negatives, Reiner Leist has recorded the view from his 26th-floor studio in Midtown on a more or less daily basis since March 1995. (He inserts a black print for each day he is out of town or otherwise unable to photograph.)

From Mr. Leist's series of approximately 3,000 images, 40, all corresponding to the dates Sept. 11 through 15, are displayed in a grid formation. The emphasis, predictably, is on the events of Sept. 11, 2001. Mr. Leist is not the only artist to have incorporated that day into a pre-existing body of work, but his decision to keep taking pictures echoes New Yorkers' determination to return to their normal routines. His antique camera softens the view, and the blow.

The art in "Eminent Domain" would seem scattershot if not for Mr. Ligon's wry narrative (printed on placards dispersed throughout the exhibition). In the early '80s he flees an underheated Fort Greene apartment for an illegal sublet on Riverside Drive. When he is discovered, he moves to Washington Heights until a flooded bathroom and a federal drug raid in the building prompt him to relocate. Back in rapidly gentrifying Fort Greene, Mr. Ligon (who is black) discovers that older African-American residents treat him with contempt.

His peripatetic existence is hardly unique, especially among artists, but it sets the tone for the exhibition. "I was born here in New York, and like many other New Yorkers I lack imagination: the idea of living somewhere else has never occurred to me," Mr. Ligon concludes. "Indeed, to live in New York is to have lived everywhere."

Day by day or block by block, the artists in "Eminent Domain" seize their own pieces of the city. The Fifth Avenue branch of the New York Public Library, soon to be renamed for the financier Stephen A. Schwarzman, is the perfect site for this meditation on the nature of public and private urban space.

*"Eminent Domain: Contemporary Photography and the City" continues through Aug. 29 at the New York Public Library; (212) 592-7730, [nypl.org](http://nypl.org).*

<http://www.nytimes.com/2008/06/13/arts/design/13cont.html?ref=design>

## This Land Is Her Land (and Her Artwork, Too)

By **KAREN ROSENBERG**



To judge from the museum calendars of the last few seasons, the '70s were segregated by gender: large surveys of Robert Smithson and Gordon Matta-Clark at the Whitney and Richard Serra at the Museum of Modern Art; equally hefty exhibitions of feminist art across the river at P.S. 1 and the Brooklyn Museum. What's missing is a sense of the decade as radical for male and female sculptors alike.

“Decoys, Complexes, and Triggers: Feminism and Land Art in the 1970s” at SculptureCenter in Long Island City, Queens, highlights female artists who overlapped with the movements of Land Art and Post-Minimalism. That’s “Feminism and Land Art,” not “Feminist Land Art”; many of the women in this show preferred not to be identified as “feminist” artists. Their work bears a closer resemblance to that of Smithson, Mr. Serra, et al., than to most of the body- and craft-centric art in surveys like “Wack! Art and the Feminist Revolution” at P.S. 1.

Organized by a guest curator, Catherine Morris, the show includes about 50 works by 10 artists. There’s a good chance that you’ve never heard of any of them (with the possible exceptions of Nancy Holt, who was married to and often collaborated with Smithson, and Lynda Benglis, who exhibits regularly in Chelsea). All were working with the same raw materials and exploring the same unorthodox sites as their better-known male contemporaries.

Presenting Land Art in a gallery is always a problem. (A catalog would have helped.) At SculptureCenter large-scale projects like “Wheatfield — A Confrontation” (1982), in which Agnes Denes planted and harvested a two-acre wheat field in what is now Battery Park City, are given a nod in photographs and other documentation.

The sole outdoor work, in the SculptureCenter’s small gravel courtyard, is a reconstruction of Jackie Ferrara’s “Wave Hill Project.” This cluster of slotted, stepped platforms resembling Aztec pyramids was

originally installed in Wave Hill, the public garden in the Bronx. Here it looks more precarious than pre-Columbian (perhaps because of the high-rise under construction next door).

Still, photographs are better than nothing — especially in the case of important works like Ms. Holt’s “Sun Tunnels” (1973-76), a site-specific sculpture executed on land purchased by the artist in northwestern Utah. The four concrete tunnels, laid out in the form of an open X, are aligned with the rising and setting sun on the days of the solstices. (The effect is also documented in a time-lapse video.)

“I wanted to bring the vast space of the desert back down to human scale,” Ms. Holt wrote about “Sun Tunnels.” That idea distinguishes her from male contemporaries like Michael Heizer, whose immense voids in the desert reduce the human body to puny insignificance. You might think of “Sun Tunnels” as a more feminine Stonehenge, although Ms. Holt would probably object to that description.

Proving that her art is not totally dependent on the beauty of the landscape, Ms. Holt’s public project “Dark Star Park” occupies a blighted urban intersection in Rosslyn, Va. A video at SculptureCenter, “Art in the Public Eye: The Making of Dark Star Park, 1979-1988,” illuminates the complex negotiations (with real-estate developers, architects, public officials and a swimming pool construction company) behind Ms. Holt’s triangular field of gunite spheres.

In a less epic version of Land Art several women bring natural materials into the gallery. Highlights include Jackie Winsor’s “Coil Piece” (1969), a ring of twisted hemp fibers, and Michelle Stuart’s “Sayerville Strata Quartet,” a series of four monochrome paintings made with different strata of earth from a New Jersey site.

Architecture trumps nature in a fascinating group of large-scale works installed in the main gallery. A 1975 sculpture by Alice Adams consists of three vaulted arches made from laminated wood and wood lath; rising only to waist height, they bring the Gothic experience down to earth. Alice Aycock’s floor-to-ceiling “Stairs (These Stairs Can Be Climbed)” (1974) takes full advantage of the SculptureCenter’s narrow, high-ceilinged space. Viewers will find it surprisingly difficult to resist the impulse to climb until their heads bump the ceiling.

Spirited rejoinders to the minimalist vocabulary are on display in SculptureCenter’s smaller gallery: a Lynda Benglis floor sculpture of pigmented polyurethane foam, “Night Sherbet A” (1968), and photographs of Ms. Winsor’s destroyed-cube sculptures “Exploded Piece” (1980-82) and “Burned Piece” (1978). These works deserve a place in any survey of postminimal sculpture.

“Decoys, Complexes and Triggers” suggests that the ’70s are far from exhausted, especially where works by women are concerned. An exhibition that placed Ms. Holt side by side with Smithson, or united Ms. Aycock with her mentor Robert Morris, would go even further.

*“Decoys, Complexes, and Triggers: Feminism and Land Art in the 1970s” continues through July 28 at SculptureCenter, 44-19 Purves Street, Long Island City, Queens, (718) 361-1750, sculpture-center.org.*

<http://www.nytimes.com/2008/06/13/arts/design/13femi.html?ref=design>

**CHANTAL AKERMAN****An Avant-Gardist's Sparse Stories, in Film and Fragments****By KEN JOHNSON**

CAMBRIDGE, Mass. — Chantal Akerman is a hero of the avant-garde cinema. Her most famous film, “Jeanne Dielman, 23 Quai de Commerce, 1080 Bruxelles” (1975), devotes more than three hours to observing a woman’s domestic routines before climaxing in, as accounts regularly put it, “an act of shocking violence.”

Since 1995 Ms. Akerman has been experimenting with video installations and exhibiting her work in museums and galleries as well as in art-house theaters. Now a traveling exhibition at M.I.T.’s List Visual Arts Center offers a good opportunity to assess what she has been up to over the last decade.

Titled “Chantal Akerman: Moving Through Time and Space,” it is the first museum exhibition devoted to this Belgium-born, Paris-based director and presents five projects — two films and three multichannel video installations — dating from 1995 to 2007. It was organized by the List Center, the Blaffer Gallery at the University of Houston, the Miami Art Museum and the Contemporary Art Museum St. Louis.

Ms. Akerman demands a lot of her viewers. At least three hours are needed to take in the exhibition fully, and the time does not fly by. With their excruciatingly long, mostly silent scenes and minimalist storytelling, her films can feel like exercises in deprivation. On the whole, it is worth the effort.

Not just a formalist, Ms. Akerman also takes on hot-button themes like racism in the American South, illegal immigration in the Southwest and a terrorism in the Mideast. As a political artist she can be heavily-handedly predictable or unexpectedly illuminating.

At best Ms. Akerman’s formalism enables her to avoid clichés. It would be hard to imagine a less conventional meditation on Israel than “Down There” (2006), for example. It is shot almost entirely inside an apartment in Tel Aviv where Ms. Akerman, who is Jewish, stayed during a teaching stint. Most of it consists of fixed-camera views through matchstick blinds of neighboring buildings where mostly older residents eat, drink, smoke and tend plants on their balconies and terraces.

Intermittently we hear Ms. Akerman speaking on the telephone and reciting autobiographical ruminations in her smoky, French-accented voice. She is evidently depressed. Then she is consumed by anxiety when she hears from a storeowner about a nearby bombing that killed four people while she was sleeping.

Gradually she comes out of her depression, and by the end of the 78-minute film — at which point she is preparing to go home — the blinds have been raised along with her mood, letting in the light. The viewer has undergone a parallel evolution from boredom to illumination, realizing how the seemingly aimless elements of the film fit together into a poetic whole.

The other full-length film, “South” (1999), is less persuasive. It began as a travelogue inspired by the writings of William Faulkner and James Baldwin. Then came the 1998 murder of James Byrd Jr., an African-American, by three white supremacist Texans who chained him behind a truck and dragged him to death. So Ms. Akerman’s film turned into a documentary about that crime. It mixes long drive-by shots of rural landscape and low-income housing with interviews with the local sheriff, a journalist and a man who explains the rise of the white supremacist movement.

There is a memorial service for Mr. Byrd at an all-black church, and twice we watch the road Mr. Byrd was murdered on unwind from the back of a slowly moving vehicle.

The film is fairly absorbing, but other than one electrifying moment when a shirtless bluesman sings and plays his guitar on the front porch of his house, nothing surprising or insightful is revealed. Here Ms. Akerman’s determinedly laconic style conveys little of what she is thinking or feeling.

The video installations are the most problematic. By breaking up two of her films into nonconsecutive short loops shown on multiple monitors, 18 in one case and 24 in another, Ms. Akerman leaves the viewer confused and uncertain how to process so much information simultaneously.

You can only imagine what the video installation “From the East: Bordering on Fiction” (1995) would be like as a continuous projection. Made in 1993, it records a journey across Eastern Europe, and its many lingering nighttime views of people enveloped in winter gear waiting on sidewalks for buses or trains evoke a mournful sense of history haunted by Holocaust memories.

As the video installation breaks the original film up into four-minute loops shown on two dozen monitors, however, the stately narrative progress is replaced by distracting fragmentation. Moving among monitors standing in threes on chest-high pedestals causes a jumpy, anxious feeling as you try to figure out whether there is a meaningful order.

Much is also lost with the video version of “From the Other Side” (2002), in which 18 monitors mix interviews with people who live north and south of the Mexican-American border with laterally tracking town scenes and views of the fence erected to prevent illegal crossing. There is no clear chronology, and the people interviewed speak in untranslated Spanish. Except for one loop in which Ms. Akerman quotes in English a man’s heartbreaking description of his search for his mother, who went to Los Angeles and disappeared, the installation remains pretty opaque.

The most recent piece in the show, “Women of Antwerp in November” (2007), suggests that Ms. Akerman is starting to understand how to use multichannel video. It is a noirish reverie about women, smoking and the movies. Opposite one large projection of a woman smoking, a frieze of five projections shows beautiful women — professional actors — smoking in various nocturnal situations: in bars, outdoors on the sidewalk, in the rain, on a park bench and so on. They laugh, they cry, they lose themselves in thought during the 20-minute piece.

The subject matter is comparatively slight, but the formal structure points toward the possibility of a more richly allusive visual poetry.

*“Chantal Akerman: Moving Through Time and Space” continues through July 6 at the M.I.T. List Visual Arts Center, 20 Ames Street, Building E15, Cambridge, Mass., (617) 253-4680, [listart.mit.edu](http://listart.mit.edu).*

<http://www.nytimes.com/2008/06/13/arts/design/13aker.html?ref=design>

## Storytelling and Deception in a Magic Kingdom

By **MICHIKO KAKUTANI**

### THE ENCHANTRESS OF FLORENCE

By Salman Rushdie.

355 pages. Random House. \$26.



Salman Rushdie's new novel, "The Enchantress of Florence," reads less like a novel by the author of such magical works as "Midnight's Children" and "The Moor's Last Sigh" than a weary, predictable parody of something by John Barth.

The fecund language and exuberant inventiveness that have distinguished Mr. Rushdie's best novels have given way here to more conventional, even academic constructions. And the capacious political analogies embedded in those earlier novels (in which a character's or family's fate became a metaphor for, say, the course of Indian history) have been replaced by musty philosophical musings about the craft of storytelling and the relationship between life and art. There are familiar Scheherazade-esque stories within stories within stories, and interminable Tristram Shandy-esque digressions that circle around and around and around.

Certainly Mr. Rushdie has tackled the subject of fictionmaking before, most notably in his fanciful fairy tale "Haroun and the Sea of Stories" (1990). But "Haroun" — which pitted a young hero and his friends against an evil sorcerer who wants to reduce the world to silence and poison the wellsprings of art — was not just a postmodernist fable; it was also a parable about the plight Mr. Rushdie found himself in at the time, having had a fatwa issued against him by the Ayatollah Ruhollah Khomeini for his controversial novel "The Satanic Verses." And even as "Haroun" reworked motifs from classics like "Gulliver's Travels," "The Wizard of Oz" and "Star Wars," it also enshrined its author's own playful imagination and love of narrative invention.

"The Enchantress of Florence," in contrast, feels static and enervated, as though it had been mechanically assembled from a recipe that included lots of research (about Medici Florence and the Mughal empire), a rote sprinkling of fantasy, and some perfunctory and strained allusions to some greater politico-religious issues (like the Sunni-Shiite split and Islam's troubled role on the world stage). Although the novel gains narrative momentum in its final chapters, large portions of the book consist of tiresome free-associative digressions and asides, heaped one on top of another in such profusion that they threaten to topple the slender frame story around which the book is constructed.

That frame story focuses on a fictionalized version of Akbar the Great, the famous 16th-century Mughal emperor, who championed religious tolerance and reason. Akbar, who is granted a depressing vision of a future in which his dreams of civility and civilization give way to sectarian violence and hate, initially seems like an intriguing hero. A brilliant military commander as well as something of a philosopher king, he is given to bouts of loneliness and soul-searching, and worries constantly about whom — among his courtiers and his sons — he can truly trust.

But instead of developing Akbar into a full-fledged character like the Moor in “The Moor’s Last Sigh,” Mr. Rushdie allows him to become a cardboard figure — a pseudo-Pygmalion, whose favorite wife, Jodha, we are to believe, is a fantasy figure he has brought to life, and who spends an inordinate amount of time musing about the porous boundaries between life and art.

One day a yellow-haired stranger from the West arrives at Akbar’s court and tells the emperor that he has a secret story to recount, a story that the emperor alone can hear. This stranger, who goes by an assortment of names (Uccello, Mogor dell’ Amore and Vespucci), reminds Akbar that he has been yearning to find a “man who was his equal, whom he could meet as his brother, with whom he could speak freely,” a man he could trust and perhaps even make his heir. But Vespucci is also a con man and magician and compulsive storyteller, and Akbar is suspicious of his motives, even as he finds himself falling under his spell.

“Is this what we all do?” the emperor asks himself. “This habit of the charming lie, this constant embellishment of reality, this pomade applied to the truth. Is the roguishness of this man of three names no more than our own folly writ large? Is the truth too poor a thing for us? Is any man innocent of embellishing it at times, or even of abandoning it entirely? Am ‘I’ no better than he?”

Vespucci starts his story by telling Akbar that he is his “relative by blood. In point of fact: your uncle.” The tale he proceeds to tell (with many, many asides) is that “his mother was a princess of the true Chaghatai blood, a direct descendant of Genghis Khan, a member of the house of Timur and the sister of the First Mughal Emperor of India.” His mother, whom he knew by the name Angelica, was “the most beautiful woman in the world, and an enchantress beyond compare.”

Just how Akbar’s golden-haired visitor explains his relationship to Angelica is itself another long shaggy dog story that involves Florentine politics, a subplot concerning Niccolò Machiavelli, assertions that Angelica is a divine enchantress (or maybe a devilish witch) and lots of talk about two mirrors: a Medici family mirror that is said to reveal “to the reigning Duke the image of the most desirable woman in the known world” and Angelica’s personal mirror, a servant girl who looks exactly like her though the teensiest bit less beautiful.

Such talk about sorcery and mysterious doubles isn’t delivered here with the sort of dazzling sleight of hand that have made Mr. Rushdie’s most powerful work, like the most powerful work of Gabriel García Márquez, so mesmerizing and so phantasmagorical. Rather it’s lacquered onto a plywood story with a heavy paintbrush that leaves lots of streaks and spots and results in a work that feels jerry-built, meretricious — and yes, quite devoid of magic.

<http://www.nytimes.com/2008/06/03/books/03kaku.html?ref=books>



## Japan, Seeking Trim Waists, Measures Millions

By NORIMITSU ONISHI



AMAGASAKI, Japan — Japan, a country not known for its overweight people, has undertaken one of the most ambitious campaigns ever by a nation to slim down its citizenry.

Summoned by the city of Amagasaki one recent morning, Minoru Nogiri, 45, a flower shop owner, found himself lining up to have his waistline measured. With no visible paunch, he seemed to run little risk of being classified as overweight, or metabo, the preferred word in Japan these days.

But because the new state-prescribed limit for male waistlines is a strict 33.5 inches, he had anxiously measured himself at home a couple of days earlier. “I’m on the border,” he said.

Under a national law that came into effect two months ago, companies and local governments must now measure the waistlines of Japanese people between the ages of 40 and 74 as part of their annual checkups. That represents more than 56 million waistlines, or about 44 percent of the entire population.

Those exceeding government limits — 33.5 inches for men and 35.4 inches for women, which are identical to thresholds established in 2005 for Japan by the International Diabetes Federation as an easy guideline for identifying health risks — and having a weight-related ailment will be given dieting guidance if after three months they do not lose weight. If necessary, those people will be steered toward further re-education after six more months.

To reach its goals of shrinking the overweight population by 10 percent over the next four years and 25 percent over the next seven years, the government will impose financial penalties on companies and local governments that fail to meet specific targets. The country’s Ministry of Health argues that the campaign will keep the spread of diseases like diabetes and strokes in check.

The ministry also says that curbing widening waistlines will rein in a rapidly aging society's ballooning health care costs, one of the most serious and politically delicate problems facing Japan today. Most Japanese are covered under public health care or through their work. Anger over a plan that would make those 75 and older pay more for health care brought a parliamentary censure motion Wednesday against Prime Minister Yasuo Fukuda, the first against a prime minister in the country's postwar history.

But critics say that the government guidelines — especially the one about male waistlines — are simply too strict and that more than half of all men will be considered overweight. The effect, they say, will be to encourage overmedication and ultimately raise health care costs.

Yoichi Ogushi, a professor at Tokai University's School of Medicine near Tokyo and an expert on public health, said that there was "no need at all" for the Japanese to lose weight.

"I don't think the campaign will have any positive effect. Now if you did this in the United States, there would be benefits, since there are many Americans who weigh more than 100 kilograms," or about 220 pounds, Mr. Ogushi said. "But the Japanese are so slender that they can't afford to lose weight."



Mr. Ogushi was actually a little harder on Americans than they deserved. A survey by the National Center for Health Statistics found that the average waist size for Caucasian American men was 39 inches, a full inch lower than the 40-inch threshold established by the International Diabetes Federation. American women did not fare as well, with an average waist size of 36.5 inches, about two inches above their threshold of 34.6 inches. The differences in thresholds reflected variations in height and body type from Japanese men and women.

Comparable figures for the Japanese are sketchy since waistlines have not been measured officially in the past. But private research on thousands of Japanese indicates that the average male waistline falls just below the new government limit.

That fact, widely reported in the media, has heightened the anxiety in the nation's health clinics.

In Amagasaki, a city in western Japan, officials have moved aggressively to measure waistlines in what the government calls special checkups. The city had to measure at least 65 percent of the 40- to 74-year-olds covered by public health insurance, an “extremely difficult” goal, acknowledged Midori Noguchi, a city official.



When his turn came, Mr. Nogiri, the flower shop owner, entered a booth where he bared his midriff, exposing a flat stomach with barely discernible love handles. A nurse wrapped a tape measure around his waist across his belly button: 33.6 inches, or 0.1 inch over the limit.

“Strikeout,” he said, defeat spreading across his face.

The campaign started a couple of years ago when the Health Ministry began beating the drums for a medical condition that few Japanese had ever heard of — metabolic syndrome — a collection of factors that heighten the risk of developing vascular disease and diabetes. Those include abdominal obesity, high blood pressure and high levels of blood glucose and cholesterol. In no time, the scary-sounding condition was popularly shortened to the funny-sounding metabo, and it has become the nation’s shorthand for overweight.

The mayor of one town in Mie, a prefecture near here, became so wrapped up in the anti-metabo campaign that he and six other town officials formed a weight-loss group called “The Seven Metabo Samurai.” That campaign ended abruptly after a 47-year-old member with a 39-inch waistline died of a heart attack while jogging.

Still, at a city gym in Amagasaki recently, dozens of residents — few of whom appeared overweight — danced to the city’s anti-metabo song, which warned against trouser buttons popping and flying away, “pyun-pyun-pyun!”

“Goodbye, metabolic. Let’s get our checkups together. Go! Go! Go!

Goodbye, metabolic. Don’t wait till you get sick. No! No! No!”

The word metabo has made it easier for health care providers to urge their patients to lose weight, said Dr. Yoshikuni Sakamoto, a physician in the employee health insurance union at Matsushita, which makes Panasonic products.



“Before we had to broach the issue with the word obesity, which definitely has a negative image,” Dr. Sakamoto said. “But metabo sounds much more inclusive.”

Even before Tokyo’s directives, Matsushita had focused on its employees’ weight during annual checkups. Last summer, Akio Inoue, 30, an engineer carrying 238 pounds on a 5-foot-7 frame, was told by a company doctor to lose weight or take medication for his high blood pressure. After dieting, he was down to 182 pounds, but his waistline was still more than one inch over the state-approved limit.

With the new law, Matsushita has to measure the waistlines of not only its employees but also of their families and retirees. As part of its intensifying efforts, the company has started giving its employees “metabo check” towels that double as tape measures.

“Nobody will want to be singled out as metabo,” Kimiko Shigeno, a company nurse, said of the campaign. “It’ll have the same effect as non-smoking campaigns where smokers are now looked at disapprovingly.” Companies like Matsushita must measure the waistlines of at least 80 percent of their employees. Furthermore, they must get 10 percent of those deemed metabolic to lose weight by 2012, and 25 percent of them to lose weight by 2015.

NEC, Japan’s largest maker of personal computers, said that if it failed to meet its targets, it could incur as much as \$19 million in penalties. The company has decided to nip metabo in the bud by starting to measure the waistlines of all its employees over 30 years old and by sponsoring metabo education days for the employees’ families.

Some experts say the government’s guidelines on everything from waistlines to blood pressure are so strict that meeting, or exceeding, those targets will be impossible. They say that the government’s real goal is to shift health care costs onto the private sector.



Dr. Minoru Yamakado, an official at the Japan Society of Ningen Dock, an association of doctors who administer physical exams, said he endorsed the government's campaign and its focus on preventive medicine.

But he said that the government's real priority should be to reduce smoking rates, which remain among the highest among advanced nations, in large part because of Japan's powerful tobacco lobby. "Smoking is even one of the causes of metabolic syndrome," he said. "So if you're worried about metabo, stopping people from smoking should be your top priority."

Despite misgivings, though, Japan is pushing ahead.

Kizashi Ohama, an official in Matsuyama, a city that has also acted aggressively against metabo, said he would leave the debate over the campaign's merits to experts and health officials in Tokyo.

At Matsuyama's public health clinic, Kinichiro Ichikawa, 62, said the government-approved 33.5-inch male waistline was "severe." He is 5-foot-4, weighs only 134 pounds and knows no one who is overweight. "Japan shouldn't be making such a fuss about this," he said before going off to have his waistline measured.

But on a shopping strip here, Kenzo Nagata, 73, a toy store owner, said he had ignored a letter summoning him to a so-called special checkup. His waistline was no one's business but his own, he said, though he volunteered that, at 32.7 inches, it fell safely below the limit. He planned to disregard the second notice that the city was scheduled to mail to the recalcitrant.

"I'm not going," he said. "I don't think that concerns me."

<http://www.nytimes.com/2008/06/13/world/asia/13fat.html?ref=health>

## Edwina Froehlich, 93, La Leche League Pioneer, Is Dead

By RONI CARYN RABIN

Edwina Froehlich, who was inspired to help found La Leche League to support breast-feeding after being told at the age of 35 that she was too old to make breast milk for her baby, died Sunday in Arlington Heights, Ill. She was 93 and lived in Inverness, Ill.

Her death followed a stroke two weeks earlier, said her son, Assemblyman Paul D. Froehlich.

A pioneer on several fronts of motherhood, she worked for Young Christian Workers, a Roman Catholic lay organization, before marrying John Froehlich when she was in her early 30s. She had her first child a couple of years later, making her comparatively old to have a first child at the time, and she made the controversial decision to forgo giving birth in a hospital in favor of a more natural delivery in her Franklin Park, Ill., home, with an obstetrician attending.



At a time when most pediatricians encouraged formula and bottle-feeding and when there were few scientific studies demonstrating the health benefits of breast milk, Mrs. Froehlich chose to breast-feed all of her babies, said another La Leche founder, Mary White.

“We used to tell the mothers the three main obstacles to successful breast-feeding were doctors, hospitals and social pressure,” Mrs. White said. In 1956, when Mrs. White and a friend, Marian Tompson, decided to start a community organization to support and educate local breast-feeding mothers, Mrs. Froehlich was one of the first women they approached. Soon, monthly meetings were being held in Mrs. Froehlich’s home, and a new phone line was installed so she could answer questions coming in from mothers across the country, Mrs. White said. “We didn’t have any information,” said Mrs. Tompson, another of the original group of seven La Leche League founders. “There weren’t any books out there, and women just didn’t talk about these things. Only 18 percent of women in the U.S. left the hospital breast-feeding at that time.” As La Leche League of Franklin Park grew, becoming La Leche League International in 1964, Mrs. Froehlich took on additional roles, including serving as assistant executive director for many years and, more recently, as a board member and a member of the Founders’ Advisory Council.

She was one of the authors of “The Womanly Art of Breast-feeding,” the league’s manifesto, which was first put together in loose-leaf form in 1958 and later published as a bound book in 1963. More than two million copies are in print. Mrs. Froehlich was born Edwina Hearn on Jan. 5, 1915, in the Bronx.

In addition to her son Paul, of Schaumburg, Ill., she is survived by two other sons, Peter and David, who live in the Chicago area; a sister, Pauline, who lives in North Carolina; and nine grandchildren. Her husband, John, died in 1997.

Mrs. Froehlich donated her body to the University of Illinois for research; her children think she wanted to continue serving science even after her death.

<http://www.nytimes.com/2008/06/13/health/13froehlich.html?ref=health>

### ***Leatherback Turtle in Texas - First Since 1930s***

By ANDREW C. REVKIN



Biologists at the Padre Island National Seashore confirmed that a leatherback sea turtle has laid eggs on a Texas beach. Last Friday, a park staffer found these tracks, spanning more than six feet, and several exposed eggs of the endangered species. (Credit: NPS Photo)

**UPDATED, 8:00 a.m.:** For the first time since the 1930's, federal biologists confirmed that a leatherback sea turtle has nested on a Texas beach, at the Padre Island National Seashore near Corpus Christi.

Last Friday, staff conducting a beach patrol found turtle tracks and a few exposed eggs. They were thought at first to be those of a green turtle. But the eggs and the width of the tracks, more than six feet across, were later determined by a park biologist, Cynthia Rubio, to be from a leatherback. The giant, ancient, endangered turtles, some the size of a Smart Car, have until now only been known to nest in four spots in the United States – with about three dozen females a year laying eggs on beaches along the east coast of Florida and slightly larger nesting populations in Puerto Rico and the U.S. Virgin Islands. There is evidence of nesting in North Carolina as well.

An e-mail message circulating around the community of sea turtle conservationists came my way today and staff at Padre Island confirmed the details.

Wednesday also saw a champion in the “Great Turtle Race,” in which students and turtle fans tracked the meanderings of 11 radio-tagged leatherbacks in the Pacific Ocean. The first to reach the International Date Line was a turtle named Saphira II, sponsored by the Bullis Charter School of Los Altos, Calif.

<http://dotearth.blogs.nytimes.com/2008/06/12/leatherback-turtle-in-texas-first-since-1930s/index.html?ref=science>

## Maritime 'treasure trove' raised

By Rebecca Morelle  
Science reporter, BBC News



The Elizabethan cannon being raised

### **A treasure trove of artefacts is being recovered from what experts describe as one of the most important maritime discoveries since the Mary Rose.**

The late 16th Century shipwreck hails from a pivotal point in England's military history. The raised haul includes a 2m-long (7ft) cannon, which will give archaeologists an insight into Elizabeth I's naval might.

The wreck, discovered 30 years ago, is situated off the coast of Alderney. Dr Mensun Bound, excavation leader and marine archaeologist from Oxford University, said: "This boat is really grade A in terms of archaeology - it is hard to find anything that really compares with it."

### **Archaeologically and historically this is an important day**

Mensun Bound, excavation leader

The excavation of the Elizabethan warship is being filmed for the BBC's Timewatch series. Recovering the cannon was a delicate operation; divers had to navigate through reef-strewn waters where strong currents prevailed.

Dr Bound said: "At first the weather was not too kind and we missed out on the window for the first attempt, but then the sea went down and the skies opened up, and everything was suddenly going our way.

"There were a few tense moments, but overall it went really well. "The cannon is in perfect condition - nothing has broken - it has an intact hand grenade, part of its carriage system is in place, there is the barrel of a gun or a sword on one side.

"We cannot wait to get a closer look at it once it has been cleaned up.



"Archaeologically and historically, this is an important day." The team hopes to raise another cannon in the coming days.

As well as the cannon, the team has also recovered many more objects, including a musket, a soldier's breastplate and an intact navigational calendar. These join a large collection of artefacts - including another cannon - raised from another dive in the early 1990s.

### **Pivotal point**

Experts believe the Alderney warship and its contents will help shed light on a key point of England's naval history. The boat is thought to have sunk in 1592, possibly after an encounter with one of the area's many reefs.

Just four years earlier, Elizabeth's navy had defeated the Spanish Armada and was embarking on expeditions that would exert its maritime and territorial domination around the world.

Dr Bound said: "The wreck illuminates a time when England was fighting for its very survival - the world was at war, the Catholic south was fighting the Protestant north."

At the same time, he added, the navy was undergoing a technological revolution. He said: "Henry VIII's Mary Rose dates to 1545 and is an old-style ship. It had all sorts of guns, of different types, different shapes, different calibres, different ages, different styles."

But just 47 years later, the Alderney warship looked very different - and by looking at artefacts such as the raised cannons the team hopes to discover just how advanced the navy really was.

"We hope they will demonstrate that this ship was carrying our first uniform, co-ordinated weapons system," Dr Bound explained.

"We think that here we have a standardised weapons system here; the guns are all the same type, the same materials, the same technology, the same calibre.

"It is a different type of navy, its a more professional navy. We have here the beginnings of broadside naval warfare."

The cannons and other arms, such as muskets and guns, will now be brought up the Thames to the Tower of London. There they will be examined and then flown to York for conservation.

The BBC Timewatch team will then follow the archaeologists as they rebuild and test the weapons, putting them through detailed ballistic tests to determine their precision and power.

*Text and video reports on the Alderney wreck are published at the BBC Timewatch website. A BBC Two documentary will be broadcast in later in the year and will detail the findings of the investigation*

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7446423.stm>

Published: 2008/06/13 11:32:45 GMT

**Book list for boys shuns classics**

**Fathers are being urged to read books featuring pirates and aliens to their sons to improve their reading, instead of traditional children's classics.**



A list of 200 books deemed suitable for boys, and produced for ministers, does not feature traditional authors like Enid Blyton and Roald Dahl.

Government figures show boys are an average of 10 percentage points behind girls in English by the age of 11.

Ministers hope the gap can be closed by encouraging better reading habits.

The campaign expands the government's Boys into Books scheme launched last year for boys aged 11 to 14.

Fathers, particularly, are being targeted in this campaign, as ministers urge them to bond with their sons on Father's Day over spy novels and fantasy books.

**Some of the books on the list**

Captain Underpants and the Preposterous Plight of the Purple Potty People - Dav Pilkey

Asterix and the Vikings: The Book of the Film - Albert Uderzo

We're Off to Look for Aliens - Colin McNaughton

When a Monster is Born - Sean Taylor and Nick Sharratt

Trouble at the Dinosaur Cafe - Brian Moses and Garry Parsons

Schools minister Jim Knight said dads should set themselves a summer challenge to read at least one book from the list with their son during the holidays.

He said: "Over a third of 10-year-olds are playing computer games for over three hours a day.

"I am in no doubt that this choice of gaming over reading has a knock-on effect on how well they do at school."

The same research shows TV and computer games have overtaken the bedtime story as the most common pre-sleep activity among children.

Author of the list, backed by the School Libraries Association, Chris Brown said: "We might express concerns about children and TV but they are more likely to see any of us habitually watching the box than reading a book."

He adds: "Boys' absolutely favourite choice of books are usually linked with high profile and successful TV series or films which are current cinema hits with young people.

"Towards the end of 2007, Doctor Who Books were dominant among Years 4, 5 and 6 and cited as 'the best' by some younger boys."

### **'Always popular'**

He adds that the intense merchandising that came with the Pirates of the Caribbean films led to a craze for pirates in story books.

"Boys tend to choose books with action that seldom flags, humour in large dollops with characters slightly larger than life.

"Currently extremely popular are fantasy tales of every shade - mock-medieval scenarios, wizardry, future-set alternative worlds, and places existing in parallel to our own time.

"Buccaneering piracy rates very highly and varies from factually based historical stories, fantastic sea-farer based tales or farcical misadventures."

Mr Brown has nothing against classic children's authors like Roald Dahl, whose "great books" he says are "rightly always popular".

### **'Dinosaurs and football'**

He also praises the books of Enid Blyton with their "two-dimensional characters" for firing children's imaginations to fill the gaps.

But he does warn that "feeding young minds with nothing but sterile and unimaginative prose is the equivalent of allowing, or encouraging, a regular diet of too much junk food".

Mr Brown also urges parents and teachers to allow children to follow their own interests.

"If interest gets really hooked by something they will read any and everything that is relevant: so skateboarding, BMX, wildlife, dinosaurs and football come up as choices."

And he also urges schools to encourage reading by involving technology in the process of sharing books.

Teachers could record their pupils reading excerpts from books and allow them to play them back to fellow pupils through the computer, he suggests.

Story from BBC NEWS:

[http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk\\_news/education/7452791.stm](http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/7452791.stm)

Published: 2008/06/14 00:00:11 GMT

## 'Hunger hormone' depression link

**High levels of the "hunger hormone" ghrelin have an antidepressant effect, US researchers claim.**



Blocking the body's response to ghrelin has been suggested as a weight loss treatment but it may also produce unintended effects on mood, they said.

The Nature Neuroscience study found mice with increased levels of the hormone showed fewer signs of depression and anxiety.

Experts said the idea was interesting but further studies were needed.

Ghrelin is released by the empty stomach into the bloodstream before moving to the brain, where it triggers feelings of hunger.

### **An unfortunate side effect, however, is increased food intake and body weight**

Dr Jeffrey Zigman

Treatment with the hormone itself - or a drug designed to cancel its effects - might be able to help both people who are eating too little, such as cancer patients, or those who eat too much, researchers believe.

In the latest study, Dr Jeffrey Zigman and colleagues restricted the food intake of laboratory mice for 10 days, causing their ghrelin levels to quadruple.

Compared with mice who had free access to food, the calorie-restricted mice showed lower levels of depression and anxiety when subjected to mazes and other behaviour tests.

### **Hormone response**

The team also looked at mice genetically engineered to be unable to respond to ghrelin.

When they were fed a restricted-calorie diet they did not experience the antidepressant or anti-anxiety effects.

The researchers found the same thing when they induced higher ghrelin levels by subjecting the mice to stress.

Those mice that could not respond to ghrelin had greater levels of depression-like symptoms than the normal mice.

"Our findings in mice suggest that chronic stress causes ghrelin levels to go up, and that behaviours associated with depression and anxiety decrease when ghrelin levels rise," said Dr Zigman, a researcher at UT Southwestern Medical Center in Dallas.

"An unfortunate side effect, however, is increased food intake and body weight," he added.

He said the results made sense from an evolutionary standpoint, as hunter-gatherers may have had a survival advantage in remaining calm and collected in times of hunger in order for them to successfully find food.

The researchers are now hoping to look at the antidepressant effect of the hormone in conditions such as anorexia.

Professor Stephen Bloom, an expert in appetite regulation at Imperial College London, said it was reasonable to believe that ghrelin had an impact on behavioural responses other than just hunger.

But he said there was a lot of research to be done before it could be confirmed that a hormone released in the stomach can have an effect on mood in the brain.

"The role of ghrelin in the gut and in the brain are likely to be completely different," he said.

Story from BBC NEWS:  
<http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7453516.stm>

Published: 2008/06/16 01:04:31 GMT

## Study cracks amoeba attack tactic

**The tiny creature behind tens of thousands of dysentery deaths each year has a crafty method of slipping past our immune system, claim researchers.**



US scientists say amoebae can get rid of giveaway chemicals on their surface.

The study in the journal *Genes and Development* suggests a similar technique helps malaria parasites get into human cells.

A UK specialist said amoebic dysentery, once diagnosed, is curable but the findings could aid vaccine development.

### **In theory, this idea could help people who are trying to work on a vaccine**

Dr Graham Clark

London School of Hygiene and Tropical Medicine

It is suspected that the number of people infected by amoebae amounts to millions worldwide.

Most of them will never suffer bloody diarrhoea, which is the first sign of amoebic dysentery, an infection which kills approximately 70,000 people each year.

In most symptomless cases, the body's immune system eventually gets rid of the infection, but it can persist for years on end.

Researchers from Johns Hopkins and Stanford universities in the US believe they have found out why the single-celled organism is capable of evading the immune system for so long.

Existing research on the plasmodium malaria parasite revealed that it used a type of cell chemical called a "rhomboid enzyme" to help it get into the host cell.

A scan of the DNA of other parasites revealed the same chemical in amoebae, and led to the discovery this chemical was capable of getting rid of a protein called lectin found on its surface.



## Surface security

Normally the immune system works out the difference between friend and foe by looking for "foreign" surface proteins and, by cutting them loose, the amoeba is able to stay undisturbed.

Dr Sin Urban, who led the study, said: "This is the first enzyme to be identified which looks like it could mediate immune system evasion."

Now the hunt could be on for drugs which specifically target the rhomboid enzyme.

Dr Graham Clark from the London School of Hygiene and Tropical Medicine, said that while effective treatments for amoebic dysentery did exist, it was often hard to identify, and could be mixed up with bacterial infection or even Crohns disease.

"In theory, this idea could help people who are trying to work on a vaccine.

"But if you understood how these proteins are being 'sloughed off', that could help you get around this process."

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7452404.stm>

Published: 2008/06/14 23:04:25 GMT

## Staying Smart in Dumbed-Down Times

By Judith Shapiro

In 1963, when I was graduating from college, a book was published entitled *Anti-Intellectualism in American Life*, by the noted historian Richard Hofstadter.

In exploring anti-intellectualism as a major current of American culture, Hofstadter examined various facets of our nation's history over time. He described how those living in rural areas grew suspicious of urban life. He analyzed how utilitarianism and practicality, associated with the world of business, were accompanied by a certain contempt for the life of the mind. He devoted special attention to evangelicalism, although we should perhaps more specifically define his target as fundamentalism, a literal-minded approach to the Bible that involved hostility to all forms of knowledge that contradicted scripture or sought to interpret it as a set of historical documents reflecting the context of its production. He noted how all of this combined to make the term "elite" a dirty word.

This exploration of American national character, which was very much a product of his times, notably the atmosphere of fear and distrust that characterized the Cold War, is still quite timely today. Which is why I felt compelled to re-read Hofstadter's book last summer. And why I was particularly interested in reading an update and homage to Hofstadter by Susan Jacoby, whose book *The Age of American Unreason* was published just this year.

Jacoby brings Hofstadter's arguments into the present, illustrating them with examples from the times in which we live today. She talks about the powerful role played by fundamentalist forms of religion in current America; about the abysmal level of public education; about the widespread inability to distinguish between science and pseudoscience; about the dumbing-down of the media and politics; about the consequences of a culture of serious reading being replaced by a rapid-fire, short-attention-span-provoking, over-stimulating, largely visual, information-spewing environment.

She, like Hofstadter, invites us to consider how all of this has affected the great venture that is American democracy? So, let us do so.

Once upon a time, the leaders of our country were the kind of men — and, let's face it, it was a men's club at the time — who were learned, who valued scholarship and science. The American Philosophical Society, founded in 1743 at the instigation of Benjamin Franklin, counted also among its early members presidents George Washington, John Adams, Thomas Jefferson, and James Madison.

In adopting as its mission the promotion of "useful knowledge", the American Philosophical Society reflected a time in which the sciences and the humanities were not divided from one another, and in which there was no opposition between what we might now call pure and applied science. What it did reflect was an opposition between Enlightenment values of reason and empirical research, on the one hand, and what we might call "faith based" beliefs, on the other. There were clergymen among the early members of the APS, but they were those who felt that their religious convictions did not stand in their way of their desire to be among the most educated members of their society.

That was then. This is now: We have a president who believes that "creation science" should be taught in our schools. As Jacoby points out, we should understand "how truly extraordinary it [is] that any American president would place himself in direct opposition to contemporary scientific thinking."

But let's not just pin the tail on the elephant here and pick only on the Republicans — or, to be more precise, on the extreme right wing of the Republican party, since there are, after all (though they may be increasingly hard to locate), moderate, thoughtful — one might even say, liberal — Republicans.

Let's look at the Democrats, at the nomination fight we all followed — followed, it seems, since the early Pleistocene. Here we had two candidates vying to run for President who had been educated at institutions that are among the most distinguished in our country: Wellesley, Yale, Columbia and Harvard. Both candidates were obviously highly intelligent and knowledgeable. Yet both felt the need to play down their claims to intellectuality — and the winner may still feel that need in the general election. Hillary Clinton chugalugged beer and sought to attach the dread label of "elitist" to her rival. And



Barack Obama felt compelled to follow one of the most honest and sophisticated political speeches in recent memory with strenuous displays of folksiness.

And who are we to blame them? If anyone is going to serve as president, the first step is to get elected. What level of intellectual interest and background can political candidates presuppose on the part of our nation's citizenry? What level of interest in the most important challenges facing us in the years ahead? What level of public demand that assertions be backed up with sound reasoning and actual facts?

To take just one example: citing data from the Pew Forum on Religion and Public Life, released in 2005, Jacoby notes that two-thirds of Americans believe that both evolution and creationism should be taught in our public schools. Who would have thought that, all these years after the United States became the laughing stock of the civilized world through international newspaper coverage of the Scopes trial, we would still see the fight we have recently seen in the state of Pennsylvania over teaching creationism in our public schools?

Nor is this simply a matter of religious belief. Many who advocate teaching creationism do so in the name of providing a "fair and balanced" curriculum. This misplaced pluralism, which draws no distinction between the results of scientific inquiry and the content of folk beliefs, is in line with the loose way in which the word "theory" is used, such that Einstein's "theory" of relativity or Darwin's "theory" of evolution is on a par with the loose way we use "theory" to describe any kind of wild guess. In this latter sense, "theory" is used as the opposite of "fact", rather than as a systematic set of hypotheses to explain a variety of facts. Moreover, simply changing the label from "creationism" to "creation science" or "intelligent design" gives this set of untestable and unfalsifiable assertions the veneer of science, which is quite enough for a lot of people who have little or no sense of what real science is.

But let us not let the scientists and scholars themselves off the hook. Jacoby devotes some interesting passages in her book to forms of pseudo-science that were at various times in our history embraced by members of the most educated classes. Back in the 19th and early 20th centuries, we had social Darwinism, which sought to justify differences between rich and poor as a reflection of "survival of the fittest" (which, by the way, was not an expression coined by Darwin). And lest we look upon those benighted forebears too complacently, let us keep in mind that, much more recently, we have had sociobiology and evolutionary psychology, which share many of the same faults, though in more sophisticated trappings, as befits the trajectory of the natural and social sciences since the 19th century unilinear evolutionism of Herbert Spencer and others.

Returning to the world of politics, the first presidential candidate I campaigned for myself — I was 10 years old at the time and we were having a mock convention in my elementary school (those were the days when candidates actually got chosen at the party's national convention) — that first presidential candidate was the quintessential, unelectable intellectual Adlai Stevenson, who ran against Dwight Eisenhower. One of the well-known anecdotes about him is the time a woman went up to him after a speech and said, "Mr. Stevenson, every thinking American will be voting for you." To which he replied, "Madam, that is not enough. I need a majority."

In her chapter on "Public Life", which is subtitled "Defining Dumbness Downward", Jacoby opens by talking about the extemporaneous speech given by Robert Kennedy on April 4th, 1968, when he had just learned, before taking the stage in Indianapolis, that the Reverend Martin Luther King, Jr. had just been assassinated in Memphis. Kennedy began by invoking from memory the following lines from Aeschylus:

*Even in our sleep, pain which we cannot forget  
Falls drop by drop upon the heart,  
Until, in our own despair,  
Against our will,  
Comes wisdom  
Through the awful grace of God.*



Jacoby notes how inconceivable it is today that a major political figure, an aspirant to the highest office in the land, would use such a quote, given the pervasive fear nowadays of seeming to be an “elitist.” Yet Robert Kennedy was not showing off to his audience or condescending to them. He just assumed that he could address them in this way, whether or not they themselves were familiar with these lines, much less could quote them from memory.

Jacoby’s discussion of the dumbing down of our public, political culture follows a chapter on what she calls “The Culture of Distraction”. She worries over the consequences of our being constantly bombarded by noisy stimuli, by invitations to multitask in a way that fosters superficiality as opposed to depth. The major casualties of our current media-saturated life are three things essential to the vocation of an intellectual: silence, solitary thinking, and social conversation.

She delves into a problem I have recurrently nagged Barnard students about: the isolating effects of new technologies. Many a time and oft, I have urged students to get off their cellphones so that, as they walk along, they can engage in reflection, contemplate surroundings, and talk to those with whom they are actually sharing your physical space.

I also share with Jacoby great concern about the fact that more information is not at all the same thing as more knowledge. We are living in an age when we have GPS and Google maps at our fingertips, but most Americans are unable to locate Iraq on a map, even though we have been at war there for years. Nor do most people feel any interest in doing so. On the other hand, when President Franklin Roosevelt was needing to reassure citizens in the early days of World War II, when things were going very badly in the Pacific, he asked people to go out and buy maps so that they could follow his fireside chat on the radio and understand the geographical challenges facing the military.

Can we ever get back to something like that? To a more educated citizenry, since there can be no true democracy without it?

If there is any chance of achieving such a goal, those of us who have chosen the academic vocation must do our part. In addition to addressing one another, we must address wider publics. And we must make use of new modes of communication as they become available. That means, for example, using cyber channels not just for blogging the like-minded (the Internet fails to achieve its liberating potential insofar as it is composed of myriad gated communities), but for opening new doors. It means learning from and working with journalists who are seeking to achieve the highest ideals of their own profession. And being active citizens ourselves, so that we can help elect the women and men who share our goals.

Judith Shapiro this month ends a 14-year tenure as president of Barnard College. This essay is adapted from her keynote address at this year’s Phi Beta Kappa ceremony at the college.

*The original story and user comments can be viewed online at <http://insidehighered.com/views/2008/06/13/shapiro>.*



## Comprehending Stonehenge

### *Reckless, megalomaniac, elitist in construction: but the mysteries behind Stonehenge remain*

Why is Stonehenge the most famous prehistoric monument in the world? A large part of the answer lies in the domination of modernity by Western nations, and the supremacy of Britain among them, both in military and economic terms, as that modernity was being developed. In that sense Stonehenge was simply the top antiquity of the top nation at a critical moment in history. Situation helped its fame, as it is set in the heartland of the realm. Indeed, for almost 200 years it has been right next to the London-to-Exeter highway, a position which is now its greatest liability as the stranglehold of main roads around it has so far prevented any redevelopment of the site to make it more attractive and appropriate for visitors. Just as important, however, has been the fact that Stonehenge simply looks like nothing else: no other ancient structure in Europe has its trademark form, of a freestanding pattern of door-jamb-and-lintel settings composed of megaliths. It is clearly the work of human hands, but has an unusually primordial and organic appearance, of mighty boulders smoothed, shaped and fitted together in such a way as to enhance their natural power as well as to create a building. As such, it has attracted curiosity and admiration ever since the twelfth century, and probably for much longer.

Since 1900, archaeology has made one considerable contribution to an understanding of Stonehenge: to establish firmly that it was a creation of the late Neolithic. The stones that we see now were mostly erected in a series of still hazily understood phases between about 2600 and 2000 bce, within a much older earthwork that once probably contained a timber circle. Other than that, we are still left with a conclusion which can be surmised without the aid of excavation: that it was the work of a bunch of reckless, megalomaniac, elitist carpenters. They were clearly carpenters because they worked stone with techniques much more appropriate to wood, such as mortise-and-tenon joints. They were megalomaniac to have tried that at all, and even more so in their choice of stone. It is very rare to find a prehistoric monument in Britain made of large stones that were obtained from more than five miles away. The huge sandstone uprights and lintels of Stonehenge were dragged about twenty miles, while the smaller but still substantial blocks called the Altar Stone and the bluestones were obtained from more than a hundred miles further than that; as the crow flies and not as the person tugs, paddles and sails. Such an enterprise is unique in the British prehistoric record, and may be in Europe. To do all this argues for recklessness in itself, but in addition the plan pushed at the very limits of the possible, and perhaps beyond them. For the biggest three-stone setting, the Great Trilithon, no second upright could be found large enough for the design. In the end a shorter one was used with a sideways bulge at the bottom end, in the hope that this would anchor it. It did not, and the huge arch fell and broke, although it may have taken millennia to do so. It is not even absolutely certain that the monument was finished; definite proof seems still to be lacking that the arc of stones in the outer ring that is missing today was ever completely there. The makers may simply have run out of materials, or willpower, or else had some reason for leaving the structure open on one side. Finally, they were elitist because, unlike the hundreds of other stone circles of Neolithic Britain, Stonehenge was constructed as a series of screens, to conceal the activities of what could only have been a relatively small number of people (or deities or spirits) in the centre.

Beyond that, all is speculation. Among archaeologists it currently comes in two favourite forms. One, most prominently associated with Mike Parker Pearson, is that Stonehenge was essentially a place of the dead, to which the living came at the winter solstice, to commune with their ancestors and consecrate the remains of the recently deceased. They did so in procession from the huge earthwork and timber monuments at Durrington Walls, a few miles away, after enjoying pig roasts and other fun of the fair. The other speculation, of which Timothy Darvill is the main exponent, is that it was essentially a temple sacred to a particular god or god and goddess, to which people travelled on pilgrimage to question oracles and to be healed. As usual with archaeology, both concepts were inspired by ideas from outside the discipline: the former is based on tribal customs in Madagascar, and the latter on ancient Greek tradition and the medieval pseudo-history of Geoffrey of Monmouth. Both have strong circumstantial evidence in their favour, and neither can be proved.

Now two more books have been added to the annual number of publications on the monument, both from respectable scholars operating beyond the mainstream of academic archaeology. Rosemary Hill is an

architectural historian, contributing a volume to a series of short introductions to major buildings of the world. As such, her concern is mainly with the way in which Stonehenge has been perceived and interpreted in historic times, and covers ground that has already been traversed, with the advantages of more space and more pictures, by the successive editions of Christopher Chippindale's *Stonehenge Complete*. Hill copes with this problem by taking a more thematic approach to the subject: there is less on archaeology and more on poems, paintings, novels, films and rock music. Both she and Chippindale score equally highly when dealing with the recent and ongoing tussles over access to the monument, and redevelopment of the site; but she is naturally more up to date. She brings genuine originality to the cultural history of Stonehenge; nobody has until now considered it as literature, poetry and art, in this comprehensive way. In addition, she shows real flair in explaining, to an ordinary readership, what made leading characters in her story tick, such as Inigo Jones, drunk on the beauty of classical architectural proportion and seeking to discover it in Stonehenge (with dreadful results), or John Wood, in whom love of building, religious devotion and local patriotism made a bewitching mixture that transformed the appearance of the city of Bath for ever.

One curiosity of Hill's book is that it gives the impression that the proponents of the view that Stonehenge was designed as an astronomical observatory, or giant computer, so prominent in the 1960s, were basically correct. This sits badly alongside the conclusion of Clive Ruggles, in his magisterial survey of the evidence for prehistoric astronomy in Britain, published in 1999 (which is quoted in other contexts), that there is no convincing evidence that it ever functioned as such. There is in fact only one unequivocal alignment built into Stonehenge, and it is one also found in other contemporary monuments in the vicinity, such as Durrington Walls: between the midsummer sunrise and the midwinter sunset. The former event has attracted thousands of revellers to the site for over a century; the effect of the latter, once probably more impressive, was ruined long ago by the collapse of the Great Trilithon. This is all fully appreciated by Anthony Johnson, who trained as an archaeologist but is by profession a specialist in surveying and computer analysis of archaeological data. He recognizes the truth of Ruggles's warning, while making the balancing observation that alignments on the moon and stars, though probably beyond proof, cannot entirely be ruled out.

His *Solving Stonehenge* is packaged by Thames and Hudson with maximum hyperbole. In addition to the strident promise of the title, the jacket blurb offers us "clues to the enigma of the stones" and "remarkable new insights". What the work actually provides is three things. The first is another summary of how the monument has been interpreted in historic times, this time brief, and less sure on earlier periods than later, but with some useful insights. The second is a survey of what is currently known about the phases of construction: probably the best concise one available at present, though Julian Richards's *Stonehenge: The story so far*, published last year, is better contextualized. The original contribution is a detailed investigation of how the main stone structures were planned and built, using the latest computer technology. This is genuinely useful, though the only solid conclusion – that the main circle and trilithons were conceived and built as a single scheme – merely reinforces what has always been thought most likely. In the process of laying out their strings, the ancient surveyors created various geometrical figures, but whether these had any arcane significance to them cannot now be known. Johnson thinks that they had, and brings in Greek tradition and Geoffrey of Monmouth in support of his ideas, thereby providing a mathematical supplement to what Tim Darvill has argued. He also, suggests, however, that once built the monument was left as a home for spirits, which matches Mike Parker Pearson.

The most famous modern comment on the monument was made in the 1960s by the "popular" archaeologist Jacquetta Hawkes, who suggested that every age "has the Stonehenge it deserves – or desires". The present one seems to have neither. There has never been a time before when Stonehenge has been under such pressure: from visitors, traffic, scholarly interpretation and political argument. Its current huge symbolic importance – to the world (to whom it belongs as a designated Heritage Site), to the nation (to whom it belongs in law), and to special interest groups who represent different aspects of that nation, such as heritage agencies, local government, archaeologists, historians, the police, modern Pagans and festival-goers – makes an obvious contrast with the present squalid, constricted and universally deplored condition of the site. One of the values of historical surveys of the sort made by the two books reviewed here, and by Christopher Chippindale's, is to remind us that there has never been agreement over the meaning and purpose of Stonehenge. We cannot condemn the present age for a postmodern hubbub of



belief and attitude concerning it, succeeding simpler and more harmonious times. We are faced by a unique combination of a critical need to do something better with the monument, and a deadlock over the practical and ideological measures to effect this. We certainly don't have the Stonehenge that we desire; and I still believe that we don't deserve it either.

Rosemary Hill  
STONEHENGE  
256pp. Profile Books. £12.99.  
978 1 86197 865 3

Anthony Johnson  
SOLVING STONEHENGE  
The new key to an ancient enigma  
288pp. Thames and Hudson. £19.95.  
978 0 500 05155 9

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[http://entertainment.timesonline.co.uk:80/tol/arts\\_and\\_entertainment/the\\_tls/article4114486.ece](http://entertainment.timesonline.co.uk:80/tol/arts_and_entertainment/the_tls/article4114486.ece)

## Tapped Out

By LISA MARGONELLI

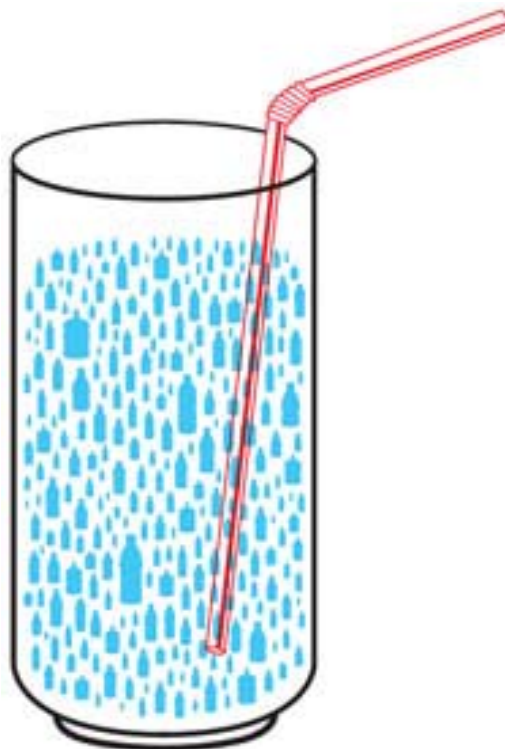
### BOTTLEMANIA

#### How Water Went on Sale and Why We Bought It.

By Elizabeth Royte.

248 pp. Bloomsbury. \$24.99.

To paraphrase an old axiom: You don't buy water, you only rent it. So why did Americans spend nearly \$11 billion on bottled water in 2006, when we could have guzzled tap water at up to about one ten-thousandth the cost? The facile answer is marketing, marketing and more marketing, but Elizabeth Royte goes much deeper into the drink in "Bottlemania: How Water Went on Sale and Why We Bought It," streaming trends cultural, economic, political and hydrological into an engaging investigation of an unexpectedly murky substance. Partway through her undoctinaire book, Royte, a lifelong fan of tap water, refills her old plastic water bottle, reflecting that "what once seemed so simple and natural, a drink of water, is neither. All my preconceptions about this most basic of beverages have been queered." And by the end of the book she will have discarded the old plastic bottle too, but not the tap.



"Bottlemania" is an easy-to-swallow survey of the subject from verdant springs in the Maine woods to tap water treatment plants in Kansas City; from the grand specter of worldwide water wars, to the microscopic crustaceans called copepods, whose presence in New York's tap water inspired a debate by Talmudic scholars about whether the critters violated dietary laws, and whether filtering water on the Sabbath constituted work. (Verdict: no and no.) Water is a topic that lends itself to tour-de-force treatment (the book "Cadillac Desert" and the movie "Chinatown" come to mind), as well as righteous indictments and dire predictions ("Thirst: Fighting the Corporate Theft of Our Water," "When the Rivers Run Dry: Water — The Defining Crisis of the Twenty-First Century"). Where others are bold, "Bottlemania" is subversive, and after you read it you will sip warily from your water bottle (whether purchased or tap, plastic or not), as freaked out by your own role in today's insidious water wars as by Royte's recommended ecologically responsible drink: "Toilet to tap."

Eww. Sorry. Let's talk about those evil marketers. In 1987, Americans drank only 5.7 gallons of bottled water per person per year, but the cumulative impact of ad campaigns and the vision of Madonna fellating a bottle of Evian in "Truth or Dare" more than doubled consumption by 1997. In 2000 the chief executive of Quaker Oats bragged to analysts that "the biggest enemy is tap water." By 2005, the enemy had become the consumer's bladder; and in 2006, Pepsi, which owns Aquafina, spent \$20 million suggesting that Americans "drink more water." That year we drank 27.6 gallons each at a rate of about a billion bottles a week.

But marketing swings both ways. As quickly as bottled water became a symbol of healthy hyperindividualism — sort of an iPod for your kidneys — a backlash turned it into the devil's drink. In 2006, the National Coalition of American Nuns came out against bottled water for the moral reason that life's essential resource should not be privatized. New numbers surfaced: each year the bottles themselves

require 17 million barrels of oil to manufacture, and, one expert tells Royte, “the total energy required for every bottle’s production, transport and disposal is equivalent, on average, to filling that bottle a quarter of the way with oil.” Mayors from San Francisco to New York suddenly became aware of the new symbolism of bottled water as a waste of taxpayer money, a diss of local tap water and a threat to the environment. Some canceled their city’s bottled water contracts. Chicago began taxing the stuff. And celebrities — among them Matt Damon and ... Madonna — started backing a dazzling array of water charities in support of domestic tap and African water supplies, associating themselves with the magical ur-brand of “pure water” just as marketers and Madonna did in the early ’90s.

Royte asks, perceptively, if the pro-bottle and anti-bottle movements aren’t cut from the same plastic: “Is it fashion or is it a rising awareness of the bottle’s environmental toll that’s driving the backlash? I’m starting to think they’re the same thing.” To Royte, the author of “Garbage Land,” righteousness requires a greater commitment.

She finds it in Fryeburg, Me., a town of 3,000 that is trying to stop Nestlé’s Poland Spring from sucking 168 million gallons of water a year out of the pristine aquifer buried under its piney woods. As Royte arrives the town is in an uproar, with neighbor pitted against neighbor and rumors of secret planning-board meetings and of dummy corporations. Fryeburg is a “perfect example of water’s shift from a public good to an economic force,” she observes. The locals are more blunt: “This is what a water war looks like.” Fryeburg bears the burden of living at the other end of the giant green Poland Spring pipe. Residents of nearby Hiram count 92 water tankers rolling through their town in one typical 24-hour period; they feel themselves under siege precisely because their watershed is clean, while 40 percent of the country’s rivers and streams are too polluted for swimming or fishing, let alone drinking. Fryeburg residents try to repel the water company. They demand tests, throw a Boston Tea Party by dumping Poland Spring in a local pond, take the issue to Maine’s Supreme Judicial Court and hold a town meeting straight out of Norman Rockwell. Here I wish Royte had devoted more energy to the narrative. The people of Fryeburg and their complaints feel tentative — a sketch where a portrait could have been. And although her writing always flows, I sometimes wished for something less utilitarian.

That comes, unexpectedly, as Royte stands at the edge of the Ashokan Reservoir in upstate New York. “Ignoring the bluish mountains that form its backdrop and the phalanx of security guards in our foreground,” she gazes “down onto the spillway which curves and drops like a wedding cake, in four tiers, before sending its excess through a granite passage,” supplying 1.2 billion gallons a day through 300 miles of tunnels and aqueducts and 6,200 miles of distribution mains. There once was grandeur in public works, and Royte captures the mythic heroism that inspired the politicians and engineers to build great reservoirs more than a century ago. Their outsize civic largesse makes our current culture of single-serving bottles feel decidedly crummy. But returning to public water’s golden age, if it’s possible, will not come cheap. Royte says the country needs to invest \$390 billion in our failing water infrastructure by 2020.

By the time I finished “Bottlemania” I thought twice about drinking any water. Among the risks: arsenic, gasoline additives, 82 different pharmaceuticals, fertilizer runoff sufficient to raise nitrate levels so that Iowa communities issue “blue baby” alerts. And in 42 states, Royte notes, “people drink tap water that contains at least 10 different pollutants on the same day.” The privatization of pristine water is part of a larger story, a tragic failure to steward our shared destiny. And if you think buying water will protect you, Royte points out that it too is loosely regulated. And there is more — the dangers of pipes and of plastic bottles, the hazards of filters, and yes, that “toilet to tap” issue. But there is slim comfort: Royte says we don’t really need to drink eight glasses of water a day. Drink when you’re thirsty, an expert says. That’s refreshing.

*Lisa Margonelli is an Irvine fellow at the New America Foundation and the author of “Oil on the Brain: Petroleum’s Long Strange Trip to Your Tank.”*

<http://www.nytimes.com/2008/06/15/books/review/Margonelli-t.html?8bu=&emc=bu&pagewanted=print>

## Up in Smoke

By VANESSA GRIGORIADIS

### WHEN YOU ARE ENGULFED IN FLAMES

By David Sedaris.

323 pp. Little, Brown & Company. \$25.99.



Even if you disregard the van Gogh cover sketch of a skeleton smoking a cigarette, it's difficult to miss that "When You Are Engulfed in Flames" is a book about David Sedaris's midlife crisis. He was in his 30s when he was discovered by Ira Glass of NPR, and ever since he has presented himself as a childish genius perpetually late to the literary scene and forever mini-crisis prone. Even as he was transformed into publishing's Dave Matthews — with four best sellers, endless paid lecture opportunities and 30-city tours — it's taken his 50th birthday to alert Peter Pan to the onset of maturity. "I've been around for nearly half a century," he moans, later adding, "In another 25 years I'll be doddering, and 25 years after that I'll be one of the figures haunting my Paris bedroom." He tallies up the last 25 years, the prime of his life, and isn't impressed by the sum: "How had 9,125 relatively uneventful days passed so quickly," he writes, "and how can I keep it from happening again?"

As usual, Sedaris has lots of answers to the first question but not many to the second in this delightful compilation of essays circling the theme of death and dying, with nods to the French countryside, art collecting and feces. Assuming the book is nonfiction — Sedaris calls the events portrayed "realish," and in a recent interview suggested his work was "97 percent ... true" — he has been passing the time in the fashion one imagines: lollygagging in Normandy feeding insects to spiders; neurotically managing a flock of chaffinches that have conspired to attack his windows; and plotting revenge on a rude airplane seatmate, in whose lap he has inadvertently spit a throat lozenge. There are sidesplitting essays here, like the baccalaureate address he gave at Princeton University in 2006 and a primer on masculine style that includes wearing an external catheter called the "Stadium Pal." He even deigns to include a few "Naked"-era grotesques: a cussing neighbor who forces him to retrieve her dentures from a planter outside their building; a stinky baby sitter named Mrs. Peacock, who lies facedown on his parents' bed while



instructing the Sedaris kids to rake her with a back-scratcher; and a French ex-pedophile whom he befriends, in a sad, moving story, until his neighbors' disapproval makes him ashamed.

It's hard not to feel a tiny pang of regret as the family retreats into the background, replaced by Sedaris's partner, Hugh Hamrick, a happy homemaker who has never provided the same comedic mileage. They are "two decent people, trapped in a rather dull play," Sedaris admits. The main stage is occupied by a mix of highly pixelated memories, chance meetings with freaks and scenes of Sedaris fretting over his eventual demise. A punk-rock attitude toward death used to be a staple of Sedariana, one of many taboo subjects he enjoyed throwing in the face of the squares, like his crystal meth addiction. As a kid, he dug up the bodies of buried hamsters; as an adult, he studied an encyclopedia for forensic pathologists, decorated his apartment with taxidermy specimens and spent 10 days, including Halloween, in a medical examiner's office on assignment for Esquire.

He recalls that experience in a smooth, speedy story, "The Monster Mash," but these days he's not sure he liked it too much — the disembowelings, the coolers of brains, the stench of decomposing corpses ("the smell of job security," as one pathologist puts it) terrify him. "This was the consequence of seeing too much and understanding the horrible truth: No one is safe," he writes. "The world is not manageable. The trick-or-treater may not be struck down on Halloween, but sooner or later he is going to get it, as am I, and everyone I have ever cared about." He's equally freaked out by the human skeleton, bought as a present for Hamrick, that suddenly begins talking to him. "I'd be sitting in my office, gossiping on the telephone, and the skeleton would cut in, sounding like an international operator." It says only one thing: "You are going to die." (After he pleads for mercy, the skeleton revises this statement to: "You are going to be dead ... someday.")

With Sedaris in this state of mind, the centerpiece of the book should have been an obvious gimme: a diary of his quest to quit smoking. Even in a more frivolous mood, Sedaris on kicking the habit — he smoked Kool Milds for about 30 years, and his mother died of lung cancer — should be pretty much the best thing ever, like [Evelyn Waugh](#) returning to tell us his thoughts on [MySpace](#). Sixteen of the 22 stories in this volume were previously published in *The New Yorker*, which doesn't detract from the overall experience since Sedaris is better on a second reading. But in the case of "The Smoking Section," the deft abridgment in the magazine last month was almost more satisfying than the original. Here the 83-page story is cut into three parts — before, during and after — and while the first section zooms off the page, once Sedaris stops smoking it's as if he has lost his muse. He travels to Tokyo for a couple of months, for reasons that are murky, and the alienating setting isn't right for the narrative. Virtue proves less interesting than vice, as he casts around for a sustainable joke — signing up for another language class, reading labels at the supermarket and, naturally, having a random encounter with feces.

It would take more than quitting cigarettes to make Sedaris bland — he's not ready to chill out and open a yoga studio yet. He knows death always wins, but he's chosen to believe that if he doesn't smoke, he might beat it and extend his youthfulness for another quarter-century or so. "I never truly thought that I would die the way my mother did, but now I really, really don't think it," he says. "I'm middle-aged, and, for the first time in 30 years, I feel invincible." The fighting instinct is a sign that there's more excellent work to come: without a struggle, Sedaris would die as a writer, which is his true mortality.

*Vanessa Grigoriadis is a contributing editor at New York magazine and Rolling Stone.*

<http://www.nytimes.com/2008/06/15/books/review/Grigoriadis-t.html?8bu&emc=bua2>

## DeMille's Close-Up

By ANDREW SARRIS

**CECIL B. DEMILLE**

### A Life in Art.

By Simon Louvish.

Illustrated. 507 pp. Thomas Dunne Books/St. Martin's Press. \$27.95.



Simon Louvish's elegantly exhaustive study of Cecil Blount DeMille (1881-1959) carries the respectful if not necessarily reverent title "Cecil B. DeMille: A Life in Art." It examines that life largely though not entirely through his 70 movies, completed during a 42-year career, from "The Squaw Man" in 1914 to "The Ten Commandments" in 1956, itself a remake of his own 1923 "Ten Commandments." "The Squaw Man" was also remade as an early talkie in 1931, during a period in which all of Hollywood, and DeMille especially, was struggling, often pathetically and disastrously, to make sense and cinema out of the newfangled dimension of talk. As it happens, I grew up listening to DeMille's mellifluous voice on the weekly "Lux Radio Theater" as he introduced the stories of recent Hollywood movies, most often with the original stars reading their lines from scripts. Unlike Louvish, however, I was never an admirer of DeMille's biblical epics, which, as Louvish himself acknowledges, are DeMille's chief claims to fame, though his only film to win an Oscar for best picture was his 1952 circus extravaganza, "The Greatest Show on Earth." And yet for all his remarkable ability to outlast and in some instances outlive much greater contemporaries — including D. W. Griffith, Ernst Lubitsch, King Vidor, John Ford, Howard Hawks and the ill-starred Erich von Stroheim and Josef von Sternberg — he remains something of a joke among sophisticated cinéastes, largely because of his tin ear for dialogue. (One famous howler is from "The Ten Commandments," in which Yul Brynner's Egyptian pharaoh says of Charlton Heston's Hebraic Moses, "His God IS God!")

To his credit, Louvish does not gloss over DeMille's deficiencies and excesses; rather, he very scrupulously records them as crucial clues in a genuinely complex story rich in contradictions and paradoxes. So we learn that DeMille married the stage actress Constance Adams in 1902, when he was 21 and she 29, and stayed married to her until his death. Still, he openly cheated on her from the very beginning with female assistants and collaborators. He once boasted to a journalist that he had never spent a Saturday night at home with his wife and family through all the years he had been married; he went on

to praise Constance for her patience, understanding and, well, constancy. After hiring a promising stage actor named Charles Bickford for his first talkie, “Dynamite” (1929), at the dawn of the sound era, DeMille took his leading man to a hideaway ranch with private lanes, each leading to a separate cottage for weekend trysts. Louvish quotes Bickford to the effect that DeMille showed him a large collection of erotic art and virtually staged orgies for his male guests with willing actresses and call girls. According to Louvish, DeMille’s aggressive sexuality failed to overcome his wife’s apparent frigidity. Consequently, the DeMilles had only one biological child, Cecilia, as well as three adopted children. Louvish acknowledges a debt to DeMille for his subject’s prodigious research into his own family roots, specifically his father’s Dutch ancestry. He spent much less time on his mother’s British Jewish side of the family, even though his ever resourceful, business-building mother supported the family after her husband died, when Cecil was 11.

Louvish does not explicitly draw the logical inference that DeMille’s contrasting attitudes toward the two branches of his family reveal his bigotry. But the author does conscientiously lay out all the evidence, so we can draw the inference for ourselves. Nonetheless, in the early chapters of his book, Louvish deals with the liberal influence on Cecil and his brother, William, exerted by the writings of Charles Kingsley, a “Protestant controversialist” who was “a clergyman and a champion of England’s poor and working people.” Oddly, as Louvish pointedly notes, “part of his religious creed was fiercely anti-Catholic, and his ideas were also part of a philosophical trend in Victorian England promoting a ‘muscular Christianity’ that combined godliness and manliness by going back to the ‘Teutonic’ roots of English history.” Shades of the Nazis’ master race. It is as if Louvish were preparing to describe for us the muscular Christianity, with its flashes of cruelty and sadism, in DeMille’s very popular religious and historical spectacles. An even stronger influence on the entire DeMille family was that of Henry George, a populist writer and champion of a single tax to lift the victims of landed wealth from poverty. Karl Marx, no less, ridiculed George in 1881 for being “utterly backward” in wanting to tax landowners instead of the rising captains of industry. But as far as the DeMilles were concerned, his heart was in the right place, and in 1903 William married George’s daughter. (They had two children, one of whom, Agnes de Mille, would take her place as a giant of American dance.) Cecil’s plays and movies demonstrate that he acquired from Kingsley and George the moral imperative of championing the underdog — often the Native American, in morality tales like “The Squaw Man.” Indeed, one friendly later critic of DeMille’s work likened his place in American cinema to that of James Fenimore Cooper in American literature.

And so, as Louvish makes abundantly clear, DeMille may have been too easily dismissed by the mostly liberal and left-wing film establishment because of his right-wing anti-union and anti-Communist activities during the cold war, particularly during the McCarthy and Hollywood-blacklist years. On one occasion, John Ford and George Stevens decisively intervened to thwart DeMille’s attempted purge of Joseph Mankiewicz as president of the Screen Directors Guild. In addition to fully documenting this incident, Louvish makes his own position crystal clear in his eloquent summation: “One does not have to agree with the political views of any artist to evaluate and appreciate the art. Much depends on how narrow your choice is of who you are willing to learn from. For myself, I am certainly an opponent of the ideas DeMille propagated in his ‘Crusade for Freedom’ in the 1940s and 1950s. I find much of his behavior in this period loathsome and offensive. His was one of many prominent but reckless voices that laid the ground for the assault by Senator Joseph McCarthy on the rights of employment and free speech of so many American citizens and so many of DeMille’s fellow workers in film, television and radio. And yet the films of his own great golden age have been an unexpected joy to discover, an undervalued treasure-trove of totally achieved, totally controlled movies that defined his own peculiar America in his own peculiar way — before he ‘found the truth.’ And once he had found his ‘truth,’ he began the long decline, which nevertheless was punctuated with majestic flourishes that will, with their own distinctive skill and manner, stand a more rigorous and long-sighted test of time.” Thus, for all its length and copious detail, Louvish’s biography is a great read and, incidentally, a fascinating history of a life lived to the hilt through a long, turbulent segment of our time. *Andrew Sarris, a professor of film at Columbia University and a film critic for The New York Observer, is the author, most recently, of “You Ain’t Heard Nothin’ Yet: The American Talking Film — History and Memory, 1927-1949.”*

<http://www.nytimes.com/2008/06/15/books/review/Sarris-t.html?8bu&emc=bua2>

## Where the Wild Things Came From

By **LAURA MILLER**

### MINDERS OF MAKE-BELIEVE

#### **Idealists, Entrepreneurs, and the Shaping of American Children's Literature.**

By Leonard S. Marcus.

402 pp. Houghton Mifflin Company. \$28.



When my second-grade teacher was growing up during the Great Depression, she discovered what would become her favorite book at the Cleveland Heights Public Library. Unfortunately, by the time she'd finished reading "The Hobbit" and persuaded her parents to buy her a copy, they couldn't find it in the bookstore. Undeterred, she checked out the library's copy over and over again, determined to make one of her own by pecking out the entire text with two fingers on the family's manual typewriter. How many authors who write for adults can boast of having a reader so utterly devoted to their work Leonard Marcus's "Minders of Make-Believe: Idealists, Entrepreneurs, and the Shaping of American Children's Literature" is the story of the apparatus that conjured such readers into existence: the children's librarian who chose to order "The Hobbit"; the publisher (Houghton Mifflin, Marcus's own) who brought it to market, the stores that were out of stock (possibly because of paper shortages). He even has a few words for the parents who, in the mid-20th century, increasingly saw books as an investment in their children's future. What probably strikes many people as the most fascinating aspect of the history of children's literature in America — the children, and the literature itself — takes a back seat to editors and reviewers, printers and magazines, libraries and bookstores.

Studies of books for young people are a recent phenomenon. "Children's books," Marcus writes, "may well have mattered so little to historians of past generations precisely because the books mattered so much to children. With their place firmly fixed in the foreground of young people's intimate lives, few scholars thought to look further or to ask what the books might possibly mean as commercial or cultural artifacts, much less as works of literature and art." "Minders of Make-Believe" primarily views them as commodities — ones that went from a trifling sideline to a \$3.4 billion industry and have on occasion become the focus of fierce cultural battles.

Marcus orders his account chronologically — from primers to Potter, so to speak — beginning with the first children's book published in the colonies, "The New-England Primer" (1689) and concluding with J. K. Rowling's record-breaking series, the only books of any kind to have their release dates celebrated at midnight festivals nationwide. No doubt this structure is meant to emphasize how much children's book publishing has changed in the past 320 years, but in truth, the industry has been peppered with the same kinds of minor crises that have characterized adult trade publishing over the decades. Budgets are cut in lean years and fattened during booms. Outrage flares when a publisher fires a revered editor in a "spectacular act of administrative shortsightedness" and then the editor is hired a month or so later by someone else. Authors grumble about their contracts. Experts worry about the degradation of the public's taste and the distractions of other media. And someone is always around to reminisce about how much more noble and idealistic the business was 30 or 40 years ago.



One thing that did distinguish children's publishing in the early 20th century, however, was the predominance of women in the industry, as editors, critics and librarians. The first editorial division devoted exclusively to children's books, the Department of Books for Boys and Girls, established by Macmillan in 1919, was headed up by Louise Seaman, a former schoolteacher and graduate of Vassar. Like teaching and missionary work, Marcus notes, working with children's books was considered one of the "'mothering' professions" to which women were supposed to be uniquely suited. Once "Minders of Make-Believe" gets to the period after World War I, it's taken over by a procession of formidable grandes dames, each armed with "a Seven Sisters degree and the well-honed social skills that implied." These were among the first women to attain positions of significance in the men's club of book publishing.

Despite the relative uniformity of their backgrounds, the doyennes of the children's book world did feud on occasion. One major divide lay between children's librarians, epitomized by the daunting Anne Carroll Moore, the New York Public Library's first children's director, and progressive educators, led by Lucy Sprague Mitchell, who ran the experimental Greenwich Village school now known as Bank Street. The librarians endorsed "timeless" fairy tales and folklore as the gold standard in children's fiction, while Mitchell and her camp advocated contemporary stories in settings familiar to young readers. "Little Red Riding Hood," Mitchell protested, was "brutal," "Cinderella" was "sentimental," and far too many of the traditional tales were filled with "the strange, the bizarre, the unreal." Virginia Haviland of the Library of Congress referred to the disagreement as the "controversy raging over 'milk bottles' versus 'Grimm' for the preschool child." In the picture book world, a schism separated the champions of the "book beautiful" from the producers of cheap and cheerful items like the Little Golden Books series, which tended to be sold in five-and-dime stores to the stressed-out parents of whining kids. The quality of the paper, printing and binding in children's books was a particular obsession for librarians and high-minded booksellers and editors, to the degree that these worthies often seemed to lose track of the books' intended audience. Marcus writes of an editor at Viking during the inflation-straitened 1970s, who, "in fear and trembling," was obliged to ask Robert McCloskey if he would permit the reprinting of "Make Way for Ducklings" without a dust jacket. McCloskey consented, though the experience "soured" him. Anyone who's ever seen a 4-year-old handle a book will wonder why it had a dust jacket to begin with.

Librarians and librarians were perhaps the mightiest force in the children's book world until the cutbacks of the 1970s and a boom in parental book-buying during the 1980s knocked them from their throne. In their heyday, children's librarians imperiously banished series fiction (like the Tom Swift and Rover Boys books and, later on, Nancy Drew) from many collections, as well as the Little Golden Books — some of which number among my own childhood favorites. The prejudice against series, the most popular of which were formulaic adventure stories churned out by the Stratemeyer Syndicate, was so virulent that Laura Ingalls Wilder's autobiographical novels about her pioneer childhood were repeatedly shut out of librarian-administered awards competitions like the Newbery Medal, merely because they seemed series-ish. (Eventually, the American Library Association created a lifetime achievement award in Wilder's name and presented her with the first one in 1954.) Although the titans of the genre, from Wilder and Dr. Seuss to E. B. White and Maurice Sendak, make brief appearances in "Minders of Make-Believe," this is finally a publishing history, the sort of book whose typical event might be characterized as "And then she went to Scribner. ..." Marcus, a charming and nimble writer, makes a valiant effort to keep things interesting, but the editorial shake-ups and new printing technologies will be of interest primarily to historians and people in the industry. It's the editor's lot, alas, to subsist on reflected glory. The most interesting thing about even the most esteemed individuals that Marcus covers are the authors they discovered and the books they published, and there's not quite enough about either in "Minders of Make-Believe." The effect is a little like hanging around at a perfectly nice party while there's a terrific one going on just down the hall.

*Laura Miller is a staff writer for Salon and the author of "The Magician's Book: A Skeptic's Adventures in Narnia," which will be published in December.*

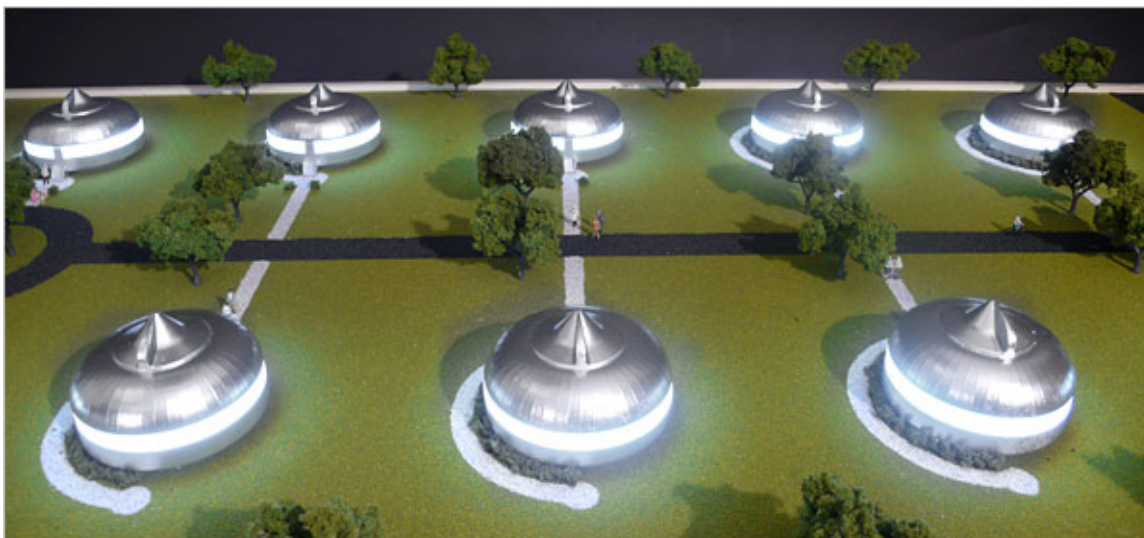
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## The Love Song of R. Buckminster Fuller

By **JAMES STERNOLD**

PALO ALTO, Calif.



AS the designer R. Buckminster Fuller liked to tell it, his powerful creative vision was born of a moment of deep despair at the age of 32. A self-described ne'er-do-well, twice ejected from Harvard, a failure in business and a heavy drinker, he trudged to the Chicago lakefront one day in 1927 and stood there, contemplating suicide. But an inner voice interrupted, telling him that he had a mission to discover great truths, all for the good of humankind.

That was the pivot on which, he claimed, his life turned. The onetime loser entered a period of such deep reflection that he was struck silent, then emerged bursting with creativity as he developed the “Dymaxion” inventions: technologies that he promised would transform housing, transportation, urban organization and, eventually, the human condition. From 1927 on, Fuller seemed utterly self-assured, even messianic, as he developed innovations like the geodesic dome, equal parts engineering élan and poetry.

Those pioneering creations will go on display next week in “Buckminster Fuller: Starting With the Universe,” a sprawling show at the [Whitney Museum of American Art](#) that testifies to the wide-ranging intellectual curiosity of Fuller (1895-1983), who inspired several generations with his quixotic vision and his zeal for the liberating power of technology.

But recent research has shed new light on Fuller’s inner life and what really drove him. In particular, it now appears that the suicide story may have been yet another invention, an elaborate myth that served to cover up a formative period that was far more tumultuous and unstable, for far longer, than Fuller ever revealed.

That is one of many insights gleaned by researchers who have begun exploring the visionary’s personal archives, deposited in 1999 at the [Stanford University](#) library by his family.

Because he believed his ideas and life would hold enduring interest, Fuller collected nearly every scrap of paper that ever passed through his hands, including letters that raise questions about the suicide story. At 45 tons, it is the largest personal archive at Stanford, according to Hsiao-Yun Chu, a former assistant curator of the papers and co-editor of a book, “Reassessing R. Buckminster Fuller,” to be published by Stanford University Press next year.



Barry Katz, a Stanford historian who wrote one of the studies in Ms. Chu's book, said, "If you really look for the details of his life at the time, it's easy to see that the suicide story was a creation."

"There was nothing even remotely in the archives suggesting feelings on the scale he later described" in 1927, he said.

In 1927 Fuller, living in Chicago, and his wife, Anne, in New York, exchanged almost daily letters and telegrams. Not a single one makes reference either to thoughts of death or to an epiphany. In addition, Mr. Katz said, he found references to lectures that Fuller gave and other evidence that he was far from silent.

Mr. Katz said he found instead signs of depression and anxiety stretching from the time his first daughter, Alexandra, died in 1922, through his financial failures and, finally, the collapse of a torrid extramarital romance in 1931. Still, he said, the suicide story seemed to serve a purpose.

"That's why I now call it a myth, but it was an effective myth. It gave a trajectory to his career. The story was constructed after the fact to show how he suddenly developed these new ideas. I think he came to believe the story himself."

On a recent day in the library Ms. Chu gave a sort of guided tour of the personality known as Bucky, rummaging through boxes of his letters, overdue bills, drawings and writings. Over the course of the visit a detailed inner portrait emerged of a man known for his pioneering designs for inexpensive, prefabricated houses suspended from masts, a highly efficient teardrop-shaped auto and then a series of structural designs that were strong yet lightweight and remarkably graceful.

Ms. Chu held up a crinkly letter written by Fuller in 1931, when he was a regular at Romany Marie's cafe in Greenwich Village and intriguing friends like Isamu Noguchi with prophecies on how his automotive and housing technologies would help usher in a new era of plenty. "He used to drink like a fish," Noguchi would recall years later in an interview with Time magazine.

What his friends did not know was that Fuller was becoming unhinged because of the collapse of an affair with Evelyn Schwartz, or Evy. Fuller was 36, with a wife and 4-year-old daughter, Allegra; Ms. Schwartz had just turned 18. The two exchanged letters almost daily, with Fuller writing that their relationship was "completely my realization of the ideal of love."

He wrote of marrying her, of her apparent efforts to get pregnant, and insisted, "Evy you and I bear a universal responsibility of forward thinking for which we are extraordinarily gifted."

But when she decided she had "gotten over" him, as he related it, Fuller unleashed a cascade of desperate letters. He admitted to stalking her at her Brooklyn home "so that you may have no feeling of panicky abandonment."

In the most revealing note, feverishly scribbled in heavy block letters across four large sheets of onion-skin drafting paper, Fuller confessed that he had suffered a "nervous breakdown" in 1931 — not 1927 — because of the romantic tumult. "Later in his life, when he was lecturing all the time, people loved him, he made them feel very special," said Ms. Chu. "He was an oracle, a guide, and he was so confident. But when he was writing those early letters, he didn't know who he was."

Jay Baldwin, a designer who helped to edit the Whole Earth Catalog (which was inspired by Fuller) in the 1960s, knew Fuller and wrote a book about him, said that he learned of the affair during his own search of the archives but chose not to mention it.

"To a lot of us he just seemed so much the master of his emotions, but I read those letters, and he just lost it," Mr. Baldwin said. "It wasn't the only thing like that. He wrote one paper about his ideas early on that sounds like a raving maniac." In Mr. Baldwin's view those episodes missed the point. "Focusing on the



affair is like spending all your time thinking about van Gogh's ear instead of his paintings," he said. "It's very off track."

Mr. Katz disagreed, saying that the seemingly crazy writings were important because they showed that in recurrent dark periods Fuller was not trying only to persuade others his ideas were important, but to persuade himself that he mattered. The letters, Mr. Katz suggested, were a form of self-encouragement as Fuller struggled to find a reason for going on. Supporting that view is Evelyn Schwartz Nef. "Those days were really quite exciting because he was so convincing that he was trying to save the world," she said in an interview. Now 94 and a retired psychotherapist, she recalled Fuller vividly. "The question I had is whether he was as convinced as we were. He was trying to reassure himself that he was something."

Fuller's daughter, Allegra Fuller Snyder, a retired professor of dance at the University of California, Los Angeles, said she was not surprised to learn that the 1927 epiphany may not have been literally true.

"It was a kind of parable of his interior thinking, really," Ms. Snyder said. Because he had such a powerful personality and was so well known for his unshakable self-confidence, few understood, as she did, that he had interludes of real doubt, often because of concern for his family's financial well-being, she said. "That was part of Daddy, always," she said. She recounted another occasion on which her father seemed to find inspiration at an especially dark moment. Fuller had tried to turn his prefabricated housing idea into a business after World War II by teaming with the Beech Aircraft Company in Wichita, Kan., and other investors. But in 1946, after prototypes were built, the project collapsed.

Ms. Snyder distinctly recalled her father coming home to their small apartment utterly despondent. She said she went to bed then got up in the morning only to find that he had been up all night working at a small wooden table. "I remember very well that he was talking about this new thing, the geodesic dome," she said. "That's what he said to me. He'd been working on what he called synergetic geometry before that, but suddenly he saw the fusion of that with the structure. That was when the idea came together for him."

By 1948 Fuller developed his first dome prototype; in 1954 he had perfected the structure and took out a patent on the dome, one of his more memorable, and profitable, designs. For all his creative energy, Fuller's legacy is slippery. By conventional measures he accomplished little. The efforts to mass-produce his houses, though written about widely, failed. His project to develop his efficient three-wheeled autos collapsed after an accident killed the driver of one. His soaring geodesic domes, built with a distinctive pattern of triangles, have been used — memorably for the United States pavilion at Expo 67 in Montreal — but never for the large-scale projects he envisioned, like the dome he hoped would cover most of Manhattan.

But Fuller had great influence through his design principles and his almost endless series of lectures and writings. His book "Operating Manual for Spaceship Earth" helped make him a symbol of the counterculture. He even influenced some Silicon Valley pioneers. For Ms. Chu one of the great insights of the archives is the sheer number of letters Fuller received and wrote. He nearly always responded personally to every note. (When a former collaborator in his design work, Kenneth Snelson, wrote angrily in 1979 that Fuller was unfairly claiming credit for what Fuller called the tensegrity structure, Fuller responded with a 51-page rebuttal.) "He didn't just write this incredible number of letters, he saved them all," she said. "It was almost like they proved he existed, that he mattered. The files were almost like the proof he needed."

As Mr. Katz put it, "Fuller's greatest invention was not a house or a car or a dome. It was himself."

<http://www.nytimes.com/2008/06/15/arts/music/15ster.html?ref=design>



## Figuring Marlene Dumas

By DEBORAH SOLOMON



**MARLENE DUMAS'S STUDIO** occupies an underheated, underfurnished ground-floor apartment on the southern side of Amsterdam. As she sat at her worktable one evening in late March, emptying a bottle of white wine and picking at a plate of almond pastries, she offered an image of contented Bohemianism. Beside her, a red vase held a bouquet of dead white tulips, and beyond an unusually tall window, dusk was gathering in a garden densely overgrown with weeds.

In the Netherlands, people talk about the Dutch light in rapturous terms. It is frequently described with adjectives related to jewelry — “pearly,” for instance, or “silvery” — but Dumas is more of a night person. She can customarily be found in her studio at 2 or 3 in the morning, and her desire to record experience in its most extreme forms — she paints birth, sex, death and violence, for starters — has failed to bring her one inch closer to observing or recording the famed Dutch light. Tellingly, she does not like to travel, even across town.

“I never learned to ride a bicycle, and it is too late now,” she told me with a hint of pride, before going on to list her other negative achievements. “I never learned to drive. I never learned to swim.” At 54, Dumas is a jovial and garrulous presence, with a tangle of blond curls and fair skin. She speaks English with a heavy accent, in a wheezing, thinned-out voice.

“I was so pleased when I read that Rossellini loved to lie in bed,” she continued, referring to the Italian filmmaker, a confirmed hypochondriac who, she discovered, would take to his bed for two or three days at a time, reading thick novels. “Now people do exercise, and they have hobbies, and they take holidays,” she said. “I am not one of those. I don’t go to a psychiatrist. I don’t go to a gym. I run away from my accountant, I run away from my dentist. They are all supposed to help you, but I like to stay in bed, where I have a chance to reflect, like Rossellini.”

As Dumas languishes in bed in Amsterdam, her career in America has been advancing on its own. The first major survey of her art in this country opens at the Museum of Contemporary Art in Los Angeles next week, before traveling to the Museum of Modern Art in New York in mid-December and finally ending at the Menil Collection in Houston. “Marlene Dumas: Measuring Your Own Grave,” as the show is titled, might sound more like a do-it-yourself funeral than a foray into the optical pleasures of painting, but one trademark of the artist’s work is her ability to conjoin nerve-racking subject matter and elegant brushwork. She is one of contemporary art’s most compelling painters, taking people from newspaper photographs and turning them into agents in a psychological drama who might shut their eyes on us or look out at us with a gaze that says, “Don’t go.”



The facts of Dumas’s biography — she grew up in South Africa under apartheid — can encourage a viewer to read her work as unadorned social commentary. Significantly, the retrospective in Los Angeles, which was organized by the curator Cornelia Butler and consists of about 70 paintings and 35 works on paper, will be arranged along loose thematic lines touching on topics like race relations and terror. Taken together, Dumas’s portraits might seem to constitute the face book of a bungled imperialism. On the other hand, the figures in her paintings are pleasingly complicated — there are babies who look like dictators and brides in wedding dresses lined up like zombies — and they hark back to the days before big questions about life and death and evil gave way to the drone of gender theory and identity politics.

For all their moral gravity, Dumas’s paintings have led a separate, rather flashy existence in the more commercial precincts of the art world. In February 2005, at Christie’s in London, “The Teacher (sub a)” (1987) — a large, horizontal group portrait that turns a sentiment-laden class picture from her own childhood into a bruising reflection on authority — sold for \$3.34 million. Virtually overnight, Dumas became “the world’s most expensive living female artist,” as the blogs reported, a status she maintained for one year, until Louise Bourgeois sold a sculpture for \$4 million and captured the top-art-girl crown.

“The Teacher (sub a),” as it turns out, was purchased by the Acquavella Galleries, which occupies a stately town house on the Upper East Side of Manhattan and, three years later, still

owns the painting. “We bought it for ourselves,” Nick Acquavella, who is 30, told me, explaining that he and his art-dealing father attended the auction not to bid on behalf of a client but rather in the hope of adding Dumas’s painting to the family collection, which abounds with Picassos, Giacomettis and other staples of European modernism. “It is difficult to find Marlene’s work on the market,” he said. “She is not very prolific, and most of her work is in European collections where people don’t want to sell.”

A few weeks ago, it was announced that Dumas is leaving her longtime dealer in New York, Jack Tilton, and signing with the David Zwirner gallery. “It literally took four years before Marlene committed fully,” Zwirner told me, during which time he visited her in Holland on two occasions, met her in Venice on two others and assembled an ambitious show of her older works. In the end, Dumas was probably won over less by Zwirner’s charming attentions than by her affinity with the artists he represents. They include art stars like Luc Tuymans and Neo Rauch, who possess a seemingly inborn talent for depicting nightmares, particularly of the political variety, and have made European painting feel newly urgent in New York.



**A DUMAS PAINTING** is easy to recognize. It typically shows a face or a figure in dramatic close-up, isolated against a neutral ground. Put another way, the people in her pictures are not sitting in a cafe or strolling the avenue, and they seem to have sprung from some infernal realm where personal memories are constantly colliding with public traumas. Her subjects include her daughter, her mother, terrorists, drowning victims, hanging victims, Emily Dickinson, the South African poet Elisabeth Eybers and the model Naomi Campbell. In addition to her oil-on-canvas output, she is prolific on paper and specializes in inky watercolors that use a meltingly sensual style to conjure disturbing scenes, among them strippers standing with their backsides shoved at us or the impassive heads of blindfolded male prisoners who may or may not be alive.



In conversation, Dumas denies that her driving themes are sex and violence, presumably because she does not want to have the content of her art reduced to so many plot points. When I asked her what to make of her frequent use of pornography as source material, she showed me a kinky liquor advertisement she clipped from a magazine and said in her defense, “I haven’t got one painting where the breast gets this much attention.”

Additional evidence was forthcoming. She left the table and fetched a book on Lucian Freud, riffling through the pages before stopping at a reproduction of a painting from the early ’90s in which two female nudes rest on a rumpled cot. “That’s his daughters lying there like that, all spread out,” Dumas said vehemently. “I wouldn’t pose for my father like that. Not that I am saying therefore that he is a bad man. Why do my pictures have that reaction

when I would think that is very peculiar — a father painting his daughters totally lying like that? That is strange.”

She once saw a film about Freud that was set in his studio in London, where David Hockney, a friend of his, was posing for a portrait. “You see his process,” she recalled. “He goes up to the face, he looks where the light falls, he looks at —” she made a funny squinting face to suggest the practice of direct observation that remains so essential to the realist school.

Dumas, by contrast, does not work from models, and most of the people in her pictures have already posed for someone else’s lens. She is part of a generation of figurative painters who find their subjects, as if by default, in photographs culled from newspapers and magazines. Still, Dumas manages to put photography to expressionistic ends. If her point of departure is an in-focus photograph, she proves that pixels aren’t everything in paintings that inhabit a realm somewhere between figuration and abstraction, between outer and inner worlds.

I asked her if she saw a difference between European figurative painting and its young New York cousins, exemplified by artists like Elizabeth Peyton, with her dreamy, jewel-like portraits of rock stars and friends. “For me, that is not cruel enough,” Dumas said. “I like it a bit crueler. Francis Bacon once said that is why he went for figuration against abstraction — he didn’t like Pollock as much because he said abstraction couldn’t be cruel enough for him. I did get things from Francis Bacon — the fact of the figure in an abstract background. It is a figure, but where is the figure?”

Over the years, Dumas’s work has remained fairly consistent. Asked about the trajectory of her development, she mentioned that her handling of paint has grown more assured: she has become adept at making pictures with less and less paint. “It’s almost Alex Katz,” she said of one of her recent works, referring to the New York figurative painter known for his spartan and effortless-seeming surfaces.

Dumas is inordinately protective of her time, and she keeps her many admirers at bay with the help of two assistants, Jolie van Leeuwen and Rudolf Evenhuis, each of whom is 49 and holds a degree in art history.

Evenhuis, who was patiently answering e-mail for Dumas when I arrived at the studio, mentioned to me that he first met her after writing her a letter and asking if he could make a film about her work. “Try me in a year,” she blithely wrote back. The eventual result was two films, the latter of which, “Miss Interpreted,” is an hourlong documentary from 1997. “She was not completely happy with the film,” Evenhuis recalls. “She thought it had too much human interest. She didn’t like that she was shown eating.”

**BORN IN CAPE TOWN ON AUG. 3, 1953,** the youngest of three children, Dumas grew up on sandy farmland, about an hour outside of the city. Her native language was Afrikaans, which was still disdained as a bumpkin dialect of the Dutchmen who settled South Africa in the 17th century. The artist’s mother, Helena, was a homemaker; her father, Johannes, was a winemaker who owned a moderate-size vineyard, Jacobsdal, which is currently run by Dumas’s oldest sibling, Cornelis. Her other brother, the Rev. Pieter Dumas, won a court case against the Dutch Reformed Church in 1988, after he was fired for speaking up against racism within the church.

As a child, Dumas was well aware of the sorrows of apartheid. “We had a lady working in the house, and I would sit with her and read to her,” she recalled. “We were very warm with one another, but we could not sit at the same table. That is horrible to see, how long things took for people to say, ‘It is going to change.’” Kuils River, the town where she grew up, was an isolated, uneventful place with “one bar, one hotel, one doctor and one church,” as she says. There was no art museum anywhere in the area, except for “a very dead place in Cape Town that showed old colonial paintings of bridges in the landscape,” as she recalls. Even the diversions of popular culture were largely nonexistent; it was not until 1976 that television arrived in South Africa, one of the few countries that did not show live footage of Neil Armstrong walking on the moon, as if any glimpse of the democratic world would cause apartheid to crumble instantly. Movies were shown in theaters but were heavily regulated for content, and only the most sanitized fluff survived. “We used to go to drive-in movies to watch Tarzan,” she said.



As if to counter the media blackout, the suppression of images, Dumas began collecting pictures. From the time she was 8, she loved drawing cartoon girls, curvy, bikini-clad models of the sort she saw in comics but whose key source was probably her obsessive fantasy life. She still likes to draw girls. To demonstrate, she picked up a pencil and a sheet of paper and conjured in about all of 10 seconds an expertly cheesy nude with a button nose and elephantine breasts. “It was always the face or the figure, even when I was small,” she said. “I never did a tree.”



The relative comfort of her childhood ended at age 12, when her father died of liver disease. “I think I am probably a lot like my father,” she said matter-of-factly. “He would go to the bar. The bar had a bad reputation, but now I go sit in the bar. My father never wanted to leave before the end of a party, and I never want to leave, either. I don’t know if it was worse going to see him in the hospital or seeing him at home in the end.”

As she described the landscape of her childhood — the baking sun, the vineyard with its low-hanging grapes, the farmhouse where she sat and drew her congeries of glamour girls — I wondered to what extent her father’s death shaped her art. Many of her paintings and watercolors depict dead or dying figures, and her work in general can feel elegiac. It was moving to think of her in her studio at night, waiting for a face to reveal itself to her, for a face to swim up to the surface of her art. Maybe it was the face of someone she had loved and lost, or maybe it was the face of a country that she lost. But when I asked her about losing her father, she brushed off the subject, saying only, “Oh, that was so long ago.”

**IN 1976, AFTER PORING OVER** countless pictures in art magazines, which provided her only glimpse of the latest art coming out of New York, and earning a degree in art at the University of Cape Town, Dumas left South Africa to study abroad. She had won a two-year scholarship to Ateliers ’63, a small, progressive, unaccredited art school in Haarlem, now known as de Ateliers and located in Amsterdam. “I moved to Holland because I wanted to see American art,” she has said, lest anyone accuse her of embarking on a sentimental search for her Dutch roots.

Ateliers ’63, one of whose founders was Jan Dibbets, the influential Dutch artist fond of measuring the movement of shadows and other fastidious calculations, was a bastion of conceptual art, and Dumas tried to play along. “I was quite fascinated by all these conceptual artists,” she said. “It looked so intelligent. It looked like modern art. Who wanted to paint a naked figure?” Most of her early work consists of abstract drawings and collages that incorporated bits of text: it is defined as much by the media she chose to work in as the ones she rejected — in particular, oil painting, whose history can be a bit overwhelming for a young artist in the Netherlands, the sort of place where it is possible to go to the grocery store to pick up some milk and pass Rembrandt’s brick house. After leaving school, she exhibited intermittently in group shows and eked out a living cleaning houses. “I was never really a good cleaner,” she recalls of that period. “I would put the vacuum cleaner on the leaves of the plants, and if they didn’t fall off, they were really strong. I had no experience at all. I had never cleaned anything. My brother Pieter would say to me: ‘What are you doing? Come back. If you want to clean houses, we have plenty of houses in South Africa.’ But for me, to live in my studio was wonderful.”

In 1984, Dumas did something radical — she started painting heads and figures. She was hardly the only painter in the early ’80s to go back to traditional figure motifs; many artists were then trying to find an alternative to the paper-white coolness of conceptual art. But unlike Francesco Clemente, Georg Baselitz and the other neo-Expressionists who were causing a sensation in New York, Dumas was in no hurry to exhibit her work in America, and she wasn’t part of any group. Her first all-painting show was held in 1985, at the Galerie Paul Andriessse in Amsterdam, and it brought together nine portraits. Three of them, curiously enough, depicted women named Martha — one the artist’s grandmother, another Martha Freud, the third a servant. “Instead of calling them portraits, she called them ‘situations,’ as in ‘the situation is “evil,” is “banal,” ’ or ‘the situation is generic homesickness,’ ” recalled Paul Andriessse, a bookish man of 53 whose gallery continues to represent the artist in Amsterdam.

**FOR 20 YEARS NOW**, Dumas has lived with her Dutch dealer’s first cousin, Jan Andriessse, himself an artist, whose work she describes as “abstract painting, but you can’t really call it that.” His spare, ethereal, carefully calibrated surfaces are rooted in the tradition of painting the Dutch light. His studio is situated on two adjacent houseboats on the grand Amstel River, which feeds the city’s network of canals; on the afternoon I visited him, the indoors were as squinty-bright as the street. He and Dumas raised their daughter, Helena, who is 19, on “this floating dump,” as he called it, and now they live in a slightly larger house nearby.

Sitting down at a table heaped with books, Andriesse poured himself a glass of gin. “The only reason I am alive is because of my love of alcohol and cigarettes,” he noted in his amused baritone, as he reached into a bag of Van Nelle tobacco and rolled a cigarette.

Andriesse is an engaging, well-read man of 57, a commanding presence who can recite long passages of Nabokov from memory. When he reflects on his life story, he emphasizes the turn of events that propelled him into exile when he was 6 years old. He was born in Jakarta, Indonesia, and he had just started school when President Sukarno, who helped the country win its independence from the Netherlands, demanded that Dutch citizens be expelled. Andriesse became part of a “colonial diaspora,” as he put it. He said that his life as an exile — his life of painful separations, and the memory of those separations — is probably the most important bond he shares with Dumas. “The only reason that Marlene and I are together is that tie,” he said. “When I first met her, she was speaking Afrikaans, and I thought she was out to lunch. But then we realized we had English in common.”

It is true that he and Dumas both grew up in countries that had been Dutch colonies. And they each left those countries, she by choice, he against his will. It was clear he felt wounded by the experience, and I suspected that Dumas’s art had given nearly perfect expression to his feelings of dislocation. That is “the tie” he referred to. He, in return, provides her with historical context. She claims to be hopeless at remembering dates, and if you ask her when she moved into her current studio, or was tapped to represent Holland at the Venice Biennale, she will invariably say, “Ask Jan.”

He comes to the studio every day, and he often sits for hours at a time contemplating the sky and the water.

The weather in Holland is extremely changeable, and if you watch the sky for just a few minutes, you are likely to witness a little drama of meteorology, complete with quickly drifting clouds and shafts of sunlight piercing through. Andriesse says he thinks of his studio as an observatory, a place to be intimate with the light. But when I asked to see some of his art, he explained in an aggrieved tone that inspiration has eluded him lately and he had not completed a painting in four years; his output consisted of only a small group of lithographs. “Depression is my middle name,” he joked.

There were two chairs at the table, and he insisted that I take the one that faced the Berlage Bridge. It is a prized architectural monument, he explained, but it is also a monument to untold sorrows. In 1940, Holland fell, and the Germans came walking in. During the Nazi occupation of Amsterdam, the bridge was one of the sites where Jews were rounded up before being forced “east” — east, he explained, being a euphemism for the death camps.

I glanced out the window, and the present seemed to fall away. It was easy to imagine a scene from the past — a small crowd of people milling at the bridge, husbands and wives pretending to be calm, children clutching at their legs. Why did Amsterdam feel so haunted, even in the frank light of day?



“I can sit here and point at that bridge,” Andriesse replied. “You can’t sit in New York and point at Gettysburg.”

Without warning, the sky darkened, and it began to rain, and the droplets made a loud tapping sound on the roof of the boat. I asked him about Dumas’s portraits of the dead, and he replied nonchalantly: “She’s been painting dead people for a long time. Balzac wanted to write the human condition. She wants to paint the human condition.” When we finished talking, it was long after sunset, and he kindly offered me a ride to my hotel on the back seat of his bicycle. I demurred, envisaging the dark, rain-slicked streets. As we said our goodbyes, he said he hadn’t decided whether he would be going to California to see Dumas’s

museum show. “The more people travel,” he said with a straight face, “the less they have to say.”



**IT HAS BEEN 18 YEARS** since Dumas made her American debut at the Tilton Gallery in New York, and the critical response to her work has been divided, more or less, among those who admire her earnest theatricality and those who deplore her theatrical earnestness. An art-world blog, Anaba, has taken to listing the names of Dumas’s supporters and detractors as if they were superdelegates charged with putting an artist into office. Are you pro-Dumas or anti-Dumas? “All of the anti-Dumasers are men,” the blog noted in 2005, in a reference to a group of influential critics that includes Jerry Saltz, the art critic for New York magazine, who has described Dumas’s work as “flat-footed.” Peter Schjeldahl, the art critic at The New Yorker, says without remorse: “She is a good second-rate artist. I just don’t think it has much that other people don’t have. There is a certain glamour of sexual perversity, but it seems a little thin to me.”

It may be late in the game to accuse male critics of sexism, a charge that smacks of ’70s-style boosterism while failing to acknowledge that women can be as sexist as men. Nonetheless, the charge persists, particularly among Dumas’s supporters. “People either love Marlene’s work or hate Marlene’s work, and I think it’s a sign of a sexist conspiracy,” says Nicole Eisenman, a figurative artist who is now 43 and based in Brooklyn. “There is an aspect of her work that is women’s work. It’s a mother painting her child, which makes it easy to dismiss.” She went on to say that Dumas’s work can easily hold its own beside the best male painters of her generation. “I think she is as good a painter as Peter Doig” — a reference to the Scottish-born painter who receives nonstop raves for his conceptual landscapes — “and actually, I think she is better than Doig.”

One of Dumas’s most enduring subjects is her daughter, Helena, who was born, as her father told me, “the year the wall fell in Berlin.” Dumas has painted Helena from infancy, at times retrospectively from old photographs, in an intermittent series of portraits that are among her most discomfiting. “The Painter” (1994), which is owned by the Museum of Modern Art, depicts a blond toddler as a miniature stalker. The little girl faces the viewer, nude and glowering, her blue stomach looking less decorated than discolored. Her hands are stained up to the wrist — her left hand carmine red, the right venous blue — and you



cannot be sure whether she has spent the previous few minutes finger painting in the playroom or dousing her hands in blood.

You can see “The Painter” as Dumas’s manifesto, a definitive image of ruined innocence, rendered with her customary thin, washy, my-first-draft-is-also-my-final-draft style. The painting is the anti-Cassatt, with none of the sentimentality, the softly lambent flesh, the powdery radiance you expect in a portrait of a child. The little girl, unlike the countless trophy infants and children in art history intended to plug their mothers’ supposed benevolence, knows she’s a morally flawed individual. Even the purest among us mess up, the picture seems to be saying. By a pleasant coincidence, I was sitting in Dumas’s studio when Helena rang the doorbell. “That’s my daughter,” she said, getting up to answer without interrupting the bright patter of her conversation. The door opened, and there stood a tall, stylish, darkly attractive teenager with lustrous brown hair that fell down her back.

She was wearing gold ballet flats, and a few moments later, when I complimented them, she said, “My mother and I bought them in Italy when we were there” — at the time Dumas was having a show in Milan. “We made a deal. I would go see art and I would get a pair of shoes.” “She saw ‘The Last Supper’ of da Vinci,” her mother chimed in proudly.

Is Helena interested in art? “No,” Dumas replied without regret. “She wants to work with the psychology of children.” Dumas returned to the table, and we resumed our conversation, only to have Helena approach a few minutes later. “I’m sorry,” she told her mother. “I don’t want to interrupt, but we had a date.” She said she wanted to go shopping for a watch for her birthday, which was three weeks away.

“Not now, Helena, not now,” Dumas said with a hint of impatience, adding that she was in her studio until 3 the previous night and wasn’t feeling up to a shopping expedition. Then she turned to me and said: “Every time she has a birthday — she still has that from childhood — she gets so into the birthday it overrides everything else. Whatever it is, if it’s a cat, if it’s a watch — can we please not think of that now?” “I just like the window-shopping,” Helena said, and there was something touching about her persistence. The watch seemed as good a symbol as any for the predicament of a child who wanted more of her mother’s time.

After a while, they stopped speaking English and switched into Dutch, and their tone grew more strident. Unable to make out what they were saying beyond the “ja”s and the “nee”s and the bursts of guttural, throat-clearing sounds, I wandered off to look around the studio.

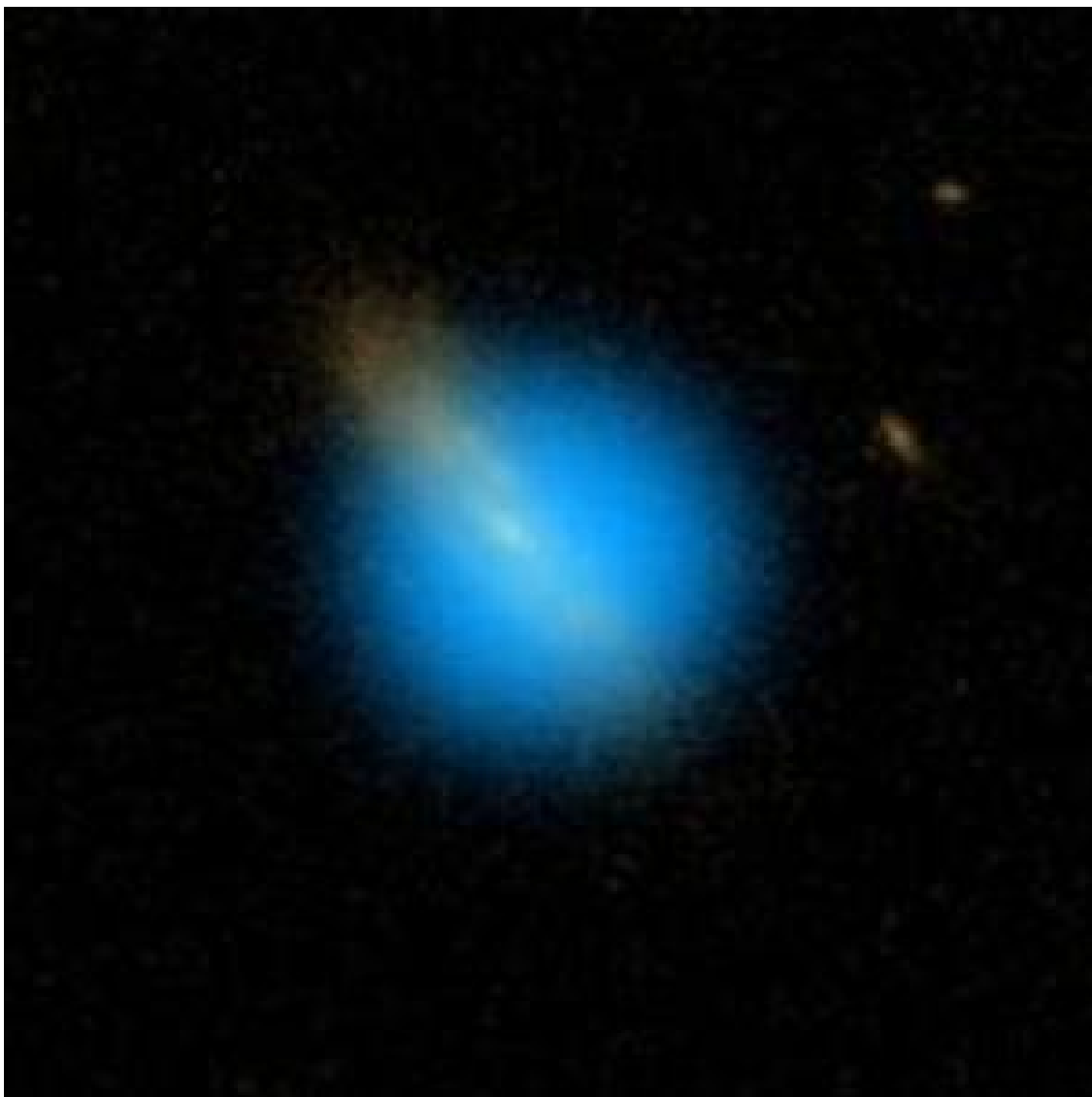
On a wall where Dumas had pinned up postcards, I noticed a reproduction of a canvas by Ode aan Coorte, a recently rediscovered 17th-century painter of miniature still lifes whose show had just opened at The Hague. It was a compelling image — red cherries and a bundle of asparagus glistening against shadow — and it seemed to say something about the Dutch temperament, with its famous affection for the everyday things of this world.

This, of course, is precisely the world that Dumas has banished from her art. Her paintings can be defined in terms of what she has rejected from her surroundings. She strips away anecdotal detail — the asparagus and the tulips and the light slanting down on red bricks — until all that is left is a haunting gaze. Together her pictures have a cumulative power, and at moments they seem to stare out at us as if emblematic of everyone who has ever disappeared, and with the knowledge that one day, we, too, will be among the missing. Which is not to say that Dumas is ready to completely embrace the abyss. “I still want to try before I die to do a tree,” she said.

*Deborah Solomon, the Questions For columnist for the magazine, is completing a biography of the artist Norman Rockwell.*

<http://www.nytimes.com/2008/06/15/magazine/15dumas-t.html?ref=design>

## Ultraviolet Gives View Inside Real ‘Death Star’



*Flash of ultraviolet light revealing the death throes of a star (Credit: Image courtesy of University of Oxford)*

ScienceDaily (Jun. 13, 2008) — Scientists have, for the first time, observed a flash of ultraviolet light from within a dying star giving vital evidence of how stars turn into supernovae.

An international team, including nine scientists from Oxford University, combined data from ground-bound telescopes observing visible light from supernovae with data from a space telescope looking for an earlier peak in ultraviolet light from an associated dying star. They were able to spot telltale signs of the shockwave that forms within a star before it explodes into a supernova. A report of the work appears in the journal *Science*.

‘Supernovae are huge stellar explosions that light up galaxies but often we have no idea which star has exploded,’ said Dr Kevin Schawinski of Oxford University’s Department of Physics. ‘The nature of such an explosion is that we can’t look inside it and it destroys almost all evidence of the original star – scientists have been trying to catch such an event happening for decades.’



Previously, scientists have observed stars nearing the end of their lives and supernova explosions and their afterglow, but have had little firm evidence of what happens in between. The new observations give a first glimpse of what happens inside a star during its final hours of life.

‘Out of all the supernovae we looked at we found one that was preceded by a dramatic ‘flash’ of ultraviolet light given off by a red super-giant star in a galaxy around a billion light years away. This flash occurred about two weeks before it was detected as a normal supernova,’ said Dr Stephen Justham of Oxford University’s Department of Physics.

‘We believe that this light, emanating from deep within the star, was generated after its core collapsed and compressed the gas surrounding it to around one million degrees Kelvin.’ Around four hours after this light was observed a shockwave from the collapsed core, travelling at 50 million kilometres an hour, would have hit the surface of the star and blown it apart. However, it was almost two weeks before the resulting fireball was spotted by supernova hunters using telescopes in Hawaii.

‘With this observation we have managed to peer inside one of the hundred billion stars in a galaxy and see what it is like at the very moment that it dies,’ said Dr Christian Wolf of Oxford University’s Department of Physics. ‘We’ve been extremely fortunate to capture this moment but this is just one event and, of course, we’d love to capture other similar events with different stars which could deliver many more surprises.’

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*Adapted from materials provided by University of Oxford.*

<http://www.sciencedaily.com/releases/2008/06/080613134315.htm>

## Students Explore The Physics Of Fizz



*Just about everyone knows what happens when you drop Mentos mints into a Diet Coke. (Credit: Michael Murphy, courtesy Wikimedia Commons)*

ScienceDaily (Jun. 13, 2008) — Just about everyone knows what happens when you drop Mentos mints into a Diet Coke.

Students at Appalachian State University have documented why the reaction occurs by studying the physics responsible for the fizzy result. Their results have been published in the June 2008 issue of the American Journal of Physics.

Tonya Coffey, an assistant professor of physics at Appalachian, developed the research project to as a way for sophomore-level students to build on skills they learned in their freshmen physics courses.

Through a series of experiments, the students found that a reaction between the rough surface of the Mentos, and the potassium benzoate and aspartame contained in Diet Coke were responsible for the famous geyser reaction, in which the liquid can spew up to 30 feet.

In the process, they also learned about the principles of thermodynamics, fluid mechanics, surface science and the physics of eruptions.

“We try to teach students what real experiments are like,” Coffey said. “I thought it would be good for the students to work on an experiment that doesn’t have a known outcome—because that’s what research is.”



Coffey asked her students to find out everything they could about the Diet Coke and Mentos reaction, develop a question about the reaction and design an experiment to answer their question. The students' only restrictions were to design an experiment that could be accomplished on a tight budget and to use existing equipment at the university.

“We discussed what a real researcher has to do when designing an experiment to answer a question,” Coffey said. Students studied what makes a good experiment, how complications can arise, the need to narrow the number of unknowns in an experiment, and the importance of designing an experiment that tests for one variable at time.

The students measured the volume of liquid displaced and the distance it traveled when a variety of items were added to Diet Coke – including Mentos, Wint-O-Green Lifesavers, rock salt, table salt and sand.

They also studied the surface roughness of the candy and other materials by using a scanning electron microscope and an atomic force microscope.

So why does the reaction occur? In an opened container of soda, carbon dioxide gas bubbles out over the course of minutes or hours until the concentration of carbon dioxide left in the soda is proportional to the carbon dioxide in the surrounding air. This de-fizzing reaction is slow because the surface tension of the liquid is very high, which keeps the gas bubbles trapped.

But when a Mentos is dropped in the beverage, it breaks the surface tension and as it falls the candy's surfactant coating further reduces the surface tension of the liquid. The candy's rough surface also provides growth sites for the gas, making it easier for carbonation to escape as a foam geyser.

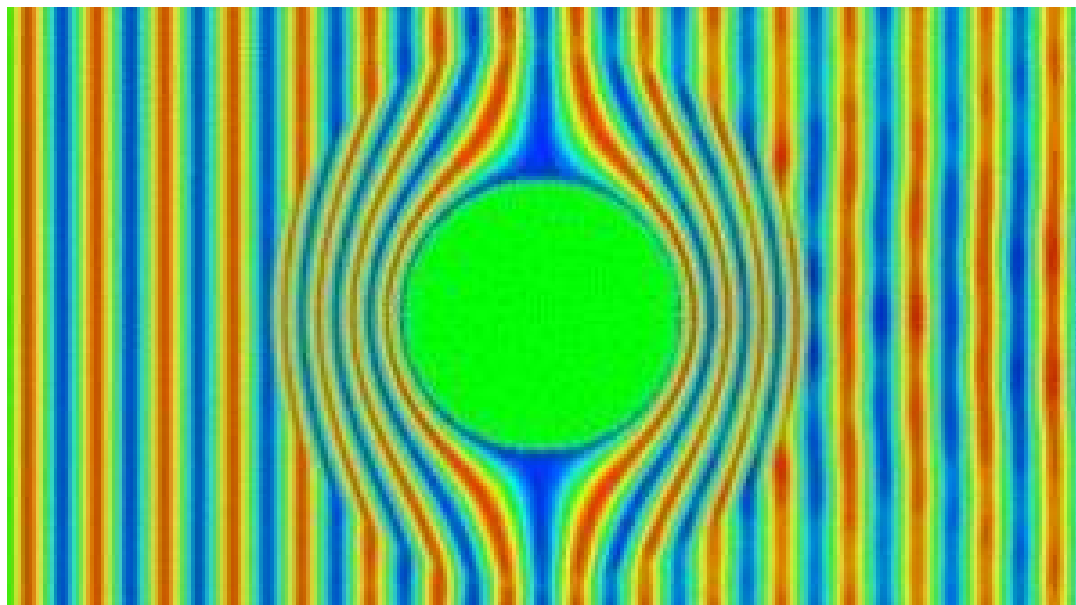
The geyser also occurs when sand, salt or lifesavers were added to the Diet Coke, but the mass lost and volume traveled is much less spectacular.

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*Adapted from materials provided by [Appalachian State University](http://www.sciencedaily.com/releases/2008/06/080612173622.htm).*

<http://www.sciencedaily.com/releases/2008/06/080612173622.htm>

## Nuisance Noise Silenced By Acoustic Cloak



*Acoustic cloak. (Credit: Image courtesy of Institute of Physics)*

ScienceDaily (Jun. 13, 2008) — Researchers in Spain have proven that metamaterials, materials defined by their unusual man-made cellular structure, can be designed to produce an acoustic cloak -- a cloak that can make objects impervious to sound waves, literally diverting sound waves around an object. The research builds on recent theoretical research which has sought ways to produce materials that can hide objects from sound, sight and x-rays.

Daniel Torrent and José Sánchez-Dehesa from the Wave Phenomena Group, Department of Electronics Engineering at the Polytechnic University of Valencia, cite theoretical work published early last year in NJP by researchers from Duke University in North Carolina, US, as the starting point for their more practical approach. To realise the cloak physically, the Spanish research team calculated how metamaterials constructed with sonic crystals, solid cylinders in a periodic array that can scatter sound waves, could be used in a multilayered structure to divert sound completely around an object.

The researchers performed multiple simulations to test their theory. They investigated the optimum number of layers required to completely divert sound and how thin the materials could be made to maintain their use but also ensure that they are easy to implement. Results were very encouraging, showing that optimum cloaking requires approximately 200 layers of the metamaterial but that there is scope for much thinner materials to be used than technology can currently produce. So, put simply, watch this space.

José Sánchez-Dehesa, one of the lead researchers, writes, "We hope that this proposal will motivate future experimental work demonstrating the materials' performance." One of the first uses of the material is likely to be warships, hoping to avoid sonar radars which pick up on the noise that ships emit, but if developments continue apace it could be used in concert halls to direct noise away from problem spots or even as a way to deal with noisy neighbours. Journal reference: Acoustic cloaking in two dimensions: a feasible approach. 13 June, 2008 New Journal of Physics (NJP).

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*Adapted from materials provided by [Institute of Physics](#).*

<http://www.sciencedaily.com/releases/2008/06/080612193837.htm>

## The Fate of The Sentence: Is the Writing On the Wall?

By Linton Weeks  
Washington Post Staff Writer  
Sunday, June 15, 2008; M01



The demise of orderly writing: signs everywhere.

One recent report, young Americans don't write well.

In a survey, Internet language -- abbreviated wds, :) and txt msging -- seeping into academic writing.

But above all, what really scares a lot of scholars: the impending death of the English sentence.

Librarian of Congress [James Billington](#), for one. "I see creeping inarticulateness," he says, and the demise of the basic component of human communication: the sentence.

This assault on the lowly -- and mighty -- sentence, he says, is symptomatic of a disease potentially fatal to civilization. If the sentence croaks, so will critical thought. The chronicling of history. Storytelling itself.

He has a point. The sentence itself is a story, with a beginning, a middle and an end. Something happens in a sentence. Without subjects, there are no heroes or villains. Without verbs, there is no action. Without objects, nothing is moved, changed, destroyed or created.

Plus, simple sentences clarify complex situations. ("Jesus wept.")

Since its invention centuries ago, the sentence has brought order to chaos. It's the handle on the pitcher, a tonic chord in music, a stair step chiseled in a mountainside.



To combat writer's block, Ernest Hemingway advised: "All you have to do is write one true sentence . . . and then go on from there."

A proverb "is a short sentence based on long experience," according to Miguel de Cervantes.

The sentence, Billington says, is the "greatest way to render narrative."

Over a cup of coffee recently in his best-view-of-the-Capitol office on the top floor of the Madison Building high above Independence Avenue, he sounds the warning. In complete sentences.

"The words 'community' and 'communicate' come from the same root word," the silver-haired librarian explains. "It logically follows that greater communication would lead to greater community, would bring us all together."

Great leaps in communication create an illusion, he says, that everyone is going to come together. The irony is that every major information revolution in the modern world has failed to stem misunderstanding and societal mayhem -- or even slow it down.

In the mid-15th century, Gutenberg's printing press did not forestall bloody holy wars. The multimedia revolution of the mid-19th century, which included telegraphy, photography and the steam-driven printing press, led to increased nationalist passions and wars among nations.

The Internet revolution, Billington says, creates new possibilities for people to be in touch with others, but it could also lead to a gobbledygook language without sentences and punctuation and paragraphs -- and with less understanding of the world and its meaning.

"We are moving toward the language used by computer programmers and air traffic controllers," he says. "Language as a method of instruction, not a portal into critical thinking."

A day or two after this conversation, Billington took his concerns to a group of educators at the library. The occasion was the April release of the results of the National Assessment of Educational Progress, otherwise known as "the nation's report card."

According to the report, only one-third of eighth-graders in this country can write with proficiency. The New York Times reported that the crowd laughed when Billington, at the presentation of the report, sounded the alarm about "the slow destruction of the basic unit of human thought -- the sentence."

Undaunted, he continued. Online communication is sloppily written, he said, and "the sentence is the biggest casualty."

Was the librarian just kicking it old school? Not necessarily.

Efstathia Siegel, who has been teaching freshman composition at Montgomery College for 10 years, agrees with Billington. "I'm optimistic about students' enthusiasm for learning," Siegel says. "But when it comes to how their sentences are put together, that consciousness is not there."

Love of stories hasn't vanished, Siegel says, and students who want to be writers and storytellers still care about the way sentences are created. "But what about those who don't write the stories?" she says. "That's who I am concerned about. Those who don't have a love of the language."

Being able to write clearly is essential to getting a good job, Siegel says. "I'm not seeing most students care about that," she says.





"In developing an idea," she explains, "it is essential that a paragraph begin with a clear topic sentence from which the idea is developed and expanded by the following sentences. Many students are lost because that beginning sentence lacks a driving or principal idea. What follows are disconnected sentences with little meaning."

Michael Morreau, who teaches philosophy at the [University of Maryland](#), says: "In logic, the sentence is the basic bearer of truth or falsity. I say: *It is raining*. I use a sentence to provide information about what the world is like around here."

People who don't write and speak in coherent sentences, Morreau says, don't succeed in communication. He is especially concerned about "the death of the good sentence" -- one that imparts clear and concise information.

"It seems pretty obvious and uncontentious that you have got to be able to use sentences to make logical arguments," says James Cargile, who teaches logic at the [University of Virginia](#).

Take a fragment such as: Sad, the king of France. It could mean the king is sad or it could mean it is sad to be the king. Two very different things.

Rifle through the Internet, and you find lots of examples of sentence fragging:

Mark A. Whatley, a psychology professor at Valdosta State University, posted a sampling of bad college-level writing.

"So was true in this study," wrote one student.

"Also, the study including finding out if males were more attracted to tall attractive females or short attractive females," wrote another.

[University of Delaware](#) professor Ben Yagoda has been teaching English for 16 years. Students, he says, are getting brighter. But their abilities to write clearly have deteriorated appreciably in the past four or five years.

Most prose that young people read nowadays, Yagoda says, is unedited -- blogs, text messages and instant messages. Consequently, "the things that suffer most are spelling and punctuation. They put a comma, not a period, where there is a pause."

A recent survey by the College Board and Pew Internet and American Life Project found that most students say it's important to know how to write well, but a majority also said that Internet-style language -- including abbreviations and emoticons -- is making its way into their classwork.

Some linguists are not alarmed. "Language, all language, undergoes constant change," Amelia C. Murdoch writes in an e-mail. "And technological developments that impinge on language inevitably cause changes in language, all kinds of changes." Murdoch is president of the just-opened National Museum of Language in College Park.

"I personally do not anticipate the early demise of constructions such as 'Pass the salt' or 'Thou shalt not kill,'" she says. "I believe that people want, require, applaud and revere writing that is clear, logical, forceful and beautiful for their information, their laws, their literature and philosophy."

Martha Kolln, a retired [Penn State](#) English professor and author of "Understanding English Grammar," says, "Every new thing that comes along has its naysayers. Kids who are text-messaging . . . certainly sentences are underneath those few words. We do in speech and in writing tend to use elliptical phrases that stand for the whole."



"I'm an optimist myself," she says. "We're still using sentences. Maybe they are fragments of sentences, but good writers use fragments. I would have to see more proof that the sentence is dying."

Wilson Follett, writing in Atlantic magazine, offered proof. In an essay titled "Death of the Sentence," fiction writer and literary critic Follett wrote, "To deal with the organization of thought in words is of necessity to deal with the sentence."

In all languages, he added, "it has been the great continuum."

The sentence, he declared, "is a structure inherently faithful to the pattern of consciousness." It is "an instrument inevitable and perfect for the expression of thought."

But, wrote Follett, the sentence is under attack. "To what stage of vagueness, confusion, or sheer lunacy must the English sentence be pushed to evoke any noticeable volume of outcry?"

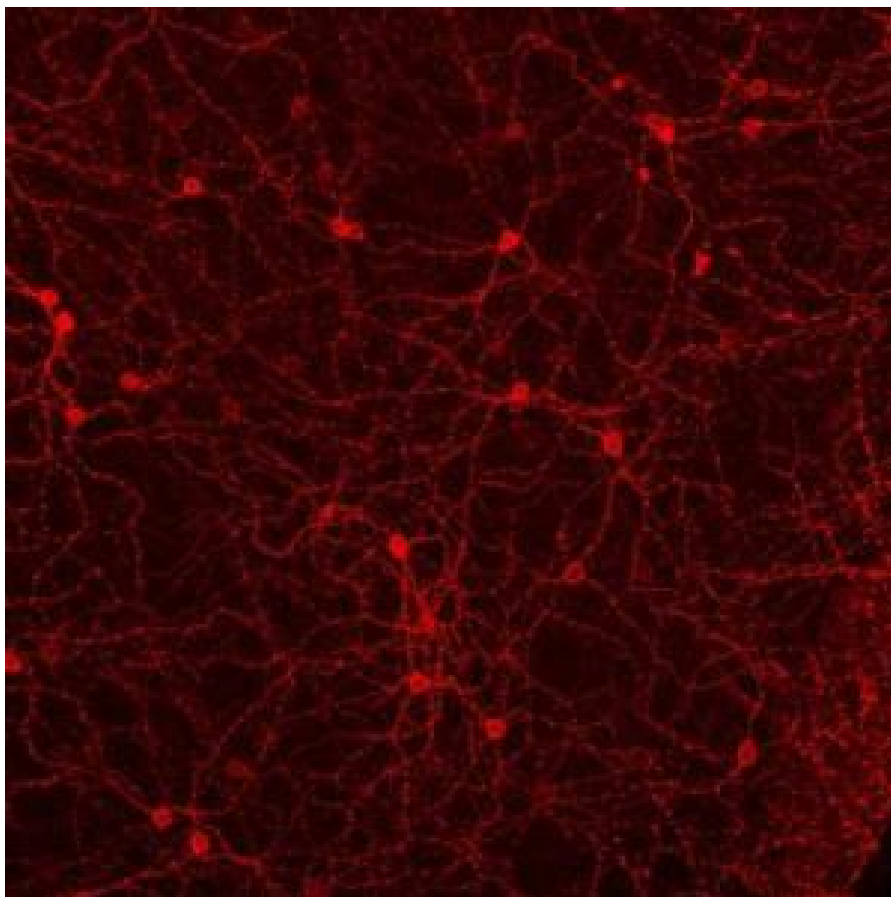
Follett's essay appeared in Atlantic's October issue. Of 1937.

At the time, he was not concerned about millions of text-messagers and e-mailers killing the sentence. He was worried about highbrow writers -- such as John Dos Passos and Harvard University's Bernard DeVoto -- using long, looping sentences that did not adhere to the strict grammatical and punctuation rules of the day.

Back then there was concern that sentences were too complex; today, that sentences are not complex enough. And that's the way it.

[http://www.washingtonpost.com/wp-dyn/content/article/2008/06/12/AR2008061202258.html?nav=rss\\_print/style](http://www.washingtonpost.com/wp-dyn/content/article/2008/06/12/AR2008061202258.html?nav=rss_print/style)

## Perfect Vision But Blind To Light



*When light activates melanopsin (red), a light receptor found in rare, specialized cells in the retina, they send a signal to different areas in the brain. It allows the body to tell day from night and adjust accordingly. (Credit: Courtesy of Dr. Megumi Hatori, Salk Institute for Biological Studies)*

ScienceDaily (Jun. 17, 2008) — Mammals have two types of light-sensitive detectors in the retina. Known as rod and cone cells, they are both necessary to picture their environment. However, researchers at the Salk Institute for Biological Studies have found that eliminating a third sensor -- cells expressing a photopigment called melanopsin that measures the intensity of incoming light -- makes the circadian clock blind to light, yet leaves normal vision intact.

"It is entirely possible that in many older people a loss of this light sensor is not associated with a loss of vision, but instead may lead to difficulty falling asleep at the right time," says Satchidananda Panda, Ph.D., an assistant professor in the Regulatory Biology Laboratory, who led the study.

Understanding how melanopsin does its job may one day allow scientists to reset the body's biological clock with a pill to alleviate symptoms associated with jet lag, shifts in work schedules, seasonal changes in day lengths and disorders such as insomnia and depression, the researchers say. Their findings are published in the June 11, 2008 issue of the PLoS ONE.

Visual processing begins when photons entering the eye strike one or more of the 125 million light-sensitive nerve cells in the retina at the back of each eye. Rod cells use rhodopsin to pick up dim light, while cone cells rely on related photopigments to discriminate color. This first and outermost layer of cells converts the information into electrical signals and sends them to an intermediate layer, which in



turn relays signals to the optic nerve. Melanopsin is different from the classical rod and cone opsins, which help us see.

"It functions like a light meter in a camera, but does more than set our biological clock," explains Panda. "The incoming information about light intensity is also used to adjust the aperture or pupil size, regulate melatonin synthesis and physical activity."

Unlike the millions of rod and cone cells imparting vision, melanopsin is only present in roughly 2,000 cells, which are known as melanopsin-expressing retinal ganglion cells or mRGCs. Embedded in the inner retina, these spidery cells signal directly to the human circadian clock, a cluster of cells less than half the size of a pencil eraser, which sits just above the point where the optic nerves cross.

Through these signals, the clock synchronizes the body's daily rhythms with the rising and setting of the sun. It tells the body when it's time to go to sleep, when to be hungry, when to wake up and makes us feel completely out of sync when we cross several time zones.

While it had been known that blind mice without functional rods and cones can still use mRGCs to adjust their biological clock, the aperture of their pupils and light-dependent activity -- collectively known as non-image forming visual responses -- mice without melanopsin were not completely blind to light.

Since mice developing without melanopsin might compensate during their development for the lack of incoming information about light intensity, resulting in muddled results, postdoctoral researcher and first author Megumi Hatori, Ph.D., developed a system that allowed her to specifically and efficiently shut down all melanopsin-expressing cells while leaving the retina intact.

She genetically engineered mice to render their mRGCs susceptible to diphtheria toxin, which she exploited to kill melanopsin-expressing cells at eight weeks of age. "We found that killing the melanopsin-expressing cells makes the mouse circadian clock completely blind to light," says Hatori, "but these mice can still perform normal image-forming visual tasks perfectly fine."

The mammalian time keeping system relies on information from melanopsin -- and to a lesser extent from rods and cones -- to collect information about light intensity. The Salk researchers experiments pinpointed mRGCs as the location where all the incoming information about the brightness of ambient light is integrated and forwarded to the circadian clock.

"Since all the information passes through mRGCs, these cells have emerged as a unique cellular target for therapeutic intervention in circadian clock related disorders," says Panda, who has started screening small molecules for their ability to tweak melanopsin's light sensing properties and thereby slowing down or enhancing the resetting of our biological clock.

Researchers who also contributed to this work include researchers Hiep Le, Christopher Vollmers, Sheena Racheal Keding and Nobushige Tanaka, Ph.D., in the Panda laboratory, Christian Schmedt, Ph.D., Associate Director of Genetics at the Genomics Institute of the Novartis Research Foundation, San Diego, and assistant professor Timothy Jegla, Ph.D., at The Scripps Research Institute, La Jolla.

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*Adapted from materials provided by [Salk Institute](#), via [EurekAlert!](#), a service of AAAS.*

<http://www.sciencedaily.com:80/releases/2008/06/080610212413.htm>

### **Aging Is Satisfying, New Research Shows**

ScienceDaily (Jun. 17, 2008) — University of Queensland research is turning conventional wisdom on its head when it comes to grumpy old men and women.

Professor Bill von Hippel, from UQ's School of Psychology, has been examining the links between people's age and their social satisfaction and he has turned up some surprising results.

In collaboration with Julie Henry and Diana Matovic from the University of New South Wales, Professor von Hippel measured social activities and social satisfaction in older adults between the ages of 66 and 91, and younger adults between the ages of 18 and 30.

He said they found younger adults engaged in a lot more social activities, but were no happier with their social lives than older adults.

"Despite older people engaging in fewer social activities with others and spending more time alone each day, they are just as socially satisfied as their younger counterparts," Professor von Hippel said.

The reason for this social resilience seems to lie in how older and younger adults perceive their social activities.

"Our research suggests that if a young person and an old person have the same experience, the older adult is likely to find it more uplifting," he said.

"Older adults appear to see the good things in life more easily and are less likely to be upset by the little things that go wrong.

"As a consequence, their daily experiences bring them just as much satisfaction as younger adults, even if they have lost friends or a spouse, or if they can no longer get out as much as they would like.

"This may be the wisdom of ageing, the ability to experience everyday life as uplifting."

The research was published in the June issue of the American Psychological Association journal *Psychology and Aging*.

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*Adapted from materials provided by [University of Queensland](http://www.universityofqueensland.edu.au).*

<http://www.sciencedaily.com/releases/2008/06/080616094222.htm>

## Global Impact Of Urbanization Threatening World's Biodiversity And Natural Resources



*According to a new report, humans are building the equivalent of a city the size of Vancouver (shown above) every week. While most of the growth is occurring in developing countries like China, India and Africa, ecologically rich areas such as coasts and islands are also at risk. (Credit: iStockphoto/Dan Barnes)*

ScienceDaily (Jun. 17, 2008) — The Nature Conservancy and Harvard University released a new study examining the effect of staggering urban growth on nature and people that finds if we don't improve urban planning now, we may lose some animals, plants and natural resources for good.

“As a species we have lived in wild nature for hundreds of thousands of years, and now suddenly most of us live in cities—the ultimate escape from nature,” says Peter Kareiva, chief scientist at The Nature Conservancy and co-author of the report. “If we do not learn to build, expand and design our cities with a respect for nature, we will have no nature left anywhere.”

The study, “The implications of current and future urbanization for global protected areas and biodiversity conservation,” was published in the current issue of *Biological Conservation* and is the first-ever global analysis of how urbanization will affect rare species, natural resources and protected areas in proximity to cities.

In 2007, the United Nations revealed that at least 50 percent of the world's population is living in cities. By 2030, that number will jump to 60 percent, with nearly 2 billion new city residents, many migrating from rural areas. According to the report, humans are building the equivalent of a city the size of Vancouver every week. While most of the growth is occurring in developing countries like China, India and Africa, ecologically rich areas such as coasts and islands are also at risk.

Kareiva and the study's lead author Robert McDonald, applied scientist at The Nature Conservancy, built scenarios of urban growth and examined how, at the current pace of urbanization, natural resources and ecosystems could by 2030 be severely damaged. Their findings include:

- Natural areas most affected by urban growth contain some of the highest concentrations of endemic species in the world — these places tend to be small, but significant. For example the Wimmer’s Shrew, found only in the outskirts of the capitol of Cote D’Ivoire on Africa’s west coast, is unlikely to survive the expansion of Abidjan without some help from conservation.
- 8 percent of vertebrae species have been labeled as “endangered” due to the effects of rapid urban development, and that number may continue to rise with new urban expansion and growth.
- In some regions, the proximity between protected areas and cities will greatly increase. For example, in Eastern Asia the average distance from a city to a protected area will be 14 miles by 2030, as compared to 27 miles in 1995. Such proximity will increase the pressures on natural resources and increase the likelihood of resource extraction and other threats to these protected places.

“While we found the effects of urbanization to be localized, cumulatively, they pose a big threat to biodiversity,” said McDonald. “Our urban footprint covers much of the globe and is coming closer to stomping out many endangered species and posing new risks to protected areas and parks.”

Economic concerns will also emerge with rapid urban growth. For example, accidental or intentionally started fires will increase, costing additional dollars and resources to suppress the flames that threaten homes, businesses and buildings. At Tijuca National Park near Rio de Janeiro, Brazil, there are around 75 wildfires a year, almost all caused by humans and most started at the edge of the park by surrounding residents. Water quality is also becoming a grave concern, as urban areas pose significant threats to the health of freshwater systems. For example, in Donana National Park in Spain, rivers are affected by polluted water coming from Sevilla, located 30 miles upstream.

Fortunately, there is hope for turning back this tide of destruction, say the report’s authors.

Governments, city-planners and conservationists can work together to predict and plan in advance for urbanization’s threats to nature. Having information on cities’ impacts to these endangered species and protected areas enables planners to shape the growth of cities before it’s too late, and to implement more sustainable urban planning.

However, a lack of funding, especially in developing countries, may prevent the implementation of smart-growth plans and expanded public transit systems — paving the way for more vehicles and drivers contributing more greenhouse gases to the atmosphere, a major cause of climate change.

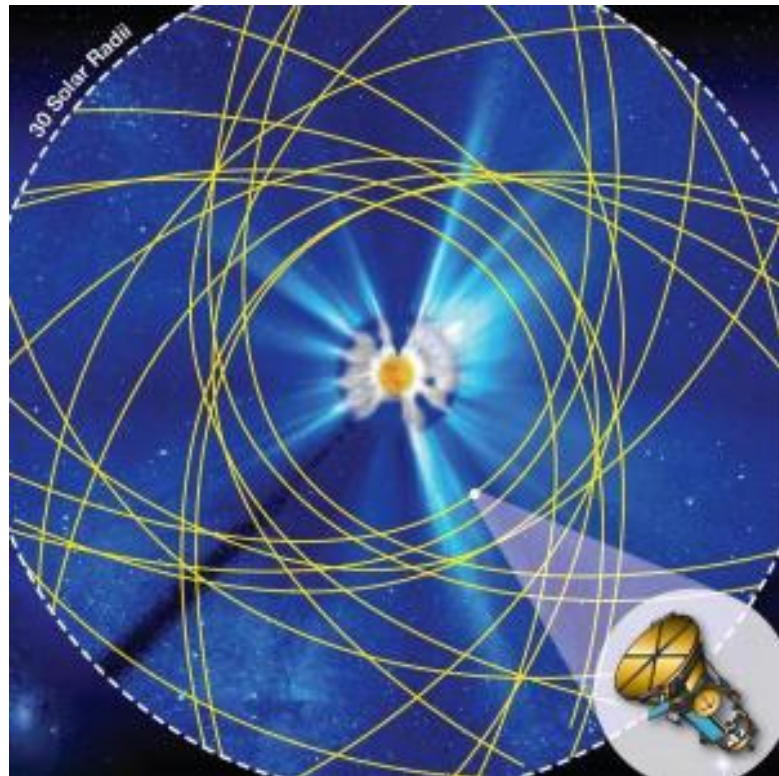
“This is yet another vivid example of why conservation cannot simply be about sequestering nature in parks and reserves,” says Kareiva. “We can set up all the reserves we want, but if we do not take care in where we place our cities, how we grow our cities, and how we live in our cities, we will fail in our mission to protect biodiversity.”

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*Adapted from materials provided by The Nature Conservancy.*

<http://www.sciencedaily.com/releases/2008/06/080610182856.htm>

## NASA Plans To Visit The Sun



*A simulated view of the Sun illustrating the trajectory of Solar Probe+ during its multiple near-Sun passes. (Credit: Image courtesy of Science@NASA)*

ScienceDaily (Jun. 16, 2008) — For more than 400 years, astronomers have studied the sun from afar. Now NASA has decided to go there.

"We are going to visit a living, breathing star for the first time," says program scientist Lika Guhathakurta of NASA Headquarters. "This is an unexplored region of the solar system and the possibilities for discovery are off the charts."

The name of the mission is Solar Probe+ (pronounced "Solar Probe plus"). It's a heat-resistant spacecraft designed to plunge deep into the sun's atmosphere where it can sample solar wind and magnetism first hand. Launch could happen as early as 2015. By the time the mission ends 7 years later, planners believe Solar Probe+ will solve two great mysteries of astrophysics and make many new discoveries along the way.

The probe is still in its early design phase, called "pre-phase A" at NASA headquarters, says Guhathakurta. "We have a lot of work to do, but it's very exciting."

Johns Hopkins' Applied Physics Lab (APL) will design and build the spacecraft for NASA. APL already has experience sending probes toward the sun. APL's MESSENGER spacecraft completed its first flyby of the planet Mercury in January 2008 and many of the same heat-resistant technologies will fortify Solar Probe+. (Note: The mission is called Solar Probe plus because it builds on an earlier 2005 APL design called Solar Probe.)

At closest approach, Solar Probe+ will be 7 million km or 9 solar radii from the sun. There, the spacecraft's carbon-composite heat shield must withstand temperatures greater than 1400o C and survive



blasts of radiation at levels not experienced by any previous spacecraft. Naturally, the probe is solar powered; it will get its electricity from liquid-cooled solar panels that can retract behind the heat-shield when sunlight becomes too intense. From these near distances, the Sun will appear 23 times wider than it does in the skies of Earth.

The two mysteries prompting this mission are the high temperature of the sun's corona and the puzzling acceleration of the solar wind:

- **The corona:** If you stuck a thermometer in the surface of the sun, it would read about 6000o C. Intuition says the temperature should drop as you back away; instead, it rises. The sun's outer atmosphere, the corona, registers more than a million degrees Celsius, hundreds of times hotter than the star below. This high temperature remains a mystery more than 60 years after it was first measured.
- **The solar wind:** The sun spews a hot, million mph wind of charged particles throughout the solar system. Planets, comets, asteroids—they all feel it. Curiously, there is no organized wind close to the sun's surface, yet out among the planets there blows a veritable gale. Somewhere in between, some unknown agent gives the solar wind its great velocity. The question is, what?

"To solve these mysteries, Solar Probe+ will actually enter the corona," says Guhathakurta. "That's where the action is."

The payload consists mainly of instruments designed to sense the environment right around the spacecraft—e.g., a magnetometer, a plasma wave sensor, a dust detector, electron and ion analyzers and so on. "In-situ measurements will tell us what we need to know to unravel the physics of coronal heating and solar wind acceleration," she says. Solar Probe+'s lone remote sensing instrument is the Hemispheric Imager. The "HI" for short is a telescope that will make 3D images of the sun's corona similar to medical CAT scans. The technique, called coronal tomography, is a fundamentally new approach to solar imaging and is only possible because the photography is performed from a moving platform close to the sun, flying through coronal clouds and streamers and imaging them as it flies by and through them.

With a likely launch in May 2015, Solar Probe+ will begin its prime mission near the end of Solar Cycle 24 and finish near the predicted maximum of Solar Cycle 25 in 2022. This would allow the spacecraft to sample the corona and solar wind at many different phases of the solar cycle. It also guarantees that Solar Probe+ will experience a good number of solar storms near the end of its mission. While perilous, this is according to plan: Researchers suspect that many of the most dangerous particles produced by solar storms are energized in the corona—just where Solar Probe+ will be. Solar Probe+ may be able to observe the process in action and show researchers how to forecast Solar Energetic Particle (SEP) events that threaten the health and safety of astronauts.

Solar Probe+'s repeated plunges into the corona will be accomplished by means of Venus flybys. The spacecraft will swing by Venus seven times in six years to bend the probe's trajectory deeper and deeper into the sun's atmosphere. Bonus: Although Venus is not a primary target of the mission, astronomers may learn new things about the planet when the heavily-instrumented probe swings by.

"Solar Probe+ is an extraordinary mission of exploration, discovery and deep understanding," says Guhathakurta. "We can't wait to get started."

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*Adapted from materials provided by [Science@NASA](mailto:Science@NASA). Original article written by Dr. Tony Phillips.*

<http://www.sciencedaily.com/releases/2008/06/080611142452.htm>

## Coffee's Aroma Kick-starts Genes In The Brain



Scientists are reporting that simply inhaling coffee aroma alters the activity of genes in the brain. (Credit: iStockphoto/Dane Steffes)

ScienceDaily (Jun. 16, 2008) — Drink coffee to send a wake-up call to the brain? Or just smell its rich, warm aroma? An international group of scientists is reporting some of the first evidence that simply inhaling coffee aroma alters the activity of genes in the brain. In experiments with laboratory rats, they found that coffee aroma orchestrates the expression of more than a dozen genes and some changes in protein expressions, in ways that help reduce the stress of sleep deprivation.

Han-Seok Seo and colleagues point out that hundreds of studies have been done on the ingredients in coffee, including substances linked to beneficial health effects. "There are few studies that deal with the beneficial effects of coffee aroma," they note. "This study is the first effort to elucidate the effects of coffee bean aroma on the sleep deprivation-induced stress in the rat brain." In an effort to begin filling that gap, they allowed lab rats to inhale coffee aroma, including some rats stressed by sleep deprivation. The study then compared gene and protein expressions in the rats' brains. Rats that sniffed coffee showed different levels of activity in 17 genes. Thirteen of the genes showed differential mRNA expression between the stress group and the stress with coffee group, including proteins with healthful antioxidant activity known to protect nerve cells from stress-related damage.

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### Journal reference:

1. Han-Seok Seo et al. **Effects of Coffee Bean Aroma on the Rat Brain Stressed by Sleep Deprivation: A Selected Transcript- and 2D Gel-Based Proteome Analysis.** *Journal of Agricultural and Food Chemistry*, June 25, 2008 DOI: [10.1021/jf8001137](https://doi.org/10.1021/jf8001137)

Adapted from materials provided by [American Chemical Society](http://www.americansocietypublishing.com).

<http://www.sciencedaily.com/releases/2008/06/080616092116.htm>

## Chemists Investigate Lost Reds In Homer Painting



Winslow Homer, "For to Be a Farmer's Boy" (1887). Watercolor from the collection of the Art Institute of Chicago, Gift of Mrs. George T. Langhorne in memory of Edward Carson Waller. (Credit: Image courtesy of Northwestern University)

ScienceDaily (Jun. 16, 2008) — More than 30 years ago, when Northwestern University chemist Richard Van Duyne developed a powerful new sensing technique, he never thought he would be using it to learn more about treasures in the Art Institute of Chicago's collection -- including a watercolor recently featured in the museum's exhibition "Watercolors by Winslow Homer: The Color of Light."

In Homer's watercolor "For to be a Farmer's Boy," painted in 1887, some of the red and yellow pigments have faded in the sky, leaving that area virtually without color. Van Duyne, Charles E. and Emma H. Morrison Professor of Chemistry in the Weinberg College of Arts and Sciences, is working with Francesca Casadio, a conservation scientist at the Art Institute, to determine what the original colors were.

To solve this mystery, they are using surface enhanced Raman spectroscopy (SERS), the analytical technique pioneered by Van Duyne in 1977. SERS uses laser light and nanoparticles of precious metals to interact with molecules to show the chemical make-up of a particular dye.

SERS is a variation of Raman spectroscopy, a widely used technique first developed in the 1920s. What sets SERS apart is its ability to analyze extremely minute samples of organic dyes; some samples are so small they cannot be seen by the naked eye.

Organic dyes are natural substances that were used to color artworks created before the introduction of synthetic dyes in the late 1800s and 1900s. That's a lot of art -- from Egyptian textiles to Renaissance tapestries to Impressionist paintings and beyond.



Because red dyes are easily damaged by light and fluoresce when probed with conventional Raman spectroscopy but not by SERS, Van Duyne and Casadio have been focusing on organic red dyes in particular, working to identify those used in Homer's painting as well as in a variety of textiles, such as a 16th century carpet from Istanbul and a rare textile fragment from Peru, dated from 800 to 1350 A.D.

"Our research provides an entirely new window onto the analysis of artworks," said Van Duyne. "There's a broad range of physical science methods used in the conservation business. The trick is you can't harm the work -- the method has to be non-destructive or minimally destructive. Conservators do a lot of work with X-ray photography and infrared photography, but those techniques don't tell you what elements are present. The Raman technique tells you about what molecules are there."

In preparing for the Art Institute's major Homer exhibition, conservators discovered, using X-ray fluorescence spectrometry and visual examination through a microscope, that the painting's white skies were originally painted in unstable red and orange dyes that have almost completely faded.

In discerning the painting's original colors, Van Duyne's team must figure out a reliable way of preparing microscopic watercolor samples for SERS analysis. In the end, Art Institute conservators won't repaint the original skies but, in conjunction with the Homer exhibition, they created a digital image that offers viewers an idea of the artist's intentions.

Van Duyne says that conservation scientists are unlocking the secrets of dye and pigment analysis, and that in the future such analysis will help conservators determine forgery, authenticity, exact provenance and best restoration methods. "If we have a better idea about which materials are used in paintings, for instance, we'll have a better idea of how to restore them. Just identifying what's involved is a very important step."

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*Adapted from materials provided by Northwestern University.*

<http://www.sciencedaily.com/releases/2008/06/080610180353.htm>

## When It Comes To Nitrogen, The 'Fix' Is In



*Claire Horner-Devine collects sediment cores in Padilla Bay mudflats to examine communities of microorganisms associated with a native and an invasive eelgrass. (Credit: University of Washington)*

ScienceDaily (Jun. 16, 2008) — The discovery in the last decade of new suites of microorganisms capable of using various forms of nitrogen -- discoveries that have involved a number of University of Washington researchers -- is one reason to rethink what we know about the nitrogen cycle.

So say University of Washington's Claire Horner-Devine, assistant professor of aquatic and fishery sciences, and Adam Martiny of the University of California, Irvine, in a recent Science magazine opinion piece about how new insights into microbial pathways, players and population dynamics are challenging conventional models of the nitrogen cycle.

It's important to understand the environmental controls on nitrogen fixation and the nitrogen cycle so we can assess their likely response to environmental changes such as global warming, ocean acidification and dead zones in the coastal ocean, Horner-Devine says.

Nitrogen in the form of compounds such as ammonia and nitrate is necessary for building amino acids and proteins essential to all life. While nitrogen gas makes up more than three-quarters of the air we breathe, the element is unusable by life in that form. It has to be fixed, that is broken apart and latched onto other chemicals, in order to become user-friendly.

Findings described in the Science piece suggest that the ability to oxidize ammonia and fix nitrogen is more widely distributed among bacteria and archaea than researchers and modelers of the nitrogen cycle have previously taken into account. For example:

- In the mid 1990s scientists including UW's Jim Staley began finding microbes capable of oxidizing ammonia in oxygen-starved environments -- this after years of only seeing this process happen when oxygen was present.
- In work since the early 2000s, researchers including the UW's David Stahl and Anitra Ingalls showed that archaea likely contribute substantially to nitrification in the oceans and on land. Archaea, initially thought to inhabit only places with extreme temperatures and pressures, instead made up a substantial proportion of marine plankton worldwide,
- Co-author Martiny is among those studying cyanobacteria, some of which are emerging as agents of nitrogen fixation.

"The discovery that such disparate groups are involved . . . in the nitrogen cycle calls for a reevaluation of the assumptions made in biogeochemical models and field experiments," Horner-Devine and Martiny write.

In addition to new pathways and players, it is becoming more apparent that understanding the global nitrogen cycle also will require consideration of ecological dynamics, something Horner-Devine studies.

The Science piece cites recently published work in which the balance between the bacteria oxidizing ammonia and those oxidizing nitrite became so destabilized and chaotic that the bacteria oxidizing nitrite were exterminated and nitrification broke down.

"Complexity and dynamics at these small scales of organization may require more sophisticated representations of microbial communities," Horner-Devine and Martiny write.

Those studying microbial diversity and those like Horner-Devine who study microbial ecology could -- and probably should -- come together more, she says.

"We must better understand how changes in community and population dynamics are related to nitrogen transformation rates and how both the players and the processes respond to disturbances," the co-authors write.

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*Adapted from materials provided by [University of Washington](http://www.sciencedaily.com/releases/2008/06/080610170057.htm).*  
<http://www.sciencedaily.com/releases/2008/06/080610170057.htm>

## Leicestershire Burial Mounds Reveal Ancestral Insights



*Two pots found in a barrow. One of the barrows included the crouched burial of a child of around eight years, who lay with grave offerings including two pots, a stone bowl and three flint knives. (Credit: Image courtesy of University of Leicester)*

ScienceDaily (Jun. 16, 2008) — Researchers from University of Leicester Archaeological Services (ULAS) have recently completed work on the results of three closely related Bronze Age round barrows excavated at Cossington, Leicestershire. Their excavations revealed a variety of burial practices from Bronze Age, Iron Age, Roman and Anglo Saxon times, showing how the three barrows were used in repeated ceremonies to honour the dead. They offer the first definite example of an Anglo Saxon cemetery sited on an earlier monument to be found in Leicestershire.

One of the barrows included the crouched burial of a child of around eight years, who lay with grave offerings including two pots, a stone bowl and three flint knives. One of the knives had been made from a much earlier object, perhaps making a physical link to past ‘ancestors’. The findings have been published in *Monument, Memory, and Myth*, by University of Leicester archaeologist John Thomas, offering an important addition to understanding how burial monuments were used, not only by the people who built them in the Bronze Age, but also by later generations living close to the monuments.

The research project, funded by English Heritage through the Aggregates Levy Sustainability Fund, has brought together the results of three separate excavations undertaken in advance of gravel extraction at Cossington Quarry.

The three barrows form part of a small cemetery located at the confluence of the Rivers Soar and Wreake. This may have been an important location where Bronze Age people met up at certain times of the year to trade, foster relationships, forge alliances and swap stories. The formation of the cemetery is likely to have been due to the importance of this part of the landscape to the people who lived in it.

John Thomas explained the significance of the finds: “The three barrows are likely to have been built as community projects, with different families pooling resources to create monuments for wider kinship use.

Evidence for the careful maintenance and re-building of the barrows shows that they were not built for single use, but had a long history and were used and re-used many times.

“A cremation burial close to the child’s grave also had broken pieces of Beaker style pottery that must have been quite ancient even before they were placed in the grave so it is possible that these were also treated as a link to the past – almost as heirlooms or antiques – with ancestral connections.

“Another burial, probably of a woman, was accompanied by a remarkable composite bead necklace. This was made of jet, shale, amber and faience beads and is a remarkable find for the region. Although the sandy soils had destroyed the bone evidence, the necklace still lay in the order that the beads had been strung, allowing it to be reconstructed. “It is thought that such necklaces, fairly common in burials from the Wessex area, were made at the graveside from beads taken from other necklaces before being buried with the deceased. In this way they can also be seen as having been charged with the power of the ancestors, as well as giving a link to the wider family network to which the deceased belonged.

“The style of the necklace (associated with Wessex) and the origins of the material for the original beads also show links with wider areas, perhaps through trade or other social networks.”

“After their original period of use the three barrows continued to attract attention. A small cremation cemetery developed on the edge of one of the barrows, which probably represented the burial ground of a single family group. The location of the burials suggests that this family wished to be associated with the barrow and those buried in it. “Later still, one of the barrows, which survived as a low earthwork mound, apparently became a meeting place for people making flint tools. They left over a thousand waste pieces behind, suggesting that this was a regular meeting spot.”

The earthwork monument also became the focus for activity during much later periods. In the Iron Age a settlement grew nearby and the significance of the barrow is shown by a number of pots (perhaps once containing offerings) that were buried in the barrow mound. This practice continued into the Roman period when more whole pots were buried.

Finally the barrow mound became the setting for a small Anglo-Saxon cemetery. This association between Saxon burials and earlier monuments is a recognised phenomenon nationally but the first definite example from Leicestershire. No bone survived but iron spears, knives, buckles and brooches indicated that at least five people had been buried there. A small settlement also existed nearby. John Thomas added: “The re-use of the barrow by Iron Age, Roman and Anglo Saxon people is very interesting. These people could not have had any knowledge of the original use and meaning attached to the monument – but it survived as a prominent landmark in a fairly flat landscape and became the focus for settlement in these periods. It was perhaps imagined to contain the ancestral spirits of the land and by associating themselves with the long dead, the living could make claims to be their successors and heirs – giving them a ‘right’ to live there.

“The results of this project have shown how the three barrows were used repeatedly, resulting in a long history and providing a remarkable insight into how these burial monuments were used by local communities living in the surrounding landscape.

“Rather than seeing these barrows as single use monuments it is clear that through their repeated use they became rich in memory and myth, even during the Early Bronze Age, and that their significance endured, influencing later settlers wishing to stake a claim on the surrounding landscape.”

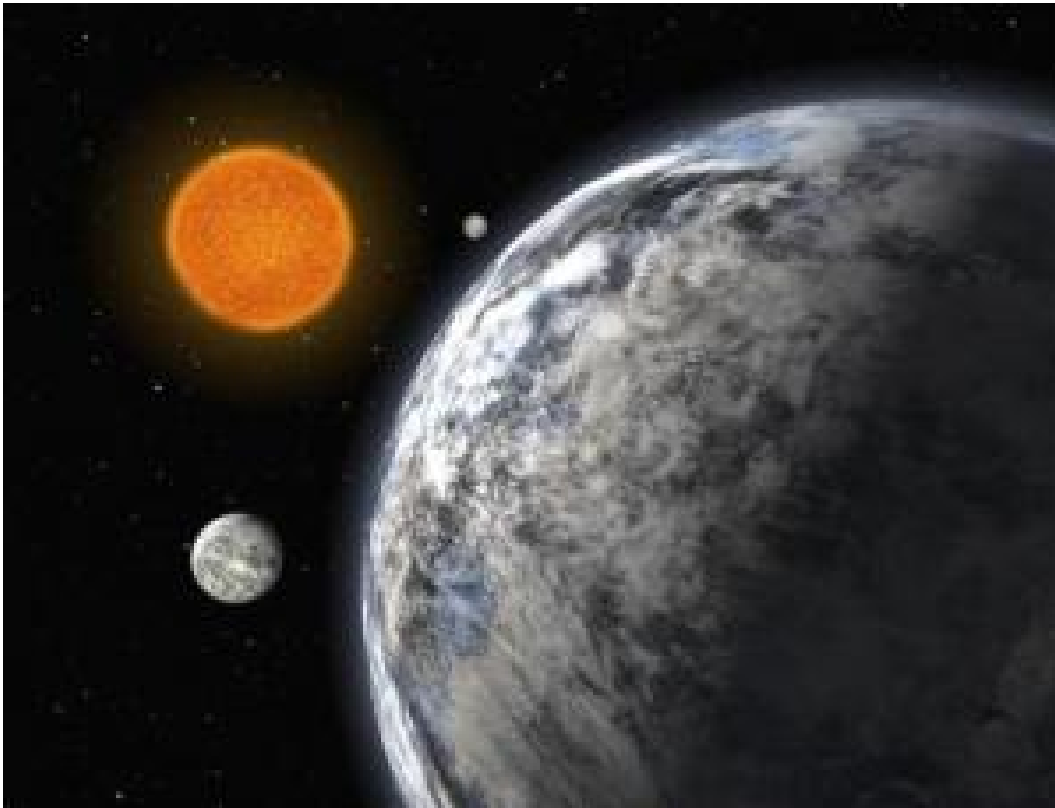
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*Adapted from materials provided by [University of Leicester](http://www.scienceandculture.ac.uk).*

<http://www.sciencedaily.com/releases/2008/06/080610191910.htm>



### Trio Of Super-Earths: Harvest Of Low-mass Exoplanets Discovered With HARPS



*Artist's impression of the trio of super-Earths discovered by an European team using the HARPS spectrograph on ESO's 3.6-m telescope at La Silla, Chile, after 5 years of monitoring. The three planets, having 4.2, 6.7, and 9.4 times the mass of the Earth, orbit the star HD 40307 with periods of 4.3, 9.6, and 20.4 days, respectively. (Credit: ESO)*

ScienceDaily (Jun. 16, 2008) — European astronomers have announced a remarkable breakthrough in the field of extra-solar planets. Using the HARPS instrument at the ESO La Silla Observatory, they have found a triple system of super-Earths around the star HD 40307. Moreover, looking at their entire sample studied with HARPS, the astronomers count a total of 45 candidate planets with a mass below 30 Earth masses and an orbital period shorter than 50 days. This implies that one solar-like star out of three harbours such planets.

"Does every single star harbour planets and, if yes, how many?" wonders planet hunter Michel Mayor from Geneva Observatory. "We may not yet know the answer but we are making huge progress towards it."

Since the discovery in 1995 of a planet around the star 51 Pegasi by Mayor and Didier Queloz, more than 270 exoplanets have been found, mostly around solar-like stars. Most of these planets are giants, such as Jupiter or Saturn, and current statistics show that about 1 out of 14 stars harbours this kind of planet.

"With the advent of much more precise instruments such as the HARPS spectrograph on ESO's 3.6-m telescope at La Silla, we can now discover smaller planets, with masses between 2 and 10 times the Earth's mass," says Stéphane Udry, one of Mayor's colleagues. Such planets are called super-Earths, as they are more massive than the Earth but less massive than Uranus and Neptune (about 15 Earth masses).

The group of astronomers have now discovered a system of three super-Earths around a rather normal star, which is slightly less massive than our Sun, and is located 42 light-years away towards the southern Doradus and Pictor constellations.

"We have made very precise measurements of the velocity of the star HD 40307 over the last five years, which clearly reveal the presence of three planets," says Mayor.

The planets, having 4.2, 6.7, and 9.4 times the mass of the Earth, orbit the star with periods of 4.3, 9.6, and 20.4 days, respectively.

"The perturbations induced by the planets are really tiny - the mass of the smallest planets is one hundred thousand times smaller than that of the star - and only the high sensitivity of HARPS made it possible to detect them," says co-author François Bouchy, from the Institut d'Astrophysique de Paris, France.

Indeed, each planet induces a motion of the star of only a few metres per second.

At the same conference, the team of astronomers announced the discovery of two other planetary systems, also with the HARPS spectrograph. In one, a super-Earth (7.5 Earth masses) orbits the star HD 181433 in 9.5 days. This star also hosts a Jupiter-like planet with a period close to 3 years. The second system contains a 22 Earth-mass planet having a period of 4 days and a Saturn-like planet with a 3-year period as well.

"Clearly these planets are only the tip of the iceberg," says Mayor. "The analysis of all the stars studied with HARPS shows that about one third of all solar-like stars have either super-Earth or Neptune-like planets with orbital periods shorter than 50 days."

A planet in a tight, short-period orbit is indeed easier to find than one in a wide, long-period orbit.

"It is most probable that there are many other planets present: not only super-Earth and Neptune-like planets with longer periods, but also Earth-like planets that we cannot detect yet. Add to it the Jupiter-like planets already known, and you may well arrive at the conclusion that planets are ubiquitous," concludes Udry.

### **More information**

These discoveries have been announced today at the international conference "Extra-solar Super-Earths" which takes place in Nantes, France, from 16 to 18 June.

Two papers on these discoveries have also been submitted to the research journal *Astronomy and Astrophysics*.

The team is composed of Michel Mayor, Stéphane Udry, Didier Queloz, Christophe Lovis, and Francesco Pepe (Geneva Observatory, Geneva University, Switzerland), François Bouchy (Institut d'Astrophysique de Paris, France), Willy Benz and Christophe Mordasini (Physikalisches Institut, Bern University, Switzerland), and Jean-Loup Bertaux (Service d'aéronomie du CNRS, Université de Versailles Saint-Quentin, France).

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*Adapted from materials provided by [European Organisation for Astronomical Research in the Southern Hemisphere \(ESO\)](http://www.eso.org).*

<http://www.sciencedaily.com/releases/2008/06/080616081723.htm>

## Synthetic Cocoa Chemical Slows Growth Of Tumors In Human Cell Lines



*A synthetic chemical based on a compound found in cocoa beans (shown above) slowed growth and accelerated destruction of human tumors in laboratory studies. (Credit: iStockphoto/Elena Korenbaum)*

ScienceDaily (Jun. 16, 2008) — A synthetic chemical based on a compound found in cocoa beans slowed growth and accelerated destruction of human tumors in laboratory studies, and should be tested further for cancer chemoprevention or even treatment, say researchers at Georgetown University Medical Center.

"We have all heard that eating chocolate is good for you; this study suggests one reason why that might be true," says the study's lead author Min Kim, Ph.D., a research scientist in the Department of Oncology at Lombardi Comprehensive Cancer Center.

Published online today in *Cell Cycle*, the researchers describe how four different human tumor cells lines out of 16 tested were sensitive to the chemical, known as GECGC. The strongest response was seen in two different colon cancers; growth was cut in half and most of the tumor cells were damaged.

Normal cells were not affected by GECGC, which makes the chemical a candidate for cancer chemoprevention, says Kim.

"This chemical seems to be safe, which makes sense because it has a structure similar to a natural product in cocoa beans - the same beans that are used to make chocolate," he says.

The researchers have long studied the beneficial effects of flavanols, which are molecules in vegetables and fruits that exhibit potent anti-oxidant and, potentially, anti-tumor properties. As part of these studies, investigators have been testing a new synthetic version of natural procyanidins, a class of flavanols, created and patented by the confectionery company, Mars Incorporated. (The company provided GECGC as a gift, and this project was funded in part by Mars Incorporated.)

In these studies, the scientists tested the effects of three different doses of GECGC on the cancer cell lines - the first time that a synthetic cocoa derivative has been used to screen human cancer cell lines. None of



the doses tested were extreme, Kim points out. "The effective concentrations were considered similar to what a person might eat or use," he says.

They found sensitivity to GECGC in both colon cancer cell lines they tested, in cervical cancer cells and in one line of leukemia, tumor cells. Other cell lines were resistant, including ovarian and prostate cancer cells.

Overall, GECGC showed the most effect in treating cancer cells that are normally fast growing, Kim says. And the fact that it demonstrated the most killing power in colon cancer suggests the chemical "could serve as a promising therapeutic for colon cancer," he says. "So far, these data are very convincing."

The researchers do not yet clearly understand the mechanism by which GECGC disrupts tumor growth, but they think it inhibits the physical connections between cancer cells and blocks internal cell signaling pathways.

Kim says that animal studies testing the anticancer power of GECGC are currently underway. "While this work is indeed promising, we have much more study to do before we can say with authority that GECGC has anticancer properties."

Study co-authors include the senior author Richard Pestell, M.D., Ph.D., from the Kimmel Cancer Center at Thomas Jefferson University; Maofu Fu, M.D., and Michael P. Lisanti, M.D., Ph.D., also from Thomas Jefferson University; and Xiaofang Wu, M.D., and Insun Song, Ph.D. from Lombardi Comprehensive Cancer Center.

The study was additionally funded by awards to Georgetown University Medical Center from the National Institutes of Health, a grant from the Pennsylvania Department of Health, and Dr. Ralph and Marian C. Falk Medical Research Trust.

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*Adapted from materials provided by Georgetown University Medical Center.*

<http://www.sciencedaily.com/releases/2008/06/080613104813.htm>

## Using Brainwaves To Chat And Stroll Through Second Life: World's First



*At a recent demonstration in Japan, a student in a remote location (Yagami Campus) moved an avatar using brainwaves, and live video footage and the moving avatar were shown within the computer game, Second Life. (Credit: Image courtesy of Keio University)*

ScienceDaily (Jun. 16, 2008) — On 7th June 2008, Keio University succeeded in the world's first demonstration experiment with the help of a disabled person to use brainwave to chat and stroll through the virtual world.

The research group led by Assistant Prof. Junichi Ushiba of the Faculty of Science and Technology of Keio University applied the technology “to operate the computer using brain images released last year and succeeds in enabling a disabled person suffering muscle disorder (41 year old male) to stroll through “Second Life®”, a three-dimensional virtual world on the Internet, to walk towards the avatar of a student logged in at Keio University located 16km from the subject's home, and to have a conversation with the student using the “voice chat” function.

This demonstration experiment opens a new possibility for motion-impaired people in serious conditions to communicate with others and to engage in business. This experiment is a marriage of leading-edge technologies in brain science and the Internet, and is the world's first successful example to meet with people and have conversation in the virtual world.

This research is an achievement of the Biomedical Research Project at Keio University, a collaboration project of the Faculty of Science and Technology, Tsukigase Rehabilitation Center and the Department of Rehabilitation Medicine of the School of Medicine. This experiment was demonstrated at the 17th Keio University Faculty of Science and Technology Open Lecture on 7th June 2008.

### About the technology

The system uses electrodes as small as 1cm in diameter that are attached to the scalp. A computer detects brainwaves from the sensory-motor cortex when the subject slightly moves fingers of his/her right and left hand, and moves the avatar accordingly. The computer also detects the subject's will to move forward, and makes the avatar move forward.



The system released last year used a desktop computer, but the new system uses a portable electroencephalograph commercially available, and made it possible to bring the system to the subject's home. The subject walks toward the avatar controlled by a student, and talks to it. Moving images of this demonstration experiment can be seen at the following website: <http://www.bme.bio.keio.ac.jp/01news/>

### **Development in the Future**

Detection of brainwaves will become more accurate, which will lead to smoother control of avatars. The technology will be used to develop communication tools and business tools to support the lives of people with serious movement disorders.

\*Second Life® is a 3-D virtual community, created and operated by U.S.-based company Linden Lab, with a growing population from more than 100 countries around the globe. Residents of Second Life® can create their own homes, vehicles, nightclubs, stores, landscapes, clothes and games. They control avatars, which are characters to replace themselves, to stroll through the virtual world and teleport. Chatting with other residents and commercial activities are also possible. Linden dollars, the virtual currency used in Second Life® can be changed to real US dollars.

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*Adapted from materials provided by [Keio University](http://www.keio.ac.jp).*

<http://www.sciencedaily.com/releases/2008/06/080613163213.htm>

## First farmers made 'lucky beads'

**Some of the first farmers in the Near East probably used green beads as amulets to protect themselves and their crops, a study suggests.**



The authors of the research suggest that early agriculturalists attached special importance to this colour. Beads they recovered from dig sites in Israel had been made from a variety of green minerals and the farmers went to great efforts to obtain them.

Details appear in *Proceedings of the National Academy of Sciences* journal. Daniella Bar-Yosef Mayer, from Israel's University of Haifa, and Naomi Porat, from the Geological Survey of Israel in Jerusalem, examined 221 beads from eight Neolithic (or late stone age) sites dating to between 11,600 years ago and 8,200 years ago.

None of the minerals the beads were made from came from the immediate vicinity of the sites. Some were mined from as far afield as northern Syria, Cyprus and Saudi Arabia. White, black, brown, yellow and red beads were being made tens of thousands of years before the advent of agriculture.

But the researchers point out that green beads are first found in significant numbers during the agricultural revolution which gained pace from about 10,000 years ago in the Near East. "We propose that the green colour mimics the green of young leaf blades, which signify germination and embody the wish for successful crops and for success in fertility," the authors write in *PNAS*.

They suggest that the onset of agriculture brought on demographic changes such as higher birth rates, but also higher child mortality. These early farmers may have developed new cultural devices for dealing with these changes.

Green beads were probably used as amulets to ward off evil and as charms for maintaining the fertility of both people and crops, say the researchers.

Story from BBC NEWS:  
<http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7457755.stm>

Published: 2008/06/16 21:39:09 GMT

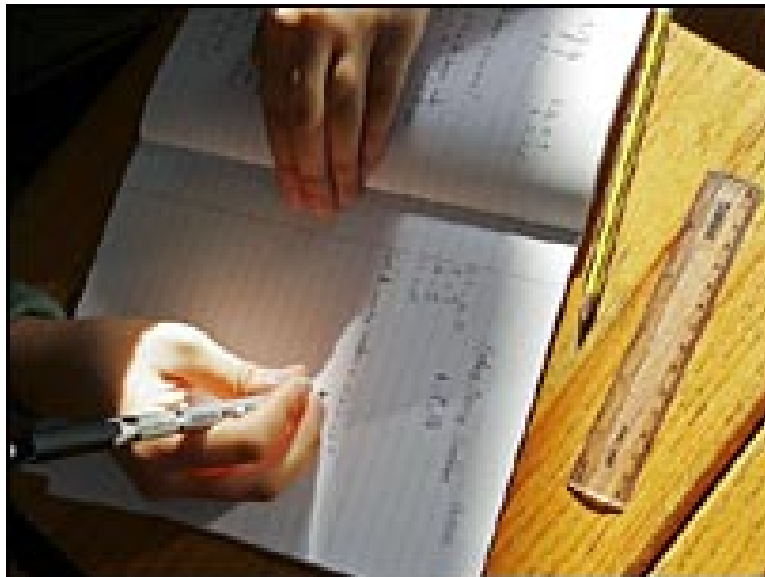
## Experts to champion better maths

**There is to be a new emphasis on maths play in England's nursery schools and 13,000 maths specialists to spearhead better primary school teaching.**

The government accepts the findings of a review it commissioned from a team led by Sir Peter Williams.

It will take 10 years and £187m to train the specialists, expected to be drawn from existing teachers. More help is proposed for youngsters who are struggling. Parents' support is seen as crucial to the whole scheme.

The proposed maths specialists would not necessarily be the existing mathematics coordinators in schools, and smaller schools might have to share.



The proposals assume that 3,000 specialists could be found straight away next year. It will take another 10 years to train the extra 10,000 - which the report acknowledges will "result in inequalities". They will be paid an extra £1,000 for each of the three years it takes to train, to attend summer schools, plus £2,500 on completion and another £2,500 when they are awarded a Masters degree in maths teaching.

## Culture

The report also argues for more qualified teachers in early years settings, to give pre-school children a better start in maths.

The main recommendations are:

- a maths specialist in every primary school in 10 years
- young children should play with shapes, time, capacity and numbers
- all children should be competent in basic maths by age seven
- children should do more mental maths in the classroom
- parents should work with teachers and help foster their child's interest in maths

The aim is to counter the prevailing culture in which, Sir Peter says, the UK remains one of the few advanced nations where it is socially acceptable - even fashionable - to profess an inability to cope with mathematics.

But his team's report concludes firmly that it is teachers, not parents, who determine what children learn - especially as the way mathematics is taught has changed greatly since most parents went to school.

## Better training





Sir Peter says he and his panel saw some excellent teaching while visiting schools.

But children are highly attuned to uncertainty on the part of their teachers - who have a wide curriculum to get through in primary schools.

### **FROM THE TODAY PROGRAMME**

Please turn on JavaScript. Media requires JavaScript to play.

The report says the basic requirement of trainee teachers that they have a grade C GCSE in maths should stay for now but be reviewed, with a view to raising the hurdle. Initial teacher training in maths is not good enough, it says. But the most practical way forward is to improve the ongoing training of practising teachers.

The review team noted that English teachers get five days a year training. In Scotland, teachers get an extra week for personal "continuing professional development", and that should be a long-term aspiration for England too, they said.

### **National strategies**

The government will be pleased to hear the report say that the introduction of the National Numeracy Strategy in the late 1990s had transformed maths teaching.

In turn, the proportion of primary school leavers attaining Level 4 of the national curriculum in tests, as expected for their age, had risen from 59% in 1998 to 77% last year. But the report calls into question the effectiveness of the revised national primary teaching frameworks and suggests they should be reconsidered and made more "user friendly" for teachers. This is being done.

Launching the report at a National Centre for Excellence in the Teaching of Mathematics conference, England's Schools Minister Lord Adonis said everyone had their part to play in helping children to understand numbers and their importance in the world. Shadow education secretary Michael Gove said the review had failed to grasp the seriousness of the state of maths education in England, with nearly a quarter of 11-year-olds failing to reach the minimum level of maths to enable them to cope with secondary school.

"The government has failed to grasp the nettle and replace methods of teaching which have failed with tried and tested methods used in countries that have much higher levels of maths achievement," he said.

**What do you think of maths teaching in schools? Are you a parent whose child struggles with maths? How can maths teaching being improved? Send us your comments and experiences using the form below.**

Name

Your E-mail address

Town & Country

Phone number (optional):

Comments

Story from BBC NEWS:

[http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk\\_news/education/7457779.stm](http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/7457779.stm)

Published: 2008/06/17 11:48:47 GMT



## Cyd Charisse, 86, Silken Dancer of Movies, Dies

By **ROBERT BERKVIST**



Cyd Charisse, the leggy beauty whose balletic grace made her a memorable partner for Fred Astaire and Gene Kelly in classic MGM musicals like “Singin’ in the Rain,” “The Band Wagon” and “Brigadoon,” died on Tuesday in Los Angeles. She was believed to be 86. Her death, at Cedars-Sinai Medical Center, was apparently caused by a heart attack, said her agent, Scott Stander.

Ms. Charisse came of age in a sparkling era of Hollywood musicals, and though she had some dramatic film roles, it was in musicals that she achieved her lasting renown. That fame later helped power a successful song-and-dance partnership with her husband, Tony Martin, in nightclubs and on television. In his 1959 memoir, “Steps in Time,” Astaire called Ms. Charisse “beautiful dynamite.” She was a striking presence on film: slender and graceful with jet black hair. She stood 5 feet 6, but in high heels and full-length stockings — a familiar costume for her — she seemed even taller. She made her film

debut in 1943 under the name Lily Norwood in “Something to Shout About,” with Don Ameche and Janet Blair, and then spent almost a decade performing in small roles and sometimes anonymously before she got her big break. That came with “Singin’ in the Rain,” released in 1952.



Written by Betty Comden and Adolph Green and directed by Gene Kelly and Stanley Donen, the film established her as one of Hollywood's most glamorous and seductive talents.





Set during the dawn of talking pictures, “Singin’ in the Rain” starred Kelly, Donald O’Connor, Debbie Reynolds and Jean Hagen. Ms. Charisse appeared in only one of the movie’s many indelible dance sequences, but one was enough. During the “Broadway Melody Ballet,” opposite Kelly, she was both sultry vamp and diaphanous dream girl.

A year later, “The Band Wagon” brought Ms. Charisse her first leading role. Directed by Vincente Minnelli, with a book by Comden and Green and songs by Howard Dietz and Arthur Schwartz, the film starred Astaire, Ms. Charisse, Oscar Levant and Nanette Fabray.

Astaire played a fading Hollywood song-and-dance man hoping to make a comeback on Broadway and who finds himself cast in a show opposite a snooty ballerina (Ms. Charisse). The couple do not see eye-to-eye until they take a nighttime carriage ride through a moonlit Central Park and wind up embracing languorously to the strains of



g”Dancing in the Dark.” One of the most famous sequences from the film, if not in the history of dance on film, is “The Girl Hunt Ballet,” in which Ms. Charisse plays the vamp to Astaire’s private-eye stage character.

In “Brigadoon” (1954), also directed by Minnelli and adapted from the 1947 Broadway show by Alan Jay Lerner and Frederick Loewe, Kelly and Van Johnson played American tourists who stumble on a mysterious Scottish village that materializes only once every 100 years. Kelly falls hard for a beautiful villager, Fiona (Ms. Charisse). They danced to “The Heather on the Hill.”

Cyd Charisse was born Tula Ellice Finklea in Amarillo, Tex. Though some sources say she was born on March 8, 1921, her agent said the year was 1922. She began taking dance lessons as a little girl. Her many name changes began, so the story goes, when her brother had trouble

pronouncing “sister” and settled for “Sid.”

While still a teenager, she was sent to California for professional dance training and quickly became a member of the Ballet Russe de Monte Carlo, a touring troupe, adopting the name Felia Sidorova. She was on a European tour when she met Nico Charisse, a handsome young dancer and dance instructor. They married in Paris when she was 18. In 1942, they had a son, Nicky.

By the early 1940s, Ms. Charisse had been spotted by studio scouts and her first film roles — as Lily Norwood — followed. (She also appeared anonymously in 1943 as a ballerina in “Mission to Moscow.”) In 1946, MGM, by then the king of Hollywood musicals, signed her to a contract and gave her minor roles in several films, including “The Harvey Girls,” “Till the Clouds Roll By” and “Ziegfeld Follies,” in which she danced a brief opening sequence with Astaire. When she was chosen to appear in “Ziegfeld Follies,” the producer Arthur Freed preferred the name Charisse to Norwood and changed the spelling of Sid to Cyd.





The next year, Ms. Charisse played a ballerina once again in “The Unfinished Dance,” which featured the child star Margaret O’Brien as a dance student.

Ms. Charisse was reunited with Kelly in the 1955 Comden and Green musical “It’s Always Fair Weather,” and was teamed with Fred Astaire in “Silk Stockings” (1957). In the latter, an update of the Greta Garbo vehicle “Ninotchka,” she played an icy Soviet functionary who is sent to Paris where she meets and is romanced by a Hollywood producer (Astaire). Needless to say, she melts for Fred as they sing and dance to Cole Porter songs like “All of You” and “Fated to Be Mated.” It was the twilight of the Hollywood musical.

Ms. Charisse’s marriage to Nico Charisse ended in divorce in 1947. She married Mr. Martin in 1948. He survives her, along with their son, Tony Jr., and her son, Nicky, by her first marriage.

In November 2006, Ms. Charisse was one of the recipients of the National Medal of Arts presented by President Bush in a White House ceremony.

Looking back on her work with Kelly and Astaire during a 2002 interview in The New York Times, Ms. Charisse said that her husband, Mr. Martin, always knew whom she had been dancing with. “If I was black and blue,” she said, “it was Gene. And if it was Fred, I didn’t have a scratch.”

In a 1992 interview with The Times, she remembered dancing with Astaire to Michael Kidd’s demanding choreography in “Silk Stockings” and said admiringly, “Fred moved like glass.”

As it turned out, “Silk Stockings” was her last major musical. She appeared in a few more movies, chiefly in dramatic roles in films like “Party Girl” (1958) and “Two Weeks in Another Town” (1962). She and Mr. Martin took their nightclub act to Las Vegas and other cities. Her last film was an Italian drama, “Private Screenings” (1989).

Ms. Charisse made her belated Broadway debut in 1992 in “Grand Hotel,” when she replaced Liliane Montevecchi in the leading role of a famous but aging ballerina in 1920s Berlin. “I think that in all my dancing I play a role,” she told The Times that year. “To me, that’s what dancing is about. It’s not just steps.”

<http://www.nytimes.com/2008/06/18/arts/dance/18charisse.html?ref=arts>

## Sylph or Siren, the Legs Have It

By **MANOHLA DARGIS**



Some stars shine, others flicker, lingering in your consciousness and dreams in flashes, favorite scenes and frozen moments. Cyd Charisse, the long-legged beauty who in the 1950s gave Fred Astaire some midcareer oomph and Gene Kelly his match in pure animal vitality, wasn't a Hollywood immortal. She never transcended the movies in which she appeared — her breakout musical, "Singin' in the Rain," could certainly have been produced without her. But it surely would not have been as magnificent without the erotic jolt she gives Kelly.

Ms. Charisse, who was thought to be 86 when she died on Tuesday, liked to say that her favorite musical number was "Dancing in the Dark," from Vincente Minnelli's "Band Wagon." For this ethereally lovely duet set in a back lot Central Park drenched in moonlight, she and Fred Astaire enter the park as colleagues and leave it as lovers. In between they wordlessly, almost wistfully, drift through an outdoor dance pavilion until they arrive in a private little corner of the park and begin their romance in earnest. She's dressed in a white shirtdress with the kind of floaty, wide skirt that costume designers liked to put her in — when she pirouettes, the dress fans out like a spinning plate, baring her legs. She bends in his arms with supple tenderness.

As pretty as that number is, I prefer the film's "Girl Hunt Ballet," a spoof of a Mickey Spillane pulp in which Astaire plays a detective who partners with a willowy blonde and a smokin' brunette, both danced by Ms. Charisse. The blonde has her allure, but not the brunette's sex appeal — or her dress, a red-hot number with tassels hanging from each torpedolike breast. "She came at me in sections," the detective says of the brunette, with "more curves than a scenic railway." Choreographed by Michael Kidd, the athletic number makes the most of her legs, which thrust through the front slit of her dress like a boxer's jabs. The number isn't sexy even when she executes a split in Astaire's arms, but she's dynamite.



She reteamed with Astaire for “Silk Stockings,” a vulgar musical redo of Ernst Lubitsch’s 1939 romantic comedy, “Ninotchka,” in which she plays the humorless Soviet bureaucrat — a role originated by Greta Garbo — who succumbs to the West during a trip to Paris. Garbo laughs in the original, but Ms. Charisse dances in the remake, filling out the stockings of the musical’s title. Its dance highlight is a gorgeous pantomime during which her character, Ninotchka, elegantly trades her party uniform, including black stockings and granny slip, for the gossamer lingerie and froufrou she has hidden around her hotel suite. The number, which opens with her turning a framed photograph of Lenin face down, encapsulates the character’s transformation, less from communism to capitalism than from a desirable woman to one who desires.

There were other notable numbers and a handful more fine films, Nicholas Ray’s 1958 noir “Party Girl” included. She bowed out of the movies gracefully, leaving the factory before it shuttered for good. It’s impossible to imagine the

Hollywood musical without her. Like the greatest American movie dancers, she showed how appearing on screen isn’t just a matter of mouthing words, but also moving through and holding space. And she was a stunning physical specimen, at once lean and beautifully curved, with a wasp waist that seems to have been naturally designed for a man’s hand to rest gently in its slope. She didn’t do all that much with her face, though on occasion she let loose a deliciously evocative leer.

Her legs could send viewers into raptures, and after watching “Singin’ in the Rain” again, it’s easy to see why. She’s on screen less than 10 minutes — simply called the Dancer — but she dominates the windup of this American classic. The number, “Broadway Melody Ballet,” occurs in a film within a film that takes flight with Kelly as an eager hooper looking for his Broadway break, singing “Gotta Dance!” He slides on his knees toward the camera, abruptly stopping before his hat, which has somehow become perched on a foot attached to a long, long leg. He gapes (as do we) as that leg then rises straight in the air with phallic suggestiveness, a prelude to a carnal encounter that was as close to on-screen sex as was possible in the 1950s and wholly sublime.

<http://www.nytimes.com/2008/06/19/movies/19char.html?ref=dance>



## Black Humor, Pageantry and Absurdity for Lunch

By CLAUDIA LA ROCCO



In the pressurized, volatile world of Wall Street, that finicky beast hope might die and be reborn untold times in a single trading session. It's the ideal setting, in other words, in which to hold a funeral for optimism, and on Monday the Doorknob Company obliged, during a brief lunchtime performance in Bowling Green Park. No word yet on whether it subsequently held a resurrection ceremony.

"The Miracle Show and the Death of OPTIMISM," a premiere presented by the Lower Manhattan Cultural Council's Sitalines series as part of the River to River Festival, is the warped brainchild of Shannon Gillen and Elisabeth Motley. Founders of the Doorknob Company, Ms. Gillen and Ms. Motley delight in dark humor, pageantry and the absurd. Using small orange rubber cones, each with the word "FUNERAL" printed in black, they carved out a circular performance area in the middle of the park's Cobblestone Plaza. The scene was further set by black balloons, flower bouquets and costumes that included tulle-festooned black dresses and yellow smiley faces drawn on black party hats (which, it should be pointed out, bear a strong resemblance to dunce caps).

Both festive and ridiculous, the design elements are evidence of Ms. Gillen and Ms. Motley's astute feel for the theatrical. But this feel seems to have deserted them during the actual piece, a dance-theater work that contained as much wailing and preaching as choreography and looked as though it could have used a lot more fine-tuning. Their six solid performers (Ms. Gillen and Ms. Motley served as M.C.'s), all women and all strong dancers, threw themselves into the manic activity with gusto. They wept hysterically on cue; chanted lines like "Happiness is a decision you must make" and "Just because you take the L train does not make you cool"; and, most enjoyably, raced about in striking group formations that needed a bit more breathing room to begin to mean something.

The dancers' valiant efforts couldn't quite save "The Miracle Show." Program notes describe the work as a dance satire, but of what? If you're going to attack human folly, you had best make sure your knives are properly sharpened. *The Doorknob Company performs Wednesday and Thursday, and June 23 to 26, in Bowling Green Park at Cobblestone Plaza; (212) 219-9401, [lmcc.net/sitalines](http://lmcc.net/sitalines).*

<http://www.nytimes.com/2008/06/18/arts/dance/18door.html?ref=dance>

**Portrait of the Critic as a Delirious Young Man**By **RICHARD EDER****THE DELIGHTED STATES****A Book of Novels, Romances, & Their Unknown Translators, Containing Ten Languages, Set on Four Continents, & Accompanied by Maps, Portraits, Squiggles, Illustrations, & a Variety of Helpful Indexes**

By Adam Thirlwell.

Illustrated. 558 pages. Farrar, Straus &amp; Giroux. \$30.

As James Joyce's H. C. Earwicker — whose dream sets off the associations, disassociations and language acrobatics of "Finnegans Wake" — stands to fiction, Adam Thirlwell stands to literary criticism.

His book "The Delighted States" shoves its delirious way around and through four centuries of great novelists, tumbles them down one trapdoor and hauls them out of another; it provokes as much as evokes and, in general, sets up a dance whose music he partly finds in them and partly invents for them.

He illustrates the book with photographs (the Czech writer Bohumil Hrabal's prehistoric typewriter, Vladimir Nabokov scribbling and irritably sunning in a deck chair, Franz Kafka smiling at a smiling young woman), along with old title pages, wandering clumps of typeface and squiggles.



Squiggles, which disrupt the forward thrust of a line with all manner of curves and caracoles, are the main thing. Two are taken from Paul Klee, but the most important were drawn by Laurence Sterne in "Tristram Shandy." Sterne used them as explanatory illustration for his book's 600 pages of uninterrupted interruptions and purposeful digressions.

Mr. Thirlwell uses them the same way for nearly as many interrupting and digressing pages of his own. As with his Shandean mentor, that is the point. "Sterne's subject is digression," he writes. "Therefore, in the end, no digression can digress from the subject: in Sterne's novel, digression is impossible."

True enough for "Tristram," a masterpiece whose comic side trips, like Don Quixote's, are both mockery and affirmation of a graver straight line running beneath. Mr. Thirlwell, whose impossibly young face beams from the book jacket with an air of Little Jack Horner extracting plums, gets frequently lost on his side trips.

He is something of a prodigy and, as such, unstoppable. In his torrent of digressive connections — he joins together Chekhov, Samuel Johnson, Samuel Richardson's "Pamela" and Hemingway in the space of three dozen lines — there are times we feel we are losing headway and the page numbers are actually running backward.

But the plums are real, even if squashed by too much else. Mr. Thirlwell has several large themes that make their way insistently through his shoves and hops. One is an impassioned belief in the novel. “Although this is a history of ephemeral inventions,” he writes, “the novel’s history is also a history of objects whose value is durable and timeless.” Then he adds, “Sometimes I believe this.”

So there he is: impassioned, yes, and skeptical of the passion, as if skepticism were the contemporary version of a Victorian chaperon keeping an eye on a susceptible and hot-blooded charge. The charge keeps getting away, though, and Mr. Thirlwell’s digressions purposely allow it to. “That is my personal form of romanticism. That is the romance of this book,” he writes.

Romance is not sentimentality, though, and the author keeps returning to the different ways the great writers employed to upset the sentimentalities, the received opinions and the rigid styles of their times. Sterne’s digressions — also used by the many he influenced, among them Denis Diderot in “Jacques the Fatalist and His Master” and the Brazilian Machado de Assis in “Epitaph for a Small Winner” — were one way.

Another was the rigorous devotion to style of Flaubert (“My sentences are my adventures”) and the far more elaborate devotion of Joyce and followers like Hrabal. Irony is another means, in writers seemingly as far apart as Cervantes, Nabokov and Gogol.

As he swirls together his international troupe of writers, along with a fine prodigality of portraits, anecdotes and quotations, Mr. Thirlwell argues and sometimes goads at a universal mutual connection and influence.

That leads to the question of translation. Though he gives many examples of what is lost, he insists that even a mediocre translation will convey a writer’s essence; his style, in other words. Style, he writes, citing Proust, is a matter of vision, not language.

He stands up for Constance Garnett’s Victorian English versions of Tolstoy and Dostoyevsky, now unfashionable for having smoothed out the originals’ rough edges. (For me, who first experienced the prodigious power of the Russians through Ms. Garnett, subsequent versions, if more accurate, cannot capture that sense of a first love. Indeed, they seem like bad imitations.)

He notes the influence of Sterne on both Machado de Assis and Pushkin, even though neither knew English and they both had to read him in a wretched French translation. He writes of the exiled Pole Witold Gombrowicz, sitting in a Buenos Aires cafe and working with Argentine friends to translate “Ferdymurke” (it became his best-known novel), even though he had little Spanish and they no Polish. He reproduces paragraphs of a wondrous French version of the supposedly untranslatable Ana Livia Plurabelle section of “Finnegans Wake,” done by a group of French writers together with Joyce.

Naturally he cites Nabokov’s increasingly quirky and rigid notion of translation, embodied in his literal word-for-word and unreadable version of “Eugene Onegin.”

And then, as a reward to us and to pre-quirk Nabokov, he gives us his own translation of the short story “Mademoiselle O,” first published in French in 1936, translated into English in 1943, then to Russian, then back to English (ending up as a chapter in “Speak, Memory”), and revised continually by Nabokov, as if art were not simply long but alive and still growing.

Mr. Thirlwell’s version translates the unaltered original, and it is a treasure.

<http://www.nytimes.com/2008/06/18/books/18eder.html?ref=books>

## The Web Time Forgot

By ALEX WRIGHT



MONS, Belgium — On a fog-drizzled Monday afternoon, this fading medieval city feels like a forgotten place. Apart from the obligatory Gothic cathedral, there is not much to see here except for a tiny storefront museum called the Mundaneum, tucked down a narrow street in the northeast corner of town. It feels like a fittingly secluded home for the legacy of one of technology's lost pioneers: Paul Otlet.

In 1934, Otlet sketched out plans for a global network of computers (or “electric telescopes,” as he called them) that would allow people to search and browse through millions of interlinked documents, images, audio and video files. He described how people would use the devices to send messages to one another, share files and even congregate in online social networks. He called the whole thing a “réseau,” which might be translated as “network” — or arguably, “web.”

Historians typically trace the origins of the World Wide Web through a lineage of Anglo-American inventors like Vannevar Bush, Doug Engelbart and Ted Nelson. But more than half a century before Tim Berners-Lee released the first Web browser in 1991, Otlet (pronounced ot-LAY) described a networked world where “anyone in his armchair would be able to contemplate the whole of creation.”

Although Otlet's proto-Web relied on a patchwork of analog technologies like index cards and telegraph machines, it nonetheless anticipated the hyperlinked structure of today's Web. “This was a Steampunk version of hypertext,” said Kevin Kelly, former editor of *Wired*, who is writing a book about the future of technology.



Otlet's vision hinged on the idea of a networked machine that joined documents using symbolic links. While that notion may seem obvious today, in 1934 it marked a conceptual breakthrough. "The hyperlink is one of the most underappreciated inventions of the last century," Mr. Kelly said. "It will go down with radio in the pantheon of great inventions."

Today, Otlet and his work have been largely forgotten, even in his native Belgium. Although Otlet enjoyed considerable fame during his lifetime, his legacy fell victim to a series of historical misfortunes — not least of which involved the Nazis marching into Belgium and destroying much of his life's work.

But in recent years, a small group of researchers has begun to resurrect Otlet's reputation, republishing some of his writing and raising money to establish the museum and archive in Mons.

As the Mundaneum museum prepares to celebrate its 10th anniversary on Thursday, the curators are planning to release part of the original collection onto the present-day Web. That event will not only be a kind of posthumous vindication for Otlet, but it will also provide an opportunity to re-evaluate his place in Web history. Was the Mundaneum (mun-da-NAY-um) just a historical curiosity — a technological road not taken — or can his vision shed useful light on the Web as we know it?

Although Otlet spent his entire working life in the age before computers, he possessed remarkable foresight into the possibilities of electronic media. Paradoxically, his vision of a paperless future stemmed from a lifelong fascination with printed books.

Otlet, born in 1868, did not set foot in a schoolroom until age 12. His mother died when he was 3; his father was a successful entrepreneur who made a fortune selling trams all over the world. The senior Otlet kept his son out of school, out of a conviction that classrooms stifled children's natural abilities. Left at home with his tutors and with few friends, the young Otlet lived the life of a solitary bookworm.

When he finally entered secondary school, he made straight for the library. "I could lock myself into the library and peruse the catalog, which for me was a miracle," he later wrote. Soon after entering school, Otlet took on the role of school librarian.

In the years that followed, Otlet never really left the library. Though his father pushed him into law school, he soon left the bar to return to his first love, books. In 1895, he met a kindred spirit in the future Nobel Prize winner Henri La Fontaine, who joined him in planning to create a master bibliography of all the world's published knowledge.

Even in 1895, such a project marked an act of colossal intellectual hubris. The two men set out to collect data on every book ever published, along with a vast collection of magazine and journal articles, photographs, posters and all kinds of ephemera — like pamphlets — that libraries typically ignored. Using 3 by 5 index cards (then the state of the art in storage technology), they went on to create a vast paper database with more than 12 million individual entries.

Otlet and LaFontaine eventually persuaded the Belgian government to support their project, proposing to build a "city of knowledge" that would bolster the government's bid to become host of the League of Nations. The government granted them space in a government building, where Otlet expanded the operation. He hired more staff, and established a fee-based research service that allowed anyone in the world to submit a query via mail or telegraph — a kind of analog search engine. Inquiries poured in from all over the world, more than 1,500 a year, on topics as diverse as boomerangs and Bulgarian finance.

As the Mundaneum evolved, it began to choke on the sheer volume of paper. Otlet started sketching ideas for new technologies to manage the information overload. At one point he posited a kind of paper-based computer, rigged with wheels and spokes that would move documents around on the surface of a desk. Eventually, however, Otlet realized the ultimate answer involved scrapping paper altogether.



Since there was no such thing as electronic data storage in the 1920s, Otlet had to invent it. He started writing at length about the possibility of electronic media storage, culminating in a 1934 book, “Monde,” where he laid out his vision of a “mechanical, collective brain” that would house all the world’s information, made readily accessible over a global telecommunications network.

Tragically, just as Otlet’s vision began to crystallize, the Mundaneum fell on hard times. In 1934, the Belgian government lost interest in the project after losing its bid for the League of Nations headquarters. Otlet moved it to a smaller space, and after financial struggles had to close it to the public.

A handful of staff members kept working on the project, but the dream ended when the Nazis marched through Belgium in 1939. The Germans cleared out the original Mundaneum site to make way for an exhibit of Third Reich art, destroying thousands of boxes filled with index cards. Otlet died in 1944, a broken and soon-to-be-forgotten man.

After Otlet’s death, what survived of the original Mundaneum was left to languish in an old anatomy building of the Free University in the Parc Leopold until 1968, when a young graduate student named W. Boyd Rayward picked up the paper trail. Having read some of Otlet’s work, he traveled to the abandoned office in Brussels, where he discovered a mausoleumlike room full of books and mounds of paper covered in cobwebs.

Mr. Rayward has since helped lead a resurgence of interest in Otlet’s work, a movement that eventually fueled enough interest to prompt development of the Mundaneum museum in Mons.

Today, the new Mundaneum reveals tantalizing glimpses of a Web that might have been. Long rows of catalog drawers hold millions of Otlet’s index cards, pointing the way into a back-room archive brimming with books, posters, photos, newspaper clippings and all kinds of other artifacts. A team of full-time archivists have managed to catalog less than 10 percent of the collection.

The archive’s sheer sprawl reveals both the possibilities and the limits of Otlet’s original vision. Otlet envisioned a team of professional catalogers analyzing every piece of incoming information, a philosophy that runs counter to the bottom-up ethos of the Web.

“I think Otlet would have felt lost with the Internet,” said his biographer, Françoise Levie. Even with a small army of professional librarians, the original Mundaneum could never have accommodated the sheer volume of information produced on the Web today.

“I don’t think it could have scaled up,” Mr. Rayward said. “It couldn’t even scale up to meet the demands of the paper-based world he was living in.”

Those limitations notwithstanding, Otlet’s version of hypertext held a few important advantages over today’s Web. For one thing, he saw a smarter kind of hyperlink. Whereas links on the Web today serve as a kind of mute bond between documents, Otlet envisioned links that carried meaning by, for example, annotating if particular documents agreed or disagreed with each other. That facility is notably lacking in the dumb logic of modern hyperlinks.

Otlet also saw the possibilities of social networks, of letting users “participate, applaud, give ovations, sing in the chorus.” While he very likely would have been flummoxed by the anything-goes environment of [Facebook](#) or [MySpace](#), Otlet saw some of the more productive aspects of social networking — the ability to trade messages, participate in discussions and work together to collect and organize documents.

Some scholars believe Otlet also foresaw something like the Semantic Web, the emerging framework for subject-centric computing that has been gaining traction among computer scientists like Mr. Berners-Lee. Like the Semantic Web, the Mundaneum aspired not just to draw static links between documents, but also to map out conceptual relationships between facts and ideas. “The Semantic Web is rather Otlet-ish,” said Michael Buckland, a professor at the School of Information at the University of California, Berkeley.



Critics of the Semantic Web say it relies too heavily on expert programmers to create ontologies (formalized descriptions of concepts and relationships) that will let computers exchange data with one another more easily. The Semantic Web “may be useful, but it is bound to fail,” Dr. Buckland said, adding, “It doesn’t scale because nobody will provide enough labor to build it.”

The same criticism could have been leveled against the Mundaneum. Just as Otlet’s vision required a group of trained catalogers to classify the world’s knowledge, so the Semantic Web hinges on an elite class of programmers to formulate descriptions for a potentially vast range of information. For those who advocate such labor-intensive data schemes, the fate of the Mundaneum may offer a cautionary tale.

The curators of today’s Mundaneum hope the museum avoids its predecessor’s fate. Although the museum has consistently managed to secure financing, it struggles to attract visitors.

“The problem is that no one knows the story of the Mundaneum,” said the lead archivist, Stéphanie Manfroid. “People are not necessarily excited to go see an archive. It’s like, would you rather go see the latest ‘Star Wars’ movie, or would you rather go see a giant card catalog?”

Striving to broaden its appeal, the museum stages regular exhibits of posters, photographs and contemporary art. And while only a trickle of tourists make their way to the little museum in Mons, the town may yet find its way onto the technological history map. Later this year, a new corporate citizen plans to open a data center on the edge of town: Google.

<http://www.nytimes.com/2008/06/17/science/17mund.html?ref=science>

## Tiny, Clingy and Destructive, Mussel Makes Its Way West

By JOHN COLLINS RUDOLF



LAKE MEAD, Nev. — Kneeling at the edge of the dock, Wen Baldwin began hauling on a length of nylon rope that disappeared into the depths of Lake Mead. One after another, an odd assemblage of objects — a water bottle, a chunk of concrete, a pair of flip-flops, a steel anchor — emerged from the emerald-green waters.

A living blanket of tiny, striped mussels covered each one.

“The conditions here are ideal for these things, absolutely ideal,” said Mr. Baldwin, 70, a retired design engineer and a National Park Service volunteer.

The mussel-coated debris is unmistakable evidence of an event occurring silently and largely out of sight — the colonization of the Colorado River by the quagga mussel, a fingernail-size Eurasian bivalve with an astonishing sex drive and a nasty reputation for causing economic and ecological havoc.

Like the closely related zebra mussel, the quagga can cling tenaciously to hard surfaces, like the equipment of the many hydroelectric and water-supply plants along the lower Colorado.

“They’re going to be all over the pipes, all over the intakes,” said Gary L. Fahnenstiel, senior ecologist with the Great Lakes Environmental Research Laboratory of the National Oceanic and Atmospheric Administration. “It’s going to be devastating.”





Dr. Fahnenstiel ought to know. The quagga has carpeted much of the Great Lakes, largely displacing the better-known zebra. Its invasion of the Colorado, presumably after crossing the Rockies on recreational boats hitched to trailers, foretells major disruptions not just for utilities, but also for the entire ecology of the lower river.

By stripping nutrients and microorganisms from the water, the mussel could do grave damage to a wide variety of species, including small invertebrates, fish and birds. "This is one bad hombre," Dr. Fahnenstiel said. "It's almost your worst-case scenario for affecting the entire food chain."

The quagga's introduction in the Colorado can hardly be a surprise. For almost 10 years, a small chorus has warned of ruinous consequences if the mussels crossed into the West.

In 1998, a group called the 100th Meridian Initiative brought together biologists, wildlife officials, water managers, environmentalists and others with the goal of preventing invasive species from crossing the 100th meridian, a historical boundary separating East and West. For seven years, Mr. Baldwin has been the group's sentinel at Lake Mead.

In 2001, Mr. Baldwin, then president of the Lake Mead Boat Owners Association, heard a presentation by a biologist from the initiative on the zebra mussel. The zebra invaded the Great Lakes from Ukraine in the 1980s and spread to major rivers and more than 800 lakes.

Mr. Baldwin lobbied officials at the Lake Mead National Recreation Area for more inspections of recreational boats, which carry mussels in bilge pumps and live bait wells. He distributed brochures and spoke widely on the threat. "I started researching it and put on some programs, trying to get people to pay attention. Some did. Most didn't."

He even built monitoring stations on docks around the lake, but found nothing. In January 2007, however, Mr. Baldwin received a call from a maintenance worker who had spotted a suspicious-looking mussel clinging to a steel cable below a Lake Mead dock. It was a quagga. Investigation quickly found colonies throughout the lake, at depths much greater than usual for zebras. "We were monitoring for zebras, and the quaggas snuck right in beneath us," he said.

At Lake Mead, a deep, narrow reservoir hundreds of miles long created by the Hoover Dam, quaggas appear well on the way to taking over.

"Within a year of discovery, it was apparent that they were lakewide, and in areas they were really numerous," said Kent Turner, chief of resource management for the park service at the recreation area. Sampling the lake bottom has found mussel concentrations in the thousands per square meter, he said.

Like the zebra, the quagga breeds externally, forming clouds of veligers, microscopic, free-swimming larvae that can float up to five weeks before settling on any surface that strikes their fancy.

By riding the current, quagga veligers have floated hundreds of miles downstream. Adult mussels have been found as far south as the Imperial Dam, near the Mexican border.

They have not stopped there. At the Lake Havasu reservoir, on the California-Arizona border, giant pumping stations pull millions of gallons of water a day for cities and farms. Drawn into the Colorado River Aqueduct and the Central Arizona Project canal, veligers have journeyed as far east as Phoenix and Tucson and as far west as San Diego.

"Wherever the river takes them, they have gone," said Alexia Retallack, a spokeswoman for the California Fish and Game Department.

The infiltration of the Colorado poses a major challenge for a water system already strained by record drought. Las Vegas is particularly reliant on the river, drawing 90 percent of its drinking water from Lake Mead.

The Metropolitan Water District, which provides water to 26 cities in Southern California, regularly deploys scuba divers to clear mussels from its intake pumps on Lake Havasu. To kill the mussel larvae, 9,000 gallons of chlorine, equal to two trailer tanks, are added to the Colorado River Aqueduct daily. "What we want to do is contain them," said Ric de Leon, a microbiologist who directs quagga control for the district. "So far, we're doing fairly well."

California officials have begun aggressive boat inspections, even enlisting canine units trained to find mussels.

"We have the first quagga-sniffing dogs on the planet," Ms. Retallack said.

Lined with dams, reservoirs, canals and pipelines, the Colorado more closely resembles a giant plumbing project than a wild river, giving the mussels ample opportunity for mayhem. David Pimentel, a professor of ecology at Cornell and an expert on the economic effects of invasive species, said the maintenance and control costs might run "into the billions, as it has been in the East."

More alarming to some experts are the potential ecological effects. Dr. Fahnenstiel called the mussels' explosive growth the most significant ecological disruption in modern Great Lakes history. "It's a huge perturbation," he said. "I don't think that can be understated."

In Lake Michigan, fish populations have plummeted as quaggas strip the water of nutrients. "The fish are taking a hit because there's no food for them," said Tom Nalepa, a research biologist with the Great Lakes laboratory. "All the food is being sucked out by the mussels. What we're seeing is the replacement of the fish by the mussels."

By filtering the water, quaggas can increase clarity, letting in sunlight that leads to algae blooms and explosive weed growth. That can, in turn, result in oxygen-starved "dead zones," observed recently in Lake Erie. By accumulating toxins filtered from the water, the mussels have also contributed to botulism.

"In the Great Lakes, we've seen avian botulism go through the roof," Dr. Fahnenstiel said. "We've had huge die-offs of loons, which are one of the most beloved species here."

In the Colorado River, two native fish species, the bonytail chub and razorback sucker, are considered particularly vulnerable to mussel competition, and avian botulism may threaten bald eagles around Lake Mead.

Biologists also warn that the vector behind the quaggas' spread, to the Great Lakes by oceanic freighter and to the West on recreational boats, remains open to exploitation by other potentially destructive species. An estimated 180 alien species have reproducing populations in the Great Lakes Basin, with new ones added almost yearly. Most recently, viral hemorrhagic septicemia, a European virus that can cause large fish kills, has spread to three Great Lakes: Huron, Michigan and Ontario.

"Everybody in North America needs to be concerned about what species come into the Great Lakes," Dr. Fahnenstiel said. "There's no system that's geographically isolated anymore. We're all linked."

<http://www.nytimes.com/2008/06/17/science/17muss.html?ref=science>



### The New SAT: Longer, but No Better?

In 2005, the College Board unveiled the most dramatic changes in years in the SAT. The dreaded analogies were removed. Mathematics questions were updated. A writing section was added, resulting in the test getting longer. The moves came at a time that a growing number of critics were questioning whether the SAT really added enough to admissions officers' knowledge to justify the stress, time and money of millions of students. Other critics raised issues of fairness, noting the gaps among gender and racial groups — and the ability of wealthy students to coach themselves to better scores.

The new and improved SAT was supposed to respond to many of those critics. On Tuesday, the College Board released “validity studies” in which, for the first time, results on the new SAT were correlated with first-year grades earned by students who enrolled at four-year colleges. (That's the key measure for judging the SAT because the College Board says it is designed to predict first-year grades, not long-term success in college.)

College Board leaders in a telephone press conference hailed the results as great news. Gaston Caperton, president of the board, said that the studies contained “very important and positive news” for colleges, in particular that the writing test's addition had worked and had brought much more attention to writing instruction.

But the reports themselves suggested that the SAT's strengths and weaknesses were not much different from before the big changes. “The results show that the changes made to the SAT did not substantially change how well the test predicts first year college performance,” said one report, which examined overall reliability of the SAT. This study also found — and this is unchanged from studies of the old SAT — that the single best way to predict a high school student's performance in the freshman year of college is through high school grades, not the SAT. (While that data point is clear in the report, College Board leaders stressed that by combining high school grades with the SAT, still more predictive value was found, although not different from that of the old SAT).

The other report focused on “differential validity,” meaning the question of whether the SAT is equally accurate in predicting the college success of different kinds of students. Here, many defenders of the SAT had hoped that the addition of the writing test might have made a difference, especially in the trend in which the SAT has tended to underpredict the abilities of females who take the test and to overpredict the skills of men. But here, too, the new SAT appears to have the same problems as the old SAT.

The College Board's report said: “The findings demonstrate that there are similar patterns of differential validity and prediction by gender, race/ethnicity, and best language subgroups on the revised SAT compared with previous research on older versions of the test.”

In terms of race, the report found the exact same patterns as it did in studying the earlier version of the SAT. Scores of black, Latino and American Indian students overpredict first-year performance in college. (That may sound surprising, because many advocates for minority students say that many who excel in college do so despite low SAT scores, but those comparisons tend to focus on overall college records, not freshman year.) White and Asian students tend to be accurately or slightly underpredicted.

On another equity issue — whether the tests are coachable, giving an edge to those who can pay for tutors and classes — the College Board has already admitted that the new writing test is in fact coachable.

The studies were based on 150,000 students' records, reviewed at a wide range of institutions.

College Board officials defended the results as a success and said that they were not alarmed by the gaps in predictive validity. Laurence Bunin, senior vice president of the board, said that “the SAT is the most well designed and researched test in the world,” and noted that questions are reviewed by multicultural groups of educators. “We know the questions on the test are fair,” he said.

Wayne Camara, vice president of research and development, noted that there are predictive gaps — in many cases larger than those from the SAT — on using high school grades as well. Camara and others



said that the most encouraging result was that the new writing test had predictive validity across ethnic and racial groups — at higher levels than the rest of the SAT.

Given the importance of writing, this suggests a real improvement in the test, he said.

Long-time critics were not impressed. Robert Schaeffer, public education director of the National Center for Fair and Open Testing, known as FairTest said that the College Board's slogan should be: "Meet the new test, same as the old test — only longer and more expensive."

The emphasis of the College Board on writing is in part because many colleges have held off on requiring the SAT writing test. According to the board, 44 percent of colleges that are "moderately selective" require or use the writing test. (In other words, that's the percentage that either require or "recommend" a writing test.) The ACT, which also has a new writing test, has had similar results, both in terms of percentage of colleges requiring it and in only seeing a small additional predictive value in the test because of the additional section.

It is unclear whether the results released Tuesday will prompt a groundswell from writing instructors to place more emphasis on the SAT. While some writing instructors have praised the College Board for adding writing, saying that the move sent a strong message, many think that the test encourages the worst kind of writing.

Les Perelman, director of the Writing Across the Curriculum program at the Massachusetts Institute of Technology, thinks the writing test is so bad that he coaches students on how to write abysmal essays, while including words that the College Board likes ("plethora" is key) and to end up with great scores. (The story of one of his successful efforts [is here.](#))

Perelman said that it's absolutely no surprise that students who do well on the SAT writing test do well in college. The College Board favors the traditional "five paragraph essay" format taught to high school freshmen, and those who are going to succeed in college have generally mastered the format and picked up the various tricks that earn good scores on the essay. (One of Perelman's students, to show how the scoring favors quotations from famous people, accurate or not, took the test using various quotes that happened to be visible in the testing room, and attributed all of them to Lee Iacocca — and she earned great scores.)

"The writing test is teaching students a lot of bad habits," said Perelman. "It's real predictive value, in terms of writing, is nil."

— Scott Jaschik

*The original story and user comments can be viewed online at  
<http://insidehighered.com/news/2008/06/18/sat>.*

## Shallow Water Corals Evolved From Deep Sea Ancestors

*The bubblegum coral*  
*Paragorgia sp. (large*  
*colony) and the lace*  
*coral Stylaster sp.*  
*(smaller colony) in*  
*waters 150 meters deep*  
*off Adak Island, Alaska.*  
(Credit: Alberto  
Lindner/NOAA)



ScienceDaily (Jun. 18, 2008) — New research shows that the second most diverse group of hard corals first evolved in the deep sea, and not in shallow waters.

Stylasterids, or lace corals, diversified in deep waters before

launching at least three successful invasions of shallow water tropical habitats in the past 40 million years. This finding provides the first strong evidence that a group of deep-sea animals invaded and diversified in shallow waters. "When we look at the DNA and fossils of these animals, we can trace how these transitions from deep water to shallow habitats have popped up in different parts of the family at different points in time," says Alberto Lindner, a coral researcher at the University of São Paulo, Brazil. "We also see this story unfold in which the corals are building skeletal defenses, possibly in a long-running arms-race with their predators. Together, it shows us how wrong it is to think of deep-sea ecosystems as being isolated and static." Lindner and co-authors Stephen Cairns and Cliff Cunningham will publish these new findings in the June 18 issue of the journal PLoS ONE. This article follows a presentation by Lindner at the American Association for the Advancement of Science (AAAS) Annual Meeting in Boston, MA. Although deep-sea research is often difficult and expensive, Lindner and his colleagues hope their work will further inspire scientific exploration and broad evolutionary studies in the oceans. "The deep sea and the shallow-water tropics are the most diverse environments in the oceans, but how deep and shallow-water species have built these different marine habitats is still poorly understood. Our study shows that integrating deep-sea and shallow-water species in evolutionary studies is key to understanding the evolution of life in the oceans."

### Journal reference:

1. Lindner et al. **From Offshore to Onshore: Multiple Origins of Shallow-Water Corals from Deep-Sea Ancestors.** *PLoS One*, 2008; 3 (6): e2429 DOI: [10.1371/journal.pone.0002429](https://doi.org/10.1371/journal.pone.0002429)

Adapted from materials provided by [Public Library of Science](http://www.plosone.org/), via [EurekAlert!](http://www.eurekalert.com/), a service of AAAS.

<http://www.sciencedaily.com:80/releases/2008/06/080617204512.htm>

## New Study Shows Potential To Treat Or Prevent Viral Cancers

ScienceDaily (Jun. 18, 2008) — A new study, presented at the SNM 55th Annual Meeting, shows that radioimmunotherapy (RIT) targeting viral antigens offers a novel option to treat--or even prevent--many viral cancers by targeting cancer cells expressing viral antigens or infected cells before they convert into malignancy. "There is an urgent need to find new approaches to treating and preventing viral cancers," said Ekaterina (Kate) Dadachova, associate professor of nuclear medicine and microbiology and immunology at Albert Einstein College of Medicine, Bronx, N.Y. and lead researcher of the study, *Viral Antigens as Novel Targets for Radioimmunotherapy of Viral Cancers*. "The magnitude and global health-burden associated with viral cancers is only now being realized."

It is estimated that up to 25 percent of all cancers are currently linked to existing viral infections. Most of these cancers are extremely difficult to treat and cannot successfully be reduced or removed using conventional therapies or treatments. Viral cancers include cervical cancers caused by infection with a human papillomavirus (HPV), a sexually transmitted disease; hepatocellular carcinoma (HCC), a cancer of the liver; various lymphomas and carcinomas in patients with AIDS/HIV; and other cancers. According to Dadachova, this is the first time that researchers have attempted to target viral antigens on cancers, although the use of RIT for the treatment of cancer has been under development for thirty years. However, the targets of RIT therapy to date have included only "self" human antigens, which are overexpressed on the tumors but also expressed on normal tissues. Viral antigens, on the contrary, are expressed only on the tumors and nowhere else in the body.

The idea to perform the study was suggested by Dr. Arturo Casadevall, chair of the department of microbiology and immunology at Albert Einstein College of Medicine, who collaborates with Dadachova on developing radioimmunotherapy of infectious diseases and cancers. The study involved treating experimental cervical cancer and hepatocellular carcinoma in nude mice with antibodies to respective viral antigens expressed on these tumors. The antibodies were radiolabeled with 188-Rhenium--a powerful beta-emitting radionuclide. "This study demonstrates a real possibility for more specifically targeted cancer treatments," said Dadachova. "Targeting those antigens with radiolabeled molecules offers exquisite specificity--and will hopefully allow us to significantly increase the efficacy of treatment by administering more individualized doses while avoiding toxicity."

"Nuclear medicine and molecular imaging offer the ability to target disease on a truly molecular level that is unmatched by any other imaging or therapeutic modality," said Dadachova. "Targeting viral antigens with radiolabeled antibodies (or also with specific peptides or aptamers) will allow the extremely precise diagnosis of such cancers and their effective therapy. Furthermore, this approach will make possible 'molecular prevention' of viral cancers, when infected cells will be targeted before they become cancerous." Dadachova and her team will also be recognized for this study by SNM's Young Professionals' Committee, which recognizes the contributions of significant studies to the fields of nuclear medicine and molecular imaging by young researchers. The Young Professionals' Committee Award will be presented on Sunday, June 15, during a luncheon.

This study was supported by the National Institutes of Health (NIH), Center for AIDS Research (CFAR) and Albert Einstein Cancer Center (AECOM). Scientific Paper 412: E. Dadachova, X. Wang, E. Revskaya, R.A. Bryan, A. Casadevall, Albert Einstein College of Medicine, Bronx, N.Y., "Viral Antigens as Novel Targets for Radioimmunotherapy of Viral Cancers," SNM's 55th Annual Meeting, June 14-18, 2008.

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*Adapted from materials provided by [Society of Nuclear Medicine](#).*

<http://www.sciencedaily.com/releases/2008/06/080616115744.htm>

## Soccer Parents: Why They Rage



Wonder if you could be one of "those" parents who rant and rage at their kid's soccer game? (Credit: iStockphoto/Julie Johnson)

ScienceDaily (Jun. 18, 2008) — Wonder if you could be one of “those” parents who rant and rage at their kid’s soccer game? Well, you don’t have to look much farther than your car’s rearview mirror for clues.

According to a new study if you have a tendency to become upset while driving, you’re more likely to be the kind of parent who explodes in anger at your kids’ sports matches.

Research by kinesiology Ph.D student Jay Goldstein of the University of Maryland School of Public Health found that ego defensiveness, one of the triggers that ignites road rage, also kicks off parental “sideline rage,” and that a parent with a control-oriented personality is more likely to react to that trigger by becoming angry and aggressive.

By surveying parents at youth soccer games in suburban Washington, D.C., Goldstein found that parents became angry when their ego got in the way. “When they perceived something that happened during the game to be personally directed at them or their child, they got angry,” says Goldstein. “That’s consistent with findings on road rage.”

And the parents who Goldstein defines as control-oriented were far more likely to take something personally and flare up at referees, opposing players, and even their own kids, than autonomy-oriented parents, who take greater responsibility for their own behavior.

“In general, control-oriented people are the kind who try to ‘keep up with the Joneses,’” Goldstein says. “They have a harder time controlling their reactions. They more quickly become one of ‘those’ parents than the parents who are able to separate their ego from their kids and events on the field.”

However, Goldstein says, even autonomy-oriented parents get angry, and when they do, ego defensiveness is the trigger. “While they’re more able to control it, once they react to the psychological trigger, the train has already left the station.”

### **Effect on Kids**

Fan rage in professional sports has been studied, but there is little data on why parents erupt in anger at their kids’ sports matches, something that’s happening more often, according to coaches.

“What effect does that have on the kids? Parents have tremendous influence over how their child interprets an experience by what parents do and say,” says Goldstein, who once ran youth soccer events professionally. His interest in finding out more about parental anger started with an incident at one of those tournaments.

“A parent snapped and struck a child, not her own. I thought ‘there’s more to this than being a bad parent.’ What would trigger that kind of reaction?”

### **Getting Angry**

In 2004, Goldstein enlisted voluntary input from 340 parents attending their kids’ soccer games in the Washington suburbs. Before the game, parents filled out a questionnaire that would identify them as either control or autonomy oriented.

As soon as the game ended, parents answered another questionnaire that revolved around what, if anything, during the course of the game may have caused them to become angry, defined as “an emotional state that varies in intensity from mild irritation to intense fury and rage.”

More than half of the parents, 53 percent, reported getting angry, to some degree, during the game. The sources of the anger were most often the referee and their own children’s teams. Most parents reported getting only slightly angry for less than two minutes.

About 40 percent of the parents reported responding to their anger with actions that ranged from muttering to themselves to yelling and walking toward the field.

“Regardless of their personality type, all parents were susceptible to becoming more aggressive as a result of viewing actions on the field as affronts to them or their kids,” said Goldstein. “However, that being said, it took autonomy-oriented parents longer to get there as compared to the control-oriented parents.”

### **Interventions**

Goldstein hopes to follow with more studies that look at other geographic areas, populations and sports. “This study was predominantly white middle class parents,” he says.

He also hopes to study effects of sideline rage on the kids. “Parents won’t change until they realize they’re hurting their children.”

Goldstein’s goal is to use his findings to develop interventions that can help parents recognize the onset of anger triggers and control their reactions.

Co-author on the paper is Seppo E. Iso-Ahola, professor in the kinesiology department of the University of Maryland School of Public Health.

### **Jay Goldstein’s tips for not becoming one of those parents**





When you feel your anger rising at something you see on the field:

- Controlled deep breathing exercises (inhale for 4 seconds and exhale for 8 seconds)
- Suck on a lollipop (Occupies your mouth and reminds you that you're there for your child.)
- Visualize a relaxing experience like floating on water.
- Repeat a calm word or phrase.
- Do yoga-like muscle stretches.
- Replace angry thoughts with rational ones, such as "This is my child's game, not mine," or "Mistakes are opportunities to learn."
- Don't say the first thing that comes into your head. Count to 10 and think about possible responses.
- If you did not see the game, first ask your child "How did you play?" rather than "Did you win?"
- Praise your child's effort, then, maybe, comment on the results.
- Use humor, but avoid harsh or sarcastic humor. Picture the referee wearing Elton John glasses.

This research was recently published in the June issue of the Journal of Applied Social Psychology.

*Adapted from materials provided by University of Maryland, College Park.*

<http://www.sciencedaily.com/releases/2008/06/080617152020.htm>

## Medical Research On Ice: Antarctic Study Will Measure How Humans Physically Adapt To Extreme Environment



*The Concordia Station is a scientific base built in Antarctica by the French Polar Institute (IPEV) and the Italian Antarctic Programme (PNRA). (Credit: Y. Frenot/IPEV)*

ScienceDaily (Jun. 18, 2008) — New medical equipment recently delivered to the Antarctic station Concordia will help understand how our bodies physically adapt to this extreme environment -- knowledge which could help prepare for a future human mission to Mars. ESA is currently looking for a candidate with a medical background to support projects at the research base.

The Antarctic station Concordia is located in one of the most hostile environments on the Earth. Built on an ice plateau at 3 200 m altitude, exposed to extreme isolation, temperatures, constant light in summer, constant darkness in winter and other stressors, a stay at Concordia is a huge challenge.

### Harsh winter

For the up to 16 crewmembers that can be hosted in the station during the Antarctic winter, conditions are even more severe as the harsh environmental conditions make access to or from the station impossible. Any problems that occur need to be dealt with autonomously by the crew with the resources at hand.

Fortunately for ESA, many of the same constraints that naturally occur during the winter at Concordia are quite similar to those that can be expected for future crewed exploration missions, for example to Mars.

For this reason, in 2002, ESA established a cooperation with the builders and operators of the station; the French Polar Institute (Institute Paul Emile Victor, IPEV) and the Italian Antarctic Programme (Consorzio per l'Attuazione del Programma Nazionale di Ricerche in Antartide, PNRA S.C.r.l.). Next to



some technology validation, the main focus of this cooperation is on medicine, physiology and psychology.

### **Long-Term Medical Survey**

Together with the Concordia partners and a diverse group of experts, ESA has defined the Long-Term Medical Survey (LTMS); a list of physiological and psychological parameters that is collected by each Concordia crewmember, with the goal of enhancing knowledge about human adaptation in this extreme environment.

To facilitate the collection of physiological data, ESA commissioned the development of an easy-to-use, minimally intrusive, integrated monitoring device, taking into account that the majority of Concordia crewmembers have no medical background. The first prototype was recently shipped to Antarctica and is now being evaluated by the Concordia crew.

Other interesting medical and psychological research is still ongoing at the station. For example, a current project investigates how blood clotting is affected by the high altitude at Concordia. This research is very relevant to understanding the 'economy class syndrome' - the risk of thrombosis when flying long-distance in airplanes. The psychological projects look for example at how the crew adapts to the extreme environment, or how they cope with the challenging situation. This type of research will also continue throughout the coming winter season.

### **Call for candidates**

As in recent years, ESA is sponsoring one crewmember with a medical background that will spend the winter season at Concordia to support these projects. See: <http://spaceflight.esa.int/callforcandidates>

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*Adapted from materials provided by [European Space Agency](#).*

<http://www.sciencedaily.com/releases/2008/06/080612131903.htm>

### Threatened Or Invasive? Species' Fates Identified

ScienceDaily (Jun. 18, 2008) — A new ecological study led by a University of Adelaide researcher should help identify species prone to extinction under environmental change, and species that are likely to become a pest.

The study, the first of its kind, was recently published online in the British Ecological Society's Journal of Ecology.

“This study provides good evidence that we can take any group of species and predict how individual species will respond to changes in the environment through events such as climate change or habitat loss,” says lead author Associate Professor Corey Bradshaw, from the University of Adelaide's School of Earth and Environmental Sciences. The researchers analysed life-history and ecological traits in more than 8900 species of the legume, or the Fabaceae plant family, and found a correlation between evolved species' traits and a particular susceptibility to a species becoming threatened or invasive.

“The urgency and scale of the global biodiversity crisis means we need good generalised predictors of a species' likelihood of going extinct or becoming invasive in non-native areas,” says Associate Professor Bradshaw.

“Previous studies have been limited by studying one or other of these ‘fates’ in isolation.

“Developing evidence-based rules of thumb for categorising poorly studied species according to their susceptibility will aid decision makers in choosing best ways to allocate finite conservation resources.” Lists of ‘species to watch’ - both threatened and potentially invasive - should be expanded based on ranking of ‘susceptibility traits’, Associate Professor Bradshaw says. Associate Professor Bradshaw is also employed by the South Australian Research and Development Institute as a senior scientist.

“Our results are particularly valuable where there is sustained habitat loss or fragmentation, especially given the predictions that climate change will simultaneously promote the expansion of invasive alien species and greater extinction rates in others,” he says.

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*Adapted from materials provided by [University of Adelaide.](http://www.sciencedaily.com/releases/2008/06/080613093732.htm)*  
<http://www.sciencedaily.com/releases/2008/06/080613093732.htm>

## Focus Attention Upon Distributors Of Human Growth Hormone, Scientists Urge

ScienceDaily (Jun. 18, 2008) — A great deal of attention has been paid to the use of growth hormone (hGH) by elite athletes and a few vocal entertainers. But underlying this tip of the iceberg is a \$2 billion dollar a year business, likely involving hundreds of thousands of regular people, and promoted by anti-aging and age-management clinics and compounding pharmacies who aggressively market and sell growth hormone with the claim that it has anti-aging or athletic enhancing properties.

Since their previous article in the Journal of the American Medical Association (JAMA) in 2005 on the clinical and legal aspects of growth hormone for anti-aging, in which researchers from Boston University School of Medicine, Boston Medical Center and the University of Illinois at Chicago alerted the medical community and lay public to the deceptive mass marketing and illegal distribution of growth hormone for anti-aging and athletic enhancement, the authors provide new evidence demonstrating that these deceptive and dangerous activities have grown worse.

Remarks Dr. Thomas Perls, Director of the New England Centenarian Study and an associate professor of Medicine at Boston University School of Medicine, who has monitored the anti-aging industry for over the past ten years, "despite the overwhelming evidence that the risks and dangers of growth hormone far outweigh the clinically demonstrated insignificant benefit in normally aging individuals, the prescribing, distribution and sale of hGH for alleged anti-aging aesthetic and athletic enhancement has dramatically grown over the past few years. Clearly, the coordinated and aggressive marketing campaigns of the anti-aging and age-management industries are highly and most unfortunately effective."

Clinical evidence does support the therapeutic use of hGH for children and adults with appropriate clinical indications. However, these cases are disease specific and rare. Furthermore, any effectiveness that is demonstrated in the rare medical conditions approved for hGH distribution cannot be translated into effectiveness among healthy aging adults, a deceptive assertion often made by proponents of hGH use for a wide range of panacea-like benefits.

In January, 2007, the FDA issued an alert emphasizing that prescribing and distributing hGH for anti-aging and body building is illegal. A number of high-profile government investigations such as Operations Raw Deal, Phony Pharm and Which Doctor have attempted to make a dent in the illegal distribution of hGH and anabolic steroids for unapproved uses such as anti-aging or aesthetic reasons. As stated on the Albany County District Attorney's website, in the case of Operation Which Doctor, numerous governmental agencies are "working together to take down a nationwide distribution ring of anabolic steroids, Human Growth Hormones and other controlled substances, by targeting the ring's dirty doctors, its distributors that pose as clinics, and ultimately the ring's supplier Signature Pharmacy."

Contrary to published claims, neither long-term safety nor health benefits have been demonstrated in normally aging individuals taking hGH. A review of clinical studies among healthy, normally aging individuals found that hGH supplementation does not significantly increase muscle strength or aerobic exercise capacity. However, documented adverse effects include soft tissue edema, arthralgias (joint pains), carpal tunnel-like syndrome, gynecomastia (enlarged breasts) and insulin resistance with an elevated risk of developing diabetes. Increasingly more and more animal and laboratory studies suggest an increased cancer risk.

The authors suggest that several measures need to be taken to address the inappropriate distribution and use of hGH.

Among their recommendations:

- The public must be accurately informed by physicians and scientists who do not have a vested interest in hGH, about health risks, fraudulent marketing and illegal distribution of this drug.



- Organizations that promote or indirectly profit from the medically inappropriate and illegal distribution of hGH that have been accredited by the Accreditation Council for Continuing Medical Education (ACCME) to offer American Medical Association Physician Recognition Award (PRA) category 1 CME credits or other categories of CME credit should, at a minimum, have their accreditation revoked.
- U.S. manufacturers of hGH must be more effective in, and held accountable for, controlling the distribution of the drug to companies providing the drug for illegal uses.
- Congressional hearings and media attention surrounding hGH should focus less on athletes and prominent entertainers who are also victims of deceptive marketing and pushing of hGH, and much more on the distributors who are violating federal and state laws by making the drug available for non-approved uses.

Senators Schumer and Grassley and Representative Steven Lynch deserve the public's support of their intention to strengthen and enhance the law regarding the illegal distribution of hGH. 'Strengthening the law' should entail stiffer financial and imprisonment penalties for illegally prescribing and/or distributing growth hormone for purported anti-aging, age management, aesthetic enhancement, and body building uses. Enhancing the law should include the addition of sermorlin (growth hormone releasing hormone [GHRH]) and mecasermin (insulin-like growth factor I [IGF-1]) and their analogues. GHRH (which stimulates the release of endogenous hGH) and IGF-I (which mediates many of the effects of hGH) result in hGH-like effects, and, therefore, the potential for their inappropriate use as purported anti-aging and performance enhancement therapies clearly exists.

Perl adds: "In my capacity as a reviewer of medical records seized from anti-aging clinics by the DEA, I almost never see hGH provided in isolation. It is usually a part of a complex cocktail of one or more anabolic steroids, human chorionic gonadotropin (specifically for men to decrease the obvious signs of steroid abuse such as small testicles and enlarged breasts), thyroid hormone, DHEA and other drugs. Additional drugs such as blood pressure medicines, diuretics and insulin may be given to treat the side effects of the basic cocktail."

Perls is a consultant for the US Department of Justice.

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#### Journal reference:

1. S. Jay Olshansky, Thomas T. Perls. **New Developments in the Illegal Provision of Growth Hormone for "Anti-Aging" and Bodybuilding.** *JAMA*, 2008;299(23):2792-2794 [[link](#)]

*Adapted from materials provided by [Boston University](#), via [EurekAlert!](#), a service of AAAS.*

<http://www.sciencedaily.com/releases/2008/06/080617160837.htm>



## Chemists Get Scoop On Crude 'Oil' From Pig Manure



*Mass production of biofuel made from pig manure could help consume a waste product overflowing at U.S. farms, and possibly enable cutbacks in the nation's petroleum use and imports. But, according to a new NIST paper, pig manure crude will require a lot of refining. (Credit: NIST)*

ScienceDaily (Jun. 17, 2008) — After a close examination of crude oil made from pig manure, chemists at the National Institute of Standards and Technology (NIST) are certain about a number of things. Most obviously, "This stuff smells worse than manure," says NIST chemist Tom Bruno.

But a job's a job, so the NIST team has developed the first detailed chemical analysis revealing what processing is needed to transform pig manure crude oil into fuel for vehicles or heating. Mass production of this type of biofuel could help consume a waste product overflowing at U.S. farms, and possibly enable cutbacks in the nation's petroleum use and imports. But, according to a new NIST paper, pig manure crude will require a lot of refining.

The ersatz oil used in the NIST analyses was provided by engineer Yuanhui Zhang of the University of Illinois Urbana-Champaign. Zhang developed a system using heat and pressure to transform organic compounds such as manure into oil.

As described in the new paper, Bruno and colleagues determined that the pig manure crude contains at least 83 major compounds, including many components that would need to be removed, such as about 15 percent water by volume, sulfur that otherwise could end up as pollution in vehicle exhaust, and lots of char waste containing heavy metals, including iron, zinc, silver, cobalt, chromium, lanthanum, scandium, tungsten and minute amounts of gold and hafnium. Whatever the pigs eat, from dirt to nutritional supplements, ends up in the oil.

While the thick black liquid may look like its petroleum-based counterparts, the NIST study shows that looks can be deceiving. "The fact that pig manure crude oil contains a lot of water is unfavorable. They would need to get the water out," Bruno says.



The measurements were made with a new NIST test method and apparatus, the advanced distillation curve, which provides highly detailed and accurate data on the makeup and performance of complex fluids. A distillation curve charts the percentage of the total mixture that evaporates as a sample is slowly heated. Because the different components of a complex mixture typically have different boiling points, a distillation curve gives a good measure of the relative amount of each component in the mixture. NIST chemists enhanced the traditional technique by improving precision and control of temperature measurements and adding the capability to analyze the chemical composition of each boiling fraction using a variety of advanced methods.

NIST researchers analyzed the graphite-like char remaining after the distillation by bombarding it with neutrons, a non-destructive way of identifying the types and amounts of elements present. Two complementary neutron methods detected the heavy metals listed above.

Bruno and colleagues currently spend much of their time analyzing military jet fuels and are not planning a major foray into pig manure. But Bruno concedes that the effort may have a payoff. "Who knows, it might help decrease the nuisance of manure piles."

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**Journal reference:**

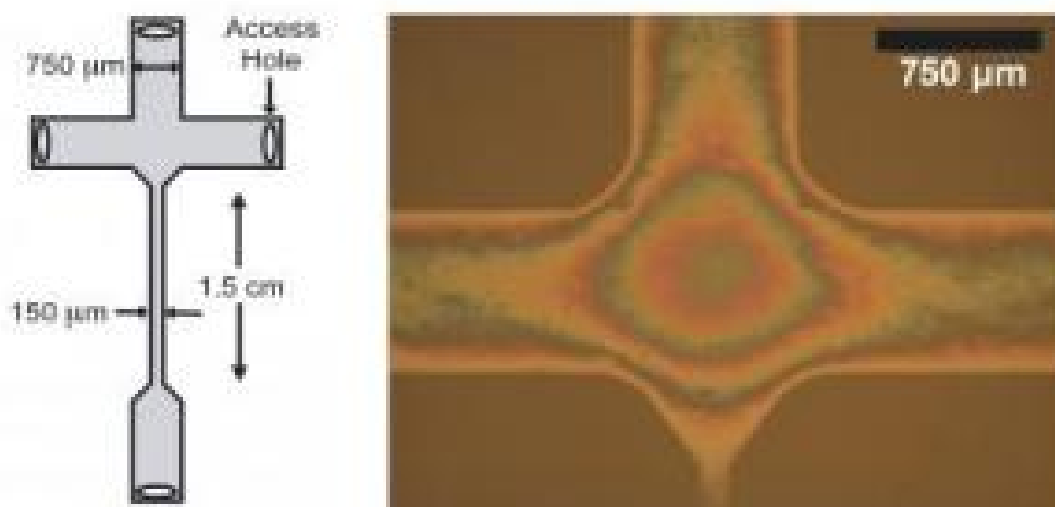
1. OTT et al. **Advanced distillation curve measurement: Application to a bio-derived crude oil prepared from swine manure** . *Fuel*, 2008; DOI: [10.1016/j.fuel.2008.04.038](https://doi.org/10.1016/j.fuel.2008.04.038)

*Adapted from materials provided by [National Institute of Standards and Technology](http://www.nist.gov).*

<http://www.sciencedaily.com/releases/2008/06/080612095527.htm>



## 'Nanoglassblowing' Seen As Boon To Study Of Individual Molecules



*Schematic of a T-junction nanofluidic device with a "nanoglassblown" funnel-shaped entrance to a nanochannel. The funnel tapers down to 150 micrometers (about the diameter of a human hair) at the nanochannel entrance. Right: Photomicrograph of the T-junction with the first section of the nanochannel visible at the bottom. The colors are a white light interference pattern caused by the changing depth of the curved glass funnel. (Credit: Elizabeth Strychalski, Cornell University)*

ScienceDaily (Jun. 17, 2008) — While the results may not rival the artistry of glassblowers in Europe and Latin America, researchers at the National Institute of Standards and Technology (NIST) and Cornell University have found beauty in a new fabrication technique called "nanoglassblowing" that creates nanoscale (billionth of a meter) fluidic devices used to isolate and study single molecules in solution--including individual DNA strands. The novel method is described in a paper in the journal *Nanotechnology*.

Traditionally, glass micro- and nanofluidic devices are fabricated by etching tiny channels into a glass wafer with the same lithographic procedures used to manufacture circuit patterns on semiconductor computer chips. The planar (flat-edged) rectangular canals are topped with a glass cover that is annealed (heated until it bonds permanently) into place. About a year ago, the authors of the *Nanotechnology* paper observed that in some cases, the heat of the annealing furnace caused air trapped in the channel to expand the glass cover into a curved shape, much like glassblowers use heated air to add roundness to their work. The researchers looked for ways to exploit this phenomenon and learned that they could easily control the amount of "blowing out" that occurred over several orders of magnitude.

As a result, the researchers were able to create devices with "funnels" many micrometers wide and about a micrometer deep that tapered down to nanochannels with depths as shallow as 7 nanometers--approximately 1,000 times smaller in diameter than a red blood cell. The nanoglassblown chambers soon showed distinct advantages over their planar predecessors.

"In the past, for example, it was difficult to get single strands of DNA into a nanofluidic device for study because DNA in solution balls up and tends to bounce off the sharp edges of planar channels with depths smaller than the ball," says Cornell's Elizabeth Strychalski. "The gradually dwindling size of the funnel-shaped entrance to our channel stretches the DNA out as it flows in with less resistance, making it easier to assess the properties of the DNA," adds NIST's Samuel Stavis.



Future nanoglassblown devices, the researchers say, could be fabricated to help sort DNA strands of different sizes or as part of a device to identify the base-pair components of single strands. Other potential applications of the technique include the manufacture of optofluidic elements--lenses or waveguides that could change how light is moved around a microchip--and rounded chambers in which single cells could be confined and held for culturing.

This work was supported in part by Cornell's Nanobiotechnology Center, part of the National Science Foundation's Science and Technology Center Program. It was performed while Samuel Stavis held a National Research Council Research Associateship Award at NIST.

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**Journal reference:**

1. E.A. Strychalski, S.M. Stavis and H.G. Craighead. **Non-planar nanofluidic devices for single molecule analysis fabricated using nanoglassblowing**. *Nanotechnology*, Online week of June 8, 2008

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

<http://www.sciencedaily.com:80/releases/2008/06/080612100445.htm>

## Learning From The Dead: What Facial Muscles Can Tell Us About Emotion

ScienceDaily (Jun. 17, 2008) — Laugh and the world laughs with you, but wrinkle your nose and you could find yourself on your own.

A new study by a scientist at the University of Portsmouth who examined the facial muscles in cadavers, has revealed that the muscles which control our facial expressions are not common to everyone.

The Risorius muscle, which experts believe controls our ability to create an expression of extreme fear, is found in only two thirds of the population.

Dr Bridget Waller has published a study in the American Psychological Association Journal which describes the unique variation of musculature structure in the face.

It is the first systematic study into the variations of muscles in the human face and how this relates to facial expression. It has important implications for our understanding of non-verbal communication.

Dr Waller is from the Centre for the Study of Emotion in the Department of Psychology. She collaborated with anatomists at the University of Pittsburgh and Duquesne University in the USA.

They found that all humans have a core set of five facial muscles which they believe control our ability to produce a set of standard expressions which convey anger, happiness, surprise, fear, sadness and disgust. But there are up to nineteen muscles which may be present in the face and many people do not possess all of them.

Dr Waller said: “Everyone communicates using a set of common signals and so we would expect to find that the muscles do not vary among individuals. The results are surprising - in some individuals we found only 60 per cent of the available muscles.”

She said that everyone is able to produce the same basic facial expressions and movements but we also have individual variations.

“Some less common facial expressions may be unique to certain people,” she said. “The ability to produce subtly different variants of facial expressions may allow us to develop individual ‘signatures’ that are specific to certain individuals.”

She said that there are significant implications for the importance of facial expression in society.

“Facial expression serves an essential function in society and may be a form of social bonding,” Dr Waller said. “It allows us to synchronise our behaviour and understand each other better.”

Dr Waller has completed studies which examined facial expressions in apes. She said that primates who live within social groups have a more elaborate communication repertoire including more complex facial expressions.

“There is a theory that language evolved to help us bond us together in social groups and we may be able to apply the same theory to facial expressions,” she said.

The face is the only part of the human anatomy which has been found to display such a massive variation in muscle structure. In the only other example of muscular differences, the forearm has a muscle which approximately fifteen per cent of the population don't have.



Dr Anne Burrows from Duquesne University was one of the anatomists on the study. She said: “The problems with quantifying facial musculature is that they're not like other muscles. They're fairly flat, difficult to separate from surrounding connective tissue and they all attach to one another. They are very unlike muscles of the limbs, for example.

“The variation we see in the face is absolutely unique,” said Dr Waller.

Dr Waller said that actors need not worry because people will compensate for a lack of one muscle by using another to develop a similar expression. And people can learn to develop a facial expression by practising in front of a mirror.

“As humans we are able to change the level of control we have over our facial expressions,” said Dr Waller. “There is a great deal of asymmetry in the face and the left side is generally more expressive than the right. But someone who is unable to raise one eyebrow without raising the other could in fact learn to raise just one.”

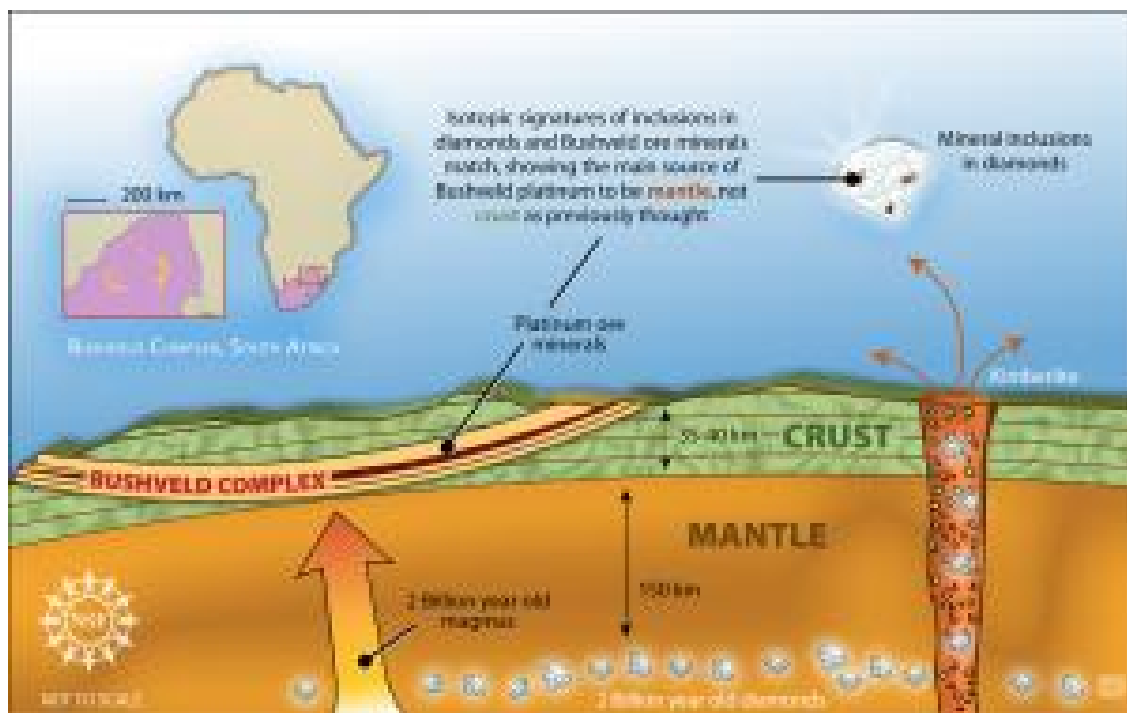
The implication for those actors who have had botox speaks for itself.

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*Adapted from materials provided by [University of Portsmouth](#), via [AlphaGalileo](#).*

<http://www.sciencedaily.com/releases/2008/06/080616205044.htm>

## Diamonds Reveal Deep Source Of Platinum Deposits



Researchers studied platinum group elements (PGE) inclusions in about 20 diamonds collected near the Bushveld Complex in South Africa. The complex is vast, measuring hundreds of kilometers in length, and it is one of the few places in the world where PGEs are found in large enough quantities to be mined. The Bushveld Complex is also very old--geologists put its age at just over 2 billion years--and formed by crystallization of the Bushveld magmas in a massive crustal magma chamber. The researchers looked at the PGEs in the diamonds, sometimes analyzing grains as small as a few micrograms. They found that the isotopic signatures of the PGEs in the diamonds and Bushveld ore minerals match, showing the main source of Bushveld platinum to be mantle, not crust falling into the magma chamber as previously thought. (Credit: Zina Deretsky, National Science Foundation)

ScienceDaily (Jun. 17, 2008) — The world's richest source of platinum and related metals is an enigmatic geological structure in South Africa known as the Bushveld Complex. This complex of ancient magmas is known to have formed some two billion years ago, but the source of its metallic riches has been a matter of scientific dispute. Now researchers from the Carnegie Institution and the University of Cape Town have traced the origin of the unique ore deposits by using another of South Africa's treasures--diamonds.

The study, published in the June 12 issue of *Nature*, suggests that the source of these valuable ores may be ancient parts of the mantle beneath the African continent.

Platinum group elements (PGEs), which include platinum, palladium, rhodium, ruthenium, osmium and iridium, are extremely rare in the Earth's crust. Platinum, the most abundant, is 30 times rarer than gold. Mined only in a few places in the world, these elements are becoming increasingly important in applications ranging from pollution control (they are key components of catalytic converters in automobiles) to microelectronics.

Previous isotopic studies of rocks from the Bushveld Complex had suggested that a significant fraction of the magma that formed the complex and deposited the ores came from shallow parts of the crust, despite the rarity of PGEs there compared to the Earth's mantle. "But the ore layers are extremely homogeneous over hundreds of kilometers," says Steven Shirey of the Carnegie Institution's Department of Terrestrial Magnetism. "The crust is very heterogeneous. That suggests a deeper source for the platinum."



To test this idea, Shirey and Stephen H. Richardson of the University of Cape Town studied minute mineral inclusions in about 20 diamonds mined from areas surrounding the Bushveld Complex. The diamonds formed at depths of 150-200 kilometers within the Earth's mantle. By measuring the ratios of certain isotopes of strontium, osmium, and neodymium in the mineral inclusions, the researchers were able to determine the isotopic "signatures" of the different regions of the mantle where the diamonds grew. They then compared these signatures with those of ore rocks in the Bushveld Complex.

Richardson and Shirey found that the isotopic signatures of the ores could be matched by varying mixtures of source rocks in the mantle beneath the continental crust. That these parts of the mantle were involved in producing the magmas is also suggested by seismic studies, which reveal anomalies beneath the complex. The anomalies were likely the result of magmas rising through these parts of the mantle.

"This helps explain the richness of these deposits," says Richardson. "The old subcontinental mantle has a higher PGE content than the crust and there is more of it for the Bushveld magmas to traverse and pick up the PGEs found in the ores."

The results of this study may be applicable to similar ore deposits elsewhere, such as the Stillwater Complex in Montana. "Knowing how these processes work can lead to better exploration models and strategies," says Shirey.

This work was supported by the Carnegie Institution for Science and the National Science Foundation.

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*Adapted from materials provided by Carnegie Institution.*

<http://www.sciencedaily.com/releases/2008/06/080611135115.htm>



## Hormone Disorder May Contribute To Lack Of Menstruation In Teenage Athletes

ScienceDaily (Jun. 17, 2008) — Researchers from Harvard University have found a way to predict which teenage female athletes will stop menstruating, an important risk factor for bone thinning, according to a preliminary study.

Amenorrhea, or absence of menstruation, occurs in as many as 25 percent of female high school athletes, compared with 2 to 5 percent in the general population, according to the study's presenter, Madhusmita Misra, MD, a pediatric endocrinologist at Harvard-affiliated Massachusetts General Hospital, Boston.

Amenorrhea in athletes is known to cause infertility and early onset of low bone density and may increase the risk of breaking bones. Evidence suggests that intense exercise associated with caloric restriction, and therefore a state of energy deficit, is most responsible for menstrual irregularities among athletes.

"The hormonal factors that link energy deficit and the stopping of periods in athletes are not well characterized," she said. "These factors are important to determine in order to develop therapies that will lead to resumption of periods and hence improved bone density."

In females ages 12 to 18, Misra and her colleagues measured levels of various hormones, including ghrelin. Giving ghrelin to animals and humans has been shown to cause impaired secretion of hormones that regulate ovarian and menstrual function, and ghrelin levels are elevated in people with anorexia nervosa, another condition of severe energy deficit, she said. Until now, ghrelin levels have not been studied in teenage athletes in relation to ovarian hormones.

The researchers studied 21 teenage athletes with amenorrhea, 19 normally menstruating athletes and 18 nonathletic girls. The body mass index, a measure of body fat, was lower in the amenorrheic girls than in the other two groups, but overall these athletes were not underweight. All girls were more than 85 percent of the ideal body weight for their ages. The amenorrheic group reported similar levels of physical activity as the normally menstruating group, and both groups of athletes reported more physical activity than the non-athletic group.

Even after controlling for BMI, the research team found that ghrelin levels were higher in athletes that were not menstruating than in either of the other two groups. The data also showed that athletes with higher ghrelin levels had lower levels of the sex hormones estrogen and testosterone.

"These findings suggest that hormonal disorders may explain why amenorrhea occurs in some but not all adolescent athletes," Misra said. "In addition, ghrelin may be an important link between an energy deficit state and the hormones that regulate menstrual function."

They plan to further study the role of ghrelin in menstrual function in more subjects and over an extended time.

The results will be presented at The Endocrine Society's 90th Annual Meeting in San Francisco.

The National Institutes of Health funded this study.

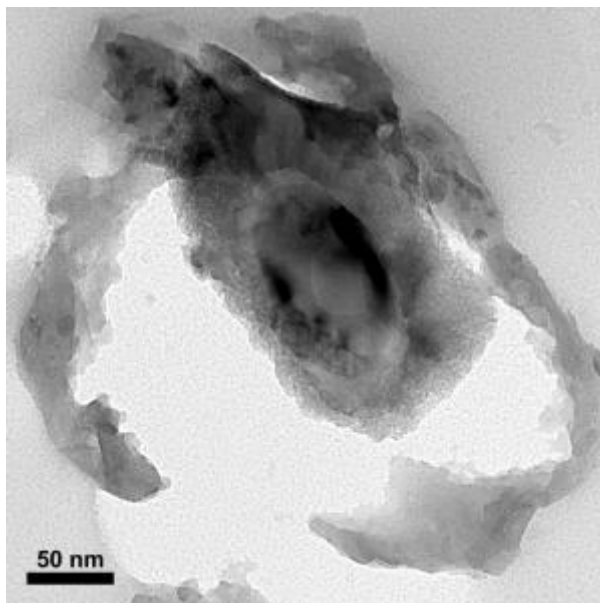
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*Adapted from materials provided by The Endocrine Society, via EurekAlert!, a service of AAAS.*

<http://www.sciencedaily.com/releases/2008/06/080616133123.htm>



## NASA Finds New Type Of Comet Dust Mineral



NASA researchers and scientists from the United States, Germany and Japan found this new mineral in material that likely came from a comet. The mineral, a manganese silicide named Brownleeite, was discovered within an interplanetary dust particle (IDP) that appears to have originated from comet 26P/Grigg-Skjellerup. The mineral was named after Donald E. Brownlee, professor of astronomy at the University of Washington, Seattle. Brownlee founded the field of IDP research. (Credit: NASA)

ScienceDaily (Jun. 17, 2008) — NASA researchers and scientists from the United States, Germany and Japan have found a new mineral in material that likely came from a comet.

The mineral, a manganese silicide named Brownleeite, was discovered within an interplanetary dust particle, or IDP, that appears to have originated from comet 26P/Grigg-Skjellerup. The comet originally was discovered in 1902 and reappears every 5 years. The team that made the discovery is headed by Keiko Nakamura-Messenger, a space scientist at NASA's Johnson Space Center in Houston.

"When I saw this mineral for the first time, I immediately knew this was something no one had seen before," said Nakamura-Messenger. "But it took several more months to obtain conclusive data because these mineral grains were only 1/10,000 of an inch in size."

A new method of collecting IDPs was suggested by Scott Messenger, another Johnson space scientist. He predicted comet 26P/Grigg-Skjellerup was a source of dust grains that could be captured in Earth's stratosphere at a specific time of the year.

In response to his prediction, NASA performed stratospheric dust collections, using an ER-2 high-altitude aircraft flown from NASA's Dryden Flight Research Center at Edwards Air Force Base, Calif. The aircraft collected IDPs from this particular comet stream in April 2003. The new mineral was found in one of the particles. To determine the mineral's origin and examine other dust materials, a powerful new transmission electron microscope was installed in 2005 at Johnson.

"Because of their exceedingly tiny size, we had to use state-of-the-art nano-analysis techniques in the microscope to measure the chemical composition and crystal structure of Keiko's new mineral," said Lindsay Keller, Johnson space scientist and a co-discoverer of the new mineral. "This is a highly unusual material that has not been predicted either to be a cometary component or to have formed by condensation in the solar nebula."





Since 1982, NASA routinely has collected cosmic and interplanetary dust with high-altitude research aircraft. However, the sources of most dust particles have been difficult to pin down because of their complex histories in space. The Earth accretes about 40,000 tons of dust particles from space each year, originating mostly from disintegrating comets and asteroid collisions. This dust is a subject of intense interest because it is made of the original building blocks of the solar system, planets, and our bodies.

The mineral was surrounded by multiple layers of other minerals that also have been reported only in extraterrestrial rocks. There have been 4,324 minerals identified by the International Mineralogical Association, or IMA. This find adds one more mineral to that list.

The IMA-approved new mineral, Brownleeite, is named after Donald E. Brownlee, professor of astronomy at the University of Washington, Seattle. Brownlee founded the field of IDP research. The understanding of the early solar system established from IDP studies would not exist without his efforts. Brownlee also is the principal investigator of NASA's Stardust mission.

The comet researchers include Messenger; John Jones, a co-discoverer of the mineral from Johnson; Simon Clemett and Michael Zolensky in Johnson's Astromaterials Research and Exploration Science Directorate; Russ Palma, Minnesota State University at Mankato; Robert Pepin, University of Minnesota, Minneapolis; Wolfgang Klöck, Röntgenanalytik Messtechnik GmbH, Germany; and Hirokazu Tatsuoka, Shizuoka University, Japan.

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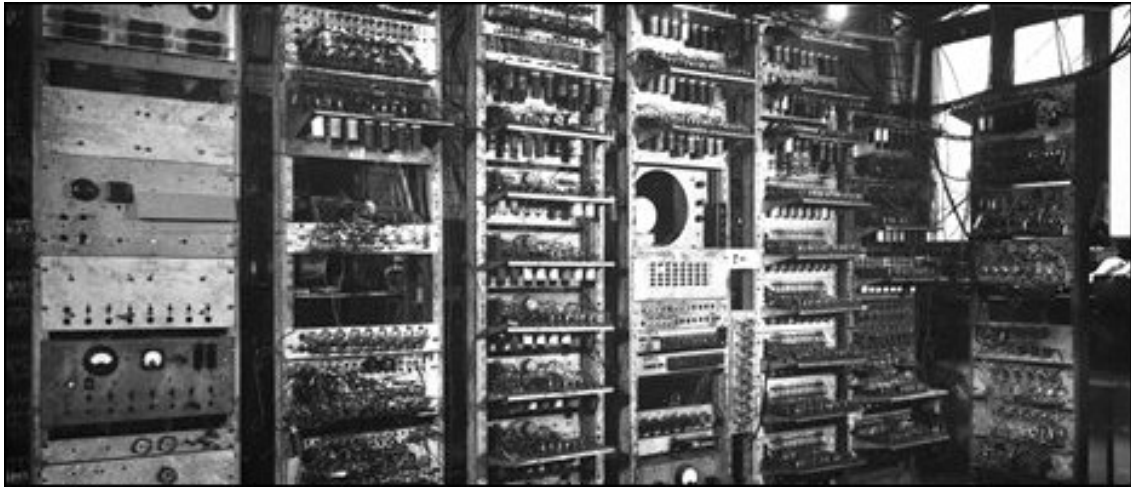
*Adapted from materials provided by [NASA/Johnson Space Center](#).*

<http://www.sciencedaily.com/releases/2008/06/080612194945.htm>

## 'Oldest' computer music unveiled

By Jonathan Fildes

Science and technology reporter, BBC News



**A scratchy recording of Baa Baa Black Sheep and a truncated version of In the Mood are thought to be the oldest known recordings of computer generated music.**

The songs were captured by the BBC in the Autumn of 1951 during a visit to the University of Manchester.

The recording has been unveiled as part of the 60th Anniversary of "Baby", the forerunner of all modern computers.

The tunes were played on a Ferranti Mark 1 computer, a commercial version of the Baby Machine.

Please turn on JavaScript. Media requires JavaScript to play. "I think it's historically significant," Paul Doornbusch, a computer music composer and historian at the New Zealand School of Music, told BBC News.

"As far as I know it's the earliest recording of a computer playing music in the world, probably by quite a wide margin."

The previous oldest known recordings were made on an IBM mainframe computer at Bell Labs in the US in 1957, he said.

"That's where the whole computer music thing started but they were not the first to have a computer play music," said Mr Doornbusch.

That honour goes to a third machine called CSIRAC, Australia's first digital computer, which "stunned" audiences with a rendition of Colonel Bogey.

"It played music months or weeks before [the Manchester] recording," said Mr Doornbusch.

However, no one has yet unearthed a recording of CSIRAC in action.

### Mood machine

Documentary evidence of the Manchester machine's musical abilities exists thanks to a BBC outside broadcasting team who had gone to the University to record an edition of Children's Hour.

At the time Manchester was home to a Ferranti Mark 1, the first commercially available general purpose computer.

Please turn on JavaScript. Media requires JavaScript to play.

How the BBC reported on the birth of "Baby" in 1948

"Word must have got around that this electronic brain could play music," explained Chris Burton of the Computer Conversation Society (CCS).

The music program was written by a friend of computing legend Alan Turing called Christopher Strachey, a maths master at Harrow.

"My understanding is that Chris Strachey got on and wrote a program for playing draughts and when the program terminated it played God Save the King," said Mr Burton.

Others contend that the program was purely for playing music.

Either way, following the recording, a university engineer called Frank Cooper asked if he could have a copy. Unable to give him the original, the BBC team cut him another version.

"At the time of the recording outside broadcasts were recorded on to acetate disks," explained Mr Burton. "You can hear the presenter tell the recording engineer in the van 'lift Jim' and that meant lift the cutter off to stop recording."

During the session, the temperamental machine managed to work its way through Baa Baa Black Sheep, God Save the King and part of In the Mood.

Following one aborted attempt, a laughing presenter says: "The machine's obviously not in the mood."

The disc was eventually passed to the CCS, who, along with the University of Manchester, has released the recording to mark the 60th anniversary of the Ferranti machine's forerunner.

### **Modern marvel**

In the late 1940s Manchester was a hotbed of computer innovation following the birth of Baby, or Small Scale Experimental Machine, in 1948.

Baby was the forerunner of the Ferranti Mark 1 and was the first computer to contain a memory device that could store a program.

"Baby was the first universal computer," explained Mr Burton.

"It would perform any task - within its capacity - depending on what program was put in."

The memory was built from a Cathode Ray Tube and allowed scientists to program 1024 bits, compared to the billions in today's modern computers.

Before Baby was built, computers such as ENIAC and Colossus had to be rewired to perform different tasks, said Mr Burton.



"You couldn't easily change what they did," said Mr Burton.

Baby successfully ran its first program - to determine the highest factor of a number - on 21 June 1948.

"That particular program was devised solely to make the machine work very hard so we could see where it was about to go wrong," Geoff Tootill, one of the builders of Baby told BBC News.

"If you gave the problem to a mathematician, he would take a fraction of a second to give you an answer."

However, companies quickly capitalised on Baby's unique abilities, giving rise to machines like the Mark 1.

"It was the start of the computer age," said Mr Tootill. "Although we didn't know it was going to be epoch-making or earth-shattering other than for weather forecasting and other scientific disciplines."

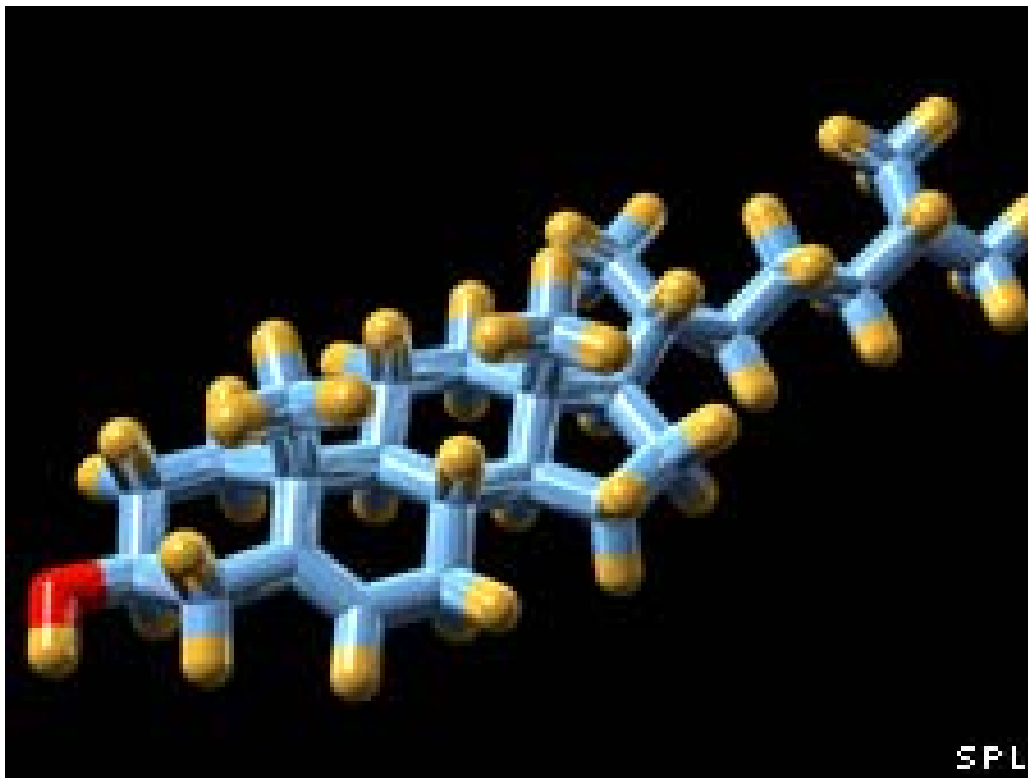
Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/7458479.stm>

Published: 2008/06/17 23:10:47 GMT

## Cholesterol genes 'protect heart'

**A third of the population have genes that could help them in the fight against heart disease, say scientists.**



A study of 147,000 patients suggests that certain types of the CETP gene might increase the levels of so-called "good" cholesterol.

UK and Dutch research, published in the *Journal of the American Heart Association*, found a 5% cut in heart attacks for those with the key types.

A UK geneticist said it could point to drugs which help many more people.

**What it does provide are important insights into the 'cause and effect' relationship, and if you understand this better, you can develop drugs which target it**

Dr Aroon Hingorani  
University College London

Scientists already know that cutting the levels of "bad" cholesterol in the bloodstream protects your heart, and well-established drugs such as statins aim to do precisely this.

The relationship between the levels of "good", or HDL, cholesterol, and heart health are less clear, although there is some evidence that raising these levels is good for you.

The team from Cambridge and Newcastle universities, and the University of Groningen in the Netherlands, merged the results of almost 100 other studies, involving 147,000 people worldwide.



They looked for the effect of having one of six different variations of the CETP gene.

The most popular three all seemed to carry a modest positive effect, raising HDL cholesterol levels by between 3% and 5%, and people with them were less likely to have a heart attack.

### **Cause and effect**

Professor John Danesh, who led the study, said that the findings added weight to the idea that heart disease could be prevented by raising HDL levels, perhaps by drugs that blocked CETP.

A trial into a drug which raised HDL cholesterol by influencing CETP was abandoned in 2006 due to an increase in heart disease and deaths, but some scientists believe it may still be possible to target the gene effectively and safely.

Professor Peter Weissberg, of the British Heart Foundation, which funded the study, said: "Researchers are questioning whether approaches that raise HDL cholesterol could further prevent heart disease.

"This suggests that it may have benefits, but that more studies are needed to determine how much might be derived."

Dr Aroon Hingorani, a lecturer in genetics from University College London, said that the relatively small decrease in risk meant that the presence of a particular variant of the CETP gene could not help predict with any accuracy the risk of an individual falling prey to heart disease.

She said: "What it does provide are important insights into the 'cause and effect' relationship, and if you understand this better, you can develop drugs which target it."

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7459766.stm>

Published: 2008/06/18 01:27:11 GMT





## Research Methods ‘Beyond Google’

When “Google” has become a synonym for “research,” how should faculty respond? And if the answer doesn’t lie in musty books and stacks of journals, are libraries still part of the answer?

The problem is near-universal for professors who discover, upon assigning research projects, that superficial searches on the Internet and facts gleaned from Wikipedia are the extent — or a significant portion — of far too many of their students’ investigations. It’s not necessarily an issue of laziness, perhaps, but one of exposure to a set of research practices and a mindset that encourages critical thinking about competing online sources. Just because students walk in the door as “digital natives,” the common observation goes, doesn’t mean they’re equipped to handle the heavy lifting of digital databases and proprietary search engines that comprise the bulk of modern, online research techniques.

Yet the gap between students’ research competence and what’s required of a modern college graduate can’t easily be solved without a framework that encompasses faculty members, librarians, technicians and those who study teaching methods. After all, faculty control their syllabuses, librarians are often confined to the reference desk and IT staff are there for when the network crashes.

So instead of expecting students to wander into the library themselves, some professors are bringing the stacks into the classroom. In an effort to nudge curriculums in the direction of incorporating research methodology into the fabric of courses themselves, two universities are experimenting with voluntary programs that encourage cooperation between faculty and research specialists to develop assignments that will serve as a hands-on and collaborative introduction to the relevant skills and practices.

Kathy Lee Berggren, a professor at Cornell University, teaches oral communication with a “heavy research component.” Still, she pointed out, “a lot of my students really [only] scratch the surface with the type of research they’re doing.”

“Research isn’t a Google search,” she said.

That sentiment was echoed by several others involved with the [Cornell Undergraduate Information Competency Initiative](#), a program that kicked off on Monday with a week-long summer institute aimed at understanding how students perceive university research, how to guide their habits and how to merge existing course goals with instruction in research methods. Those practices, of course, can apply whether inside a brick-and-mortar research facility or logged on from home. The goal is to “really learn how to use a library whether they’re in it or not,” Berggren said.

Each of nine faculty fellows, including Berggren, will join an “implementation team” consisting of a librarian, someone from the information technology staff and a representative from Cornell’s Center for Learning and Teaching with the “objective of infusing information competency skills into the coursework,” said Thomas Mills, a co-chairman of the program who teaches online legal research at the Cornell Law School. Those teams will continue to meet over the next semester to monitor how the course is progressing and evaluate research-based assignments.

“It’s certainly one way to encourage faculty who probably were taught in a very lecture-style format and have grown up in a largely lecture-style format — maybe augmented by PowerPoint — to share with undergraduates the genuine excitement of what learning in a university is all about, and that does involve research,” said Tracy Mitrano, the director of Cornell’s Computer Policy and Law Program and, like, Berggren, both a faculty fellow and an institute facilitator. “It might also involve service....”

Mitrano incorporated what she calls “active learning” techniques into her course on the culture, law and politics of the Internet, an experience one of her former students, now a teaching assistant, will discuss this week at the institute, she said. When she brought up the music recording industry’s anti-piracy tactic of sending “pre-litigation letters” to colleges, “the room erupted,” she remembers. To bring in real-world concepts and to encourage collaborative research, she broke the class into groups, each of which was assigned a different project: on the history of piracy, on current issues, on new business models for music, protest movements and other topics.

“Man, they woke right up,” Mitrano recalled. “I didn’t see any more yawns.”





An instructor “winds up learning so much that it’s an enormous benefit to them, and moreover, it reminds them of why they wanted to be in higher education in the first place, because it’s all about this process, and it’s exciting.”

The germ of the Cornell initiative started with a visit to the University of California at Berkeley last spring, where faculty and librarians learned about the Mellon Library/Faculty Fellowship for Undergraduate Research, which for several years has tested a similar model but on the scale of an even larger research campus, and with funding from the Andrew W. Mellon Foundation.

During Berkeley’s accreditation renewal process several years ago, said Elizabeth Dupuis, the project’s director, one of the campuswide goals was to define “what it means to be at a research institution.” Of course, she said, one of the fundamental aspects of that experience was research itself, but not just in lab courses or classes on research methods.

“There’s no course that everyone takes, and there’s not really a very clear trajectory for most students,” Dupuis noted.

“It’s really important that these skills are taught in the context of a course, and really learning the content and material of a discipline, as opposed to learning these skills separate from a course.” The answer, she said, is “to try to infuse these skills in a wide range of courses” and “work into those assignments the sort of critical thinking skills along the way” — “a net gain of exposure throughout [students’] career.”

Berkeley’s Mellon-funded program, renewed after its initial grant for several years, is now in a hiatus phase in which the university is working with external evaluation consultants to conduct focus groups and interviews with participants. Last fall, a modified version of the program was established that focuses on full departments rather than on individual faculty members.

But as the trajectory of the program indicates, the movement is from the grass roots rather than from on high, a necessity at large and often unwieldy institutions like Berkeley and Cornell.

So for now, the participants in the Cornell institute are “academic guinea pigs,” said Anne Kenney, the university librarian.

“[B]eing able to understand the importance of navigating a complex information landscape and being good-quality consumers of content rather than passive receptors of what’s pushed at them is important,” she said. “We know that ... when faculty who have used librarians to provide information competency components in their classes, there has been a concomitant increase in the quality of papers presented.”

— **Andy Guess**

*The original story and user comments can be viewed online at  
<http://insidehighered.com/news/2008/06/17/institute>.*





## The critics meet the champions

Sport and culture are often thought to have nothing in common. But is this really true? What would happen if the Guardian's arts critics and sports writers swapped roles for a day? Today the critics get a taste of the sporting life, while tomorrow the sports team are set loose on the contemporary arts world

- [The Guardian](#),
- Tuesday June 17 2008
- [Article history](#)



*Judith Mackrell, dance critic, on horse-racing Ladies' Day at the Epsom Derby, June 6*

In some ways, Ladies' Day at Epsom is not so different from a gala night at the ballet. The more glamorous section of the crowd are preening themselves, the more serious are studying the form - which horses, or which dancers, are likely to deliver the most spectacular results.

But the similarities can't go much deeper, given that ballet is not a competitive entertainment - at least, not to the point where you want one dancer to succeed at the expense of the rest. In a performance of *Sleeping Beauty*, when Aurora hits the notoriously tricky climax of the *Rose Adagio* - taking four long, unsupported balances, one after the other - everyone in the theatre is willing her to survive them. No one has an emotional or financial investment in seeing her topple. And if, by some horrible chance, she gets injured, she isn't going to be put down after the show.

But at Epsom, winning and losing is everything - and initially I find that fact completely addictive. I have never been to the races before, never placed a bet, and with a few tips from the Guardian's racing team, plus a few sentimental choices of my own (£5 each way on Anna Pavlova, even though she will apparently not run well on this dry-ish ground) - I am checking out the odds at the bookies with the best of them.

The first race is fantastic. Watching the horses break out of the trees at the distant end of the track and then, in a surreal telescoping of time and distance, seeing them suddenly thundering down the home straight is exhilarating. I'm yelling so hard I can't hear the commentary, and it's a few moments before I understand that my horse, Blythe Knight, has crossed the line first. I've won a pittance but I feel like a millionaire.

The social aspect of racing is a revelation. Reviewing dance is a mostly silent activity, but here I get to banter with the bookies, embrace fellow winners and chat with a jockey.

Even more of a revelation are the horses. As a child I read pony books, but horses always seemed off-puttingly large and dangerous in reality. Now I see where all the comparisons between race horses and ballerinas come from. These are beautiful animals - form and function fused in their precisely articulated legs and shining, muscled haunches. When they run, their bodies realign along a single horizontal thrust towards the finishing post, and this too reminds me of dancers - the radiant stretch of the spine that transforms a solid body into a line of pure movement.

But as I fall in love with the horses I start to get frustrated with the sport. Compared to a dance performance each race is over so quickly, and there is no time to study these awesome animals and understand what makes each one special. Expert as the jockeys are (stiff-legged and diminutive off their mounts, but dynamos of coiled tension when they're in the saddle), I'm feeling that the horses don't get enough of the applause. They are the real stars, and all the human activity - the drinking and the betting - takes too little account of that fact.

Or maybe it's just that my winning streak has deserted me. After a glowing burst of beginner's luck, I lose everything, and more.

***Michael Billington, theatre critic, on darts  
Premier League final, Cardiff International Arena, May 26***

Driving down the M4 on a bank holiday Monday in pelting rain to watch a darts tournament in Cardiff, I wonder if I am being punished in some way, either by God or the Guardian. As a darts virgin, I imagine watching sweating, beer-bellied arrowmen playing to a few hundred spectators. What I discover is that Premier League darts is a mixture of showmanship, skill and big business played to more than 4,000 people, who pack every inch of the Cardiff International Arena. "Darts," I am told by Sky Sports commentator Sid Waddell, "is working-class theatre."

I get to talk to Waddell in his presentation box and soon realise why he is as much a legend as the players he describes. In the course of doing his vocal warm-ups, this genial Oxford-educated Geordie talks to me knowledgeably about the original Pitmen Painters (recently dramatised by Lee Hall in his play about the Ashington miners, now at the Cottesloe) and quotes Wittgenstein's remark that trying to define sport is like trying to define language. But he has none of the pretentiousness of Keith Talent, the anti-hero of Martin Amis's novel *London Fields*, which I have been reading by way of preparation. Talent talks of "the address of the board" and "the sincerity of the dart". Waddell gives me shrewd tips about the players, the punters, the phenomenal popularity of darts and, on air, displays a manic fervour that produces off-the-cuff lines such as "he could play a ukelele and make it sound like a Stradivarius".

The event itself - consisting of two play-off semis and a final - is a mixture of razzmatazz and expertise. The players, flanked by glamorous female acolytes, enter down a red carpet, like championship boxers. The crowd chant, shout, sing, roar on their favourites, hold up placards ("Kids, has the babysitter turned up yet?" reads one) but fall appreciatively silent for each "leg" of the contest. What soon becomes clear, however, is that we are here to watch the coronation of a darts genius: Phil "The Power" Taylor, who has won the three previous Premier League finals and is about to sweep to a triumphant fourth.

"Taylor is to darts," I was told by Waddell, "what Bradman is to cricket or Pele to football: he has set a standard which we know will never be matched." But in sport, as in theatre, there is always a hidden story



just beneath the surface. In the second semi the 47-year-old Taylor defeats the 23-year-old Adrian Lewis with contemptuous ease: only later do I learn that both hail from Stoke and that Taylor is a professional mentor to the visibly crestfallen Lewis. And, although in the final Taylor beats the 25-year-old James Wade with a run of remarkable trebles, the steely, bespectacled Wade periodically unsettles the champ. Are we, I wonder, seeing the darts equivalent of drama's peripeteia: a crucial turning-point in which the reigning king has to acknowledge a rival to the throne?

But, for now, the rotund, unflappable Taylor displays the perfect hand-to-eye co-ordination and muscle memory of the great sportsman. His only mistake, in picking up the £100,000 prize, is to say that "it's been a great year for English sport" momentarily forgetting that he is addressing a crowd of raucous, partisan, tanked-up Welshmen. Darts may be a display of sporting skill. But, as one of Waddell's Sky colleagues said to me as I was about to quit the noisy arena: "You can take darts out of the pub, but you can never entirely take the pub out of darts."

***Jonathan Jones, visual art critic, on football  
Hull City v Bristol City at Wembley, May 24***

This brings back memories. The tall stadium full of bodies and voices, the calls and sighs rolling from one part of the crowd to another, the surprisingly small green rectangle at the heart of the matter. It's not as if I've never been to a football match before: sitting in the press enclosure at Wembley, I think back to afternoons with my father at Anfield and Goodison Park in Liverpool, and the year we got season tickets to see Wrexham FC. But this is the first football match I've attended since those days when I tried, and failed, to live up to the strong family football-loving tradition (Dad recalls how I once fell asleep in the stands on a Saturday afternoon).

Wembley is a thrill, for all sorts of reasons. There's the architecture - the raised external ramps are like walking on a north London Acropolis, and the roof leaves a small space over the pitch, generating powerful contrasts of light and shadow. There's the way the crowd is so neatly bisected into orange Hull fans and red Bristol fans, and the constant changes in the source and volume of their noise. Then there's



the "media lounge", a spectacle in itself. After undergoing the rigours of accreditation, I get in a special lift up to the luxurious press facilities, which include free lunch, drinks, coffee and cakes at half time. They should consider installing something like this at Tate Modern.

Watching football is, in theory, a bit like looking at art. The view from my seat (which has its own little TV monitor) might be compared to looking down on a vast green abstract canvas laid flat, with dots oscillating about like some 1960s piece of kinetic art. But while I can find deep meaning in, say, an abstract by Jackson Pollock, the game of football has always been as indecipherable to me as some people profess to find modern art. I am a football philistine.

Still, I do stay awake, which is something. Today's match - Hull City v Bristol City in the Championship play-off final - is a lifechanger for the winners, who will go into the Premier League. And I do see the one goal of the day, scored by a Hull hero, but that's a stroke of luck. Throughout the match, I keep trying to concentrate. I can watch the ball go from one player to another, maybe a second, even a third pass ... and then my mind starts to wander. Frankly, what's football about? How can so many people get so passionate about a ball? The massed feeling is so intense that it ought to end with heads being torn off and chests opened with sacrificial daggers, like the ancient ball game in pre-Columbian Mexico.

I remember my Taid - Welsh for grandad - watching football in a cosy lounge while I played with my Action Man. The game was just a blur to me, so much less real than Action Man's commando mission. There's a photo of me looking weedy in my first soccer strip. There's no photo of me freezing in the rain on the school field, praying the ball and a torrent of abuse wouldn't come my way.

And it's all over. Hull have won, and their celebration is tremendous. The players are dancing about in orange wigs, bowing to their loyal fans. The Bristol fans have vanished, leaving just a hemisphere of orange shirts. And now I can't tear myself away. If I really were the alien I feel like among this crowd, I'd report back to my home planet that humans find football a potent symbol of communal belonging, as well as a release of collective passions. But what can I tell you, as a critic, about the quality of what I saw? On the phone, Dad says it was a good game. I'm afraid I can't do better than that.

*Caroline Sullivan, rock critic, on cricket*

*Second Test match, England v New Zealand, at Old Trafford, Manchester, May 23*

If ever there were a sport invented to alienate the casual onlooker, it's cricket. What is the appeal of a game that grinds on for five days, has an arcane vocabulary of "wickets" and "overs" and "LBWs" and forces its fans to sit in sodden stadiums for seven hours at a stretch? To me, an American, it seems to be one of those "pleasures" that Brits revel in to reinforce their reputation as connoisseurs of the inexplicable and the eccentric. As a rock critic, the only parallel I can think of is a Tindersticks gig I recently saw: it was slow-moving, went on for about a year and the audience sat in mute absorption all the way through, like they'd been poleaxed.

That's as good a description as any of the first day of the second Test at Old Trafford. And, in fact, the scene outside the ground isn't dissimilar to what you'd find outside a gig: there are ticket touts, there is merchandise for sale and long, long queues of quietly suffering fans. So I feel almost at home, until I get in and sit down to watch the action. Or rather, the inaction.

It's New Zealand v England - I establish that much, along with the fact that NZ are batting and England bowling. Beyond that, I'm completely lost. OK, I understand that one guy throws the ball and the other guy hits it, and when he hits it he capers around a bit and the audience gently applaud. And I quickly become aware that a player called Monty Panesar is a favourite with the crowd, who snap out of their torpor and yelp when he comes up to bowl. But why is something so straightforward clouded by impenetrable terms and conditions? The Guardian's cricket correspondent excitedly tells me that an England bowler has just "taken two wickets" - and, whoa, there's just been a "leg before wicket". I peer at the pitch to see if anything looks different, but nothing has changed.

Today's game is considered special because it's umpire Darrell Hair's first match since he controversially accused a Pakistani player of cheating in 2006. I keep an eye on him to see if he does anything interesting, but no - he just stands a few feet back from the pitch and looks bored. Ah, but what's this? He's waving an arm, and both teams troop off the pitch. Apparently, the light has become too dim for play to continue, and we're going to have to wait until things brighten up. An hour later - it's 5pm, and we've been here six hours - we're still waiting. But instead of throwing bottles, as the crowd would be doing if this were a gig, spectators are placidly reading magazines and drinking tea. And they say English stoicism no longer exists. Well, here's proof it does. At this point, I decide to leave. I'm none the wiser about cricket's attractions, but perversely proud that I've sat through six hours of it.

***Erica Jeal, classical music critic, on motorcycle racing  
The British Superbikes Championship, Donington Park, May 26***

I'm not exactly a petrolhead. My previous motorbiking experience consists of a spin around the block on the back of a Yamaha belonging to my sister-in-law's boyfriend, Mark, reaching dizzying speeds of around 15mph. However, Mark doesn't get to spend his bank holiday Monday at Donington for the fourth meeting of the 2008 British Superbikes Championships. I do.

It was a good weekend for British motorsport. The day before, Lewis Hamilton had triumphed in the Monaco Grand Prix. In the pit lane to celebrate with him: P Diddy; Quentin Tarantino; a Pussycat Doll. In the pit lane with the Rizla Suzuki Superbikes team: me; my husband; Fabio, the Guardian's photographer. Superbikes, you might infer, is less glamorous than motor racing - but that, I'm realising, is part of the appeal. Not everybody gets to watch the race from a team garage, but everybody here can get close to their heroes. An hour before the racing begins, the pit lane is jammed with punters peering into the garages. The riders happily sign posters and pose for photos with cheesy thumbs-up. Did Michael Schumacher ever do that?

The machines, too, are not beyond the fans' imaginations. What distinguishes Superbikes from MotoGP is that the bikes have to be on the company's production line. Even I could buy the Rizla Suzuki team's basic model, if I had £9,000 to spare - although if it were then taken apart and put back together the way rider Tom Sykes likes, it would be worth seven or eight times that. The gossip is that Airwaves Ducati, the team behind the Championship's runaway leader, "Shakey" Shane Byrne, have been battling to flog enough of their £24,000 machines to qualify.

Shakey's not bothered. He's in pole position. He leads the first race throughout, unruffled even when an umbrella blows across the track and when another bike catches fire. Myself, I'm rooting for Sykes, and get a thrilling race in return as he storms up to third from 13th on the grid. One verse of God Save the Queen, a spray of champagne and a couple of hours later, Byrne starts badly in the second leg, dropping to sixth. Yet he works his way back, eventually stealing the lead by taking absurdly tight corner lines, knees almost scraping the tarmac.

There is a kind of artistry in those corners, I reckon. Perhaps Byrne and Sykes have something in common with the concerto soloists I write about, in that all must lavish so much practice on something so fleeting, be it a well-held inside line or a perfectly nailed musical flourish. However, the real shared ground is in the element of communal experience for the "audience". Even if those around me are watching the big screens as much as the actual bikes, just being here is fuel for their enthusiasm - and that applies as much to the children in junior-size Rizla Suzuki fleeces as to the grizzled old bikers in their leathers. A little of its oily charm has even rubbed off on me. Now, to persuade Mark to take me for another spin.

<http://www.guardian.co.uk/sport/2008/jun/17/1>

## Piano Designs \$435 Million Tugboat for Downtown Whitney Museum

Review by James S. Russell



June 17 (Bloomberg) -- Moored to the elevated High Line train track and park, the tugboat silhouette of Renzo Piano's \$435 million design for New York's new Whitney Museum looks poised to steam purposefully toward the nearby Hudson River.

The pugnacity exuded by this still-amorphous design isn't surprising. This is the museum's fourth attempt in three decades to grow beyond its dour 1966 Marcel Breuer fortress on the Upper East Side.

Dare we call this block-long, 185,000-square-foot structure in the Meatpacking District a branch? Scheduled to open late in 2012, it's three times the size of its uptown sibling.

The 70-year-old Piano, the risk-averse trustee's blue-chip choice, has at last departed from the metal-and-glass pavilions that have become rote in almost a dozen U.S. museums, from Boston to Los Angeles.

The evocative corner of Washington and Gansevoort streets demands an extroverted building, which is exactly what an art museum -- with wall space a priority and its collections sensitive to light -- does not want to be.

Piano attempts to reconcile these opposites. He steps four sculpture terraces up from the High Line, the almost finished, meadow-planted train track that begins at the museum's front door.

It's Piano's smartest move. Linked by elegant fretwork stairs, visitors moving among these display spaces will perform a stirring three-dimensional ballet.

### Closed to the River

A faceted and tapering shell to the west -- almost windowless -- negates that openness to the surroundings. Piano masses the volume highest at the western edge to form a ship's prow aimed at the waterfront. It presents a forbidding face to the river, all but ignoring its deep history and sparkling glory. He's faceted this edge, as if to take advantage of river panoramas. Yet the slit windows (meager because late-afternoon sun is the hardest to control) add to the watch-tower menace.

The experience within continues the outside's split loyalties. An SUV-size, windowed elevator opens to the grimy, industrial blocks where so many artists in the Whitney's collection have portrayed the hubris, heedlessness and solitude of city life. Regrettably, the glass elevator turns the neighborhood view into a theme-park experience rather than simply presenting it so visitors could make the connection themselves.

### Four Levels

Within the 50,000 square feet of galleries on four levels, the introversion is almost total. A 250-foot-long temporary- exhibition space on the third floor will at last permit the Whitney to mount today's massive artworks in a place of suitable scale. Above, two floors will house the permanent collection in 30,000 square feet, as much as 10 times the space (depending on the configuration of temporary shows) that the museum has available uptown.

The sixth-floor gallery for long-term projects is the only display space that is top-lit with Piano's signature daylight- control devices. It should be glorious.

The faceted exteriors shape large amorphous polygons of space that complicate installations without delivering counterbalancing amenity. Neither east-facing window walls nor west-facing glass slits are architecturally protected from sun glare (even though Piano is a master at manipulating daylight), so they are likely to be shut off most of the time.





Curators resist daylight because it varies from their neutral ideal in color temperature and intensity throughout the day. Suitably controlled, natural light can bring art alive in a way that museum lighting never can. It's a crime to miss that opportunity in a rare New York site where it can be harvested.

#### Rawness, Elegance

The Whitney design seems poised between warehouse rawness and Piano's usual bespoke elegance. Its ambivalence reflects a vagueness in the Whitney's sense of place in the New York museum ecosystem.

In a presentation of the design at the uptown Whitney, museum Director Adam Weinberg spoke of taking risks and moving the museum closer to the rougher and more authentic places where artists live. Earth to Weinberg: That's Queens. Only millionaire artists can afford the Whitney's new neighborhood now.

Weinberg plans to raise the very uptown sum of \$680 million to build and endow the much-enlarged institution. He's budgeted construction at a posh \$2,350 per square foot -- though roaring construction inflation will effectively take a slice out of that sum every month.

More power to him. But he's got to figure out what this building is for and unleash its design possibilities, not close them off.

(James S. Russell is Bloomberg's U.S. architecture critic. The opinions expressed are his own.)

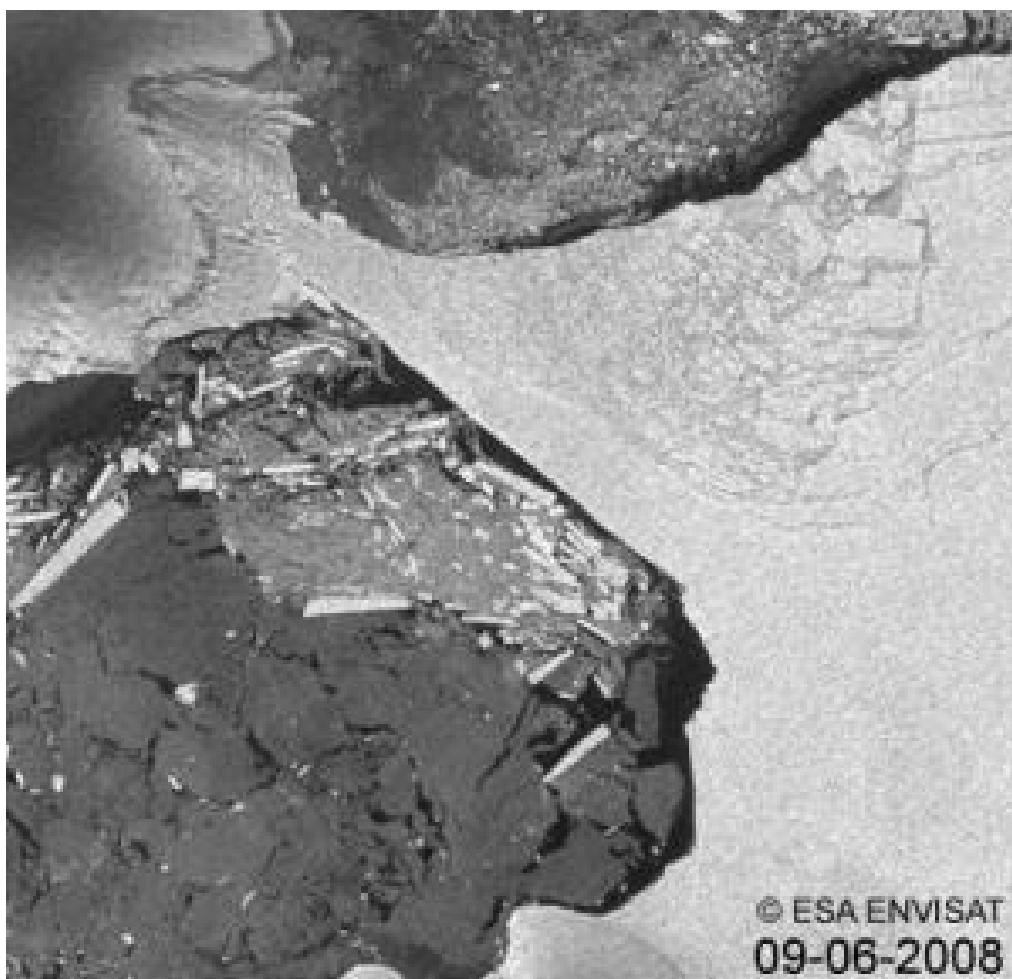
To contact the writer of this story: James S. Russell in New York at [jamesrussell@earthlink.net](mailto:jamesrussell@earthlink.net).

*Last Updated: June 17, 2008 00:01 EDT*

<http://www.bloomberg.com/apps/news?pid=20601088&sid=aqIRbcL5N6DI&refer=muse#>



## Even The Antarctic Winter Cannot Protect Wilkins Ice Shelf



*Wilkins Ice Shelf, a broad plate of floating ice south of South America on the Antarctic Peninsula, is connected to two islands, Charcot and Latady. In February 2008, an area of about 400 km<sup>2</sup> broke off from the ice shelf, narrowing the connection down to a 6 km strip; this latest event in May has further reduced the strip to just 2.7 km.*

ScienceDaily (Jun. 14, 2008) — Wilkins Ice Shelf has experienced further break-up with an area of about 160 km<sup>2</sup> breaking off from 30 May to 31 May 2008. ESA's Envisat satellite captured the event – the first ever-documented episode to occur in winter.

Wilkins Ice Shelf, a broad plate of floating ice south of South America on the Antarctic Peninsula, is connected to two islands, Charcot and Latady. In February 2008, an area of about 400 km<sup>2</sup> broke off from the ice shelf, narrowing the connection down to a 6 km strip; this latest event in May has further reduced the strip to just 2.7 km.

New images highlight the rapidly dwindling strip of ice that is protecting thousands of kilometres of the ice shelf from further break-up.

According to Dr Matthias Braun from the Center for Remote Sensing of Land Surfaces, Bonn University, and Dr Angelika Humbert from the Institute of Geophysics, Münster University, who have been investigating the dynamics of Wilkins Ice Shelf for months, this break-up has not yet finished.

"The remaining plate has an arched fracture at its narrowest position, making it very likely that the connection will break completely in the coming days," Braun and Humbert said.

Braun and Humbert are monitoring the ice sheet daily via Envisat acquisitions as part of their contribution to the International Polar Year (IPY) 2007-2008, a large worldwide science programme focused on the Arctic and Antarctic.

The ASAR images used to compile these animations were acquired as part of ESA's support to IPY. ESA is helping scientists during IPY to collect an increasing amount of satellite information, particularly to understand recent and current distributions and variations in snow and ice and changes in the global ice sheets.

ESA is also co-leading a large IPY project – the Global Interagency IPY Polar Snapshot Year (GIIPSY) – with the Byrd Polar Research Centre. The goal of GIIPSY is to make the most efficient use of Earth-observing satellites to capture essential snapshots that will serve as benchmarks for gauging past and future changes in the environment of the polar regions.

ASAR is extremely useful for tracking changes in ice sheets because it is able to see through clouds and darkness – conditions often found in polar regions.

Long-term satellite monitoring over Antarctica is important because it provides authoritative evidence of trends and allows scientists to make predictions. Ice shelves on the Antarctic Peninsula are important indicators for on-going climate change because they are sandwiched by extraordinarily rising surface air temperatures and a warming ocean.

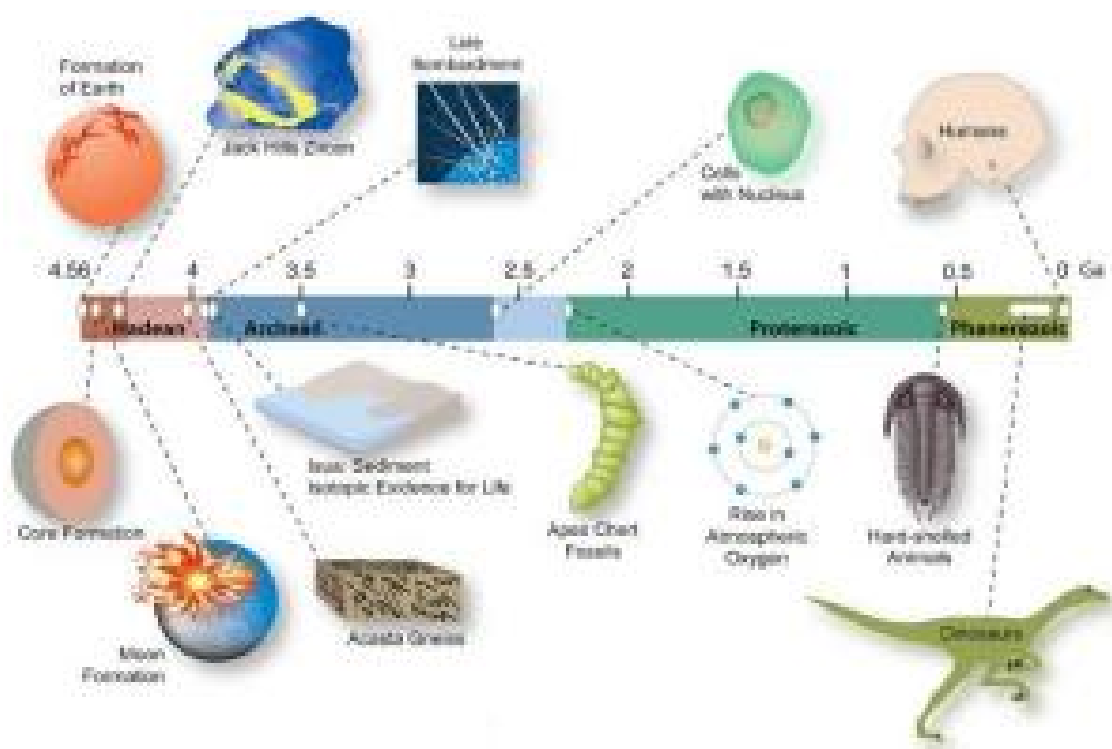
The Antarctic Peninsula has experienced extraordinary warming in the past 50 years of 2.5°C, Braun and Humbert explained. In the past 20 years, seven ice shelves along the peninsula have retreated or disintegrated, including the most spectacular break-up of the Larsen B Ice Shelf in 2002, which Envisat captured within days of its launch.

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*Adapted from materials provided by [European Space Agency](http://www.esa.int).*

<http://www.sciencedaily.com:80/releases/2008/06/080613104743.htm>

## Ancient Mineral Shows Early Earth Climate Tough On Continents



A timeline shows the geological context of Jack Hills zircons, ancient minerals that formed when the Earth was less than 500 million years old. (Credit: Illustration: Andree Valley)

ScienceDaily (Jun. 14, 2008) — A new analysis of ancient minerals called zircons suggests that a harsh climate may have scoured and possibly even destroyed the surface of the Earth's earliest continents.

Zircons, the oldest known materials on Earth, offer a window in time back as far as 4.4 billion years ago, when the planet was a mere 150 million years old. Because these crystals are exceptionally resistant to chemical changes, they have become the gold standard for determining the age of ancient rocks, says University of Wisconsin-Madison geologist John Valley.

Valley previously used these tiny mineral grains - smaller than a speck of sand - to show that rocky continents and liquid water formed on the Earth much earlier than previously thought, about 4.2 billion years ago.

In a new paper recently published online in the journal *Earth and Planetary Science Letters*, a team of scientists led by UW-Madison geologists Takayuki Ushikubo, Valley and Noriko Kita show that rocky continents and liquid water existed at least 4.3 billion years ago and were subjected to heavy weathering by an acrid climate.

Ushikubo, the first author on the new study, says that atmospheric weathering could provide an answer to a long-standing question in geology: why no rock samples have ever been found dating back to the first 500 million years after the Earth formed.

"Currently, no rocks remain from before about 4 billion years ago," he says. "Some people consider this as evidence for very high temperature conditions on the ancient Earth."

Previous explanations for the missing rocks have included destruction by barrages of meteorites and the possibility that the early Earth was a red-hot sea of magma in which rocks could not form.

The current analysis suggests a different scenario. Ushikubo and colleagues used a sophisticated new instrument called an ion microprobe to analyze isotope ratios of the element lithium in zircons from the Jack Hills in western Australia. By comparing these chemical fingerprints to lithium compositions in zircons from continental crust and primitive rocks similar to the Earth's mantle, they found evidence that the young planet already had the beginnings of continents, relatively cool temperatures and liquid water by the time the Australian zircons formed.

"At 4.3 billion years ago, the Earth already had habitable conditions," Ushikubo says.

The zircons' lithium signatures also hold signs of rock exposure on the Earth's surface and breakdown by weather and water, identified by low levels of a heavy lithium isotope. "Weathering can occur at the surface on continental crust or at the bottom of the ocean, but the [observed] lithium compositions can only be formed from continental crust," says Ushikubo.

The findings suggest that extensive weathering may have destroyed the Earth's earliest rocks, he says.

"Extensive weathering earlier than 4 billion years ago actually makes a lot of sense," says Valley. "People have suspected this, but there's never been any direct evidence."

Carbon dioxide in the atmosphere can combine with water to form carbonic acid, which falls as acid rain. The early Earth's atmosphere is believed to have contained extremely high levels of carbon dioxide - maybe 10,000 times as much as today.

"At [those levels], you would have had vicious acid rain and intense greenhouse [effects]. That is a condition that will dissolve rocks," Valley says. "If granites were on the surface of the Earth, they would have been destroyed almost immediately - geologically speaking - and the only remnants that we could recognize as ancient would be these zircons."

Other co-authors on the paper include Aaron Cavosie of the University of Puerto Rico, Simon Wilde of the Curtin University of Technology in Australia and Roberta Rudnick of the University of Maryland.

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*Adapted from materials provided by [University of Wisconsin-Madison](http://www.wisc.edu).*

<http://www.sciencedaily.com/releases/2008/06/080613170202.htm>

## How The Brain Separates Audio Signals From Noise

ScienceDaily (Jun. 14, 2008) — How are we able to follow a single conversation in the midst of a crowded and noisy room? Little is known about how the human brain accomplishes the seemingly simple task of extracting meaningful signals from noisy acoustic environments.

In a new article, Alexander Gutschalk and his colleagues provide an important advance towards solving this mystery by discovering the neural correlates of conscious auditory perception.

The researchers use magnetoencephalography (MEG) to record brain activity as human subjects detect target tones in a complex auditory scene consisting of distracting tones. They discover that the awareness of these sounds correlates with activity in high-level auditory regions in the brain, but not the initial cortical region where sound is processed.

Because many previous neuroimaging studies have used simple stimuli in unnatural contexts, such as pure tones in an otherwise quiet environment, this novel study will influence future research investigations aimed at uncovering the neural mechanisms of conscious perception in natural and complex environments.

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### Journal reference:

1. Gutschalk et al. **Neural Correlates of Auditory Perceptual Awareness under Informational Masking**. *PLoS Biology*, 2008; 6 (6): e138 DOI: [10.1371/journal.pbio.0060138](https://doi.org/10.1371/journal.pbio.0060138)

*Adapted from materials provided by Public Library of Science, via EurekAlert!, a service of AAAS.*

<http://www.sciencedaily.com/releases/2008/06/080610092753.htm>

## Most Doctors Aren't Using Electronic Health Records

By **STEVE LOHR**



A government-sponsored survey of the use of computerized patient records by doctors points to two seemingly contradictory conclusions, and a health care system at odds with itself.

The report, published online on Wednesday in *The New England Journal of Medicine*, found that doctors who use electronic health records say overwhelmingly that such records have helped improve the quality and timeliness of care. Yet fewer than one in five of the nation's doctors has started using such records.

Bringing patient records into the computer age, experts say, is crucial to improving care, reducing errors and containing costs in the American health care system. The slow adoption of the technology is mainly economic. Most doctors in private practice, especially those in small practices, lack the financial incentive to invest in computerized records.

The national survey found that electronic records were used in less than 9 percent of small offices with one to three doctors, where nearly half of the country's doctors practice medicine.

Dr. Paul Feldan, one of three doctors in a primary care practice in Mount Laurel, N.J., considered investing in electronic health records, and decided against it. The initial cost of upgrading the office's personal computers, buying new software and obtaining technical support to make the shift would be \$15,000 to \$20,000 a doctor, he estimated. Then, during the time-consuming conversion from paper to computer records, the practice would be able to see far fewer patients, perhaps doubling the cost.

"Certainly, the idea of electronic records is terrific," Dr. Feldan said. "But if we don't see patients, we don't get paid. The economics of it just seem so daunting."

Private and government insurers and hospitals can save money as a result of less paper handling, lower administration expenses and fewer unnecessary lab tests when they are connected to electronic health records in doctors' offices. Still, it is mainly doctors who bear the burden making the initial investment.



“We have a broken market for electronic health record adoption because the people who gain financially are not the people who pay,” said Dr. Blackford Middleton, a health technology expert at Partners Healthcare, a nonprofit medical group that includes Massachusetts General Hospital in Boston.

To fix the market, Dr. Middleton, like others, recommends that the government play a role in providing incentives or subsidies to speed the use of computerized patient records in the United States, whose adoption rate trails most developed nations.

The government took a step in that direction last week, announcing a \$150 million Medicare project that will offer doctors incentives to move from paper to electronic patient records. The program is intended to help up to 1,200 small practices in 12 cities and states make the conversion.

Individual doctors will be offered up to \$58,000 over the five-year span of the project, which is intended to test the impact of incentives on the spread of electronic health records. Further programs across the country are planned.

The report published in the journal also found that electronic health records were used by 51 percent of larger practices, with 50 or more doctors.

Indeed, electronic health records are pervasive in the largest integrated medical groups like Kaiser Permanente, the Mayo Clinic, the Cleveland Clinic, University of Pittsburgh Medical Center and others. These integrated groups not only have deep pockets. By combining doctors, clinics, hospitals and often some insurance they can also capture the financial savings from electronic health records.

The findings of the study, which was paid for by the Department of Health and Human Services and a grant from the Robert Wood Johnson Foundation, broadly echo previous research on the adoption of electronic health records. Large medical groups have long been the early adopters, and small practices have struggled.

But the new study is based on a large sampling — more than 2,600 doctors across the country — and a detailed survey, making it more definitive than past research, experts say. The results, they say, also show a strong endorsement of electronic health records by doctors who have them, especially for what the report termed “fully functional” records, which include reminders of care guidelines, based on a patient’s age, gender or medical history.

For example, 82 percent of those using such electronic records said they improved the quality of clinical decisions, 86 percent said they helped in avoiding medication errors and 85 percent said they improved the delivery of preventative care.

“Those numbers are huge and very encouraging,” said Dr. David J. Brailer, the former health information technology coordinator in the Bush administration.

Dr. Brailer also pointed to the 54 percent of doctors without electronic health records who said that not finding an electronic health record that met their needs was a “major barrier” to adoption. In short, they are not satisfied with the existing products, which tend to be designed for hospitals — big customers — instead of small practices.

“What we see is a deficit in innovation, and that is something innovators and the capital markets can address,” said Dr. Brailer, who leads a firm that invests in medical ventures, Health Evolution Partners.

One wave of innovation is coming from big technology companies, like Microsoft and Google, which recently have begun services that offer consumer-controlled personal health records over the Web, which are stored in the companies’ data centers. These consumer-controlled health records are intended to link up and exchange information with electronic patient records in doctors’ offices and hospitals.



Dr. Peter Masucci, a pediatrician with his own office in Everett, Mass., embraced electronic health records to “try to get our practice into the 21st century.”

He could not afford conventional software, and chose a Web-based service from Athenahealth, a company supplying online financial and electronic health record services to doctors’ offices.

Dr. Masucci was already using Athenahealth’s outsourced financial service, and less than two years ago adopted the online medical record.

Today, Dr. Masucci is an enthusiast, talking about the wealth of patient information, drug interaction warnings and guidelines for care, all in the Web-based records.

“Do I see more patients because of this technology? Probably no,” Dr. Masucci said. “But I am doing a better job with the patients I am seeing. It almost forces you to be a better doctor.”

[http://www.nytimes.com/2008/06/19/technology/19patient.html?\\_r=1&th&emc=th&oref=slogin](http://www.nytimes.com/2008/06/19/technology/19patient.html?_r=1&th&emc=th&oref=slogin)



**‘ARIAS WITH A TWIST’****Effigies and Aliens Cavort in a Cross-Dressing Wonderland**By **BEN BRANTLEY**

Eat your heart out, Madonna. The chanteuses who play Madison Square Garden and football stadiums have never experienced the imaginative heights of spectacle with which Basil Twist surrounds Joey Arias in “Arias With a Twist,” which opened Wednesday night at the newly renovated Here Arts Center.

Mr. Twist is the inspired puppet master who, a decade ago, turned wet pieces of cloth into a Folies Bergère-style corps de ballet in his head-tripping interpretation of Berlioz’s “Symphonie Fantastique,” set in a giant aquarium. Now he returns to the scene of that career-making triumph, the Dorothy B. Williams Theater, to ply his surreal magic on the venerable downtown drag show.

Mr. Arias, a cross-dressing vocalist notable for the weight of his false eyelashes and his gift for replicating the raspy wail of Billie Holiday, returns to New York after doing time in Las Vegas as a mistress of ceremonies for the racy Cirque du Soleil show Zumanity. And while the stage he commands at Here is, in size, but a fraction of the one he played at the New York New York hotel, it cannot be said that he has hit the small time.

That’s because Mr. Twist, along with an accomplished technical team, has whipped up a vast enchanted troupe of effigies — from a marionette supper-club combo to a life-size chorus line of plump, plumed dancers — to back up Mr. Arias’s song stylings. Well, perhaps back up is not quite the way to put it, since Mr. Twist’s creations have a way of stealing the spotlight, even when they’re in the shadows.

This show even has a spotlight that steals the spotlight, a roving disc of illumination that shrinks and expands capriciously, a diva unto itself, before the curtain goes up. (Ayumu Saegusa did the lighting.) There are, in fact, an assortment of curtains, which part and fall and drop teasingly, like Salome’s veils.

Finally they uncover Mr. Arias, looking like the vintage pin-up model Bettie Page in dominatrix mode, strapped to a giant, rotating silver wheel and being probed by ghostly aliens. The script, devised by Mr. Arias and Mr. Twist, uses this very close encounter as a dropping-off point for a series of earthly, and often earthy, adventures.



These include Mr. Arias tumbling through space and landing in a glorious Edenic rain forest; eating a magic mushroom that takes him straight to hell; stalking Manhattan as a 50-foot woman; and, at last, arriving at a cozy little boîte to sing soulfully before being propelled into the dizzying realm of a Busby Berkeley fantasy number. The apparitions that show up in these locales are often delightful (the blissful marionette jazz ensemble) and sometimes sinister (the giant slithering serpent in the rainforest). Flowers blossom before your eyes; white-gloved hands, ice cream cones and cymbal-banging monkeys float through the air; and what looks



like the entire island of Manhattan materializes as a sky-scraping Oz. Did I mention the rotating wedding cake? And how about those giant dancing devil puppets, which move like Las Vegas chorus boys? Their outsized assets include flailing phalluses, a reminder that though children might find much to revel in here, this is definitely not a kiddie show. Mr. Arias's dialogue, delivered in a deadpan mix of little-girl breathlessness and big-girl worldliness, will sound familiar to anyone who's seen a New York drag show during the last few decades. ("I didn't even get his phone number," Mr. Arias sighs after dancing with the devil.) And of course he sings, with varying effectiveness, pop standards ("All by Myself"), acid rock ("Kashmir"), a charming original composition by Alex Gifford ("Jungle of Eden") and, most memorably, the Holiday standard "You've Changed." As an actor Mr. Arias is not a seamless illusionist. We're always aware of the big lug beneath the Joan Crawford maquillage and Thierry Mugler corsets. But in a way, this makes him the perfect escort into Mr. Twist's wonderland.

Mr. Arias registers as a figure of solid human flesh aching to be transported into a world of celluloid dreams. Costumes and makeup can only take a fellow so far. That's where Mr. Twist comes in, with a fluid mise-en-scène that allows Mr. Arias — and, vicariously, you and me — to go the distance, all the way over the rainbow.

#### ARIAS WITH A TWIST



Created by Joey Arias and Basil Twist; directed by Mr. Twist; lighting by Ayumu Saegusa; sound by Greg Duffin; video design by Daniel Brodie; costume concepts by Thierry Mugler, designed by Chris March; musical arrangements and production by Eliot Douglass and Jean Houle Francoise; songs by Alex Gifford; production stage manager, Neelam Vaswani; produced by Barbara Busackino. Presented by Here's Dream Music Puppetry Program and Tandem Otter Productions in association with Johnnie Moore. At the Here Arts Center, 145 Sixth Avenue, at Dominick Street, South Village; (212) 352-3101. Through July 13. Running time: 1 hour 10 minutes. WITH: Joey Arias, Oliver Dalzell, Randy Ginsburg, Kirsten Kammermeyer, Matt Leabo, Jessica Scott and Lindsay Abromaitis Smith.

<http://theater2.nytimes.com/2008/06/19/theater/reviews002F19twist.html?ref=arts>

## A Facade Like No Other: Once Temporary, Now a Fixture Worth Restoring

By **FRED A. BERNSTEIN**



For more than 30 years the architect Steven Holl has explored an approach to design in which walls, floors and ceilings function as permeable membranes. One of the best illustrations of that concept, which he calls porosity, is his 1993 facade for the Storefront for Art and Architecture, a nonprofit gallery on Kenmare Street in Lower Manhattan.

Working with the artist and designer Vito Acconci, Mr. Holl fashioned a concrete board facade with 10 pivoting panels that curators have used as doors, windows, seating and shelves in endless combinations. Intended as a temporary installation, it cost about \$40,000.

As it turns out, the building's porosity was more than metaphorical: water flowing through the facade has left it badly damaged. Some panels are visibly cracked and peeling, and many of their steel frames have rusted. A frieze of poured concrete, spelling "Storefront for Art and Architecture," is in particularly bad shape: the final E now resembles an L with two drooping appendages.

After much debate Storefront's board last week commissioned a restoration of the facade. The remake will be as faithful to the original as possible, said Andy Frankl, whose company, IBEX Construction, has agreed to do the job at a steep discount.

Mr. Frankl, who studied architecture at Cooper Union before becoming a contractor, said his firm would donate about \$100,000 in services to the project. The remaining cost, about \$80,000, is to be covered by government grants and private donations. The work will begin in August and should take a month, Mr. Frankl said.

The facade "was meant to be a changing piece of public art," said Belmont Freeman, a member of the Storefront board and its president until this year. Some members worried that preserving it "would run counter to the original conception," Mr. Freeman said.

Mr. Acconci recalled that the Storefront initially planned to reinvent the facade every two years. "That would have been nice," he said. "But it isn't reality. You would need to raise new money every time."

Mr. Holl added that "it's an honor that they're kept it this long and that they've decided to restore it." (Though Mr. Holl is renowned today for projects like his expansion of the Nelson-Atkins Museum of Art in Kansas City, Mo., and his vast Linked Hybrid housing complex in Beijing, he was far less well known in the early 1990s.)

Mr. Freeman said that the board had discussed the possibility of selling the facade to a museum and using the proceeds to commission a replacement that some members hoped would be as innovative as the Holl-Acconci design. But most board members ultimately recognized the importance of the current facade to the Storefront's identity as a proponent of innovative art, architecture and design, Mr. Freeman said.

"We had a responsibility to preserve it one way or the other, and the best way to do that was to preserve it onsite," he said. "We realized that if we were going to sponsor design competitions, we could do them at other locations." (The Storefront recently began opening a series of temporary outposts in other cities.)



Mr. Acconci said that a perfectly faithful restoration was not an option because Supra-Board, the original facade material, is no longer available. The restorers will use a similar kind of concrete board called Mineret. The current facade also impedes wheelchair access, which Mr. Frankl said would be corrected in the restoration.

The facade's many openings, which make heating and cooling the interior a challenge, will remain as they are. "We would have done it differently if we'd thought it was going to be permanent," Mr. Acconci acknowledged.

Mr. Freeman said that a few board members were concerned that the gallery, known for its iconoclastic shows, film screenings and publications, was enshrining its past. "To them it signals that the Storefront is becoming a little institutional," he said. "I don't think that's true, though it does feel, in a strange way, middle-aged."

<http://www.nytimes.com/2008/06/19/arts/design/19stor.html>

## Continued Growth for 2 Distance Ed Models



Two unique models of providing distance education to mainly nontraditional students are coming into their own, each showing a healthy expansion of enrollments and growth in available course offerings. One, the Online Consortium of Independent Colleges & Universities, has been enlarging since its inception, while the other, Western Governors University, faced years of skepticism from critics who said its ambitious goals would never be met. Now, both are touting their success with fresh numbers and statistics, suggesting that online education needn't only come from large for-profit companies or local community colleges.

In 2005, Regis University announced a consortium of colleges that would work together, rather than compete, to share each others' online courses in a way that would in effect vastly expand the offerings of each of the group's members. Since then, the 39 founding colleges of the OCICU have expanded to 68, with 1,784 course enrollments over the past year.

The model is unusual in that it allows colleges that are interested in offering courses online, but don't necessarily have the resources to cover every conceivable topic, to supplement their catalog with classes that already exist — in the consortium and on the Web, but not on their campuses. So far, seven of the member colleges, including Regis, act as “providers,” essentially allowing other colleges in the group to pick and choose which courses to make available to their own students, with full institutional credit assigned through the student's college.

“We've just experienced remarkable growth and great feedback from the schools participating,” said Thomas R. Kennedy, executive director of new ventures at Regis. “Especially as member schools ... they don't have any online schools whatsoever, and overnight they have one. That's one of the beauties of it.”

That near-instant capability can serve students in a number of ways. Do they need to fulfill a general elective requirement, like sociology or political science? The providers offer plenty of possibilities for students at colleges that don't have the resources to fill every gap in the curriculum. What about students interested in a niche topic, like Irish studies? Some of the providers, as well as members that are planning on offering up courses to the rest of the consortium in the future, have such offerings as well.



Many, but not all, of the member colleges are religiously affiliated, and most fit the profile of small- or medium-sized institutions in the Council of Independent Colleges that may not have the resources to get into the distance education business on their own. Members pay a one-time fee of \$3,500 to join the consortium plus an annual fee of \$1,000, Kennedy said, to cover administrative costs. Of the approximately \$1,350 in tuition for a three-credit course, he added, about \$500 would go to the provider school per student — essentially extra cash for a course that was already being held, he pointed out — and \$700 would remain at the student's home college, which would incur no additional cost.

“All these provider schools are doing is opening up their classes ... to visiting students, in a way,” he said. The key difference, however, is that students receive credit as if they took the courses at their own institutions, rather than as transfer credits.

Kennedy said he's been urging member colleges to pocket that extra tuition money “and start investing in your own online program.”

Some are doing just that. Keuka College, in upstate New York, administers degree completion programs by partnering with hospitals and community colleges across the state. To help students in its various programs who need to take a specific course or two to complete their degrees, the college can now send them to offerings available online through the consortium.

“We found that by using courses offered through the consortium, we could offer students more forms of access,” said Gary Smith, associate vice president for professional studies and international programs at Keuka, especially for the “general education or general elective pool that's outside our major program offerings.”

This year, Keuka will ramp up its own online courses by playing to its strengths: If all goes according to plan, Smith said, the college will add classes in Asian studies to the consortium's lineup.

#### **A ‘Competency-Based’ University Takes Off**

Another model that's meeting or exceeding the expectations of its leaders is breathing a sigh of relief. Western Governors University, founded in 1997 by 19 state governors, started with ambitious plans to grow its enrollment and become a regional economic engine. But the initial plans faltered and the university found itself the object of criticism and even scorn — although that wasn't necessarily confined to Western Governors.

“If you go back to the mid-'90s, when the idea for WGU bubbled up from among the conversations from the governors of the Western states, there was at that time no clear sense of whether or not online education would work, period, or would work with any level of success and any decent level of quality,” said Patrick Partridge, the university's vice president of marketing and enrollment. But, he acknowledged, there was plenty of skepticism in academe as well. “I think that skepticism was both of a financial type and sort of an awareness ... of the kind of political hurdles in the higher-ed world.”

These days, the picture for both online education in general, and WGU in particular, seems quite a bit brighter. The nonprofit institution, which receives no state support and sustains itself primarily through tuition and private donations, announced this month that it had reached an enrollment of 10,000 students — up from 500 in 2003. That growth can be attributed to a number of factors, including regional accreditation, but the university also emphasizes two features that distinguish it from most of its peers: a “competency-based” approach to assessing students' work, and its nationally accredited Teachers College.

From the outset, courses and curriculums are developed with input from senior faculty together with an “outside council” including practitioners from a given field. Course material is then assessed to a level that's considered “highly competent,” Partridge said, by the developers of the course, effectively creating a standardized set of requirements in lieu of more independent assessments by individual instructors. Upon completion, employers can theoretically be assured that students are proficient in a specific set of skills and knowledge.



The university doesn't give letter grades, and it allows students to take as long as they want in their course of study — which could be a mixed blessing, since they pay a flat fee (a bit under \$3,000) every six months. All in all, Partridge said, “we are as different from the other online schools as they are from” traditional higher education. It's a model not suited to everyone, he acknowledged, but especially tailored to students with a certain “impatience” or “determination” to complete in a timely manner.

Another significant draw for WGU is the Teachers College, which, unlike any other such online program, places graduates at schools in virtually every state. Now, at least half of WGU's students are enrolled in the teaching program. “[W]e offer a path to initial teacher licensure for individuals all around the country who want to become teachers, often later in life where returning to a traditional school of education ... is just not that convenient,” Partridge said.

The university projects further growth in the coming years, with a predicted enrollment of up to 15,000 in the foreseeable future. “We really see the future as one in which the people of the United States and the adult audience need to have very good-quality and affordable options to either get a first bachelor's degree or continue to pursue [a] master's degree, in particular change careers and pursue dreams that will in the long run strengthen our economy, the citizenry and make our country, our states, etc., stronger,” said Partridge.

— **Andy Guess**

*The original story and user comments can be viewed online at  
<http://insidehighered.com/news/2008/06/19/distance>.*





## Models of Success With Latino Students

With the Latino population growing, colleges are considering their success — or lack thereof — in educating Latino students.

A new report released Wednesday, “Modeling Hispanic-Serving Institutions (HSIs): Campus Practices that Work for Latino Students,” explores strategies used by institutions with significant Latino enrollments. The report was released by Excelencia in Education and examined six community colleges and six public universities — in California, New York and Texas.

The report looked at five topics identified to help Latino students succeed and what the 12 institutions were doing in those areas. Some examples:

**Community outreach:** East Los Angeles College works with students in middle and high schools to teach them math and prepare them for college math.

**Academic support:** El Camino College set up a First Year Experience Program in which students participate in learning communities (programs in which cohorts take multiple classes together), and also receive help from peer and faculty mentors.

**Data use:** New York City College of Technology, of the City University of New York, conducted surveys of students and found that many minority students were troubled by a lack of communication with professors and advisers about career goals. The college responded by creating new programs for undeclared majors and revamping career counseling.

**Faculty development:** El Camino College started a new programs to teach professors how to pronounce names they might not know, with the goal of making all students feel more comfortable in the classroom.

**Transfer paths:** The report pointed out that almost half of Latino students begin their higher education at a community college. The University of Texas El Paso works with the local school districts as well as the El Paso Community College to make the transitions smooth — and offers special summer programs and scholarships for community college students.

The report also several general suggestions for working with Latino students:

“Provide a holistic approach to serving Latino students within the institution.”

“Partner with other education organizations in the community to align educational resources.”

“Seek external sources to develop and test innovative practices while adding proven practices to the institutional budget.”

“Use short-term measures of academic progress to guide improvement in curricula instruction, and support services for Latino students.”

Deborah Santiago, vice president for policy and research of Excelencia in Education and author of the report, said one of the most important lessons was that it’s not enough for colleges to enroll Latinos, but that they must provide services to these students. She added that these programs can serve other populations as well.

“If it works well for Latino students, it can work well for all students,” she said.

— James Heggen

*The original story and user comments can be viewed online at  
<http://insidehighered.com/news/2008/06/19/report>.*



## Thinking Ahead: Bacteria Anticipate Coming Changes In Their Environment



*Biologist Saeed Tavazoie (left) and electrical engineer Ilias Tagkopoulos collaborated to show that bacteria anticipate and prepare for coming changes in their environment. Combining lab experiments with computational simulations, their work sheds light on deep questions in biology and evolution. (Credit: Photo by Bentley Drezner)*

ScienceDaily (Jun. 19, 2008) — Microbes may be smarter than we think. A new study by Princeton University researchers shows for the first time that bacteria don't just react to changes in their surroundings -- they anticipate and prepare for them. The findings, reported in the June 6 issue of *Science*, challenge the prevailing notion that only organisms with complex nervous systems have this ability.

"What we have found is the first evidence that bacteria can use sensed cues from their environment to infer future events," says Saeed Tavazoie, an associate professor in the department of Molecular Biology, who conducted the study along with graduate student Ilias Tagkopoulos and post-doctoral researcher Yir-Chung Liu.

The research team, which included biologists and engineers, used lab experiments to demonstrate this phenomenon in common bacteria. They also turned to computer simulations to explain how a microbe species' internal network of genes and proteins could evolve over time to produce such complex behavior.

"The two lines of investigation came together nicely to show how simple biochemical networks can perform sophisticated computational tasks," says Tavazoie.

In addition to shedding light on deep questions in biology, the findings could have many practical implications. They could help scientists understand how bacteria mutate to develop resistance to antibiotics. They may also help in developing specialized bacteria to perform useful tasks such as cleaning up environmental contamination.

In one part of the study, the researchers studied the behavior of *Escherichia coli*, the ubiquitous bacterium that travels back and forth between the environment and the gut of warm-blooded vertebrates. They wanted to explain a long-standing question about the bug: How do its genes respond to the temperature

and oxygen changes that occur when the bacterium enters the gut? The conventional answer is that it reacts to the change -- after sensing it -- by switching from aerobic (oxygen) to anaerobic (oxygen-less) respiration. If this were true, however, the organism would be at a disadvantage during the time it needed to make the switch. "This kind of reflexive response would not be optimal," Tavazoie says.

The researchers proposed a better strategy for the bug. During *E. coli*'s life cycle, oxygen level is not the only thing that changes -- it also experiences a sharp rise in temperature when it enters an animal's mouth. Could this sudden warmth cue the bacterium to prepare itself for the subsequent lack of oxygen?

To test this idea, the researchers exposed a population of *E. coli* to different temperatures and oxygen changes, and measured the gene responses in each case. The results were striking: an increase in temperature had nearly the same effect on the bacterium's genes as a decrease in oxygen level. Indeed, upon transition to a higher temperature, many of the genes essential for aerobic respiration were practically turned off.

To prove that this is not just genetic coincidence, the researchers then grew the bacteria in a biologically flipped environment where oxygen levels rose following an increase in temperature. Remarkably, within a few hundred generations the bugs partially adapted to this new regime, and no longer turned off the genes for aerobic respiration when the temperature rose. "This reprogramming clearly indicates that shutting down aerobic respiration following a temperature increase is not essential to *E. coli*'s survival," says Tavazoie. "On the contrary, it appears that the bacterium has "learned" this response by associating specific temperatures with specific oxygen levels over the course of its evolution."

Lacking a brain or even a primitive nervous system, how is a single-celled bacterium able to pull off this feat? Whereas higher animals can learn new behavior within a single lifetime, bacterial learning takes place over many generations and on an evolutionary time scale, Tavazoie explains. To gain a deeper understanding of this phenomenon, his team developed a virtual microbial ecosystem, called Evolution in Variable Environment. Each microbe in this novel computational framework is represented as a network of interacting genes and proteins. An evolving population of these virtual bugs competes for limited resources within a changing environment, mimicking the behavior of bacteria in the real world.

To implement this framework, the researchers had to deal with the sheer scale and complexity of simulating any realistic biological system. They had to keep track of hundreds of genes, proteins, and other biological factors in the microbial population, and observe them as they varied over millions of time points. "Simulations at this scale and complexity would have been impossible in the past," says Tagkopoulos. Even with the vast number crunching power the supercomputers provided by the University's Computational Science and Engineering Support Group, their experiments took nearly 18 months to run, says Tagkopoulos.

In this virtual world, microbes are more likely to survive if they conserve energy by mostly turning off the biological processes that allow them to eat. The challenge they face then is to anticipate the arrival of food and turn up their metabolism just in time. To help them along, the researchers gave the bugs cues before feeding them, but the cues had to appear in just the right pattern to indicate that food was on its way.

"To predict mealtimes accurately, the microbes would have to solve logic problems," says Tagkopoulos, a fifth-year graduate student in electrical engineering and the principal architect of the Evolution in Variable Environment framework.

And sure enough, after a few thousand generations, an ecologically fit strain of microbe emerged which did exactly that. This happened for every pattern of cues that the researchers tried. The feeding response of these gastronomically savvy bugs peaked just when food was offered, says Tagkopoulos.

When the researchers examined a number of fit virtual bugs, they could at first make little sense out of them. "Their biochemical networks were filled with seemingly unnecessary components," says



Tagkopoulos. "That is not how an engineer would design logic-solving networks." Pared down to their essential elements, however, the networks revealed a simple and elegant structure. The researchers could now trace the different sequences of gene and protein interactions organisms used in order to respond to cues and anticipate mealtimes. "It gave us insights into how simple organisms such as bacteria can process information from the environment to anticipate future events," says Tagkopoulos.

The researchers say that their findings open up many exciting avenues of research. They are planning to use similar methods to study how bacteria exchange genes with one another (horizontal gene transfer), how tissues and organs develop (morphogenesis), how viral infections spread, and other core problems in biology.

"What is really exciting about our discovery is that it brings together and establishes deep connections between the traditionally separate fields of microbial ecology, network evolution, and behavior," says Tavazoie.

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*Adapted from materials provided by Princeton University, Engineering School, via EurekAlert!, a service of AAAS.*

<http://www.sciencedaily.com/releases/2008/06/080618161546.htm>

## Tropical Forest Sustainability: A Climate Change Boon



*Forests like this in Borneo act as carbon sinks to remove large amounts of atmospheric carbon dioxide created by human activities. (Credit: H.D. Viktor Boehm)*

ScienceDaily (Jun. 19, 2008) — Improved management of the world's tropical forests has major implications for humanity's ability to reduce its contribution to climate change, according to a paper published in the journal, *Science*.

The authors – Dr Pep Canadell from CSIRO and the Global Carbon Project, and Dr Michael Raupach from CSIRO – say the billions of tons of carbon dioxide (CO<sub>2</sub>) absorbed annually by the world's forests represents an 'economic subsidy' for climate change mitigation worth hundreds of billions of dollars.

However, concerns about the permanence of forest carbon stocks, challenges in quantifying changes in the size of those stocks, and concerns about the environmental and socio-economic impacts of reforestation programs, have limited the adoption of policies designed to foster forestry activities.

“With political will and the involvement of tropical regions, forests can contribute to both climate change protection through carbon sequestration and also enhanced economic, environmental and socio-cultural benefits,” Dr Canadell says.

“Forestry activities have the economic potential to offset 2-4 per cent of projected CO<sub>2</sub> emissions by 2030, with tropical regions accounting for nearly two thirds of the total offset”.

“A key opportunity is the reduction of carbon emissions from deforestation and degradation in tropical regions,” he says.

An estimated 13 million hectares of the world's forested areas – almost exclusively in the tropical regions – are deforested annually. Dr Raupach says, however, reducing rates of deforestation by 50 per cent by



2050, and stopping further deforestation when countries reach 50 per cent of their current forested area, would avoid emissions equivalent to six years of current fossil fuel emissions by the end of this century.

“This estimate shows that even with significant continuing deforestation, the mitigation potential is large, although major changes in governance and price incentives are required to realize this potential,” Dr Raupach says.

They authors also note, however, that efforts to mitigate climate change by increasing both the overall area and volume of biota in those forests, does carry the risk that events such as bushfires and insect outbreaks can release massive amounts of sequestered carbon back into the atmosphere.

“Since 2000, for example, increases in the areas of Canada’s forests affected by bush fires and insect outbreaks have transformed them from a ‘CO<sub>2</sub> sink’ to a ‘CO<sub>2</sub> source’ – a situation which is expected to continue for the next 20-30 years,” Dr Canadell says.

“Forests also affect biophysical properties of the land surface, such as sunlight reflectivity and evaporation, and that climate models suggest large reforestation programs in the boreal (colder) regions of the world could have limited benefits due to the replacement of large areas of reflective snow with dark forest canopies.

“Conversely, the climate benefits of reforestation in the tropics are enhanced by positive biophysical changes such as cloud formation which further reflect sunlight,” he says.

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*Adapted from materials provided by [CSIRO Australia](#).*

<http://www.sciencedaily.com/releases/2008/06/080613103425.htm>

## Chimps Not So Selfish: Comforting Behavior May Well Be Expression Of Empathy



*Consolation behaviour in chimps may well be an expression of empathy. (Credit: Image courtesy of Liverpool John Moores University)*

ScienceDaily (Jun. 19, 2008) — Compared to their sex-mad, peace-loving bonobo counterparts, chimpanzees are often seen as a scheming, war-mongering, and selfish species. As both apes are allegedly our closest relatives, together they are often depicted as representing the two extremes of human behaviour.

Orlaith Fraser, who will receive her PhD from LJMU's School of Biological Sciences in July 2008, has conducted research that shows chimpanzee behaviour is not as clear cut as previously thought. Her study is the first one to demonstrate the effects of consolation amongst chimpanzees.

In her recently published article, Fraser analyses how the apes behave after a fight. Working with Dr Daniel Stahl of Kings College London and Filippo Aureli, LJMU's Professor of Animal Behaviour, she found that third-party chimpanzees will try to console the 'victim' of the fight by grooming, hugging and kissing.

Although this behaviour has been witnessed in chimpanzees since the 1970s, anthropologists previously believed that the motivation behind it was purely selfish - with the consoling chimp wanting to pre-empt further violence.

However, the study challenges this assumption. "If that was the case then there shouldn't be a calming effect from the consolation, rather, just a reduction of aggression," said co-author Professor Aureli, "I think it's much more likely that it is done for the benefit of the others rather than the third party."

Fraser, who successfully defended her PhD on conflict management in chimpanzees, said: "Unlike previous studies, this research demonstrates the link between consolation and stress reduction, showing the potential for empathy in chimpanzees as opposed to their more renowned aggressive behaviour."

Apes are the only primates to show consolation, and it has been speculated that this behaviour is perhaps equivalent to what in human children is called 'sympathetic concern'. One of the world's leading primatologists, Professor Frans de Waal, of Emory University in Atlanta, USA, said: "The behaviour of young children that falls under sympathetic concern (touching, hugging of distressed family members) is in fact identical to that of apes, and so the comparison is not far-fetched. The present study is significant in that it suggests that the function of this behaviour in chimpanzees is similar to humans, in that it comforts the other."

The allegedly telltale signs of nervousness in humans include scratching ourselves or hand-to-face movements. Similarly, when our simian cousins find themselves in stressful situations they often resort to self-grooming and self-scratching. Fraser and Professor Aureli found that after a fight, these actions occurred with increasing frequency, but when the non-aggressive chimp entered the fray, the agitated ape soon stopped their nervous movements.

Interestingly, the study also found that apes with mutually beneficial relationships will try to calm each other down. Professor Aureli explained: "It's what we call a valuable relationship - basically those animals that are good friends, not just individuals that spend a lot of time together or groom one another, but ones that actually have some value to one another. For example, they help one another in fights, tolerate one another around limited resources, share food, and collaborate."

One of the most controversial and divisive issues in anthropology today is whether or not animals can empathise. Fraser said that as well as altruistic behaviour, our closest evolutionary ancestors could potentially have an empathetic side. She said: "Showing the calming effect of consolation is one of the building blocks from which we can learn more about the emphatic abilities of animals."

Professor de Waal added that this study removes any previous doubt that consolation provides relief to distressed parties after conflict: "The evidence is compelling and makes it likely that consolation behaviour is indeed an expression of empathy."

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#### Journal reference:

1. Fraser et al. **Stress reduction through consolation in chimpanzees**. *Proceedings of the National Academy of Sciences*, 2008; DOI: [10.1073/pnas.0804141105](https://doi.org/10.1073/pnas.0804141105)

*Adapted from materials provided by [Liverpool John Moores University](http://www.liverpool.ac.uk).*

<http://www.sciencedaily.com/80/releases/2008/06/080618093247.htm>



## Computers As Safe As Medical Experts In Prescribing Blood Thinning Drugs

ScienceDaily (Jun. 19, 2008) — The largest ever study into the administration of blood thinning drugs, principally Warfarin, has concluded that dosages calculated by computer are at least as safe and reliable as those provided by expert medical professionals.

Increasing evidence of the value of these anticoagulant drugs in a wide range of clinical disorders such as abnormal heart rhythm, or atrial fibrillation, has led to a rapid rise in their use around the world.

However, prescribing the right oral dose of anticoagulant to patients, even for experienced medical staff, can be problematic as individuals differ greatly in response to a given dose and a single patient's response can change over the period of an illness. Too high a dose for an individual and the blood becomes too thin and can lead to internal bleeding, too low and the blood clots too readily.

Previous studies supporting the use of computer-assisted dosage have depended solely on laboratory results and have not been sufficiently large to determine whether prolongation of normal blood clotting – measured as the 'international normalised ratio' or INR – resulted in clinical benefit and improved safety.

But now results from the five-year clinical trial have shown that computer-assisted dosage is as good, if not better, at prescribing the correct dosage to prolong the INR in patients as dosages given by expert medical professionals.

“The need for computer assistance arises from the massive demand for oral anticoagulants following their success at treating an increasing number of thrombotic and embolic conditions,” said Professor Leon Poller, who co-ordinated the international team with its Central Facility at Manchester's Faculty of Life Sciences.

“This increased demand has been overwhelming and stretched medical facilities worldwide to their limits. Computer dosage was introduced as a way to meet this demand but its safety and effectiveness had not previously been established.”

The study was carried out in 32 medical centres across the European Union and associated countries involved more than 13,000 patients. It analysed nearly 400,000 INR tests, divided evenly between manual and computer-assisted dosage.

The percentage of manual tests to give the correct INR was 64.7%, compared to 65.9% for computer-assisted dosage, confirming the effectiveness of the two programs tested by the team.

In terms of safety, the number of INR tests that resulted in clinical complications was 7.6% lower in all clinical groups with computer-assisted dosage, dispelling any safety concerns.

Indeed, while this overall reduction was not statistically significant, in the 3,209 patients with deep vein thrombosis or pulmonary embolism, the number of clinical events following treatment were significantly lower for computer dosage – 9.1 per 100 patient-years with medical staff dosage was reduced to 6.1 in the computer arm.

“The results are even more impressive when you consider that the comparisons were made against medical professionals based at centres that specialised in prescribing oral anticoagulants,” said Professor Poller.

“At the very least, our study confirms the clinical safety and effectiveness of computer-assisted dosage using the two systems we tested and should help to bring relief to overstretched medical professionals while providing reassurance to patients.”



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*Adapted from materials provided by [University of Manchester](http://www.scienceandmedicine.com).*

<http://www.sciencedaily.com/releases/2008/06/080618114703.htm>



## People With Lower Incomes, Lower Education Levels Have Higher Death Rates After Heart Attacks

ScienceDaily (Jun. 19, 2008) — Researchers have long suspected that socioeconomic factors like education level and income also might affect survival rates following heart attack. In the June issue of Mayo Clinic Proceedings, Mayo Clinic researchers present new data suggesting that people with lower incomes and education levels are more likely to die after heart attack than more affluent, educated people.

Over the past several decades, medical research has helped identify a list of factors that increase a person's risk for myocardial infarction, the disruption of blood flow to the heart commonly known as heart attack. These factors include behaviors such as smoking or inactivity, and a variety of physical characteristics, including high blood pressure, high blood cholesterol and obesity. Today, better awareness of heart attack signs and symptoms and improved treatments help many survive that first heart attack. Mayo authors examined medical records from 705 patients residing in Olmsted County, Minn. -- the location of Mayo Clinic -- who were treated for heart attack between Nov. 1, 2002 and May 31, 2006. Researchers recorded the years of schooling completed (self-reported by the patients via a questionnaire) and neighborhood income (obtained by linking the participant address to the 2000 U.S. Census Bureau data) for each participant. Participants were divided into three income groups and three education groups. Researchers analyzed survival data across these different groups.

Among the 155 deaths recorded during the study period, one-year survival estimates across income groups were lowest for people with the lowest income. Seventy-five percent were survivors among people earning \$28,732 to \$44,665; 83 percent survived among people earning \$49,435 to \$53,561; and 86 percent survived among people earning \$56,992 to \$74,034. Similarly, the survival rates were lowest for participants with less education. Sixty-seven percent were survivors among those who had fewer than 12 years of education; 81 percent survived among people with 12 years of education; and 85 percent survived among people with greater than 12 years of education.

The authors say that while many previous studies have sought to link socioeconomic status and poor outcomes following heart attack, this study design has yielded some unique results. "Interestingly, despite the higher-than-average socioeconomic status of this population, the associations of individual education and neighborhood income with death after heart attack were stronger than those reported in many previous studies," notes Mayo Clinic cardiovascular researcher Yariv Gerber, Ph.D., the study's lead author. "We think our approach of evaluating two different and complementary indicators of socioeconomic status allowed us to capture a wider spectrum of this complex theory."

Mayo researchers believe that the association observed for education could be related to education's positive effect on factors that include job opportunities, income, housing, access to nutritious foods and health insurance. "Higher levels of education also could directly affect health through greater knowledge acquired during schooling and greater empowerment and self-efficacy," writes Dr. Gerber. "As recently reported, education is strongly associated with health literacy, which in turn affects one's ability to obtain, process, and understand basic health information and services needed to make appropriate health decisions."

Mayo researchers also point out that more specific mechanisms linking low socioeconomic status to survival following heart attack could also be related to the greater difficulty that poorer individuals with lower education levels have in attending cardiac rehabilitation programs and adhering to medications and lifestyle recommendations.

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*Adapted from materials provided by [Mayo Clinic](http://www.mayoclinic.com).*

<http://www.sciencedaily.com/releases/2008/06/080617142842.htm>



## **New Intrusion Tolerance Software Fortifies Server Security**

ScienceDaily (Jun. 18, 2008) — In spite of increased focus and large investments in computer security, critical infrastructure systems remain vulnerable to attacks, says Arun Sood, professor of computer science at George Mason University. The increasing sophistication and incessant morphing of cyber-attacks lend importance to the concept of intrusion tolerance: a system must fend off, or at least limit, the damage caused by unknown and/or undetected attacks.

“The problem is that no matter how much investment is made in intrusion prevention and detection, intruders will still manage to break through and trespass on computer servers,” says Sood. “By looking at this problem from a different angle, we developed a way to contain the losses that may occur because of an intrusion.”

Sood, who is the director of the Laboratory of Interdisciplinary Computer Science at Mason, along with Yin Huang, senior research scientist in the Center for Secure Information Systems at Mason, created the Self Cleansing Intrusion Tolerance (SCIT) technology to provide an additional layer of defense to security architecture with firewalls and intrusion prevention and detection systems. While typical approaches to computer security are reactive and require prior knowledge of all attack modalities and software vulnerabilities, intrusion tolerance is a proactive approach to security.

In the SCIT approach, a server that has been online is assumed to have been compromised. SCIT servers are focused on limiting the losses that can occur because of an external intrusion, and achieve this goal by limiting the exposure time of the server to the Internet. Exposure time is defined as the duration of time that a server is continuously connected to the Internet. Through the use of virtualization technology, duplicate servers are created and an online server is periodically cleansed and restored to a known clean state, regardless of whether an intrusion has been detected. These regular cleansings take place in sub-minute intervals.

“This approach of regular cleansings, when coupled with existing intrusion prevention and detection systems, leads to increased overall security,” says Sood. “We know that intrusion detection systems can detect sudden increases in data throughput from a server, so to avoid detection, hackers steal data at low rates. SCIT interrupts the flow of data regularly and automatically, and the data ex-filtration process is interrupted every cleansing cycle. Thus, SCIT, in partnership with intrusion detection systems, limits the volume of data that can be stolen.”

By reducing exposure time, SCIT provides an additional level of protection while efforts are ongoing to find and fix vulnerabilities and correct configuration errors.

SCIT was funded by the Center for Innovative Technology (in partnership with Northrop Grumman), Lockheed Martin, National Institute of Standards and Technology through the Critical Infrastructure Protection Program, Sun Microsystems and the U.S. Army’s Telemedicine and Technology Research Center. Four patents are pending on the SCIT technology.

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*Adapted from materials provided by [George Mason University](http://www.georgemason.edu).*

<http://www.sciencedaily.com/releases/2008/06/080616144905.htm>

## Stress During Childhood Increases Risk Of Allergies



*Nurse Annett Bergner carrying out the Prick test with a child. (Credit: André Künzelmann/UFZ)*

ScienceDaily (Jun. 18, 2008) — Moving house or the separation of parents can significantly increase the risk of children developing allergies later on. These are the results from a long-term study correlating life-style, immune system development and allergies, led by the Helmholtz Center for Environmental Research in Leipzig (UFZ), the Helmholtz Zentrum München and the "Institut für Umweltmedizinische Forschung" (IUF) in Duesseldorf.

The researchers had examined blood samples taken from 234 six-year old children and discovered increased blood concentrations of the stress-related peptide VIP (vasoactive intestinal polypeptide) in connection with moving house or the separation of parents. The neuropeptide VIP could take on a mediator role between stress events in life and the regulation of immune responses, researchers write in the scientific journal *Pediatric Allergy and Immunology*.

The fact that stress events can have an influence on the development of allergies has been known for a while. The mechanisms behind this however remained unexplained for a long time. In the study that has now been published, stress events were investigated for the first time during early childhood within a large epidemiological study using immune and stress markers.

Stress events during childhood are increasingly suspected of playing a role in the later development of asthma, allergic skin disorders, or allergic sensitisations. Dramatic life events like the death of a family member, serious illnesses of a family member or the separation of parents, but also harmless events like for example moving house are suspected of increasing the risk of allergies for the children affected.

The immune system obviously plays a mediator role between stress on the one hand and allergies on the other. Since these mechanisms had hardly been understood before, researchers attempted to identify stress-related factors showing an influence on the immune system, in the context of an epidemiological study (LISA). At the same time as the blood tests, researchers together with colleagues from the Institute for Social Medicine at the University of Lübeck also analysed the most diverse social factors in the children's environment, in order to find out which factors are causing stress-related regulation deficiencies of the immune system.

With children, whose parents had separated over the last year, researchers found increased blood concentrations of the neuropeptide VIP (vasoactive intestinal polypeptide) as well as an increased concentration of immune markers, which are related to the occurrence of allergic reactions, like for

example the cytokine IL-4. By comparison, serious diseases or the death of close relatives led to no remarkable changes. Likewise, the unemployment of parents was not associated with increased concentrations of the stress-related peptides in the children's blood.

As tragic as these events are, they are obviously however of less significance for the stress reactions of children than for example a separation or the divorce of parents, UFZ researchers have concluded. As was already shown in an earlier publication from the same study, increased concentrations of the stress peptide VIP can also be proven in the blood of children after moving house (similar to the separation of parents). Preceding investigations in LISA showed that there is a relationship between an increased concentration of the neuropeptide VIP and allergic sensitisations among six-year old children. Even if the results were to be interpreted carefully, because of the comparatively small number of children affected, they nevertheless provide valuable indications as to what exactly happens to the body through stress.

The investigations are based on data from 6-year old children from the LISA study. LISA stands for "Lifestyle - Immune System - Allergy" and investigates the influences of life-styles on the immune system development in early childhood and the emergence of allergies.

In addition to the Helmholtz Center for Environmental Research in Leipzig (UFZ), the Helmholtz Zentrum München, the German Research Center for Environmental Health, and the "Institut für Umweltmedizinische Forschung" (IUF) in Duesseldorf, other universities and clinics are also participating partners, including the Municipal Hospital "St. Georg" in Leipzig. For the LISA study over 3000 newborn children in the cities of Munich, Leipzig, Wesel and Bad Honnef were recruited between the end of 1997 and the beginning of 1999. Parents were repeatedly asked about various lifestyle-related factors and disease outcomes.

Furthermore, blood tests were carried out at different times. At the age of six a total of 565 children were examined in Leipzig, and for 234 participants, blood analyses regarding stress and immune parameters were carried out. Over the course of the 6-year study nearly one third of the families living in Leipzig were affected by unemployment. For approximately half of all families, severe illnesses were experienced by close family members. By comparison, cases of death among family members or the separation of parents only affected every sixth or tenth child.

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<http://www.sciencedaily.com/releases/2008/06/080618114728.htm>

## Rising Diesel Prices Renew Interest In Fuel-saving Technologies For Heavy Trucks



*Aerodynamic improvements on truck trailers -- such as rounded corners -- coupled with pneumatic controls for blowing air from slots, help reduce drag and improve fuel economy for heavy trucks. (Credit: Courtesy: Robert Englar)*

ScienceDaily (Jun. 18, 2008) — Diesel fuel prices approaching \$5 a gallon -- and the resulting economic impact on products transported by truck -- have created renewed interest in fuel-saving technologies developed during the past decade at the Georgia Tech Research Institute (GTRI).

Use of pressurized air "active flow control" techniques combined with conventional aerodynamic streamlining could improve fuel efficiency by 8 to 12 percent in the heavy trucks used to transport a broad range of products. If installed throughout the U.S. trucking fleet, these technologies for reducing aerodynamic drag could save between 1.6 and 2.4 billion gallons of fuel per year.

"The dramatic increase in diesel prices has led the trucking industry to reconsider aerodynamic fuel efficiency improvements that might not have been cost effective only a few years ago," said Robert Englar, a GTRI principal research engineer and principal investigator for the project. "Though there are technical challenges ahead, we believe our techniques for improving fuel efficiency offer significant potential to reduce the impact of these fuel cost increases. Beyond the trucking industry, that would help consumers who see the effects of fuel costs in everything they buy."

Since diesel prices began their rapid increase, Englar has seen growing interest in the GTRI low-drag active flow control aerodynamic technologies, which were developed with support from the U.S. Department of Energy starting in the late 1990s. He has received numerous inquiries for information from both large and small trucking companies, and also from railroads -- whose higher-speed western track runs could also benefit from aerodynamic drag reduction.

Aerodynamic drag is the major component of heavy vehicle resistance at typical highway speeds, and overcoming that resistance requires increased energy use. Truck designers have reduced drag on the

tractor portion of the vehicles by applying such aerodynamic streamlining approaches as roof fairings, but those have done little to address drag on the aft portion of the trailers.

Because only limited streamlining can be done for trailers due to their length, the GTRI researchers added the active flow control techniques, which use patented pneumatic devices to blow air from slots over small curved aerodynamic surfaces at the rear of the trailers. These air jets smooth the flow of air over the boxy trailers to eliminate air-flow separation, vorticity and suction on the aft doors, which reduces aerodynamic drag at highway speeds.

The researchers also evaluated aerodynamic improvements that involved rounding aft trailer corners, installing fairings around wheels and making other changes designed to better streamline the trailers.

These active flow control techniques are based on aerodynamic research done during the 1980s for applications on U.S. military aircraft. Beyond the fuel savings, they have also been shown to enhance braking and directional control for the heavy trucks without using any moving external parts, potentially improving safety.

"Aerodynamically, we have resolved unknowns raised in earlier testing, and the next step is to get this into a fleet of trucks for more extensive testing," Englar said. "At highway speeds, each one percent improvement in fuel economy would result in saving about 200 million gallons of fuel for the U.S. heavy truck fleet. We believe that is worth pursuing."

The fuel efficiency project began in the late 1990s with tests of simple scale model tractor-trailers in GTRI's low-speed wind tunnel. The researchers then applied those principles to a full-sized test truck, working with Volvo Trucks of North America and Great Dane Trailers, manufacturers of the basic test tractor and trailer respectively.

A series of Interstate-speed test runs at the Transportation Research Center's Ohio fuel-economy test track have demonstrated substantial fuel savings. The tests involved operating a test tractor-trailer for several different 45-mile runs around a 7.5-mile oval track at highway speeds of 65 and 75 miles per hour. A control truck that did not have either the aerodynamic improvements or pneumatic flow control system was operated under the same conditions to provide a comparison. For additional comparisons, the test truck was also run without the experimental blowing equipment.

The tests showed that the techniques could provide drag coefficient reductions of up to 31 percent, which translates to a fuel efficiency increase of 11 to 12 percent. When the energy required by the air compressor installed on the truck to provide the compressed air for these prototype tests was subtracted from those savings, those tests showed that the low-drag techniques could produce an overall fuel efficiency increase of 8 to 9 percent.

Before the pneumatic control system can be widely used in trucks, however, researchers will have to choose the best source of compressed air for the blowing system, Englar notes. An air compressor more efficient than the one used in the testing would provide higher overall fuel efficiency. Options include a small diesel-powered compressor installed on or under the trailer like current refrigeration units; bleeding pressurized air from the truck's supercharger/turbocharger, or a simple chain drive from the trailer's wheels to turn air blowers.

Other practical issues -- such as protecting the pneumatic surfaces from damage during docking -- still must be resolved. A simple solution, Englar noted, could be to use stiff rubber surfaces.

Beyond boosting fuel efficiency, the pneumatic system can also provide a form of aerodynamic braking to assist the mechanical brakes. "The pneumatic systems can turn a low-drag configuration into a high-drag configuration very rapidly, providing a lot more braking power," Englar said. "By turning the trailer into a non-moving pneumatic rudder, blowing can also restore directional stability should the truck be operating in destabilizing high side winds."





Further energy savings could come using a pulsed pneumatic system, which preliminary wind-tunnel studies show could produce the same aerodynamic efficiency with 40 to 50 percent less energy consumed by the blowing system. Englar hopes to receive additional funding to study how this might affect the truck aerodynamics -- as well as fuel consumption.

"The ultimate proof would be to apply this overall aerodynamic system to a small fleet of heavy trucks and run them on their normal cross-country routes for a month or so to measure the operational increases in fuel efficiency and safety," Englar said.

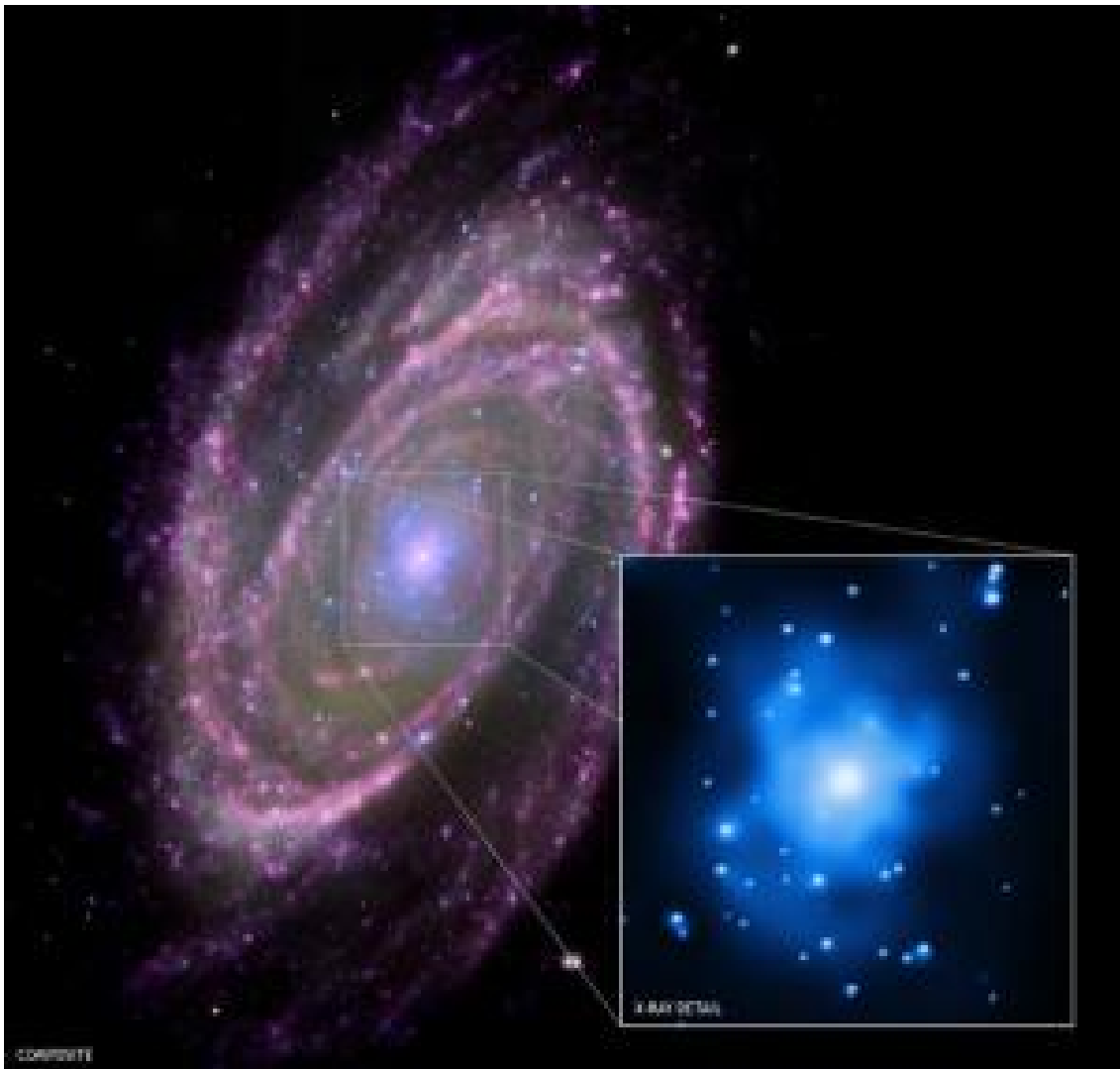
Details of this project were presented at the SAE Commercial Vehicle Engineering Congress in November 2005: [Englar, Robert J. "Improved Pneumatic Aerodynamics for Drag Reduction, Fuel Economy, Safety, and Stability Increase for Heavy Vehicles," SAE paper 2005-01-3627.]

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*Adapted from materials provided by Georgia Institute of Technology, via EurekaAlert!, a service of AAAS.*

<http://www.sciencedaily.com/releases/2008/06/080611154206.htm>

## Black Holes Have Simple Feeding Habits



*This composite image of M81 includes X-rays from the Chandra (blue), optical data from Hubble (green), infrared from Spitzer (pink) and ultraviolet data from GALEX (purple). The inset shows a close-up of the Chandra image where a supermassive black hole about 70 million times more massive than the Sun lurks. A new study using data from Chandra and ground-based telescopes, combined with detailed theoretical models, shows that the giant black hole in M81 feeds just like ones with masses of only about ten times that of the Sun. (Credit: X-ray: NASA/CXC/Wisconsin/D.Pooley and CfA/A.Zezas; Optical: NASA/ESA/CfA/A.Zezas; UV: NASA/JPL-Caltech/CfA/J.Huchra et al.; IR: NASA/JPL-Caltech/CfA)*

ScienceDaily (Jun. 18, 2008) — The biggest black holes may feed just like the smallest ones, according to data from NASA's Chandra X-ray Observatory and ground-based telescopes. This discovery supports the implication of Einstein's relativity theory that black holes of all sizes have similar properties, and will be useful for predicting the properties of a conjectured new class of black holes.

The conclusion comes from a large observing campaign of the spiral galaxy M81, which is about 12 million light years from Earth. In the center of M81 is a black hole that is about 70 million times more massive than the Sun, and generates energy and radiation as it pulls gas in the central region of the galaxy inwards at high speed.



In contrast, so-called stellar mass black holes, which have about 10 times more mass than the Sun, have a different source of food. These smaller black holes acquire new material by pulling gas from an orbiting companion star. Because the bigger and smaller black holes are found in different environments with different sources of material to feed from, a question has remained about whether they feed in the same way. Using these new observations and a detailed theoretical model, a research team compared the properties of M81's black hole with those of stellar mass black holes. The results show that either big or little, black holes indeed appear to eat similarly to each other, and produce a similar distribution of X-rays, optical and radio light.

One of the implications of Einstein's theory of General Relativity is that black holes are simple objects and only their masses and spins determine their effect on space-time. The latest research indicates that this simplicity manifests itself in spite of complicated environmental effects. "This confirms that the feeding patterns for black holes of different sizes can be very similar," said Sera Markoff of the Astronomical Institute, University of Amsterdam in the Netherlands, who led the study. "We thought this was the case, but up until now we haven't been able to nail it."

The model that Markoff and her colleagues used to study the black holes includes a faint disk of material spinning around the black hole. This structure would mainly produce X-rays and optical light. A region of hot gas around the black hole would be seen largely in ultraviolet and X-ray light. A large contribution to both the radio and X-ray light comes from jets generated by the black hole. Multi-wavelength data is needed to disentangle these overlapping sources of light. "When we look at the data, it turns out that our model works just as well for the giant black hole in M81 as it does for the smaller guys," said Michael Nowak, a coauthor from the Massachusetts Institute of Technology. "Everything around this huge black hole looks just the same except it's almost 10 million times bigger."

Among actively feeding black holes the one in M81 is one of the dimmest, presumably because it is "underfed". It is, however, one of the brightest as seen from Earth because of its relative proximity, allowing high quality observations to be made. "It seems like the underfed black holes are the simplest in practice, perhaps because we can see closer to the black hole," said Andrew Young of the University of Bristol in England. "They don't seem to care too much where they get their food from."

This work should be useful for predicting the properties of a third, unconfirmed class called intermediate mass black holes, with masses lying between those of stellar and supermassive black holes. Some possible members of this class have been identified, but the evidence is controversial, so specific predictions for the properties of these black holes should be very helpful. In addition to Chandra, three radio arrays (the Giant Meterwave Radio Telescope, the Very Large Array and the Very Long Baseline Array), two millimeter telescopes (the Plateau de Bure Interferometer and the Submillimeter Array), and Lick Observatory in the optical were used to monitor M81. These observations were made simultaneously to ensure that brightness variations because of changes in feeding rates did not confuse the results. Chandra is the only X-ray satellite able to isolate the faint X-rays of the black hole from the emission of the rest of the galaxy.

This result confirms less detailed earlier work by Andrea Merloni from the Max Planck Institute for Extraterrestrial Physics (MPE) in Garching, Germany and colleagues that suggested that the basic properties of larger black holes are similar to the smaller ones. Their study, however, was not based on simultaneous, multi-wavelength observations nor the application of a detailed physical model.

These results will appear in an upcoming issue of *The Astrophysical Journal*.

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*Adapted from materials provided by [Chandra X-ray Center](http://www.chandra.harvard.edu).*

<http://www.sciencedaily.com/releases/2008/06/080618133708.htm>



## New Soft Safety Helmet Lining Turns Into Rock Hard Shock Absorber When Hit



*The helmet is lined on the inside with a material that is soft and flexible under normal conditions, but which “locks” instantaneously, becoming hard and shock-absorbent, if the helmet is subjected to impact or blows. (Credit: Image courtesy of SINTEF)*

ScienceDaily (Jun. 18, 2008) — If something hits you on the head while you are wearing this safety helmet, its soft flexible inner layer will instantly turn into a rock-hard shock-absorbent material.

Industrial designer Tore Christian Bjørsvik Storholmen at SINTEF Health Research felt that workers in the building and construction industry deserved a helmet that is smarter than current models - in more than one sense.

Now, the 27-year-old designer has won an award from the Norwegian Design Council for his “ProActive” helmet.\*

### New shape

“As far as appearance is concerned, safety helmets have not altered much in the course of the past 30 years. The shape of my concept was inspired by the baseball cap which has long been popular headgear in the construction industry”, explains Storholmen.

He chose this design because he was well aware that workers are more likely to wear protective equipment that they feel comfortable wearing. However, the “smart” concept refers to more than the appearance of the new helmet.

### Smart material

The helmet is lined on the inside with a material that is soft and flexible under normal conditions, but which “locks” instantaneously, becoming hard and shock-absorbent, if the helmet is subjected to impact or blows.

“The material on the inside makes my helmet more comfortable in everyday use, and at the same time, safer than traditional models”, says the prize-winner.

And in line with the spirit of the times, Storholmen has made parts of the outer shell transparent, so that the shock-absorbent material is visible from the outside.

### **Smart ear protection**

SINTEF's new employee has also used smart materials in the ear-protectors that form part of the helmet. Both the ear-protectors themselves and the "loop" that is used to charge up instruments in the helmet are made of textiles that can conduct electricity.

"This means that communication systems can be incorporated in the helmet without the need for cables that could become caught up in other things," says Storholmen.

Radio or intercom links or gas detectors can all be mounted on the helmet according to the requirements of the individual user.

A combination of pressure-sensitive textiles and Bluetooth technology means that the user can answer a mobile phone call without having to remove his gloves, ear protectors and helmet.

### **Student project**

Tore Christian Bjørsvik Storholmen graduated last year as M.Sc. (Eng.) from NTNU's industrial design course. The ProActive helmet is the result of a student project that formed part of the course.

"We chose our topics ourselves. Since I have a brother in the construction industry I realised that a lot of people are uncomfortable wearing traditional safety helmets," says the young prize-winner.

### **Multidisciplinary group effort**

Storholmen is now with SINTEF Health Research's Work Physiology section, where he works on SmartWear, which is one of six areas of special effort in the SINTEF Group. The aim here is to develop two types of smart clothing:

- Clothing with integrated instrumentation, i.e. with inbuilt sensors and communication equipment.
- Clothing made of functional materials, i.e. materials that give clothes new properties when the temperature changes or when there are other alterations in the user's environment.

\*The helmet took third prize in "Young talents – open class" at this year's design awards ceremony in Oslo on March 12.

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*Adapted from materials provided by [SINTEF](#), via [AlphaGalileo](#).*

<http://www.sciencedaily.com/releases/2008/06/080611183702.htm>



## Male Homosexuality Can Be Explained Through A Specific Model Of Darwinian Evolution, Study Shows

ScienceDaily (Jun. 18, 2008) — An Italian research team, consisting of Andrea Camperio Ciani and Giovanni Zanzotto at the University of Padova and Paolo Cermelli at the University of Torino, found that the evolutionary origin and maintenance of male homosexuality in human populations could be explained by a model based around the idea of sexually antagonistic selection, in which genetic factors spread in the population by giving a reproductive advantage to one sex while disadvantaging the other.

Male homosexuality is thought to be influenced by psycho-social factors, as well as having a genetic component. This is suggested by the high concordance of sexual orientation in identical twins and the fact that homosexuality is more common in males belonging to the maternal line of male homosexuals. These effects have not been shown for female homosexuality, indicating that these two phenomena may have very different origins and dynamics.

Male homosexuality is difficult to explain under Darwinian evolutionary models, because carriers of genes predisposing towards male homosexuality would be likely to reproduce less than average, suggesting that alleles influencing homosexuality should progressively disappear from a population. This changed when previous work by Camperio Ciani and collaborators, published in 2004, showed that females in the maternal line of male homosexuals were more fertile than average.

Challenged by all these empirical data, the authors of the new study considered a range of different hypotheses for the genetic diffusion of male homosexuality. These included: the genetic maternal effects on sons, the heterozygote advantage (as is found in malaria resistance), and "sexually antagonistic selection." The latter is a particular aspect of Darwinian evolution, in which genetic factors spread in the population by giving a reproductive advantage to one sex while disadvantaging the other. This type of evolution has been previously found in insects, birds, and some mammals, but never in humans.

To discover and clarify the dynamics of the genetic factors for homosexuality, the researchers had to screen a large set of models and exclude them one by one. They concluded that the only possible model was that of sexually antagonistic selection. The other models did not fit the empirical data, either implying that the alleles would become extinct too easily or invade the population, or failing to describe the distribution patterns of male homosexuality and female fecundity observed in the families of homosexuals. Only the model of sexually antagonistic selection involving at least two genes -- at least one of which must be on the X chromosome (inherited in males only through their mother) -- accounted for all the known data.

The results of this model show the interaction of male homosexuality with increased female fecundity within human populations, in a complex dynamic, resulting in the maintenance of male homosexuality at stable and relatively low frequencies, and highlighting the effects of heredity through the maternal line.

These findings provide new insights into male homosexuality in humans. In particular, they promote a focus shift in which homosexuality should not be viewed as a detrimental trait (due to the reduced male fecundity it entails), but, rather, should be considered within the wider evolutionary framework of a characteristic with gender-specific benefits, and which promotes female fecundity. This may well be the evolutionary origin of this genetic trait in human beings.

The possible widespread occurrence of sexually antagonistic characteristics in evolutionary processes, which play their evolutionary game by giving a fecundity benefit to one sex while disadvantaging the other, has only recently begun to be appreciated. This is understood as a key mechanism through which high levels of genetic variation are maintained in biological populations.

Male homosexuality is just the first example of an unknown number of sexually antagonistic traits, which contribute to the maintenance of the natural genetic variability of humans. The new perspectives opened





by the models developed for sexually antagonistic selection may also contribute to a better understanding of most genetically-based sexual conflicts, which are, at present, poorly understood in humans.

An unexpected implication of the new models concerns the impact that the sexually antagonistic genetic factors for male homosexuality have on the overall fecundity of a population. The findings suggest that the proportion of male homosexuals may signal a corresponding proportion of females with higher fecundity. Consequently, these factors always contribute, all else being equal, a positive net increase of the fecundity of the whole population, when compared to populations in which such factors are lower or absent. This increase grows as the population baseline fecundity decreases; this means that the genes influencing male homosexuality end up playing the role of a buffer effect on any external factors lowering the overall fecundity of the whole population.

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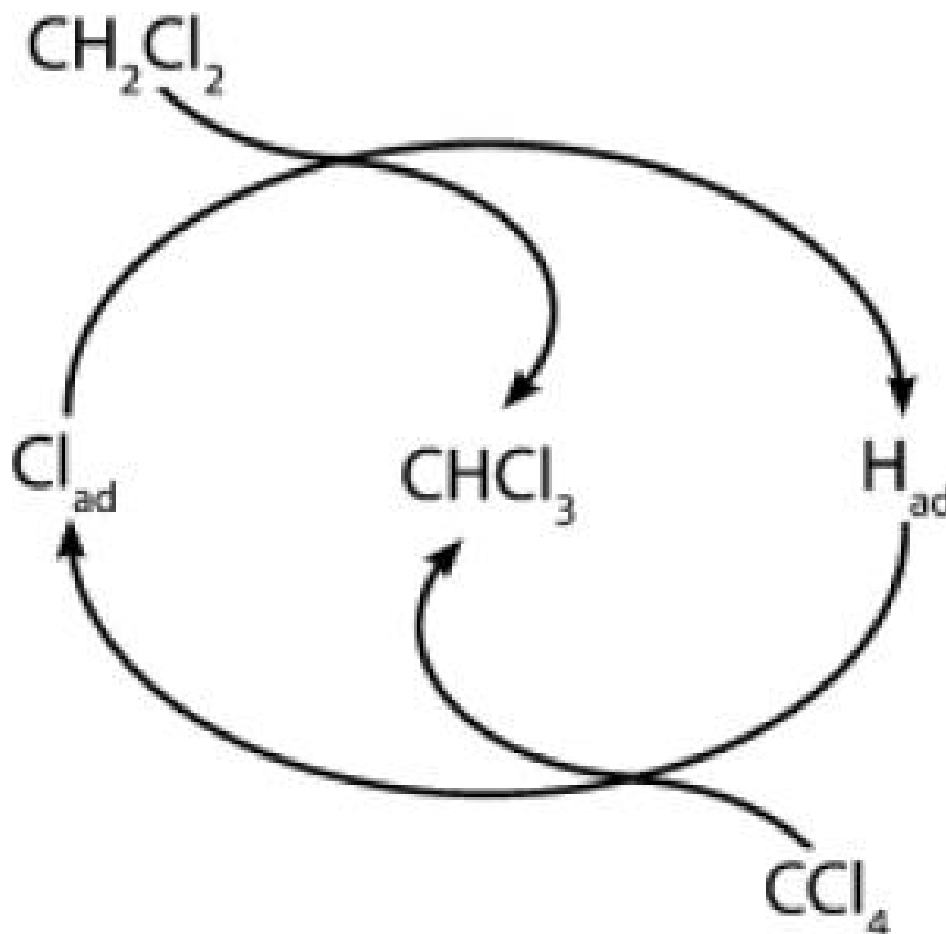
**Journal reference:**

1. Camperio Ciani et al. **Sexually Antagonistic Selection in Human Male Homosexuality**. *PLoS One*, 2008; 3 (6): e2282 DOI: [10.1371/journal.pone.0002282](https://doi.org/10.1371/journal.pone.0002282)

*Adapted from materials provided by [Public Library of Science](http://www.ncbi.nlm.nih.gov/pubmed/18681111), via [EurekAlert!](http://www.eurekalert.com), a service of AAAS.*

<http://www.sciencedaily.com/releases/2008/06/080617204459.htm>

## New Method To Recycle Unwanted Byproduct Of Chlorinated Hydrocarbon Production



Chemists have now found an interesting new approach that may lead to effective recycling of  $\text{CCl}_4$ , an unwanted byproduct of chlorinated hydrocarbon production. (Credit: Copyright Wiley-VCH)

ScienceDaily (Jun. 18, 2008) — Because of its toxicity and the dangers involved in handling it, tetrachloromethane (carbon tetrachloride,  $\text{CCl}_4$ ) can no longer be used or produced in many countries. However, the processes used in the production of other chlorinated hydrocarbons, such as chloroform (trichloromethane,  $\text{CHCl}_3$ ), also produce  $\text{CCl}_4$  as a byproduct.

What is the best way to get rid of this unwanted substance?

A team headed by Bert M. Weckhuysen at the University of Utrecht (Netherlands) has now found an interesting new approach that may lead to effective recycling. As the researchers report in the journal *Angewandte Chemie*, a lanthanum chloride catalyst induces  $\text{CCl}_4$  and its reaction partner dichloromethane ( $\text{CH}_2\text{Cl}_2$ ) to exchange one chlorine atom for a hydrogen atom, forming nearly 100% of the desired  $\text{CHCl}_3$ .

In order to increase the catalyst surface, lanthanum chloride ( $\text{LaCl}_3$ ) was deposited onto carbon nanofiber supports. This results in a highly active, selective, and stable catalyst to facilitate the hydrogen–chlorine exchange between  $\text{CCl}_4$  and  $\text{CH}_2\text{Cl}_2$ . “Computer calculations suggest,” says Weckhuysen, “that the mechanism occurs by way of two separate hydrogen–chlorine exchange reactions.”

It appears that the surface of the  $\text{LaCl}_3$  catalyst contains not only the terminal chlorine atoms of the crystal lattice, but also other weakly adsorbed species.  $\text{CH}_2\text{Cl}_2$  swaps one of its hydrogen atoms for one such





weakly bound chlorine atom. It leaves behind the hydrogen atom, which is in turn weakly adsorbed to the catalyst surface. This hydrogen atom can be taken up by  $CCl_4$ , which in turn leaves one of its chlorine atoms behind on the catalyst surface. Both of these reaction steps produce chloroform exclusively; no byproducts come into play.

This new catalytic reaction is astonishing in that it was previously assumed that the presence of oxygen—either in the gas phase or bound to the crystal lattice of the catalyst—is required for such reactions. Says Weckhuysen: “We are reporting for the first time a lanthanum-based catalyst material that can activate both C-H and C-Cl bonds in the absence of oxygen.”

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**Journal reference:**

1. Alwies W. A. M. van der Heijden, Simon G. Podkolzin, Mark E. Jones, Johannes H. Bitter, Bert M. Weckhuysen. **Catalytic Hydrogen-Chlorine Exchange between Chlorinated Hydrocarbons under Oxygen-Free Conditions**. *Angewandte Chemie International Edition*, 27 May 2008 DOI: [10.1002/anie.200800270](https://doi.org/10.1002/anie.200800270)

*Adapted from materials provided by [Wiley-Blackwell](http://www.wiley-blackwell.com).*

<http://www.sciencedaily.com/releases/2008/06/080616124935.htm>

## Get A Little Sun This Summer -- It Could Help Save Your Life, Researcher Suggests



*Experts still agree that a fairly modest amount of sun is enough -- perhaps 10-15 minutes of exposure on your arms and face about three times a week. Sunburn should of course be avoided and a tan clearly isn't necessary -- but some real sun exposure probably is. (Credit: iStockphoto/Robert Churchill)*

ScienceDaily (Jun. 18, 2008) — As summer comes and people across America get ready to start slathering on the sunscreen, a note of caution is in order – a little sunshine is good for you.

Studies increasingly are suggesting the value of vitamin D – often known as the sunshine vitamin, because that's one way you can obtain it – in everything from bone metabolism to maintaining muscle strength, immune function, reducing hypertension and possibly even playing a role in prevention of cancer and autoimmune disease.

Summer is a time when most people finally get enough of this vitamin due to their sun exposure, and also help build stores of it in their fat for use during the dark days of winter. But research has suggested that, for whatever reason, as many as a billion people around the world may now be vitamin D deficient, posing possibly serious threats to their health.

“The old theory was that if you had enough vitamin D to prevent rickets and osteomalacia, two skeletal disorders, you were okay,” said Victoria Drake, a research associate in the Linus Pauling Institute at Oregon State University, and manager of its Micronutrient Information Center. “But new research is now raising our awareness about the possible relationships between vitamin D and cancer, particularly colorectal, breast, ovarian and prostate cancers. There are also potential links to cardiovascular disease, and autoimmune diseases such as multiple sclerosis and rheumatoid arthritis.”

Many of the studies are observational, Drake said, and more work needs to be done with randomized, double-blind, placebo-controlled clinical trials. Experts still argue about how much vitamin D is enough, and some feel that the optimal amount is several times higher than the adequate intake level set by the Food and Nutrition Board of the Institute of Medicine, which is 200 international units per day for adults ages 19-50.

What's clear, however, is that many Americans are not getting even those minimal amounts, especially those with dark skin colors – one study reported that 42 percent of African American women were vitamin D deficient.

As a result, Drake said, many doctors are increasingly starting to test their patients for deficiency of this vitamin, especially in the temperate zones above 40 degrees latitude – a line running roughly from Philadelphia to Denver and through Northern California. That includes New York City, Boston, Chicago, Detroit, Seattle and many other of the nation's most populous cities. Residents of the Pacific Northwest, with its northern latitudes and eternally cloudy winters, are especially vulnerable. Inexpensive supplements are frequently prescribed.

“My own doctor said that he frequently tests for vitamin D status, and that vitamin D deficiency is prevalent in his patient population,” Drake said. “Experts are now talking about a phenomenon they call ‘Vitamin D Winter.’”

One recent study referred to vitamin D deficiency as “a major unrecognized epidemic in the older adult population” and recommended routine blood testing for adequate levels.

Open to speculation, but little in the way of proof, Drake said, is that deficiencies of vitamin D may have worsened in recent years as more people became aware of the risks of skin cancer and aggressively avoided sun exposure or used sunscreen lotions, on themselves and their children. Experts still agree that a fairly modest amount of sun is enough – perhaps 10-15 minutes of exposure on your arms and face about three times a week. Sunburn should of course be avoided and a tan clearly isn't necessary – but some real sun exposure probably is.

Alternatively, you can also get vitamin D from some foods, including vitamin fortified milk and some cereals or breads – assuming you don't have a diet rich in oily fish. For higher levels, supplements are usually necessary.

Among the recent findings and observations about vitamin D:

- Vitamin D is a fat-soluble vitamin that functions as a hormone in the body, regulating calcium metabolism.
- Most people living above 40 degrees latitude do not obtain enough vitamin D from about mid-November to early March.
- Infants who are exclusively breast-fed, and are not supplemented with vitamin D, are at high risk of vitamin D deficiency, because human milk generally doesn't have adequate levels.
- People with dark-colored skin have significantly less ability to synthesize vitamin D from sunlight, as do the elderly.
- Obesity increases the risk of vitamin D deficiency because obese individuals cannot easily access the vitamin D stored in body fat.

So if adequate levels of vitamin D are critical to your health, how much is enough? Depends on who you ask, Drake said. The official government recommendation is 200 I.U. per day – although moderate sun exposure might provide about 100 times that much. Many multivitamins provide about 400 I.U. per day, and it's generally accepted that levels up to 2,000 I.U. per day pose no health risk. Some studies under way with pregnant women are giving them 4,000 I.U. per day in supplements.



One study last year indicated an adequate level of vitamin D, produced by daily supplements of up to 2,000 I.U. per day, might prevent 30 percent of the cases of breast cancer and 50 percent of the colon cancer in the United States – at extremely low cost and with few or no adverse effects.

The Linus Pauling Institute recommends a multivitamin supplement with at least 400 I.U. of vitamin D for most healthy adults, and twice that amount for anyone over age 50. Additionally, at least 10-15 minutes of sun exposure on the arms and legs, or face and arms, at least three times weekly, between 11 a.m. and 2 p.m. during the spring, summer and fall may help residents of temperate latitudes avoid vitamin D deficiency at the end of winter.

“There’s a lot we still have to learn about this micronutrient, but it’s already clear the role it has in optimal health, and that a lot of people don’t get enough,” Drake said. “Many people may need to consider supplements, especially in winter. And one thing we would say is, don’t be afraid of getting at least a little sunshine. It’s good for you.”

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*Adapted from materials provided by Oregon State University.*

<http://www.sciencedaily.com/releases/2008/06/080616161111.htm>

## Perfecting A Solar Cell By Adding Imperfections

ScienceDaily (Jun. 18, 2008) — Nanotechnology is paving the way toward improved solar cells. New research shows that a film of carbon nanotubes may be able to replace two of the layers normally used in a solar cell, with improved performance at a lower cost. Researchers have found a surprising way to give the nanotubes the properties they need: add defects.

Currently, these solar cells, called dye-sensitized solar cells, have a transparent film made of an oxide that is applied to glass and conducts electricity. In addition, a separate film made of platinum acts as a catalyst to speed the chemical reactions involved. Both of these materials have disadvantages, though. The oxide films can't easily be applied to flexible materials: they perform much better on a rigid and heat resistant substrate like glass. This increases costs and limits the kinds of products that can be made. And expensive equipment is necessary to create the platinum films.

Jessika Trancik of the Santa Fe Institute, Scott Calabrese Barton of Michigan State University and James Hone of Columbia University decided to use carbon nanotubes to create a single layer that could perform the functions of both the oxide and platinum layers. They needed it to have three properties: transparency, conductivity, and catalytic activity. Ordinary carbon nanotubes films are so-so in each of these properties. The obvious ways of improving one, though, sacrifice one of the others. For example, making the film thicker makes it a better catalyst, but then it's less transparent.

Previous theory had suggested that materials may function better as catalysts when they have tiny defects, providing sites for chemicals to attach. So the researchers tried exposing the carbon nanotubes to ozone, which roughs them up a bit. Very thin films, they found, became dramatically better catalysts, with more than ten-fold improvement. Thin, transparent nanotube films catalyze the reduction of triiodide, a reaction important for the dye-sensitized solar cell, with a charge-transfer resistance as measured by electrochemical impedance spectroscopy that decreases with increasing film thickness. Moreover the catalytic activity can be enhanced by exposing nanotubes to ozone to introduce defects. Ozone-treated, defective nanotube films could serve as catalytic, transparent, conducting electrodes for the dye-sensitized solar cell. Other applications include batteries, fuel cells, and electroanalytical devices.

In fact, the performance gets close to that of platinum. "That's remarkable," Trancik says, "because platinum is considered pretty much the best catalyst there is." In order to address the trade-off between transparency and conductivity, the researchers tried another trick on a bottom layer of tubes: they created carbon nanotubes that were longer. This improved both conductivity and transparency.

The carbon nanotube films might be used in fuel cells and batteries as well.

"This study is an example of using nanostructuring of materials -- changing things like defect density and tube length at very small scales -- to shift trade-offs between materials properties and get more performance out of a given material," Trancik says. "Making inexpensive materials behave in advanced ways is critical for achieving low-carbon emissions and low cost energy technologies."

The researchers published their results recently in *Nano Letters*. They are currently in the process of filing a patent application for their techniques.

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*Adapted from materials provided by [Santa Fe Institute](#), via [EurekAlert!](#), a service of AAAS.*

<http://www.sciencedaily.com/releases/2008/06/080616163421.htm>



## **Dementia drug use to be reviewed**

Please turn on JavaScript. Media requires JavaScript to play.

Minister in charge of the review discusses its findings

### **Ministers have ordered a review into the controversial use of anti-psychotic drugs to treat dementia patients.**

The practice is widespread, even though there is evidence that the drugs have no positive impact, and may actually have a negative effect.

The announcement is part of a proposed new strategy to improve dementia care across England.

An estimated 570,000 people have dementia in England, and the figure is expected to double in 30 years.

### **Dementia is a condition affecting an increasing number of families in our society and one the greatest challenges now facing NHS and social care services**

Ivan Lewis  
Health Minister

Ministers have also given a firm commitment to a summit to draw up plans for new research into the condition.

Dementia experts wrote to Health Secretary Alan Johnson this week warning the predicted rise in cases over the next two decades could destroy the NHS.

They warned that an ageing population means the burden of dementia on the UK will double to £35bn a year within 20 years.

The rest of the proposed new strategy will be put out to public consultation over the next three months.

Ministers say it is designed to increase awareness of dementia, remove the stigma associated with it, improve diagnosis and boost the quality of care.

Among the proposals are plans to set up more memory clinics, where patients can get information about their condition and learn techniques for improving their memory.

It is also proposed that every patient with dementia is given a named "dementia care advisor" to be their single contact throughout diagnosis and treatment.

And all care homes and acute hospitals would be encouraged to have a key staff member identified as responsible for handling dementia patients, seen as a way to help care homes shift the focus from drug treatments to talking therapies.

## **Huge challenge**

Ivan Lewis, the health minister, said: "Dementia is a condition affecting an increasing number of families in our society and one of the greatest challenges now facing NHS and social care services.

**Today is a landmark day for people with dementia and their carers, as the**





**government recognises dementia as a national priority**

Neil Hunt  
Alzheimer's Society

"That is why this first ever national dementia strategy is so important.

"It will set out how we will improve the quality of life for people with dementia and their families, improve the quality of care dementia sufferers receive, increase awareness of the condition and ensure earlier diagnosis and intervention."

Neil Hunt, chief executive of the Alzheimer's Society, said: "Today is a landmark day for people with dementia and their carers, as the government recognises dementia as a national priority.

"Dementia is a devastating condition caused by diseases of the brain, yet only a third of people ever receive a diagnosis and families are often left to cope alone until they reach crisis point.

"It's time to drag dementia care out of the dark ages and change the way we treat some of our most vulnerable older people."

Mr Hunt added: "The review of anti-psychotic drugs to stop dangerous over-prescription to people with dementia is urgently needed."

The final strategy will be published in the autumn.

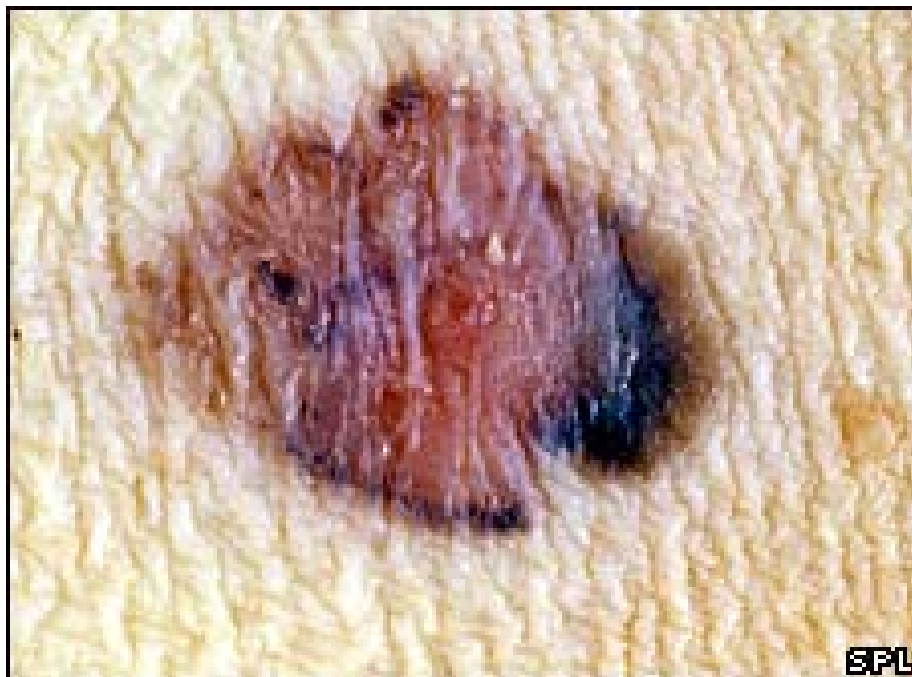
In Scotland it is planned to introduce targets to improve early diagnosis of dementia.

Story from BBC NEWS:  
<http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7461400.stm>

Published: 2008/06/18 23:41:49 GMT

## Clone cell cancer 'cure' hailed

Scientists claim they have cured advanced skin cancer for the first time using the patient's own cells cloned outside the body.



The 52-year-old man involved was free of melanoma two years after treatment.

US researchers, reports the New England Journal of Medicine, took cancer-fighting immune cells, made five billion copies, then put them all back.

Scientists in the UK warned that further trials would need to be done to prove how well the treatment worked.

**This is another interesting demonstration of the huge power of the immune system to fight some types of cancer**

Spokesman  
Cancer Research UK

The body's immune system plays a significant role in the battle against cancer, and doctors have been looking for ways to boost this tumour-killing response.

The 52-year-old man had advanced melanoma which had spread to the lungs and lymph nodes.

Scientists at the Fred Hutchinson Cancer Research Center in Seattle concentrated on a type of immune system cell called a CD4+ T cell.

### FROM THE TODAY PROGRAMME

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From a sample of the man's white blood cells, they were able to select CD4+ T cells which had been specifically primed to attack a chemical found on the surface of melanoma cells.

These were then multiplied in the laboratory, and put back in their billions to see if they could mount an effective attack on the tumours.

Two months later, scans showed the tumours had disappeared, and after two years, the man remained disease-free.

The new cells persisted in the body for months after the treatment.

### 'Immune power'

While claiming this as a world first, the study authors pointed out that their technique applied only to a patient with a particular type of immune system and tumour type, and could work for only a small percentage of people with advanced skin cancer.

#### **Patients will live with their cancer, and die with their cancer, but not of their cancer - it will be like diabetes today**

Professor Karol Sikora  
Imperial College London

Dr Cassian Yee, who led the project, said: "For this patient we were successful, but we would need to confirm the effectiveness of therapy in a larger study."

Professor Karol Sikora, a cancer expert at Imperial College in London, described the research as "pretty exciting" with potentially wide application.

He said the researchers had focused on melanoma because the disease was well understood compared with other cancers, but other cancers could potentially be targeted.

He said: "I think we will be able to harness the power of the immune system. Eventually we will learn how to control cancer, in other words we will suppress it."

"Patients will live with their cancer, and die with their cancer, but not of their cancer - it will be like diabetes today."

A spokesman for Cancer Research UK also said more research would be needed, adding: "This is another interesting demonstration of the huge power of the immune system to fight some types of cancer."

"Although the technique is complex and difficult to use for all but a few patients, the principle that someone's own immune cells can be expanded and made to work in this way is very encouraging for the work that ourselves and others are carrying out in this field."

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7460743.stm>

Published: 2008/06/18 23:42:04 GMT



## Plagiarism is nothing new in academia

Few professors will have been shocked by the Raj Persaud story. Such shameless borrowing has been going on for years

June 18, 2008 12:00 PM



Genius steals... Raj Persaud. Photograph: Eamonn McCabe

The admission of the leading psychiatrist Raj Persaud of a "cut and paste error" - ie substantial plagiarism - in one of his books will come as no surprise to some academics whose grumbles about their work being pillaged by more starry writers have been getting louder by the week.

One such is Judith M Okely, emeritus professor of social anthropology at Hull and deputy director of the Centre for International Gender Studies, Oxford, who was outraged to find details from her own book about Gypsies appearing without acknowledgment in Isabel Fonseca's book Bury Me Standing.

"Years of living on Gypsy camps, reading and analysis of field notes went into The Traveller-Gypsies," says Okely of her book. "But my anthropological interpretation of animal classification was re-presented by Fonseca without acknowledgment and acclaimed in reviews as her own. Other social scientists experienced the same. Presumably, fiction writers will call this mere 'reportage'."

What Okely and her colleagues want is not revenge, or money, but acknowledgment, which Fonseca did provide in later editions.

Plagiarism is frequently alleged but rarely as clear-cut as that by Persaud, who has admitted borrowing from the work of two learned professors in a newspaper article and in his 2003 book From the Edge of the Couch, though he denies that his behaviour was dishonest and liable to bring the medical profession into disrepute.

Writers have always piggy-backed on the backs of others, and nobody to my knowledge has blamed Shakespeare for plagiarising Holinshed. Indeed, there's no small regret in university circles at the loss of the "Casaubon" tradition of plodding, lifelong scholarship that was only ever going to serve as a resource for later, more dynamic writers.

But the problem has undoubtedly become more acute in the lickety-split world of today, when whole theses can be accessed at the click of a mouse, and literary reputations can only be kept ablaze by being fed a constant supply of books.



Only last month, at the Hay Festival, Ian McEwan was stopped in his tracks after reading a passage from his novel-in-progress. It centred on an urban myth about a man who thinks a stranger is helping himself to his crisps and retaliates by seizing the other man's drink - before discovering his own crisps safe in his pocket. Nothing wrong with that except, as someone in the audience pointed out, Douglas Adams had got to it first (in biscuit form).

I've no doubt that this was an innocent oversight, but just think how embarrassing it could have been had it gone all the way into print. It raises a whole host of issues about the ownership of stories in a world where, as Philip K Dick once remarked, there are more ways of saying things than there are things to say. When Harold Bloom coined the phrase "the anxiety of influence" back in the early 1970s, to express the fear poets have of being derivative, he had no inkling just how anxious things were going to get.

[http://blogs.guardian.co.uk:80/books/2008/06/the\\_admission\\_of\\_the\\_leading.html](http://blogs.guardian.co.uk:80/books/2008/06/the_admission_of_the_leading.html)



### Some Patients May Not Need Insulin For Long-term Control Of Type 2 Diabetes, Study Suggests

ScienceDaily (Jun. 16, 2008) — Some patients with type 2 diabetes can control their disease for years yet avoid insulin injections by using multiple classes of oral diabetic medications, a new study found. The results were presented June 15, at The Endocrine Society's 90th Annual Meeting in San Francisco.

Findings from the study contradict common beliefs about non-insulin diabetic medications, said principal investigator Arthur Swislocki, MD, of the Veterans Affairs (VA) Northern California Health Care System in Martinez. Oral diabetes medications help control blood glucose, or sugar, levels in people whose bodies still produce some insulin, as is true for many patients with type 2 diabetes.

"Generally, both patients and physicians believe that long-term use of oral diabetic medications is not possible because these drugs lose their effectiveness over time as the patient's pancreas fails," Swislocki said. "Our data suggest that some patients can remain in good glucose control for years using non-insulin, oral diabetic agents."

The study result is good news for people who need medical therapy for type 2 diabetes, according to Swislocki. "They may be able to delay or avoid the use of insulin," he said.

Some patients prefer pills over insulin injections because they are easier to use or because the patient fears needles or getting low blood sugar, as is possible with insulin treatment, he said.

Swislocki and his coworkers studied the VA medical records of 191 veterans (188 men and 3 women) with type 2 diabetes who received treatment beginning in 1992 and received follow-up for 15 consecutive years. Of these patients, 96 began treatment solely with oral drugs. The researchers found that 55 percent of the patients (53 of 96) who started treatment with oral diabetic agents were able to continue using them 15 years later and achieve good blood sugar control. A measure of long-term blood sugar control--hemoglobin A1c--improved from an average of nearly 8 percent to about 7 percent 15 years later in this group.

Of the 96 patients, 45 percent eventually switched to insulin, either alone or in combination with oral drugs. At the beginning of the study, the duration of diabetes was similar between these patients and those who remained on an oral drug regimen. However, the group of patients who stayed on oral medications throughout the study had a lower beginning A1c and were less obese than patients in the other group, the authors reported. They also were more likely to be white. Past studies show minorities have poorer blood sugar control than do whites.

Swislocki said the long-term effectiveness of oral diabetic medications seen in their study may reflect the wider range of oral drugs now available for treating type 2 diabetes, compared with 15 years ago. Therefore, if one class of drugs became less effective, other classes could be added in combination.

The study, however, did not specifically address whether or not oral diabetic drugs lose their effectiveness over a long time, according to Swislocki. Rather, it mainly tracked the prescribing practices of VA primary care providers. "Deductions about drug effectiveness need to be made cautiously," he said.

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*Adapted from materials provided by [The Endocrine Society](#), via [EurekAlert!](#), a service of AAAS.*

<http://www.sciencedaily.com:80/releases/2008/06/080615142258.htm>



## 'Clearwater': An Eco-Friendly Feed Barley



*Clearwater barley, growing here in Tetonía, Idaho, can help prevent phosphorus pollution of streams and other waterways. (Credit: Photo courtesy Phil Bregitzer, ARS)*

ScienceDaily (Jun. 16, 2008) — A new barley that benefits the environment as well as farm animals has been developed by Agricultural Research Service (ARS) scientists and their colleagues.

"Clearwater" hulless barley is rich in the kinds of phosphorus--an essential nutrient--that pigs, fish and other single-stomached, or "monogastric," animals can use. That's unlike grain from conventional barleys, which contains more of the phytate type of phosphorus, the kind that monogastric animals find difficult to digest.

Indigestible phosphorus, leached from manure, can sometimes end up polluting groundwater or streams.

Clearwater builds upon decades of research by plant geneticists Victor Raboy, Phil Bregitzer and others at the ARS Small Grains and Potato Germplasm Research Unit at Aberdeen, Idaho.

Raboy uses conventional plant-breeding procedures to chemically tweak seeds' phosphorus makeup. The work has paved the way for low-phytate barleys, such as Clearwater and a hulled type called "Herald," as well as low-phytate rice, corn and soybeans.

Bregitzer, Raboy and ARS plant geneticist Don Obert collaborated in the Clearwater research with Idaho Agricultural Experiment Station co-researchers Juliet Windes and James Whitmore. A recent article in the *Journal of Plant Registrations* contains more details.

Clearwater yields are about the same as those of other niche-market barleys, according to Bregitzer. One such market--aquaculture feeds--is already being explored. Approximately 46,000 pounds of Clearwater



were shipped to Vietnam earlier this year by the U.S. Grains Council of Washington, D.C., and the Idaho Barley Commission to test Clearwater as a feed ingredient for farm-raised fish.

ARS researchers at Hagerman, Idaho, and Bozeman, Mont., will begin similar investigations with farm-raised rainbow trout this month.

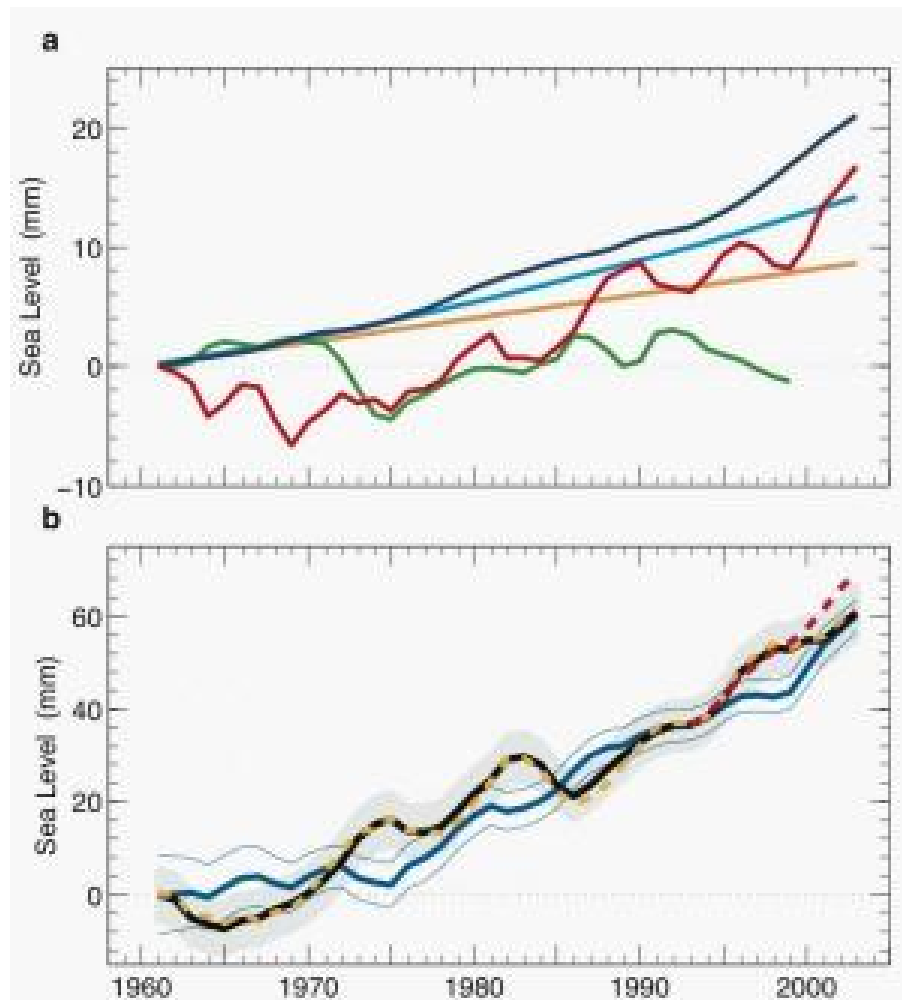
The Idaho Agricultural Experiment Station's Foundation Seed Program at Kimberly has offered Clearwater seed for sale since late 2007. Researchers and plant breeders can contact Bregitzer to obtain, at no charge, small supplies of Clearwater or any of several other feed, food and malting barleys that have resulted from ARS and Experiment Station barley breeding research.

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*Adapted from materials provided by [USDA/Agricultural Research Service](#).*

<http://www.sciencedaily.com/releases/2008/06/080606134126.htm>

## Ocean Temperatures And Sea Level Increases 50 Percent Higher Than Previously Estimated



Estimates of ocean heat content and sea surface temperature. Upper (a): Comparison of our upper-ocean heat content with previous estimates (red1 and blue12) for the upper 700 m. The straight lines are linear fits to the estimates. The global mean stratospheric optical depth (arbitrary scale) at the bottom indicates the timing of major volcanic eruptions. The brown curve is a three-year running average of these values, included for comparison with the smoothed observations. Lower (b): Comparison of thick black line, as in a with the thick red line; thin red lines indicate estimates of one standard deviation error) results with sea surface temperature (blue; right-hand scale). All time series were smoothed with a three-year running average and are relative to 1961. (Credit: Image courtesy of DOE/Lawrence Livermore National Laboratory)

ScienceDaily (June 19, 2008) — New research suggests that ocean temperature and associated sea level increases between 1961 and 2003 were 50 percent larger than estimated in the 2007 Intergovernmental Panel on Climate Change report.

An international team of researchers, including Lawrence Livermore National Laboratory climate scientist Peter Gleckler, compared climate models with improved observations that show sea levels rose by 1.5 millimeters per year in the period from 1961-2003. That equates to an approximately 2½-inch increase in ocean levels in a 42-year span.



The ocean warming and thermal expansion rates are more than 50 percent larger than previous estimates for the upper 300 meters of oceans.

The research corrected for small but systematic biases recently discovered in the global ocean observing system, and uses statistical techniques that “infill” information in data-sparse regions. The results increase scientists’ confidence in ocean observations and further demonstrate that climate models simulate ocean temperature variability more realistically than previously thought.

“This is important for the climate modeling community because it demonstrates that the climate models used for assessing sea-level rise and ocean warming tie in closely with the observed results,” Gleckler said.

The results are reported in the June 19 edition of the journal *Nature*.

Climate model data were analyzed from 13 different modeling groups. All model data were obtained from the WCRP CMIP3 multi-model dataset archived at the LLNL’s Program for Climate Model Diagnosis and Intercomparison (PCMDI).

Although observations and models confirm that recent warming is greatest in the upper ocean, there are widespread observations of warming deeper than 700 meters.

Results were compared with recent estimates of other contributions to sea-level rise including glaciers, ice caps, Greenland and Antarctic ice sheets, and thermal expansion changes in the deep ocean. When these independent lines of evidence are examined collectively, the story is more consistent than found in earlier studies.

The oceans store more than 90 percent of the heat in the Earth’s climate system and act as a temporary buffer against the effects of climate change. The ocean warming and thermal expansion rates are 50 percent larger than previous estimates for the upper 700 meters of oceans, and greater than that for the upper 300 meters.

“This is just the tip of the iceberg, so to speak,” Gleckler said. “Our ability to quantify structural uncertainties in observationally based estimates is critically important. This study represents important progress.”

The team involved researchers from the Centre for Australian Weather and Climate Research (CSIRO), the Antarctic Climate and Ecosystems Cooperative Research Centre and LLNL.

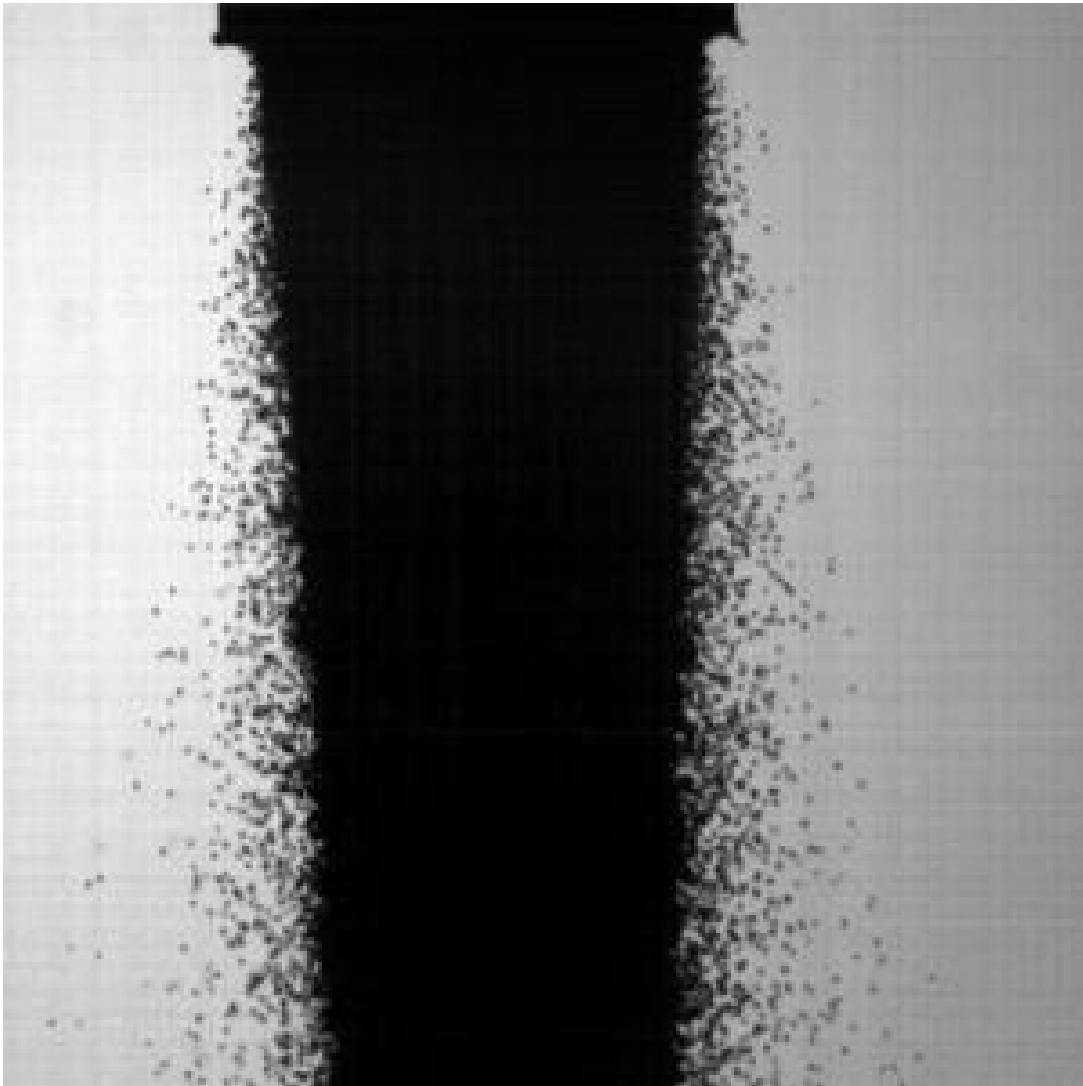
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*Adapted from materials provided by [DOE/Lawrence Livermore National Laboratory](http://www.llnl.gov).*

<http://www.sciencedaily.com/releases/2008/06/080618143301.htm>



## Grains And Liquids Demonstrate Similar Cohesion Effects



*Glass beads flowing from a funnel. (Credit: Copyright CNRS 2008 Yacine Amarouchene)*

ScienceDaily (June 19, 2008) — What if sand flowed like water? Researchers at Centre de Physique Moléculaire Optique et Hertzienne (CNRS/ Université Bordeaux) have just demonstrated that even without an attractive force between grains in flowing sand, they have a cohesion similar to that of liquids.

How do grains flow out of an emptying silo? Or And what about sugar poured out by a pastry chef? Like liquids, grains can flow, but there is no attraction between the grains to ensure trigger cohesion. However, by studying the waves that form and propagate on the surface of flowing sand, the physicists have observed telltale signs of cohesion. Like the very small ripples that form on the surface of water, these waves point to the existence of a “taut elastic skin” on the surface of volumes of grain surfaces. This “skin” on flowing grain flows is its surface tension.

The surface of a liquid is similar to an elastic membrane under tension, which causes, for example, the pressure on the interior of soap bubbles. This “surface tension” is due to cohesion forces between molecules in the liquid.



By measuring wave propagation speed, the researchers have shown that this cohesion effect is a result of reduces a decrease in air pressure between flowing grains. Therefore, when a mass of grains flows, there is a depressed area at the middle of the pressure is reduced within the flow, which bringing pulls straying grains back towards the mass. These results are going should improve our understanding of the details of what happens on a very small scale in grain flows – these materials may be which are common, but they are not yet well understood.

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**Journal reference:**

1. Amarouchene et al. **Capillarylike Fluctuations at the Interface of Falling Granular Jets.** *Physical Review Letters*, 2008; 100 (21): 218001 DOI: [10.1103/PhysRevLett.100.218001](https://doi.org/10.1103/PhysRevLett.100.218001)

*Adapted from materials provided by [CNRS](http://www.cnrs.fr).*

<http://www.sciencedaily.com/releases/2008/06/080611185948.htm>