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intellectual Affairs
Guerrilla Librarians in Our Midst

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Scott McLemee

When thinking about the future of Occupy Wall Street, there is something to say for meteorological determinism. An open-ended protest movement may grow when the weather permits, but an Arctic blast means shrinkage. OWS may bloom again in the spring, perhaps on a scale to dwarf anything that's happened so far. But when you ask people involved in the movement about what to expect in the meantime, the response can be rather evasive, and it sometimes comes with a look that says, "Have you ever tried to do *anything* by consensus, let alone long-term planning? Seriously, quit asking me that."

But one segment of the movement has been thinking about the cold months ahead, and even beyond that. They are the "guerrilla librarians" -- the people organizing and distributing books and periodicals to keep the demonstrators informed and entertained. A library was established in Zuccotti Park at the very start of the Occupy Wall Street demonstrations, and it has received a good deal of attention. Several more sprang up as the protests spread. With the occupation movement, decentralized improvisation is the name of the game, so it's impossible to tell just how many libraries have sprung up. But they exist in Boston and Philadelphia, in Portland, Ore. and Halifax, Nova Scotia, among other places. They are staffed by a mixture of professional librarians and activist volunteers, with "stacks" created through donations from publishers, bookstores, and individuals.

Just keeping their collections running has been plenty demanding. But that's where a slowdown in activity during the cold months could help the libraries consolidate themselves while also establishing contacts with one another. The blog of the flagship OWS library now serves as an unofficial journal providing information and advice for the whole milieu. A stronger network is likely to come out of the American Library Association meeting in Dallas in January, where an informal working group of library and information-science professionals who supporting the occupation movement will get together to compare notes.

Mandy Henk, a librarian at DePauw University, will be attending the session in Dallas. Being on fall break gave her the chance to work with the Occupy Wall Street library in early October. When we spoke by phone, she was back in Indiana but planning to return to Zuccotti Park within a few days.

"A lot of academics have volunteered," she said, "mostly grad students or professors from the New York area." Her description of the work required to keep the collection running covers all the basic functions performed by the staff of a more traditional collection: acquisitions, cataloging, building and maintaining a reserves collection, and working the circulation desk where patrons can check books out. "We also have a Friday night poetry slam," she says, "and events where authors discuss their work with the public."

I asked how meet-the-author events were organized. This, with hindsight, was a pretty silly question. As with everything else in OWS, the voluntarism sustaining the library follows its own rhythm. Authors just show up. Librarians work when they can and leave when they must. Flux is part of the ambience: a feature, not a bug.

"People are enjoying having a space where they are surrounded by books and ideas," Henk says. "The great thing about Zuccotti is that constant political and economic debates take place that people might otherwise shy away from." (Not that the library provides only fodder for argument. Plenty of fiction also circulates.)

Steven Syrek, a graduate student in English at Rutgers University, has been working at the OWS library since about the third week of the demonstration. "People talk about this movement like it's a ragtag bunch of hippies," he told me when we spoke by phone, "but the work we do is extremely well-organized." The central commitment, Syrek says, is to create "a genuine clearinghouse for books and information." Volunteers have

adopted a slogan summing up what the library brings to the movement: "Literacy, Legitimacy, and Moral Authority."

The hours he spends at the OWS library are, admittedly, cutting into the time Syrek has for his dissertation. Figuring out how to "strike a better balance" between research and public service is an priority. But adding to the mass of secondary literature on Shakespeare feels less urgent than the work to be done in Zuccotti Park. (And besides, short of a massive improvement of the job market in literary studies, devoting energy to open-air scholarship might make more sense now than the narrower sort of professionalization that once prevailed.)

As with the "book bloc" that formed during protests against education cuts in Italy and elsewhere some month back, the occupation libraries seem like a new development. And a welcome one, after too many years of demonstrations where the cultural tone was set by giant papier-mâché puppets engaged in mirthless satire. (I used to feel guilty for wanting to see them consumed in flames, but eventually realized that this was a pretty common desire.)

But the libraries at the anti-Wall Street protests are not quite as novel as they first appear. They have a tradition going back the better part of two centuries. In a recent article, Matthew Battles, the author of *Libraries: An Unquiet History* (Norton, 2004), noted the similarity to the reading rooms that served the egalitarian Chartist movement in Britain. For that matter, the Chartists also anticipated the occupation strategy as well. Battles, who is working on a forthcoming book on the history of the written word, discusses the OWS-Chartism connection in a short video:

Libraries & Occupations from Matthew Battles on Vimeo.

Immanuel Ness, a professor of political science at Brooklyn College of the City University of New York and editor of *The International Encyclopedia of Revolution and Protest, 1500 to the Present*, (Wiley-Blackwell, 2009), points out that libraries emerged as part of the sit-down strikes that unionized the American auto industry in the 1930s. Over the past 20 years, scores of workers' centers providing training and legal help for low-income people have been established around the United States. "All of them have libraries as essential components of the process of educating workers," says Ness by email. (His most recent book, *Our to Master and to Own*, co-edited with Dario Azzellini and published by Haymarket, is in great demand at occupation libraries, I'm told.)

So the OWS library and its spin-offs have a venerable ancestry. But what distinguishes them is that the collections are drawing in people with a deep background in library work – who, aside from their feelings about the economic situation itself, are sometimes frustrated by the state of their profession.

"I've worked in libraries since 1998," Henk told me, "and throughout that period we've lost more and more control over budgets and collections. The information sources that people need are controlled by corporations, while we keep getting hit by the push for austerity."

The issue here isn't just the impact on the librarians' own standard of living. Their professional ethos is defined by a commitment to making information available to the public. They are very serious about that obligation, or at least the good ones are, and they are having a hard time meeting it. If knowledge is power, then expensive databases, fewer books, and shorter library hours add up to growing intellectual disenfranchisement. Extreme economic inequality reinforces inequality of access to information, and vice versa.

It is an exceptionally vicious circle. Joining the occupation movement is a way for librarians "to begin taking power back," Henk says, "the power to create collections and to define what a library is *for*." It is, in effect, a battle for the soul of the library as an institution.

The get-together at the American Library Association meeting in Dallas early next year will be an important chance to work out the next stage of that campaign. In the meantime, the occupation-movement librarians -- professional and otherwise -- have to figure out how to meet more pressing demands. “We’re going into a very cold winter,” Henk says. “It’s important to get our people through 16 weeks of that while also preparing for the longer term." At OWS, they are working out plans for fund-raising, storage, and, in due course, expansion.

The poet and rock performer Patti Smith has donated a tent that the organizers could use to protect the collection. But putting it up would risk a crackdown by police, since tents in parks are prohibited by city law. It’s against the law in Washington too, though the Occupy DC library in McPherson Square has one up anyway. The image of cops destroying a library, even an informal one, would go around the world in about two minutes. That’s not to say it won’t happen, though. Beyond a certain point, strategy and tactics replace cataloging and collection management as core concerns.

In any case, Henk sees the occupation-movement libraries as the shape of things to come. "We have to keep serving the information needs of the protesters," she said, "and of other communities being hit by the economy. This work needs to continue."

Read more: http://www.insidehighered.com/views/2011/11/02/essay-librarians-occupy-movement#ixzz1dQWXUmRh
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http://www.insidehighered.com/taxonomy/term/789

#OWS: Have We Entered the Age of Protest?

Popular movements like Occupy Wall Street and the Tea Party suggest that mass demonstrations have moved from the last resort of the powerless to the first resort of the newly empowered.

By Emily Badger

Two researchers suggest that protests, like the ones currently being demonstrated by the Occupy Wall Street movement and its cross-country spinoffs, have moved from the fringe of American culture into the political mainstream. (David Shankbone/Flickr.com)

The Occupy Wall Street movement is in many ways a sign of the moment. The unemployment rate has been hanging out around 9 percent for more than two years. Income inequality is rising. Washington's political system has devolved into dysfunction. There is, in other words, plenty to protest.

But there's another way to think about what's going on in Zuccotti Park (and its far-flung spinoffs): People have many legitimate grievances these days, but they're also more prone to protest than in the past. Occupy Wall Street, in this sense, represents a particular moment in time when people are really disgruntled, meeting a historic momentum — which has been building for decades — toward increased protest by everyone, about (or against) just about everything.

Sociologist David S. Meyer and political scientist Sidney Tarrow have called this the "social movement society." In it, protest has moved from the fringe of American culture into the political mainstream. Over the last 30 years, it's become easier to organize, and participation now comes with less of a cost. The number of people protesting has expanded, as have the causes they espouse. Protest has become ubiquitous, institutionalized even.

Before the movements of the 1960s and '70s, "protest was what people who had no other way of getting things done would use," Meyer said. "Protest was a good strategy for people who lacked other means to get what they want."

And now?

"Those people still protest sometimes, people who don't have other routes to influence," Meyer said. "But they're not the only people who protest. You have members of Congress getting arrested in the anti-apartheid movement — and you'd think members of Congress could go vote, or they could introduce legislation."

He suggests that protest has more commonly become the punctuation mark on broader campaigns among people who may also contribute money, lobby politicians, form political action committees and vote to get what they want. Think, for example, of Glenn Beck's Sept. 12 rally in Washington in 2009. That protest was part of a series of strategies deployed by riled Tea Party voters to shift the dialogue in Washington over government power and taxation.

Pre-1960s protest was generally the outlet of people who felt excluded in some way, and so it largely produced movements focused on forms of inequality. Protesters opposed authority (in the form of government, businesses or the church, for example). Now, they often oppose each other. Protest produces counter-protest. Abortion opponents draw pro-choice crowds; pro- and anti-gay marriage protesters square off from opposite corners of the same intersection; the Tea Party spawns something called the Coffee Party.

Meyer ticks off a number of explanations for so much protest popularity. Protesters themselves are no longer marginalized or permanently tarred as outsiders. And police generally are more adept at handling them than they were in the 1960s.

"You can say, 'OK, I want to go to a demonstration,'" Meyer said. "Regardless of the cause, you can be pretty sure, aside from traffic, that you can decide how much time you want to commit to it, and you're going to get home safely."

You may have even been to a protest where a police officer kindly asked everyone who would like to be arrested to please gather to one side.

"It becomes kind of routinized," Meyer said. "There's less risk involved. And that matters."

It's also simply become easier to organize (and publicize) movements, particularly with the proliferation of technological communication — (a trend also evident in the cascade of 'Spring' and 'Color' movements in authoritarian states). This point, though, comes with a catch: It's easier to get your message out, but it's harder to get people to care about it. Will you turn up for a protest if you have 10 other pleas in your inbox?

This question touches on one of the biggest uncertainties implied by the "social movement society."

"If everybody is doing it, and groups that are well-heeled, well-resourced and are also engaged in electoral politics are doing it, does it still matter in the same way?" Meyer asked. "And does it crowd out people who used to use it as their best shot? That's totally an open question."

He admits that he's not sure how to begin to answer that. Then he sidesteps the question by suggesting that the impact of a protest still depends on the success of all the other activities and strategies that go with it.

"The Tea Party mattered because it wasn't just a bunch of protests," he said. "And Occupy Wall Street will matter to the extent that it's able to inspire people to do things in addition to camping out in a park in lower Manhattan."

http://www.miller-mccune.com/culture/ows-have-we-entered-the-age-of-protest-36967/

Magnetic tongue to produce tastier tinned tomatoes

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Technology

Melissae Fellet, contributor

Factories could use a tongue-like detector to test flavour during production *(Image: KeystoneUSA-ZUMA/Rex Features)*

Talk about a metal mouth. A "magnetic tongue" can predict the taste of tinned tomatoes. The sensor could help food manufacturers tweak their production methods to maximise flavour.

Experienced taste tasters rate flavours, texture and consistency on a numerical scale. Anders Malmendal, at the University of Copenhagen, and his colleagues wanted to replicate this human-like flavour detection with an artificial sensor.

They analysed the chemical composition of 18 different types of tinned tomatoes by examining hydrogen atoms with nuclear magnetic resonance spectroscopy. The proton in the nucleus of a hydrogen atom acts like a tiny magnet. A pulse of energy flips the proton's magnetic field, and the proton releases energy as it relaxes back to its original orientation.

A hydrogen atom's location in a complex molecule like a sugar influences how quickly it relaxes, giving each hydrogen atom a unique signal based on its relaxation speed. Using these signals, the scientists identified several common sugars and protein building blocks called amino acids in each tomato sample.

Statistical analysis correlated collections of these compounds with flavours like saltiness, sweetness, and bitterness, as ranked by trained tasters. The "magnetic tongue" tastes tomato liquid practically straight from the can. Manufacturers could sample tomatoes during production with this sensor and quickly adjust their methods to create better tasting products, Malmendal says.

Other artificial taste and smell sensors recognize patterns of compounds connected with certain flavors as well. Electronic tongues sample wine and electronic noses sniff out insects, cancer and human skin .

Journal reference: *Journal of Agricultural and Food Chemistry*, DOI: 10.1021/jf203803q

Real Utility: Accounting for Energy Costs Makes Mortgage Sense

Backers of a move to add utility bills into home-loan considerations say it will boost energy conservation and create lots of jobs that can't be exported.

By Emily Badger

Most U.S. families spend more powering, heating, and cooling their homes than they pay in real estate taxes and insurance.

Mortgage underwriters generally weigh several numbers when deciding whether a family can afford a new home. They look at income, of course, and tally up expenses in the form of a home's property taxes, insurance premiums and monthly payments. There is one number they ignore: how much a household spends on its utilities, a figure that averages more than $2,000 a year in the U.S.

In fact, most U.S. families spend more powering, heating, and cooling their homes than they pay in real estate taxes and insurance. At the margins, that number can spell the difference between a home a family can reasonably afford and one it has no business buying. But Fannie Mae, Freddie Mac, and the Federal Housing Administration, which by setting standards for the huge numbers of loans they buy essentially set the rules for American mortgages, don't take energy costs into account.

This week, Democratic Sen. Michael Bennet and Republican colleague Johnny Isakson introduced the SAVE Act, a bill that would require them to do so. And for this seemingly small-sounding idea, a large coalition has formed around the promise that this one change could aid homeowners, encourage energy conservation, and create thousands of new jobs.

"Part of the reason this particular idea might have some legs and why you're seeing it now is because of the financial climate that we're in," said Ross Eisenberg, the environment and energy counsel for the U.S. Chamber of Commerce. Other government grant programs and tax rebates have tried to encourage homeowners to retrofit their homes to make them more energy efficient.

"A lot of those funding mechanisms out there are now coming to a close," he said. "And given the fiscal constraints of Congress we're dealing with, and a lot of the political divides over what to do about that, nothing with a billion-dollar price tag that promotes this kind of stuff seems like it would get the backing you would hope for to get through Congress. That's why this one is working."

Also on board are the Natural Resources Defense Council, the Institute for Market Transformation, and much of the homebuilding industry. The American Council for an Energy-Efficient Economy has projected that the bill would create 83,000 jobs and $1.1 billion on homeowner energy savings by 2020.

Homebuilders are behind the idea because it will prompt homebuyers to pursue more energy-efficient houses, and because it will encourage people to make energy-efficient upgrades to their existing homes to boost their resale value.

"But for that market to work rationally," said Philip Henderson, a senior financial policy specialist with the NRDC, "the lender and the appraiser also have to account for those real savings."

Currently, the federal mortgage agencies – which ultimately handle about 90 percent of all mortgages in the country – make no distinction in energy costs between a $300,000 compact urban row house and a $300,000 sprawling suburban ranch. Those two homes, though, may have widely different utility bills, and two families with the same income in both locations aren't equally equipped to cover them. This means existing policy puts some people in homes they can't afford, and underestimates the size of the mortgage that other people could readily handle.

"We're not trying to predict with perfect certainty what families' utilities are going to be," Henderson said. "Rather, we want to enable the lender to get more accurate than the current method, which is very inaccurate."

How would mortgage underwriters do this? Many loan applications come from people refinancing their homes, and lenders could look at their recent utility bills. New construction now frequently comes with an energy audit. And for the rest of homebuyers, Henderson says the automated formulas used by underwriting programs could consider the square footage of a home, or whether it has electric or gas heating. He expects that the methods would become more sophisticated over time.

The process shouldn't make it harder for people to get a home loan, say the bill's backers, but it should make it harder for them to get a mortgage for a home that they couldn't afford in the first place. And as a result of all this, the bill's backers hope existing homeowners will also be spurred into making energy-efficient upgrades, because if mortgage underwriting includes the cost of energy bills, that makes energy-efficient homes more valuable.

"When people consider renovating their kitchen, they don't ask, 'What's the payback period for cabinets?'" Henderson said, referring to how long it takes an item to pay for itself. "They know that better cabinets in a better kitchen are incorporated in the asset value of the home. It makes the home more valuable, and they get it back when they sell the home. Today that thinking [about energy efficiency] is suppressed by a mortgage process that's flawed, and that needs to be corrected."

Herein lies the job-creation element of the bill (and as government officials have said many times, insulation-installation jobs can't be sent overseas). Eisenberg says this is just one of the reasons why the Chamber of

Commerce got behind the idea. The chamber, he said, generally supports energy-efficiency policies, where the incentives don't come at the expense of another industry.

"On something like this, not only is that goal reached, but you also have the job-creation aspect, which is a significant plus, and the lack of federal spending," Eisenberg said. "It's one good thing on top of another."

http://www.miller-mccune.com/business-economics/real-utility-accounting-for-energy-costs-makes-mortgage-sense-37252/

Mysterious Life Forms in the Extreme Deep Sea

Close-ups of xenophyophores obtained on previous expeditions. (Credit: Lisa Levin (all except upper right, credit David Checkley))

ScienceDaily (Oct. 24, 2011) — A summer research expedition organized by scientists at Scripps Institution of Oceanography at UC San Diego has led to the identification of gigantic amoebas at one of the deepest locations on Earth.

During a July 2011 voyage to the Pacific Ocean's Mariana Trench, the deepest region on the planet, Scripps researchers and National Geographic engineers deployed untethered free-falling/ascending landers equipped with digital video and lights to search the largely unexplored region. The team documented the deepest known existence of xenophyophores, single-celled animals exclusively found in deep-sea environments. Xenophyophores are noteworthy for their size, with individual cells often exceeding 10 centimeters (4 inches), their extreme abundance on the seafloor and their role as hosts for a variety of organisms.

The researchers spotted the life forms at depths up to 10,641 meters (6.6 miles) within the Sirena Deep of the Mariana Trench. The previous depth record for xenophyophores was approximately 7,500 meters (4.7 miles) in the New Hebrides Trench, although sightings in the deepest portion of the Mariana Trench have been reported. Scientists say xenophyophores are the largest individual cells in existence. Recent studies indicate that by trapping particles from the water, xenophyophores can concentrate high levels of lead, uranium and mercury and are thus likely highly resistant to large doses of heavy metals. They also are well suited to a life of darkness, low temperature and high pressure in the deep sea.

"The research of Scripps Professor Lisa Levin (deep-sea biologist) has demonstrated that these organisms play host to diverse multicellular organisms," said Doug Bartlett, the Scripps marine microbiologist who organized the Mariana Trench expedition. "Thus the identification of these gigantic cells in one of the deepest

marine environments on the planet opens up a whole new habitat for further study of biodiversity, biotechnological potential and extreme environment adaptation."

The xenophyophores are just the tip of the iceberg when it comes to considerations of the nature and diversity of life at extreme depths. For example, according to Dhugal Lindsay (Japan Agency for Marine-Earth Science and Technology, or JAMSTEC), the Dropcam movie also depicts the deepest jellyfish observed to date.

The instruments used to spot the mysterious animals were "Dropcams" developed and used by National Geographic Society Remote Imaging engineers Eric Berkenpas and Graham Wilhelm, participants in the July voyage.

"The 'Dropcams' are versatile autonomous underwater cameras containing an HD camera and lighting inside of a glass bubble," said Berkenpas. "They were created by National Geographic engineers to allow scientists and filmmakers to capture high-quality footage from any depth in the ocean. The devices were baited and used 'camera-traps' to capture imagery of approaching marine life."

Dropcams utilize a thick-wall glass sphere capable of withstanding more than eight tons per-square-inch pressure at extreme depth.

"Seafloor animals are lured to the camera with bait, a technique first developed by Scripps Professor John Isaacs in the 1960s," said Kevin Hardy, a Scripps ocean engineer and cruise participant. Hardy advanced the ultra-deep glass sphere design used on 'Dropcams' more than a decade ago. "Scripps researchers hope to one day capture and return novel living animals to the laboratory for study in high pressure aquariums that replicate the trench environment."

Also during the expedition, Scripps researchers successfully tested an advanced seafloor Deep Ocean Vehicle (DOV) design, using similar spheres to recover microbes and test other advanced system components.

The xenophyophore sightings were positively identified by Scripps' Levin, director of the Scripps Center for Marine Biodiversity and Conservation, and confirmed by Andrew Gooday of the UK National Oceanography Center.

"As one of very few taxa found exclusively in the deep sea, the xenophyophores are emblematic of what the deep sea offers. They are fascinating giants that are highly adapted to extreme conditions but at the same time are very fragile and poorly studied," said Levin. "These and many other structurally important organisms in the deep sea need our stewardship as human activities move to deeper waters."

This project was funded by NASA, the National Geographic Society Expeditions Council, Joanie Nasher, Patty and Rick Elkus.

Story Source:

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http://www.sciencedaily.com/releases/2011/10/111024165037.htm

US, EU in Dogfight Over Airline Emissions

Europe forges ahead on tackling greenhouse gas emissions, but the U.S. wants to ground certain rules that affect its airlines.

By Emily Badger

The Aviation Directive, a measure to cap emissions on all flights landing and taking off from airports inside the EU, presents a case that underscores how hard it is to address a problem that crosses all borders — like greenhouse gases. (Comstock/iStockphoto)

With the rest of the world's leaders repeatedly gridlocked in crafting a binding international climate change strategy, Europe has plowed ahead in tackling greenhouse gas emissions. The European Union designed its own emissions trading scheme, and starting Jan. 1, 2012, the piece targeting emissions from air travel is scheduled to go into effect.

The Aviation Directive would slowly cap emissions on all flights landing and taking off from airports inside the EU. However, the system focuses not just on the emissions that occur within European air space, but on those associated with the entire flight to and from European airports.

The idea has hit turbulence — and not from domestic opposition or intransigence by European carriers. American airlines are balking — with the help of Congress.The case underscores the tough task of trying to address problems that cross all borders — like greenhouse gases — when everyone won't get on board.

United/Continental and American Airlines sued to block the EU law earlier this year, arguing that it constituted an illegal tax and that it circumvented the International Civil Aviation Organization, a United

Nations body created in 1947 to oversee global airline issues. That body, however, has never produced a workable plan to curb airplane emissions. A preliminary decision from the European Court of Justice earlier this month ruled that the EU should not have to wait indefinitely for an international solution that may never come.

Monday night the U.S. House of Representatives passed a bill that would ban U.S. airlines from participating in Europe's emissions trading. The bill has no momentum in the Senate (and may be an international pressure tactic more than anything else), but the House version poses a perplexing scenario: if it became law, U.S. airlines would be forced to either violate American laws, or European ones.

None of this bodes well for international cooperation on a host of other emissions sources that have nothing to do with airplanes, although airplane emissions have long posed particularly vexing problems for those who would regulate them. It's been unclear, for example, who should be responsible for emissions over the high seas or how airlines should handle over-flight issues.

"If I'm flying from London to Beijing, and I'm over-flying Russia for a significant portion of that flight, but I never land in or take off from Russia, how is Russia supposed to take account of my emissions?" asked Pamela Campos, an attorney with the Environmental Defense Fund. That advocacy organization, along with a dozen other environmental groups, supports U.S. participation in the program.

"You can very easily imagine the mess around trying to say, for instance, that we're going to start charging sales tax on flights within the U.S. for the water bottle or sandwich that you buy, but the sales tax that you pay is determined by what state you're flying over."

Unable to answer such questions, the framers of the global-warming-focused Kyoto Protocol kicked the problem to the International Civil Aviation Organization, whose officials spent 15 years trying to figure out what to do before the EU struck out on its own.

"As a norm, when you go to a friend's house to play, you play by their rules, you are in their home — that's what Europe has done," Campos said. This is exactly what the U.S. does when it requires international flights into American cities to comply with U.S. national security standards. The EU scheme was upheld in the preliminary decision in part because it doesn't discriminate between countries of origin or airline nationalities; America's airlines must comply just as Chinese airlines do.

The only flights that are exempt are those that originate in countries with comparable emissions programs. The goal, after all, is to cut down on the actual emissions associated with each flight, not to levy a fee on each carrier, or to make a legal point about who gets to write international aviation rules.

"I think what's happening now is that the way this is being seen, we are just completely divorced form the underlying environmental issue here," Campos said. "And this is being talked about as a sovereignty issue, and to some degree as a tax issue."

The European system isn't meant to preclude a grand international solution. But Campos said countries can't afford to wait for one since the airplanes coming on the market today will still be in use decades from now, and airline emissions are major contributor of greenhouse gases.

"Typically in the climate change context, we're talking about [projections] between now and 2050," Campos said. "That seems like a really long time away. Well, airplanes last much longer."

http://www.miller-mccune.com/environment/us-eu-in-dogfight-over-airline-emissions-37331/

Design Rules Will Enable Scientists to Use DNA to Build Nanomaterials With Desired Properties

Abstract rendering of a DNA strand. (Credit: iStockphoto/Johan Swanepoel)

ScienceDaily (Oct. 13, 2011) — Nature is a master builder. Using a bottom-up approach, nature takes tiny atoms and, through chemical bonding, makes crystalline materials, like diamonds, silicon and even table salt. In all of them, the properties of the crystals depend upon the type and arrangement of atoms within the crystalline lattice.

Now, a team of Northwestern University scientists has learned how to top nature by building crystalline materials from nanoparticles and DNA, the same material that defines the genetic code for all living organisms.

Using nanoparticles as "atoms" and DNA as "bonds," the scientists have learned how to create crystals with the particles arranged in the same types of atomic lattice configurations as some found in nature, but they also have built completely new structures that have no naturally occurring mineral counterpart.

The basic design rules the Northwestern scientists have established for this approach to nanoparticle assembly promise the possibility of creating a variety of new materials that could be useful in catalysis, electronics, optics, biomedicine and energy generation, storage and conversion technologies.

The new method and design rules for making crystalline materials from nanostructures and DNA will be published Oct. 14 by the journal *Science*.

"We are building a new periodic table of sorts," said Professor Chad A. Mirkin, who led the research. "Using these new design rules and nanoparticles as 'artificial atoms,' we have developed modes of controlled

crystallization that are, in many respects, more powerful than the way nature and chemists make crystalline materials from atoms. By controlling the size, shape, type and location of nanoparticles within a given lattice, we can make completely new materials and arrangements of particles, not just what nature dictates."

Mirkin is the George B. Rathmann Professor of Chemistry in the Weinberg College of Arts and Sciences and professor of medicine, chemical and biological engineering, biomedical engineering and materials science and engineering and director of Northwestern's International Institute for Nanotechnology (IIN).

"Once we have a certain type of lattice," Mirkin said, "the particles can be moved closer together or farther apart by changing the length of the interconnecting DNA, thereby providing near-infinite tunability."

"This work resulted from an interdisciplinary collaboration that coupled synthetic chemistry with theoretical model building," said coauthor George C. Schatz, a theoretician and the Charles E. and Emma H. Morrison Professor of Chemistry at Northwestern. "It was the back and forth between synthesis and theory that was crucial to the development of the design rules. Collaboration is a special aspect of research at Northwestern, and it worked very effectively for this project."

In the study, the researchers start with two solutions of nanoparticles coated with single-stranded DNA. They then add DNA strands that bind to these DNA-functionalized particles, which then present a large number of DNA "sticky ends" at a controlled distance from the particle surface; these sticky ends then bind to the sticky ends of adjacent particles, forming a macroscopic arrangement of nanoparticles.

Different crystal structures are achieved by using different combinations of nanoparticles (with varying sizes) and DNA linker strands (with controllable lengths). After a process of mixing and heating, the assembled particles transition from an initially disordered state to one where every particle is precisely located according to a crystal lattice structure. The process is analogous to how ordered atomic crystals are formed.

The researchers report six design rules that can be used to predict the relative stability of different structures for a given set of nanoparticle sizes and DNA lengths. In the paper, they use these rules to prepare 41 different crystal structures with nine distinct crystal symmetries. However, the design rules outline a strategy to independently adjust each of the relevant crystallographic parameters, including particle size (varied from 5 to 60 nanometers), crystal symmetry and lattice parameters (which can range from 20 to 150 nanometers). This means that these 41 crystals are just a small example of the near infinite number of lattices that could be created using different nanoparticles and DNA strands.

Mirkin and his team used gold nanoparticles in their work but note that their method also can be applied to nanoparticles of other chemical compositions. Both the type of nanoparticle assembled and the symmetry of the assembled structure contribute to the properties of a lattice, making this method an ideal means to create materials with predictable and controllable physical properties.

Mirkin believes that, one day soon, software will be created that allows scientists to pick the particle and DNA pairs required to make almost any structure on demand.

The Air Force Office of Scientific Research, the U.S. Department of Energy Office of Basic Energy Sciences and the National Science Foundation supported the research.

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Journal Reference:

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Wildlife CSI Positively Identified Bat Killer

A fungus long suspected as the cause of the white-nose syndrome killing American bats has been positively ID'd as the culprit.

By Michael Todd

Scientists have positively identified a fungus that is causing the white-nose syndrome killing bats in North America and Europe, offering hope that a cure isn't far behind. (USFWS/Southeast)

In a scientific detective story with Halloween overtones, researchers say they have definitively identified what causes white-nose syndrome in bats: a fungus. The journal *Nature* today reports that exposure to the fungus *Geomyces destructans* resulted in white-nose 100 percent of the time among an experimental colony of hibernating little brown bats.

The disease is named for the fuzzy white material that grows on the bats' muzzles while they hibernate over the winter in caves.

Miller-McCune has been following the explosion of white-nose since 2008, when David Richardson wrote about a new and mysterious malady that had catastrophic consequences for bat colonies in the Northeastern United States. Since then, the disease has spread dramatically to 16 U.S. states and four Canadian provinces, exterminating up to 80 percent of the bats in the most impacted areas. Beyond feeling bad for bats, the animals are credited with saving farmers billions of dollars by eating bugs that would otherwise eat their crops.

Even at the dawn of the threat, scientists such as David Blehert, head of diagnostic microbiology at the USGS' National Wildlife Health Center, had a strong hunch that this particular fungus was the culprit. The fungus was found on bats with white-nose, but researchers couldn't be sure if it caused the disease or was a symptom.

Their efforts to confirm or deny this suspect's culpability created an excellent opportunity to watch science in action. One confusing clue arose when the fungus was found on bats in Europe — and those critters were healthy. The paper released today speculates that Europe's bats have adapted to the fungus, which researchers know has been there for at least three decades, while its arrival on U.S. shores presented it with a "naive population of animals" ripe for devastation.

Now, with assurance that the fungus is the cause of the malady, officials can better craft techniques for saving the bats.

http://www.miller-mccune.com/environment/wildlife-csi-positively-identified-bat-killer-37354/

Quantum keys let submarines talk securely

- 29 October 2011 by **Jacob Aron**
- Magazine issue 2836

SUBMARINES must be able to talk securely with remote naval bases while remaining submerged. Could quantum communications allow them to pull off this technically challenging feat?

Submarines employ random "keys" known as one-time pads to encrypt messages. Each key can only be used once, making it impossible for eavesdroppers to crack the code.

One problem with this is that the key must be securely agreed before the submarine leaves base. There is a risk involved in having many keys on board, in case the sub is captured and they fall into hostile hands.

The other problem is that submarines receive messages using low-frequency radio waves that can penetrate water, but only a few characters per second can be transmitted at these frequencies. To receive high frequencies, which can boost the data rate, submarines have to surface and risk detection.

"You want the submarine to be undetectable for as long as possible - we're talking about several weeks," says Marco Lanzagorta, director of quantum technologies at US defence firm ITT.

He suggests that a technique called quantum key distribution (QKD) could solve these problems. It uses the quantum properties of photons, which are polarised in two different ways to encode 0s and 1s, to generate and exchange a key. Any attempt to intercept the photons disturbs these properties and raises the alarm.

To establish a secure link while remaining 100 metres underwater, submarines could transmit photons of laser light to satellites, for retransmission to base. With the key exchanged, the submarine could then communicate via laser pulses with guaranteed security.

Lanzagorta's simulations suggest it would be possible to transmit and receive data at 170 megabytes per second, enough for video communication. He will present his ideas next month at a cryptography workshop in Gaithersburg, Maryland, hosted by the US National Institute of Standards and Technology. Later he plans to conduct experiments at the US Naval Research Laboratory in Washington DC to investigate how well a photon's quantum state is preserved as it travels through water.

Rupert Ursin of the University of Vienna in Austria was part of a team that, in 2007, set a QKD record by sending photons 144 kilometres through air. That showed that quantum-encrypted signals can in principle be sent to and from satellites, though Ursin says such an experiment is still far off because much of the necessary equipment has never flown in space. It is "quite visionary" to contemplate quantum-encrypted signalling from Earth to a satellite, he says. "This submarine communication stuff is even more visionary."

http://www.newscientist.com/article/mg21228365.100-quantum-keys-let-submarines-talk-securely.html?full=true&print=true

Music Training Enhances Children's Verbal Intelligence

Canadian researchers report the verbal intelligence of 4- to 6-year-olds rises after only one month of musical training.

By Tom Jacobs

The verbal intelligence of 4- to 6-year-olds rises after only one month of musical training. (Digital Vision)

A just-published study from Canada suggests early music education stimulates a child's brain, leading to improved performance in an entirely different arena – verbal intelligence.

"These results are dramatic not only because they clearly connect cognitive improvement to musical training, but also because the improvements in language and attention are found in completely different domains than the one used for training," said York University psychologist Ellen Bialystok, one of the paper's co-authors. "This has enormous implications for development and education."

The study, published in the journal *Psychological Science*, was conducted at York University by psychologist Sylvain Moreno, who is now with Baycrest's Rotman Research Institute. It focused on 48 children between the ages of 4 and 6, who took part in one of two computerized training programs Moreno designed.

Half participated in a music program, which "included training in rhythm, pitch, melody, voice and basic musical concepts," the researchers write. The other 24 took part in a visual-arts program, which "emphasized

the development of visuo-spatial skills relating to concepts such as shape, color, line, dimension, and perspective."

All received their respective training one hour per day, five days per week for four weeks. The programs were projected onto a classroom wall and conducted in groups led by a teacher.

Before and after their four weeks of training, the children took a vocabulary test designed to measure verbal ability and a "block design" test to measure spatial intelligence. (In the latter, they were shown abstract designs and then asked to recreate them using colored blocks.) In addition, their level of brain activity was measured using an electroencephalograph.

The results showed, in Moreno's words, "a rapid transfer of cognitive benefits" for the music students. Specifically, those who received music training raised their scores the visual-intelligence test.

This increase in verbal intelligence was large and virtually across the board, with 90 percent of the 24 children showing improvement. What's more, using ERP analysis, the researchers measured changes in the kids' brain activity. This suggests the music training had a "transfer effect," enhancing their ability to understand words and explain their meaning.

The children who received the visual-art training did not fare as well: They showed no significant increase in either verbal or spatial skills.

"Preschool children are auditory experts with well-developed language abilities, but visuo-motor skills are less developed at this stage of life," the researchers note. "A longer or more intensive training period in visual art might significantly influence spatial intelligence."

Nevertheless, "Our findings represent the first demonstration of broad transfer of an educationally vital skill," the researchers write. "Training in music-listening skills transfers to verbal ability."

This finding echoes the results of a recent study of second-graders, which found the reading skills of those who received structured musical training were superior to those of their peers. Such research suggests cutting music education to concentrate on "the basics" is based on a misunderstanding of the way young minds work.

"Our findings demonstrate a causal relationship between music training and improvements in language and executive function," the researchers conclude, "supporting the possibility of a broad transfer between high-level cognitive abilities."

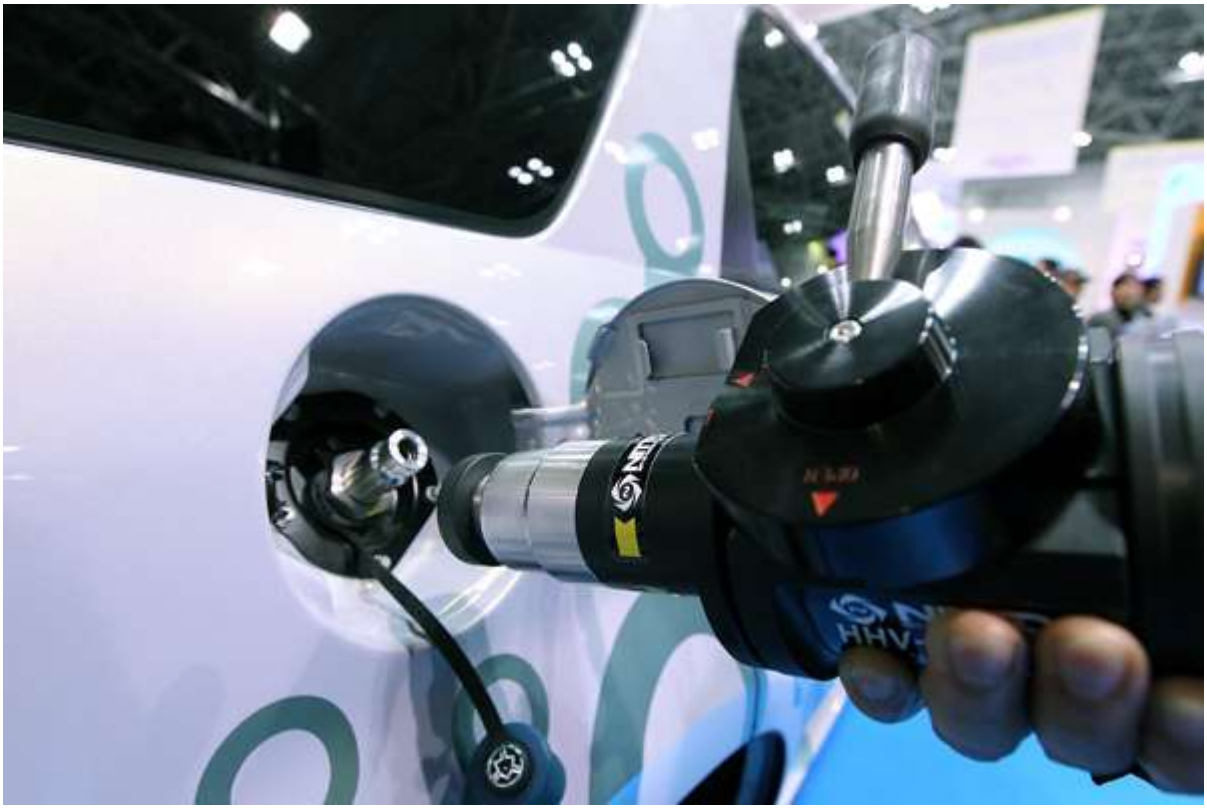
The famous Mozart effect was certainly overhyped and oversimplified, but it now appears that learning to appreciate complex music really can boost overall intelligence. Piping sonatas into your womb is unlikely to make a difference, but enrolling your kid in an early music-education class sounds like a very good idea.

http://www.miller-mccune.com/education/music-training-enhances-childrens-verbal-intelligence-36701/

Recycled cans to make cheap fuel cells

13:04 28 October 2011

Jesse Emspak, contributor



A fuel cell-powered car at the International Hydrogen & Fuel Cell Expo 2010 *(Image: Junko Kimura/Getty)*

Hydrogen fuel cells for cars are still wildly expensive, mainly because they have to use costly noble metals such as platinum. Now researchers have demonstrated that aluminium can be treated to store and release hydrogen - making it far cheaper than existing methods.

There have been several attempts at a cheaper alternative, involving materials such as carbon nanotubes and organic crystals. Storing hydrogen and separating it from other substances for use presents other problems - hydrogen either has to be very cold (on the order of -250 °C) or pressurised.

Irinder S. Chopra, a physics PhD student at the University of Texas, Dallas, led a team that tried depositing a tiny bit of titanium on pure aluminium, resulting in an arrangement of aluminium atoms broken up by the occasional titanium atom in a regular pattern.

When the doped aluminium is exposed to molecular hydrogen at 90 degrees kelvin (-183 °C), the H2 breaks up and binds to the metal forming a hydride. When the metal is heated, the hydrogen is released and makes H2 again. Doped aluminium can store up to 10 per cent of its weight in hydrogen - much better than other options, says Yves Chabal, a professor of materials science and one of the co-authors.

There are still challenges. How much contamination the doped aluminium can be exposed to before it won't bind to the hydrogen anymore is one. How dense the hydrogen can be - the initial experiments were done in near vacuum conditions - is another. That said, a fuel cell using aluminium would use a widely available and recycled metal (and give one more reason to bring the cans back).

Journal reference: *Nature Materials* DOI: 10.1038/nmat3123

http://www.newscientist.com/blogs/onepercent/2011/10/green-machine-recycled-cans-to.html

Misinformation in TV Drama Can Gain Credibility

New research finds we're more likely to believe a piece of false information conveyed in a television drama after two weeks have passed.

By Tom Jacobs

Time cements all misinformation: New research suggests bits of false information acted out in fictional TV programs, like "Boston Legal" can, over time, lodge in our brains as perceived facts — even if we're at first skeptical. (ABC)

Our beliefs about the world are shaped by many factors. The courses we took in college. The lessons we learned from our families.

And, of course, the prime-time courtroom drama we watched a couple of weeks back.

Newly published research suggests nuggets of misinformation embedded in a fictional television program can seep into our brains and lodge there as perceived facts. What's more, this troubling dynamic seems to occur even when our initial response is skepticism.

That's the conclusion of a study published in the journal *Human Communication Research.* It asserts that, immediately after watching a show containing a questionable piece of information, we're aware of where the assertion came from, and take it with an appropriate grain of salt. But this all-important skepticism diminishes over time, as our memory of where we heard the fact or falsehood in question dims.

A research team led by the University of Utah's Jakob Jensen conducted an experiment in which 147 students watched a specific episode of the David E. Kelley drama *Boston Legal*. Immediately afterward, they completed a survey in which they revealed how strongly they related to the characters, how closely they felt the show reflected reality, and the degree to which they felt transported into the narrative of the show.

Half also completed a separate set of questions, including their opinion on the effectiveness of EpiPens — devices that deliver a measured dose of ephinephrine to counter the effects of a severe allergic reaction. In the episode, use of the device failed to stop such a reaction, resulting in a child's sudden death — a highly unlikely scenario that outraged an advocacy group.

The study participants were emailed a follow-up survey two weeks after watching the show. Those who did not receive the second set of questions, including the one on the effectiveness of EpiPens, filled it out at that time.

The results: "Individuals queried two weeks after exposure to the television program were more likely to endorse the false belief than those queried immediately after exposure."

These findings are consistent with those of a 2007 study, which similarly found the persuasive effects of fictional narratives increase over time. In that case, the misinformation was embedded in a written story.

"Two studies have now shown that fiction (written and televised) can produce a delayed message effect," Jensen and his colleagues write. This is troubling, they add, noting, "People are bombarded by mass media every day all over the world, and a sizeable (and growing) body of mass communication research has demonstrated that much of this content is distorted in a multitude of ways."

Indeed, ABC — the same network that ran *Boston Legal* — was widely criticized in 2008 when an episode of another legal drama, *Eli Stone*, suggested a link between autism and a vaccine. While this link has been definitively debunked, this research points to one reason it and other falsehoods continue to circulate.

The "sleeper effect" — the notion we can hold onto a piece of information while gradually forgetting it came from an unreliable source — was first proposed in the late 1940s, and a meta-analysis in 2004 confirmed its validity. Importantly, Jenkins notes that in both his study (featuring misinformation conveyed in a fictional television program) and the 2007 paper (where a falsehood was presented as part of a written work of fiction), the size of this effect was greater than that found in the 2004 meta-analysis.

This suggests to him that delayed-message effects "may be larger and meaningfully different" in cases where the misinformation is presented in fictional form. In other words, we may be particularly susceptible to believing falsehoods originally conveyed to us through fiction, perhaps because the context — the TV episode or short story in question — is more likely to fall from our minds.

So here's yet another reason to continually question your beliefs: It turns out your primary source on certain subjects may be James Spader.

http://www.miller-mccune.com/culture/misinformation-in-tv-drama-can-gain-credibility-36845/

Fiery Volcano Offers Geologic Glimpse Into Land That Time Forgot

The first scientists to witness exploding rock and molten lava from a deep sea volcano, seen during a 2009 expedition, report that the eruption was near a tear in the Earth's crust that is mimicking the birth of a subduction zone. (Credit: NSF/NOAA)

ScienceDaily (Oct. 19, 2011) — The first scientists to witness exploding rock and molten lava from a deep sea volcano, seen during a 2009 expedition, report that the eruption was near a tear in Earth's crust that is mimicking the birth of a subduction zone.

Scientists on the expedition collected boninite, a rare, chemically distinct lava that accompanies the formation of Earth's subduction zones.

Nobody has ever collected fresh boninite and scientists never had the opportunity to monitor its eruption before, said Joseph Resing, University of Washington oceanographer and lead author of an online article on the findings in Nature Geoscience. Earth's current subduction zones are continually evolving but most formed 5 million to 200 million years ago. Scientists have only been able to study boninite collected from long-dead, relic volcanos millions of years old.

Resing was chief scientist on the expedition, funded by the National Oceanic and Atmospheric Administration and the National Science Foundation, that pinpointed the location of the West Mata volcano, erupting 4,000 feet (1,200 meters) below the surface in the Southwest Pacific Ocean.

"Everything about the eruption itself -- how fast, how intense, the ratio of lava to explosive fragments, the amount and composition of gas released -- is new to us," said co-author Kenneth Rubin, University of Hawaii

geologist. "Plus, having a young, fresh occurrence of this very rare rock type to study gives us the opportunity to examine subtle chemical and mineralogical variations in a pristine specimen."

At subduction zones the oceanic crust on one tectonic plate slides beneath another, producing abundant volcanism and contributing heat, gases and mineral-laden fluids to ocean waters. Scientists have long studied the impact of subduction zones on geological and geochemical cycles. To puzzle out how subduction zones form and evolve they study inactive contemporary marine volcanos that do not produce boninite and they collect and study boninite lavas collected on land and examine cores collected from the deep sea.

"West Mata lies above the subducting Pacific plate and is part of the rapidly expanding Lau Basin, which is bounded by Samoa, Tonga and Fiji," Resing said. "The large bend at the northern end of the Tonga trench produces a tear in the Pacific plate and creates unusual lavas that usually only form at very young subduction zones."

Conditions are right for boninite to form, there's lots of seawater released from subducting rock that mixes into relatively shallow mantle that has previously melted, causing the mantle to remelt at high temperatures. Boninite lavas are believed to be among the hottest from volcanos that erupt on Earth.

"What makes this exciting is how uncommon these eruptions of boninite are, both now and in the past," Rubin said. "Locked within the boninite is critical information about the rates and magnitudes of subduction-zone magmatism and global geochemical cycles."

The scientists writing in *Nature Geoscience* think the release of gaseous water, carbon dioxide and sulfur dioxide from the slab is the reason the eruption was so explosive. No one realized such energetic eruptions happened so deep, Resing says. Streams of red and gold lava 35 feet long shot through the water and lava-skinned bubbles some three feet across emerged.

West Mata, which the scientists estimate has been erupting for at least three years, and eight other elongated volcanoes that overlap each other in the northeast Lau Basin sit within one of the most magmatically active areas on Earth, Resing says.

"The basin may prove an important place to study submarine volcanic eruptions in relation to early stages of subduction," he said.

Rubin and Robert Embley, with NOAA's Pacific Marine Environmental Laboratory, Newport, Ore., and co-author on the paper, will return to the area in November for further study and to try to determine if the volcano is still actively erupting.

"Observing the eruption in real time was a rare and special opportunity because we know so little about how submarine volcanic activity behaves," Embley said. "This is one of only a handful of 'glimpses' of the process we've had to date and is the first time we've actually observed natural submarine 'earthlight' from the glowing magma."

Resing's UW appointment is through NOAA and the Joint Institute for the Study of the Atmosphere and Oceans based at the UW. Other co-authors from the UW and the joint institute are Marvin Lilley, David Butterfield and Nathaniel Buck. Other co-authors are from NOAA-Pacific Marine Environmental Laboratories, Oregon State University, ETH Zurich, Marine Biological Laboratory, Woods Hole Oceanographic Institutions, Monterey Bay Aquarium Research Institute, University of Tulsa, Oregon Health & Science University and Portland State University.

The project was funded by NSF, NOAA and the David and Lucile Packard Foundation.

Story Source:

The above story is reprinted from materials provided by **University of Washington**. The original article was written by Sandra Hines.

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An Unforgettable World Series? Only If Your Team Wins

New research suggests details of decisive games fade more quickly from the memories of the losing team's fans.

By Tom Jacobs

This fan looks fairly upset (or resigned) that his team lost, but how much of that game will he remember? Not a lot, according to researchers who say in a recent study that details of a game fade more quickly from fans' memories if their favorite team lost. (rsmdc/Flickr)

Fans of the Texas Rangers and St. Louis Cardinals will be anxiously following every inning of baseball during this year's World Series. But how much will they remember about the key games five or six years from now?

New research suggests it largely depends upon on whether their team won or lost.

A study just published in the journal *Psychological Science* contradicts the notion we have sharper memories of negative events. Catholic University psychologists Carolyn Breslin and Martin Safer found fans of the New York Yankees and Boston Red Sox more accurately recalled key playoff games in which their team prevailed.

Their study, which was conducted in late 2008, featured 1,563 baseball fans who reported "attending, watching, or reading about the decisive 2003 and 2004 American League Championship games." Seventy-eight percent called themselves Red Sox fans, 14 percent were Yankees fans, and 8 percent were neutral. (The high percentage of Red Sox fans reflects the fact many learned of the study via a post on a Red Sox-related website.)

After being reminded about the outcome of the two games — the Yankees won in 2003, the Red Sox in 2004 — fans were asked a series of specific questions about the contests, including the final score, the winning and losing pitchers, where it was played, and whether it went into extra innings.

Unsurprisingly, the memories of the neutral fans were less accurate than those of the fans whose teams were participating. Previous research has found emotionally arousing experiences, whether positive or negative, are likely to be remembered more vividly and recalled more accurately.

But the key result was a surprise. "We predicted that Yankee and Red Sox fans would remember more details about the game their team lost than about the game their team won," the researchers write, "but in fact, we found the opposite pattern."

In addition, "fans reported more vivid memories of the game that their team won," and said they thought about that game more frequently and/or saw more media coverage afterward, compared to the game their team lost.

These findings contradict those of three earlier studies, which found people remembered negative public events more accurately than positive ones. But the participants in those studies — including a group of East German communists who were attempting to adjust to a new system after the fall of the Berlin Wall — "were living in environments with frequent reminders of the negative events," Breslin and Safer write.

In contrast, "Our fans had three to four intervening baseball seasons to selectively remember what felt good and forget what felt bad," they note, "and presumably their negative memories faded faster than comparable positive memories. Our results are more consistent with studies of autobiographical memories, which find that most individuals relive and recall more positive than negative memories about their lives."

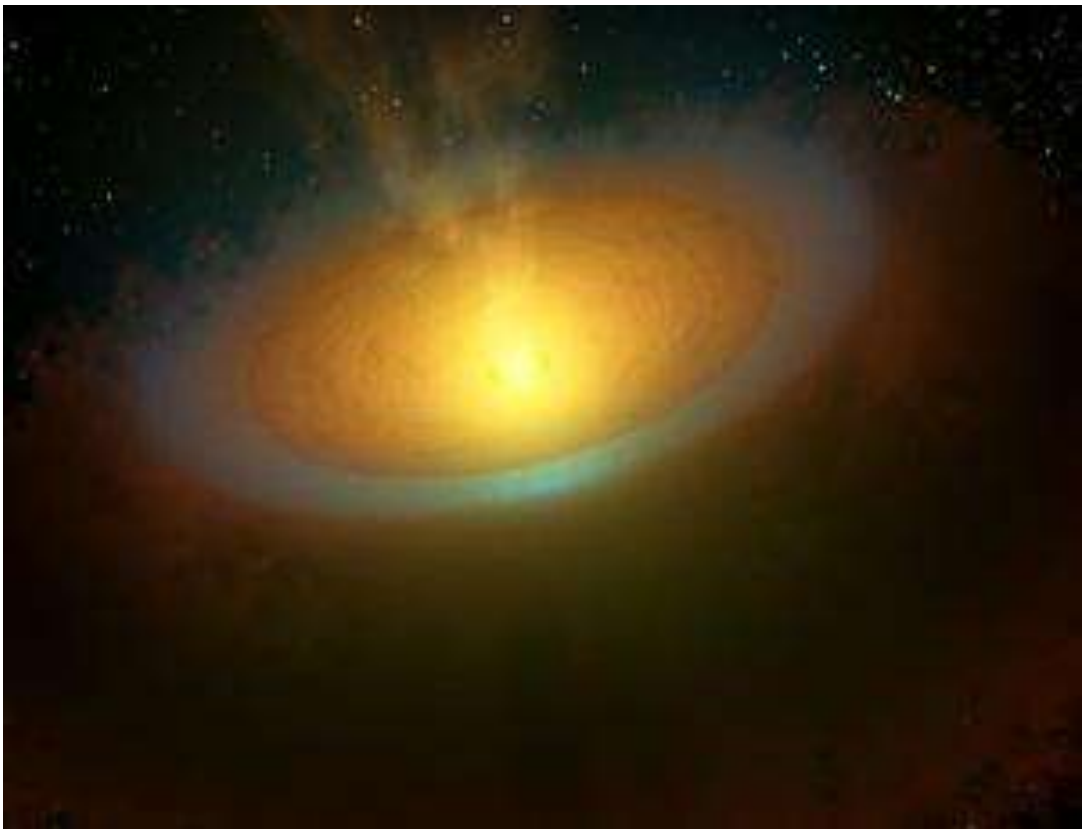
"It is the parades, merchandise, championship team pictures, etc. that help keep the positive memories alive for many years," Safer added. "Every time a Boston fan puts on his 2004 championship hat, he is reminded of the win, and so are the Boston fans who see others wearing 2004 championship hats."

So take heart, fans. If that final game is a closely fought, tense affair, you'll remember it vividly — if your team comes out on top. If not, it's far more likely to fade, leaving behind only a vague feeling of regret. There may be no crying in baseball, but there's no rule prohibiting memory loss.

http://www.miller-mccune.com/culture/an-unforgettable-game-sure-if-your-team-won-37062/

First icy star-disc hints at source of Earth's water

- 12:00 21 October 2011 by **Lisa Grossman**



How the TW Hydrae system might look, up close and personal (Artist's impression: NASA/JPL-Caltech)

For the first time, astronomers have found a planet-forming disc around a star that is awash with frozen water. The discovery adds credence to the idea that Earth got its water from comets – especially as the disc seems to contain enough water to fill Earth's oceans thousands of times over.

Hot water vapour has previously been detected in the inner part of the planet-forming discs of nascent, alien solar systems. But this is too close to the central star to be incorporated into the forming planets.

By contrast, the new observations are of water in the form of ice grains, which can exist only in the frigid outer reaches of a planet-forming disc. It is there that they can ultimately coalesce into planets and comets.

Before planets form, the disc of material surrounding young stars is mostly gas. Astronomers can probe the contents of that gas by analysing the spectra of the light it emits. Earlier observations had found organic materials like carbon monoxide and cyanide in such discs, but because Earth's own atmosphere is so damp, it interferes with the detection of alien water from the ground.

UV puffs

To solve this problem, Michiel Hogerheijde of the Leiden Observatory in the Netherlands and colleagues used the Herschel space observatory to get above Earth's clouds and observe a young star called TW Hydrae, which has just over half the mass of the sun and is 175 light years away.

Earlier models suggested that there should be water in the outer frigid regions of TW Hydrae's disc, where it would be locked up in ice and therefore invisible to Hershel's infrared eyes. But when those dust grains get hit by ultraviolet photons from their host star, they give off little puffs of water vapour that emit light in the wavelengths Herschel can see.

Hogerheijde and colleagues found a spectral signature that can be attributed to ice reservoirs about five one-thousandths of the mass of Earth's oceans. But for every gram of vapour they spotted directly, there should be thousands of grams still frozen. The team inferred that the total ice reservoir in the disc should amount to several thousands of Earth's hydrosphere.

Alien hope

The team further confirmed that the water they were seeing came from the frigid, comet-forming region of the disc via the signatures of two different types of water molecule, which form at different temperatures. If the two hydrogen atoms in water have the same quantum spin, the water is called "ortho", and if they're different, it's called "para". The ratio of these two versions of water in TW Hydrae's disc suggested that much of it formed cold – in other words in the frigid outer regions of the disc.

Some astronomers think Earth got its oceans from comets that smashed into the infant planet after it had cooled. The discovery of cold water around TW Hydrae, combined with the recent discovery of a comet storm in a young planetary system suggests this scenario is a distinct possibility.

That could be good news for the prospect of life on dry exoplanets that are waiting for water. "If this is true in all systems, there is certainly a lot of water around," said Rachel Akeson of the NASA Exoplanet Science Institute at the California Institute of Technology, who was not involved in the new study. "It may increase the chance that life can develop on these planets."

Journal reference: *Science*, DOI: 10.1126/science.1208931

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Facebook Profile Pics Predict Future Happiness

College freshmen whose Facebook profile pictures featured intense smiles were more likely to feel satisfied with their lives 3½ years later.

By Tom Jacobs

College students who displayed a more intense smile in their first-semester Facebook profile picture reported higher levels of life satisfaction — both when the picture was posted, and again as they approached graduation three-and-a-half years later. (robleto/Flickr)

You can learn all sorts of information by perusing a person's Facebook page. But newly published research suggests you can ascertain a key fact about that individual – how satisfied they are with their life – without reading a word.

Just check out their profile picture, and gauge the intensity of their smile.

True, the profile pic may be a few years old. But a paper just published in the journal *Social Psychological and Personality Science* suggests the visual information remains not only valid, but predictive of the future.

In two studies, university students who displayed a more intense smile in their first-semester Facebook profile picture reported higher levels of life satisfaction — both when the picture was posted, and again as they approached graduation three-and-a-half years later.

"The expression of positive affect captured in a photograph can convey surprisingly rich information about people's long-term well being," write University of Virginia psychologists J. Patrick Seder and Shigehiro Oishi, the paper's co-authors.

In the first study, 48 University of Virginia students (20 men) completed the Satisfaction with Life Scale in the middle of their freshman year (in late 2005 or early 2006), and again at the end of their senior year (in the spring of 2009). They responded to five statements such as "In most ways, my life is close to my ideal," expressing their level of agreement with each on a one-to-seven scale.

Their freshman-year pictures were coded by measuring the intensity of action in two groups of facial muscles – one that elicits raised cheeks, and another that raises the corners of the mouth.

The intensity of their smile "was a robust predictor of life satisfaction three and one-half years later," the researchers report. In addition, those with more intense smiles were more likely to report an increase in their life-satisfaction level over the three and one-half year period.

The second study essentially duplicated the first, using 36 members of the freshman class of fall 2006. The results were the same.

This research confirms the results of a 2001 study, which found a link between the intensity with which a group of female students smile in their college graduation yearbook photos in 1958 and 1960 and their self-reported life satisfaction three decades later. The 2006 Facebook photos tended to be far less formal than the 1950s-era graduation snapshots, but the predictive power of smile intensity survived the transition to the social networking era.

So why do these images tell us so much? Seder and Oishi present some possible answers.

"It is plausible that an intense smile displayed in a Facebook profile photo (especially in a college context) indicates that people will be more likely to act similarly in 'real life,'" they write. If so, those who smile more intensely "may seem more friendship-worthy and approachable."

"Individuals who tend to smile intensely may be more sought-after as interaction partners," they add. Thus such people are more likely to make friends, and have a better shot at establishing satisfying personal relationships.

At this point, such explanations are necessarily speculative, and it's worth noting that these samples were small. But this research becomes still more interesting when compared with a 2010 study of baseball players. It found those who intensely smiled in early-career headshots lived an average of seven years longer than those with small or nonexistent smiles.

Perhaps the equation is simple. Smiling is good for your social life, and an active social life – one that fosters close relationships – has been linked to higher levels of health and happiness.

So if you're unhappy with life, give your profile picture a long look, and then give these findings some thought. Perhaps Facebook has given us a tool to learn about not just each other, but also ourselves.

http://www.miller-mccune.com/culture/facebook-profile-pics-predict-future-happiness-37151/

Propensity for Longer Life Span Inherited Non-Genetically Over Generations, Study Shows

We know that our environment -- what we eat, the toxic compounds we are exposed to -- can positively or negatively impact our life span. But could it also affect the longevity of our descendants, who may live under very different conditions? Recent research suggests this could be the case. (Credit: © Jean Kobben / Fotolia)

ScienceDaily (Oct. 20, 2011) — We know that our environment -- what we eat, the toxic compounds we are exposed to -- can positively or negatively impact our life span. But could it also affect the longevity of our descendants, who may live under very different conditions? Recent research from the Stanford University School of Medicine suggests this could be the case.

Blocking or modifying the expression of any of three key proteins in a laboratory roundworm increases the life span of not only the original animal, but also that animal's descendents, the researchers found. This occurs even though the original modification is no longer present in the descendants. The finding is the first to show that longevity can be inherited in a non-genetic manner over several generations.

It's tempting to translate the findings to humans, who share similar proteins with those studied in the worms in this work. While much more investigation is needed, the research at least hints at the possibility that modifications that occurred in your great-grandparents, perhaps as a result of diet or other environmental conditions, will affect your own life span.

Related News

- " Study identifies proteins that extend life span in worms
- " Study shows neural stem cells in mice affected by gene associated with longevity

"In some ways, this work relates to the idea of inheritance of acquired traits, which is almost heretical because it has long been discounted by the laws of Mendel," said associate professor of genetics Anne Brunet, PhD. "But we show in this study that the transgenerational inheritance of longevity does occur in roundworms via modulations of proteins that normally add epigenetic modifications to chromatin."

Brunet is the senior author of the study, published online Oct. 19 in *Nature*. Former graduate student Eric Greer (now a postdoctoral scholar at Harvard Medical School) is the first author.

The term epigenetics describes a process by which organisms modulate their gene expression in response to environmental cues without changing the underlying sequence of their DNA. Chromatin, the tightly coiled complex of DNA and proteins called histones that keeps the genetic material firmly packed in the cells'

nucleus, can be modified in an epigenetic manner by addition or removal of chemical tags on histones or DNA itself. Although most chromatin modifications are reset between generations during the process of reproduction, this study suggests that such reprogramming is incomplete in some cases.

The current research builds on a previous study from Brunet's laboratory that showed that mutations in several chromatin regulators can increase the life span of a laboratory roundworm known as *Caenorhabditis elegans* by as much as 30 percent. Interestingly, these chromatin regulators control life span by functioning at least in part in the worm's reproductive system, or germ line. That research was published in *Nature* last year.

Greer and Brunet wondered whether the effect on life span of these chromatin regulators would be conveyed to the worms' descendants, even when the mutations were no longer present. To answer this question, Greer individually mutated each of the genes encoding three proteins -- ASH-2, WDR-5 and SET-2 -- involved in the chromatin regulatory complex that adds methyl groups to a specific histone in chromatin. The methyl groups work to lock chromatin in an open configuration that is accessible for gene expression.

Greer then bred the worms in such a way that their descendants would no longer have the mutations. He found that the descendants with normal levels of expression of these three proteins (but with ancestors that were deficient for them) still lived longer than descendants from un-mutated ancestors. This longer life span persisted, in some cases for up to three generations, but did eventually disappear and the worms reverted to a normal life span. When he compared the gene expression profiles of long-lived descendants of mutant ancestors with those of control worms, Greer found several hundred genes whose changes in expression were also inherited.

"We still don't know the exact mechanism of this epigenetic memory of longevity between generations," said Brunet. "We hypothesize that when the parental generation is missing key components that normally regulate chromatin, epigenetic marks are not completely reset from one generation to the next in the germ line, thereby inducing heritable changes in gene expression. It will be very interesting to understand how this happens.

"We are also curious as to whether environmental factors that can affect longevity, like calorie restriction, could also affect subsequent generations," she said.

In addition to Greer and Brunet, other Stanford researchers involved in the study include postdoctoral scholars Travis Maures, PhD, Duygu Ucar, PhD, Elena Mancini, PhD, and Bérénice Benayoun, PhD; graduate student Jana Lim; and undergraduate Anna Hauswirth.

The research was supported by the National Institutes of Health, the Glenn Foundation for Medical Research and a Helen Hay Whitney Postdoctoral Fellowship.

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1. Eric L. Greer, Travis J. Maures, Duygu Ucar, Anna G. Hauswirth, Elena Mancini, Jana P. Lim, Bérénice A. Benayoun, Yang Shi, Anne Brunet. **Transgenerational epigenetic inheritance of longevity in Caenorhabditis elegans**. *Nature*, 2011; DOI: 10.1038/nature10572

http://www.sciencedaily.com/releases/2011/10/111020024333.htm

Far West, Northeast Lead in Jobs for Artists

A new National Endowment for the Arts report finds jobs for artists are concentrated in specific states, including New York, California, Oregon, and Vermont.

By Tom Jacobs

Two million Americans list a job in the arts as their primary source of employment. That comes out to 1.4 percent of American workers. (Stockbyte)

When you ask someone at a party, "What do you do for a living?" what are the odds he or she will respond "I'm an artist"?

The answer varies considerably from state to state, according to a new National Endowment for the Arts research note.

The report on artists in the workforce supplements and expands upon a 2008 paper, which found about two million Americans list a job in the arts as their primary source of employment. That comes out to 1.4 percent of American workers.

New York heads the newly released state-by-state list, with artists making up 2.3 percent of its labor force. California, home to the film and television industry, places second with 2.0 percent.

Not far behind are Oregon and Vermont, each of which has a workforce in which 1.7 percent of workers are artists. That means they exceed the national average by a substantial 20 percent.

"Writers and authors are especially prominent [in Oregon and Vermont]," the NEA report notes.

Also exceeding the national average: Colorado and Connecticut (where artists make up 1.6 of the labor force), and Hawaii, Rhode Island, Massachusetts, Maryland, Washington, Nevada, and Minnesota (at 1.5 percent).

"In Nevada, dancers and entertainers account for much of this difference," the report notes, "while in Hawaii, it can be attributed partly to fine artists, art directors, and animators."

Indeed, it's worth noting that "artists" is a broad category that includes actors, animators, announcers, architects, dancers, designers, musicians, writers, fine artists such as painters and sculptors and "other entertainers." That final group includes circus performers, comics, jugglers, magicians, puppeteers, and "showgirls," who are undoubtedly well-represented in the Nevada statistics.

Overall, 39 percent of working artists in the U.S. are designers of one sort or another (graphic, commercial, industrial, fashion, interior, etc.). Performing artists make up the next largest category, at 17 percent. Fifty-four percent of artists work in the private, for-profit sector of the economy, while 35 percent are self-employed.

Artists' median wages and salaries were $43,000 in 2009, which was above the median for the entire workforce ($39,000). However, artists are considered "professionals," and the median salary for professionals as a whole was $54,000.

And just in case you thought the arts were a friendlier environment for females, the NEA reports women artists earn 81 cents for every dollar earned by male artists. That's one penny above the gap in the overall workforce, where women earn 80 cents for every dollar earned by men.

http://www.miller-mccune.com/business-economics/far-west-northeast-lead-in-jobs-for-artists-37473/

Launch of Galileo satellites heralds new era

- 14:15 21 October 2011 by **David Shiga**

A Russian Soyuz rocket lofts the pair of Galileo satellites into orbit from French Guiana (Image: ESA/CNES/Arianespace, S. Corvaja)

Today heralds an independence day of sorts. The European Space Agency (ESA) has successfully launched the first two of its Galileo navigation satellites, the beginning of the end of European dependence on the US GPS fleet.

The eventual Galileo fleet of 30 satellites promises to boost both navigation and science, especially plate tectonics, as combining information from GPS and Galileo should allow positions to be determined more accurately than by GPS alone. It will also be a civilian venture, whereas GPS is run by the US military.

Don't hold your breath though: the endeavour is already 12 years behind schedule and €2 billion over budget. Currently, the whole fleet is expected to be up by 2020, at a total cost of €5 billion.

The satellites launched on a Russian Soyuz rocket from French Guiana – the first Soyuz launch from anywhere outside of the former Soviet Union's territory. ESA hopes that the launch is a step towards closer cooperation in space launches between the two countries.

Atomic clocks

The pair of satellites will not be terribly useful by themselves. But that will change as more satellites are added. Eighteen are planned by 2015, which will be enough to give Europe its own satellite-based positioning system independent of GPS.

The Galileo satellites will fly farther north and south of the equator than the GPS satellites, providing better coverage at far northern and southern latitudes.

On-board are more accurate clocks than those on the current GPS satellites, which in principle could make their position data more accurate. But in practice, other sources of error are more important than clock

accuracy, like the quality of the device receiving the signal and distortion of the signals as they travel through the atmosphere.

ESA says Galileo will provide positions accurate to within a metre. A similar accuracy is possible with GPS (pdf), depending on the quality of the device receiving the signal.

Tectonic shift

Much greater accuracy is possible when signals are averaged over a long period of time. Researchers monitoring the motion of tectonic plates and swelling of volcanoes achieve accuracies of under a millimetre this way using GPS.

Using the Galileo satellites in combination with the GPS satellites could improve the time resolution of these measurements further, says Herb Dragert of the Geological Survey of Canada in Sidney, British Columbia.

That is because using signals from a larger number of satellites simultaneously could help reduce errors from things like atmospheric distortion – so millimetre-level accuracy could be achieved after averaging for a few hours instead of 24 hours, as is currently the case, he says.

Better time resolution could help answer questions such as whether the slow motions of tectonic plates currently being monitored will eventually trigger large earthquakes, he says. "You might be able to see very subtle short term changes and that could turn out to be very, very important," Dragert adds.

http://www.newscientist.com/article/dn21079-launch-of-galileo-satellites-heralds-new-era.html

Vehicle-to-Grid: A New Spin on Car Payments

Buried in the high hopes for electric cars is the very real possibility that they can make money by powering and regulating the grid.

By Dan Ferber

Business research firm Global Data conservatively projects a global market for vehicle-to-grid that would pay $2.3 billion to electric vehicle owners by 2012 — and $40 billion by 2020. (Illustration by Andy Potts)

Willett Kempton is an anthropologist. And an electrical engineer.

On this winter morning at the University of Delaware, both skill sets come in handy as he courts two Japanese businessmen. They've traveled here from Tokyo to see how much progress he's made toward a revolutionary idea: electric cars that will make several thousand dollars a year for their owners, and speed the switch to renewable energy sources.

Observing Japanese business etiquette, Kempton presents his business card to the senior visitor, Makoto Horiguchi, then the two exchange bows. He repeats the ceremony with Horiguchi's junior colleague and with their translator. Then Horiguchi steps to the front of the classroom to give a short talk describing the work that his employer, the industry-funded Japan Automobile Research Institute, does on electric vehicles. Kempton listens attentively and asks questions. Then he makes his pitch.

For 15 years, Kempton, who directs the University of Delaware's Center for Carbon-Free Power Integration, has pushed the idea that fleets of electric vehicles — rather than being another big draw on the electric grid —

could provide valuable backup power on demand to utilities. This would reduce the need for costly new generating plants, and help ensure a reliable supply of electricity.

Utilities pay each other billions of dollars a year for such backup power through wholesale electricity markets, and Kempton believes that a hefty slice of that pie could be paid to electric-vehicle owners instead. Some industry analysts agree that the approach, known as "vehicle-to-grid," could take off; a December 2010 report from the business research firm Global Data conservatively projected a global market for vehicle-to-grid that would pay $2.3 billion to electric vehicle owners by 2012 — and $40 billion by 2020. Kempton and his colleagues have made some influential converts in policy circles, too. Marc Spitzer, a commissioner with the Federal Energy Regulatory Commission, has described the plan as "the salvation of the automotive industry in the United States."

Automakers, however, have been slow to warm to the idea, and the first crop of mass-market battery electric vehicles, including the Chevy Volt and the Nissan Leaf, can only plug and charge themselves. A small number of 2012-model electric vehicles from a few manufacturers, including the BMW Mini E, Daimler Smart E, and Detroit Electric e63, however, could provide power to the grid because they each contain a proprietary electric drivetrain built by AC Propulsion, a California-based maker of electric vehicle technology that has collaborated with Kempton.

But Kempton wants to take vehicle-to-grid to the mass market, and he pushed for years, unsuccessfully, to convince major automakers to ramp up their vehicle-to-grid work. Now, on this December morning, he has a chance to find a new ally.

For the next few minutes, as three graduate students on his team watch, Kempton presents results from his team's vehicle-to-grid demonstration project to his Japanese visitors. He gives them calculations that show that electric vehicles could provide plenty of valuable electricity to the grid without inconveniencing drivers. "These numbers are why we think the electric vehicle will become an important part of the electric system," Kempton explains. The Japanese duo does not seem convinced, and they ask polite but challenging questions. Kempton answers smoothly, and the visitors ask for a tour.

A few minutes later, Nat Pearre, a graduate student in Kempton's group, is showing off one of the university's five grid-enabled electric cars, a small, boxy Scion xB. Pearre pops the hood, the Japanese visitors crowd in for a look, and Horiguchi's colleague snaps some photos. There's no engine in the engine compartment — just an aluminum box containing the power electronics that control the car.

As Kempton could explain to his guests, after he plugged this car into a smart charging station at his house in late 2009, it began earning $300 a month. This Scion became the first car ever to earn cash for its owner while it sat parked.

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In The late 1960s, with muscle cars the rage, Willett Kempton began overhauling engines. In high school, in McLean, Va., he'd drive his '65 Mustang to a local service station and spend hours watching a motorhead friend do repairs. Before long, Kempton was buying used Volkswagen Beetles and vans at police auctions for $100, taking them home, and rebuilding the engines from the ground up.

After three years of studying electrical engineering at the University of Virginia, Kempton took a year off "to get a change of pace," he says. He started an auto-repair business with a friend, which made no money, then got a job fixing engines at a busy Rockville, Md., shop run by a pair of German mechanics.

When he returned to school, Kempton changed his major to sociology and anthropology. “It seemed more useful to figure out why things were moving the way they were in society than to build a more accurate guided-missile electronic system,” he recalls. By the 1980s, he’d earned a doctorate in anthropology. But he couldn’t shake his affinity for the electrical and mechanical, so he studied people’s attitudes about energy efficiency, presenting papers with titles like “Folk Theories of Home Heating Systems” and “Ethnography as a Tool for Interpreting Metered Energy Data.”

In the ’90s, he began looking at the use of rooftop solar panels to power homes and businesses. In 1993, a graduate student named Steven Letendre joined Kempton’s research group to study the value home solar panels would deliver to society if they were used widely. To get around the classic solar-home dilemma — the sun’s power peaks at noon but people draw the most power after they arrive home from work — Kempton thought that each home would need a powerful battery to store this solar electricity. Then, while at a 1996 electric vehicle conference, an idea hit him: “Wait a minute,” he recalls thinking. “We were looking at buying a battery, and there’s already going to be one down in the garage.”

At that point, California had mandated that 2 percent of all cars sold in the state in 1998 — and 10 percent in 2003 — would emit no tailpipe air pollutants. “The expectation was that there would be hundreds of thousands of electric vehicles” in California, Letendre recalls. Meanwhile, physicist Amory Lovins of the Rocky Mountain Institute had been promoting a “soft energy path” in which a distributed system involving solar panels, wind turbines, and conservation replaced a centralized system driven by large, fossil-fuel-consuming power plants.

“The ideas were percolating,” Letendre says. “Lovins had talked about hydrogen cars in garages providing power. We looked at that and at the technology on the horizon,” including electric cars.

One day, he and Kempton began crunching some numbers. A vehicle’s power is usually calculated as horsepower for the driveshaft, but the two researchers converted those numbers into kilowatts available to the grid. The 146 million cars and SUVs and pickups that made up the United States’ light vehicle fleet, they discovered, produced more than 10 times the power of all U.S. power plants combined. (Today’s fleet produces seven times more.)

That automotive energy could be tapped for other purposes. Cars and other light vehicles are typically driven just one hour a day, so most of the time they sit idle. And electric vehicle batteries have to store several times more energy than that hour of driving requires, to ensure the vehicle can make longer trips. “If we think about the vehicle fleet as an electric utility would think about its equipment, the vehicle fleet’s power capacity is grossly under-utilized,” the two reported in a 1997 paper.

Kempton and Letendre developed a plan, explained in the paper, showing how vehicle-to-grid would work. The car owner would enter information into a dash-mounted control panel, including when he needed to travel, and how far. A microprocessor in the control panel would calculate whether the car had power to spare. When the car was parked for long periods, the owner would plug it into a smart charging station that talked through power lines to the local utility, which could draw from, or charge, the battery as needed — so long as enough power remained to take the driver where he wanted.

Soon after the paper was published, Tom Gage, the CEO of AC Propulsion, the battery drivetrain maker, called Kempton to talk about experimenting with the idea.

Six months later, at the San Dimas, Calif., shop of AC Propulsion, Kempton and Letendre watched as Gage’s team plugged in a prototype electric sports car they had built. They tapped a few commands into a laptop, the car started charging, and the dials in the shop’s utility meter started spinning. Then they tapped some other commands. “The meter slowed down, stopped, and began to spin backwards,” Letendre says.

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Electricity is fundamentally different from other commodities in that it's difficult to warehouse. Some electricity storage capacity exists, including stationary batteries, and there are ways to use electrical power to capture water or air to be released later to generate electricity when it's needed. Together these methods store only a few percent of the electricity produced in today's grid. For the most part, electricity must be produced when it's consumed, and supply must match demand. To ensure that happens, the nation's 10 regional organizations that run the grid operate several types of wholesale electricity markets.

Kempton and Letendre calculated the profits that vehicle-to-grid might generate in various wholesale electricity markets. They found it was too expensive to compete as a source of base-load power — the round-the-clock electricity available through large-scale coal-fired or nuclear plants.

The money looked more promising in the peak-power market, when utilities buy expensive bulk power from natural gas-fired "peaker" plants or hydroelectric dams for a few hours to meet demand at its height, such as on a hot summer afternoon when air conditioners are cooling full bore. Kempton and Letendre found that in this arena, the going rates were high enough that electric vehicle owners could earn $300-$500 per year simply by attaching their cars to the grid.

The economics were even better in little-known markets called the "spinning reserves," where power plants or hydroelectric dams ramp up quickly to produce extra electricity in a pinch (when, say, another plant on the grid stops working). Spinning reserves are called on about 20 times a year for an average of 10 minutes at a time.

But the economics looked best of all in the market for frequency regulation. Regulation fine-tunes the balance between supply and demand to make sure that the electricity in outlets has a frequency of exactly 60 hertz at all times. A frequency that's just slightly off can make clocks run too slow, make lights flicker, and raise havoc with electronics. To provide regulation, an electricity generator must adjust output up or down based on a hard-wired electronic signal that grid operators send out 400 times a day. Coal or gas power plants that typically provide this service can respond by quickly adjusting the spinning steam-driven engines that produce electricity to turn faster or slower. But it's often not quickly enough; adjusting turbine speed can take several minutes.

The advanced batteries in electric vehicles, on the other hand, can respond within seconds, as grid operators prefer.

"We looked at the value of peak shifting and get a dollar number of $300-$500 per year," Kempton recalls. "Then we looked at regulation, and holy cow, we can use the same car and it's worth $5,000 a year!" And the demand for regulation is high enough that millions of cars worldwide could participate.

In 2001, Kempton and his colleagues included these calculations in a report published by the University of Delaware and the University of California, Davis, for the project's sponsors, the California Air Resources Board and the Los Angeles Department of Water and Power. They were greeted with enthusiasm — and skepticism. "The electric industry said, 'Yes, this is incredible. Yes, we'll pay for it,'" Kempton says. "But the car industry said, 'Not with our batteries you don't.'"

So Kempton and chemical engineer Jasna Tomic kept plugging away on what Kempton knew would convince the industry: the numbers. The results, reported in 2005, confirmed that vehicle-to-grid — especially in the spinning reserves and frequency regulation market — was economically competitive for battery electric vehicles, hybrids, and fuel cell vehicles.

Technical analysts started to come around, slowly. The industry "shifted from saying Kempton's a nut, to saying that vehicle-to-grid is a cool idea that's 20 years away, so we don't have to think about it right now," Kempton says.

At the Philadelphia headquarters of PJM Interconnection, one of 10 independent system operators (or regional transmission organizations) that operate the electrical grid for a particular region, Ken Huber, the company's manager of advanced technology, passes muster at two security checkpoints. He leads us down a flight of stairs and knocks on a heavy steel door. A man lets us in, and we peer down from a balcony at a two-story room, covered floor to ceiling with electronic displays, including brightly colored maps, charts, graphs, and tables. This is PJM's control room, where workers ensure reliable electricity for a good chunk of the eastern United States.

The control room workers were monitoring power plants, hydroelectric dams, high-voltage transmission lines, and substations, all to help PJM ensure that electricity supply and demand are balanced every second of the day. "I think that's the toughest job we've got," Huber tells me.

As more and more wind and solar plants are introduced into the grid, balancing supply and demand gets more complicated, since wind and sun don't necessarily produce electricity when it's needed. In PJM's territory today, wind supplies 3 percent of PJM's typical load, but an equal amount is under construction. And if half the wind farms already proposed come to fruition, wind could supply up to one-fourth of the region's power by the 2020s, Huber says. "If we want a future with very high penetration of renewables, we need to have the ability to control the flow of energy they create," says Chris Shelton, president of AES Energy Storage.

Two large-scale ways to store electricity exist today. The most widely used method involves pumping water uphill into a reservoir and releasing it to drive turbines when electricity is needed. One utility, based in Alabama, stores energy by compressing air into a huge underground cavern, then releasing the pressure to drive an electricity-producing turbine. Both of these methods, which require a very specific natural infrastructure, can replace a downed generator for hours or days at a time. But they can't produce energy quickly enough to provide spinning reserves or frequency regulation.

Batteries can.

Which is why Huber, who directs a team that searches for technological fixes to grid-operator problems, partnered with Kempton in 2005 to test vehicle-to-grid.

Huber, Kempton, and several companies cobbled together the Mid-Atlantic Grid-Interactive Car Consortium, or MAGICC. Kempton's longtime research partner AC Propulsion kicked in that converted 2007 Scion; a smart grid company provided software that enabled the car to communicate with the grid; and Kempton's team developed the hardware at Kempton's house — now coined the "University of Delaware secret laboratory."

On Oct. 18, 2007, Kempton, Huber, and half a dozen colleagues gathered at the secret laboratory. Kempton plugged in the Scion; a computer at PJM sent a message down the line signaling a need for frequency regulation; and the car responded by delivering power to the grid.

The operators of the frequency regulation market aren't much interested in dealing with minor players, like one Scion, so to enable the car owner (the University of Delaware in this instance) to earn money for providing regulation, MAGICC piggybacked the 15 kilowatts delivered by the Scion xB onto a 1-megawatt bank of advanced batteries at AES Energy Storage. Down the road, companies like AES Energy Storage will pool the electricity from cars all over town, allowing ordinary car owners to earn money in wholesale electricity markets like PJM's.

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As with so many electric car projects, it is a long road from demonstration project to commercially viable enterprise. For vehicle-to-grid to work on a large scale, utilities would have to manage huge amounts of data, says Mark Griffith, of the engineering firm Black & Veatch. Millions of smart charging stations would be needed at homes, shopping centers, and other public charging stations; and hundreds of small transactions would have to be monitored at each station. Difficult, but doable, Griffith says; phone companies manage equally huge volumes of data in billing for calls and texts. And the electric power industry is "intrinsically complicated," he adds.

There are also business challenges, says Ray Boeman, director of energy partnerships at Oak Ridge National Laboratory's National Transportation Research Center. The price of electric vehicles must come down, which means battery makers need to get better at making cheaper advanced batteries that are still reliable, safe, and long-lasting.

And making consumers confident that the program is safe could be a hurdle. Electric car owners may worry that using the car for vehicle-to-grid could, for example, damage their car's expensive battery or void its warranty, says Venkat Srinivasan, acting head of electrochemistry at Lawrence Berkeley National Laboratory and This Week in Batteries blogger.

But steps have been taken: Kempton lobbied successfully, without opposition, to change Delaware's net metering law to include vehicle-to-grid, and to require utilities to pay the same rate to customers when meters run backward as the customer pays to draw electricity. So far, Delaware is the only one of the 43 states with net metering laws that include vehicle-to-grid.

Kempton's University of Delaware team recently patented his team's "vehicle smart link," a 2.5-inch square circuit board that monitors the owner's driving habits and decides how much electricity the battery can hold or discharge. They've developed software that keeps tabs on each car in a fleet and helps pool their electricity, which allows the fleet to act as a virtual power plant or virtual storage facility. And they've built a smart charging station that not only charges the car, but also keeps tabs on it to ensure the owner gets an accurate bill — or a check.

To Kempton's delight, Autoport, a company in Wilmington, Del., that modifies cars, vans, and trucks, licensed the vehicle smart link last year. The company has overhauled several of the cars in the University of Delaware fleet, and with AC Propulsion, were chosen by the U.S. Postal Service for a trial run of vehicle-to-grid on the postal service's ubiquitous mail-delivery vehicles. (In 2007, Kempton and Tomic determined that a standard commercial fleet of a couple hundred vehicles could generate low-six-figure profits to the regulation market.) Autoport is doing a trial run with electric delivery vans for a large urban cable television company.

And Kempton has made strides overseas. Last year, he and tech industry veterans Gregory Poilasne and Emir Kiamilev founded Nuvve Corporation, which opened a facility in Horsens, Denmark, this year to bring vehicle-to-grid hardware and software to market. Nuvve is launching a pilot program in which 30 electric cars will provide regulation services to the Danish grid operator Energinet.dk. Poilsane claims that Nuvve will be able to pay electric or hybrid car owners up to $10,000 for the use of their car battery's extra energy over the lifetime of the car, enough to make electric vehicles more attractive to customers.

The world market for regulation services is $6 billion — $1.5 billion in the United States and $4.5 billion overseas — so Nuvve has plenty of room to grow, Poilasne says. Vehicle-to-grid aggregators such as Nuvve could also provide virtual storage directly to wind farms, which would enable the wind company to deliver a steadier flow of electricity. They could also store electricity from solar panels or utility-scale solar plants, as Kempton envisioned years ago.

Meanwhile, back at the University of Delaware, Kempton's engineers and social scientists are honing the hardware, software, and know-how to bring Kempton's idea to the world. The Japanese researchers and I pile into the Scion xB, and Pearre accelerates across campus, fast as a sports car but noiselessly. We talk for a while — which model electric cars will be out soon, which cities are building networks of charging stations. The researchers plan another visit to Kempton's lab. Both in the U.S. and across the Pacific, it seems, electric cars are here. The fleet has left the charging station.

If vehicle-to-grid catches on as well, tomorrow's electric vehicles would be more than simply transportation, they'd be resources for all of us. If so, it would help achieve Kempton's dream "to have most of the light vehicles in the industrialized world be powered primarily by electricity; to have that electricity use integrated with the electrical grid, to do that with 100 percent renewable power, and not have the lights flicker." It could happen yet.

http://www.miller-mccune.com/environment/vehicle-to-grid-a-new-spin-on-car-payments-36697/?utm_source=Newsletter185&utm_medium=email&utm_content=1101&utm_campaign=newsletters

Culinary Racism

Trying to explain the "Obama Fried Chicken" incident and others like it.

By Jesse Bering|Posted Tuesday, Nov. 1, 2011, at 1:38 PM ET

Obama Fried Chicken in Brooklyn, N.Y.

Photo by Don Emmert/AFP/Getty Images

President Obama has found himself embroiled in one fried-chicken row after another. First there was the "Obama Fried Chicken" incident of 2009, in which a Bangladeshi immigrant who claimed to be naïve to the racist stereotype of African-Americans' consumption of fried chicken decided to rebrand his poultry restaurant in homage to our nation's commander in chief. He couldn't have asked for a more effective advertising campaign, once the media caught wind of this fowl scandal. Even the Rev. Al Sharpton got involved in the street protests outside the Brooklyn eatery, pressuring for a return to the restaurant's original name, Royal Fried Chicken. The owner refused to budge, and Obama Fried Chicken is still serving (apparently mediocre) hot wings and biscuits in Remsen Village today.

Then, this year, Kentucky Fried Chicken, that fulsome, ubiquitous goliath of fast-food chains, took considerable heat when its Chinese subsidiary aired a television commercial in Hong Kong featuring an Obama look-alike. The ad showed the Obama doppelgänger campaigning that "change is good" for the KFC menu. (He then gets inexplicably flattened on the podium by a gigantic fish sandwich.) In the face of racism allegations, the company yanked the ad and said that it wasn't meant to offend anyone.

Advertisement

And just last month, a 21-year-old Chinese student opened his own carryout on the outskirts of Beijing, christened it "OFC" (short for "Obama Fried Chicken"), and above the door proudly erected a sign identical to the red-and-white KFC logo, except with Colonel Sanders' iconic face replaced by that of a grinning Obama. "It's insulting, offensive, and plays to racist stereotypes," Al Sharpton told the *New York Post*. Much like his Brooklyn Bangladeshi compatriot, the young Beijing owner alleged that he was just a harmless

Obama fan unfamiliar with the fried-chicken racist stereotype. Yet fearing a legal injunction by KFC—which failed to see any Obama chicken-related humor this time around—he eventually caved, removing the image and renaming the restaurant to "UFO." (I'm not sure where the "chicken" part fits into this abbreviation, but presumably it's a more innocent nod to yet another quirky Americanism.)

In any event, all this suggests that informed citizens of our own country may be the only ones who understand that mentioning "fried chicken" in the same sentence as "black people" is a major no-no. Yet I'm guessing that the issue of *why*, exactly, the juxtaposition is so verboten isn't entirely clear, even to most of us. The most obvious explanation derives from the historical fact that fried chicken dishes were popular in slave homes on Southern plantations. In many cases, chickens were the only livestock animals that slaves were permitted to raise on their own, and—given that Scots founded much of the American South—there's speculation that African-Americans tweaked and perfected their masters' imported tradition of frying birds. (That centuries-old habit was one way the Scots distinguished themselves from their staid English neighbors.) So given fried chicken's powerful symbolic association with oppression, it's entirely reasonable for African-Americans to be suspicious of any efforts to pair a black president and a classic slave dish for commercial purposes.

There's more to the story, however. The consumption of "fast foods" tends to elicit a host of negative reactions from those around us, since our eating habits broadcast our social identity. That's according to the "impression-management theory" of food consumption, as summarized by Cornell University's Lenny Vartanian and his colleagues in a 2007 issue of the journal *Appetite.* Although social psychologists haven't explored people's perceptions of those who scarf down heavily battered drumsticks, per se, data in this area imply that people who shrug off dietary concerns by eating fried chicken are tarred with the unattractive attributes of the product itself. A bucket of fried chicken may suggest nasty racial stereotypes by virtue of its unwholesome image (one that is entirely unbecoming of our country's leader) as much as by its particular history as a plantation staple. "Food choice is a means by which one expresses one's philosophy of life," argue Vartarian and his co-authors. "What one eats has important consequences for social judgements."

Experiments suggest that we react very differently to other people on the basis of the type and amount of food that they consume. In one study, a few hundred undergrads were told of a fictional character named "Pat." In some cases, she was described as eating "oatmeal with fresh fruit and nuts on top for breakfast;" in others, the researchers said she eats "pie for breakfast." Then the students were asked to describe Pat's character. The pie-eating version of Pat was deemed more likely to be aggressive, lazy, selfish, and immoral than the oatmeal-eating version. In another experiment, participants who were shown images or video clips of someone eating fast food tended to judge that person as being less physically attractive, less intelligent, less moral, and less conscientious than participants who saw the very same individual eating healthier food. There are some perks to eating poorly, though. Studies also show that those who consume high-fat diets are perceived by onlookers as being significantly more fun-loving, happy, and sociable than their more high-strung, healthy-eating peers. That may be why Bill Clinton's notorious McDonald's diet helped him to get elected in two presidential campaigns, even as it threatened his health.

As an unhealthy and inexpensive food, fried chicken invokes images of poverty, ignorance, sloth, and other racist associations. Add to that its slavery-related heritage, and the Obama-chicken scandals make quite a bit of sense. Once the dust had settled in Beijing after the latest incident, Obama hosted the Chinese delegation at a special White House dinner. The guests were treated to D'Anjou pear salad, poached Maine lobster, and dry aged ribeye with buttermilk crisp onions, flanked by vegetables harvested from the first lady's garden. Even if you're not a culinary snob, you'd probably agree that's a bit more presidential-sounding than Extra Crispy Wings (even if those wings *are* made with 11 secret herbs and spices).

Still, it's worth noting that African-Americans, particularly in the Deep South, have no problem acknowledging the centrality of fried chicken to soul food cuisine. In a 2010 study led by Wendy Jefferson of the Department of Nutrition Sciences at the University of Alabama, young, educated black men and women from the Birmingham area were asked, "What are the foods you associate with being African-American?"

The top 10 responses, in the order of number of votes received from these participants, were: chitterlings (pig intestines), fried chicken, pig parts (feet, ears, tail), collard greens with ham hock, ribs, macaroni and cheese, souse meat, sweet potato pie, cabbage, and BBQ.

While these participants understood that many of these foods are terribly bad for you when prepared in the traditional way (presumably, the original soul food diet helped sustain the gruelling physical demands of slave labor), the fact that they remain a core part of the African-American cultural identity, reason the authors, provides some insight into why the rates of major dietary-related health problems are especially high among blacks. "These foods often provide a sense of familiarity and comfort," the authors point out. "Omitting [them] from the diet completely is often less than desirable and can lead to a feeling of abandoning one's cultural heritage." (The researchers focused on African-American nutrition in the Southeast, yet a similar argument can probably be made regarding the traditional foods of many other ethnic groups.)

In fact, the social and emotional factors that promote the consumption of culturally familiar foods like those mentioned above lurk very deep in human cognition. In a study published this year in *Psychological Science*, SUNY Buffalo researchers Jordon Troisi and Shira Gabriel found that, for many people, simply thinking about "comfort foods"—let alone eating them—actually reduces feelings of loneliness. People who were asked to write an essay about getting into a fight with someone very close to them, and then a follow-up essay about eating their favorite "comfort food," said they felt less lonely than did those who followed up the fight essay with one about simply trying a new food.

Troisi and Gabriel explain these effects by arguing that comfort foods *become* comfort foods because we are repeatedly exposed to them in the presence of family and friends. "In other words," they explain, "because comfort foods are typically initially eaten with primary relationship partners, the perceptual experience of eating these foods is encoded along with the higher-order experience of social cognition." Thus, food literally becomes a sort of social surrogate eaten to recapture those positive feelings. I experienced this when my partner, Juan, made matzoh ball soup for me a few weeks ago, and I was immediately flooded by warm memories of my dearly departed Jewish grandmother. (If only she'd known at the Seder of 1981 that 30 years later my gay Mexican partner would be borrowing the family recipe.)

I hesitated to even write about this subject because it elicits such raw feelings—and justifiably so, given the above. Still, leaving the issue unexamined for so long obviously hasn't done much good, either. At least we can all agree that when it comes to fried chicken, Dave Chappelle is on to something. There's no denying that fried chicken became a global phenomenon because it just tastes delicious to our color-homogenized human taste buds. I, for one, am a European-American mongrel with extremely pasty skin, and I'll readily confess that there's something wonderful about the Colonel's original recipe even if it makes you think that I'm slovenly, dumb, and immoral.

http://www.slate.com/articles/health_and_science/science/2011/11/obama_fried_chicken_incident_explaining_racist_food_stereotypes.single.html

The Ten Most Amazing Databases in the World

A database isn't a vault--it's a garden

By Rena Marie Pacella Posted 10.31.2011 at 10:48 am 0 Comments

Where Data Lives Dream Pictures/Getty Images

The 10 most amazing databases in the world do more than store knowledge. They provide researchers with new ways to solve long-cold crimes, predict economic recessions, measure your love life, map the universe and save lives.

- The Combined DNA Index System
- The Encyclopedia of Life
- The Food and Agriculture Organization Database
- The Genographic Project

- The International Panel on Climate Change's Data Distribution Centre
- The MD:Pro
- OKCupid's OKTrends
- Sloan Digital Sky Survey Database
- The Wayback Machine
- WorldCat

http://www.popsci.com/technology/article/2011-10/ten-most-amazing-databases-world

Lipitor Rage

If statins carried a rare but serious side effect, would we ever find out?

By Christie Aschwanden|Posted Wednesday, Nov. 2, 2011, at 10:21 AM ET

The FDA is not equipped to track rare but serious side effects of drugs like Lipitor

Photo by Scott Olson/Getty Images.

Patient 1 wanted to kill someone. Normally even-tempered, the 63-year-old man found himself awaking with an uncontrolled anger and the desire to smash things. His violent impulses started after he began taking the cholesterol-lowering statin Lipitor and they vanished within two days of quitting the drug. Patient 2 developed a short fuse after he started on Zocar, another popular statin. The 59-year-old felt an impulse to kill his wife, and once tried, unsuccessfully, to do so. His violent tendencies subsided within a few weeks of stopping Zocar. Patient 3, a 46-year-old female, became unusually irritable while taking Lipitor, repeatedly blowing up at her husband for no reason. Like the others, her uncharacteristic behavior disappeared after she quit taking statins.

Physician Beatrice Golomb at the University of California-San Diego has collected thousands of anecdotes like these through her website, Statineffects.com, and she's convinced that these drugs—taken by one in four Americans over the age of 45—can provoke severe irritability and violence among a tiny subset of users.

While it might seem crazy to blame bad behavior on a drug that's prescribed for your heart, such effects are not unprecedented. Violent behavior has been linked to at least 31 other medications, such as tobacco cessation aids and antidepressants, and the notion that lowering cholesterol might make someone violent or aggressive has some scientific basis. Monkeys put on cholesterol-reducing diets become more aggressive, and numerous studies have linked low or lowered cholesterol to violent behavior in people, too. For instance, one study compared the cholesterol measurements of nearly 80,000 Swedes who'd enrolled in a health-screening project against police records and found that violent criminals had significantly lower cholesterol levels than noncriminals. Golomb points to low serotonin levels, which are also associated with low cholesterol, as a possible cause.

Still, the link between statins and behavior has been widely rejected by the medical community. "Golomb is a nut case," says cardiologist Steven Nissen of the Cleveland Clinic, a vocal advocate for drug safety who refuses to take money from drug companies. None of the randomized, controlled trials done on statins have turned up this side effect, he says, and absent some rigorous evidence, the link between statins and violence is nothing more than speculation. "I'm not a tool for industry, but I also don't want to scare people away from life-saving drugs because of fringe ideas," he says, before urging me not to write this story at all.

There's no question that Golomb's idea is fringe, and from a public health standpoint, the benefits of statins—which can cut the risk of a second heart attack by about one-third—almost certainly outweigh whatever small risks of violent behavior they might, in theory, pose, at least for people with existing heart disease. (The benefits for people without heart disease are less clear.) Regardless, the overwhelming majority of people who take statins don't become violent, nor do they try to kill their spouses. Statins have prevented thousands of deaths, and it may be the case that Golomb's theory about how they affect mental health is total bunk.

But right or wrong, this work highlights a worrisome problem. The Food and Drug Administration's system for tracking drugs' side effects is simply not equipped to detect rare but serious problems. By definition, these would be so uncommon as to slip by the initial studies that are used to create pharmaceutical warning labels. Such studies typically involve just a few thousand patients, so any response that affected a tiny sliver of the population would scarcely show up. Once a new drug hits the market, it's up to consumers and their doctors to report any unusual side effects to the FDA, and if the side effect were completely unexpected (as in the case of violent behavior), not all of these sufferers would think to consider whether the new symptom might be related to the drug.

When you're prescribing a pill to treat a life-threatening disease, you might not worry too much about whether it carries a very rare side effect. Even if someone were to become irritable or violent while taking a powerful antibiotic, that would be a small price to pay for curing a potentially fatal infection. The infrequent side effect becomes more of an issue when you're talking about blockbuster drugs that are used in preventive medicine, however. Such medications are prescribed to millions of people throughout the country, as a way of warding off disease before it ever shows up. Even if a very small subset of these patients developed an unusual side effect—statin-related aggression or otherwise—then we might be talking about thousands of victims who were never that sick to begin with.

Nissen himself calls the FDA's approach to dealing with drug side effects "woefully inadequate." Once a drug has been approved for sale, the FDA looks out for so-called "adverse drug events" (ADEs) through a computerized system called MedWatch. Patients, doctors, and other health care professionals voluntarily submit ADE reports, but a 2002 *Journal of the American Medical Association* report estimated that more than 90 percent never get reported, since the system is voluntary and there are no real incentives for anyone to share their experiences. It's also not clear what happens to information once it's entered in the database. An FDA representative told me that staff members routinely monitor the database and they have an internal system in place for deciding when to look into a particular ADE, but there are no publicly stated rules about what it takes to trigger a formal government investigation.

Side effects are inherently difficult to pin down. In a previous ***Slate*** column on whether birth-control pills cause weight gain, I explained how easy it is for people to misattribute a symptom to a drug they're taking. If you happen to develop a problem soon after starting on a new medicine, you'll have no trouble deciding what's to blame. The people who reported aggressive or violent behavior to Golomb after taking statins may have been affected by their prescription drugs, or they may simply have had an unrelated episode that happened to coincide with a new treatment. Golomb classifies a behavior as being "linked" to the drug if it began after the drug was initiated, went away when the drug was withdrawn, and reappeared if the drug was taken again. These criteria make sense, but they, too, can provide only suggestions, not definitive proof. Behavior is subjective and malleable, and inherently difficult to measure. Golomb recalls one patient who

insisted, over his wife's objections, that he wasn't more irritable while taking statins. His wife just happened to be more irritating during the time when he'd been taking them.

More convincing evidence might come from a case control study in which people who showed violent behavior over a given time period are compared with similar people who didn't. If more of the violent folks were taking statins, that would be another warning sign. Even stronger would be a double-blind study in which violence-prone subjects were dosed with either a statin or a placebo. In any case, Golomb herself has conceded that the evidence to support her claim is a little shaky. In a case series published in 2004 in *QJM*, she notes that the link might be just a chance association. Seven years later, she's collected enough anecdotes to convince her that the link is real, and she's now recruited a geneticist at the University of British Columbia to look for genetic variants that could make people susceptible to becoming violent on statins. If a genetic link can be found, it would offer another hint that the problem exists in the first place, as well as a way for doctors to screen their patients before prescribing the drug.

What about the FDA? The key to finding rare side effects is to create a database large enough to spot them, and the administration could potentially do this by requiring drug companies themselves to monitor for side effects after their drugs go on sale. The FDA already asks manufacturers in some cases to conduct phase IV trials, which track the drug once it's on the market, but they could make these trials mandatory for all new drugs, with a set deadline and stiff penalties for those who don't comply. (A 2004 editorial in *JAMA* stated that fewer than half of the postmarketing studies that drug companies promised to conduct were actually completed, and many of them weren't initiated in the first place.) The FDA could also require companies to send detailed surveys to a large cross-section of patients taking a drug to monitor for side effects. As electronic medical records become more common, these could also be scoured for conditions that turned up after a patient began a new drug.

The consensus view among doctors holds that statins pose no mental-health risks to consumers, and for the moment there's not much reason for most people to worry about becoming violent while taking the drug. But history has shown that many important drug side effects are slow to gain recognition—a 2002 *JAMA* study showed that only half of all serious drug side effects are detected within seven years of the drug's approval. No one but Golomb seems to be tracking behavioral side effects associated with statins. Without the benefit of a more systematic national monitoring system, we don't have much else to go on.

http://www.slate.com/articles/health_and_science/medical_examiner/2011/11/lipitor_side_effects_statins_and_mental_health_.single.html

Knowledge is Power: Shakespeare, Bacon, & Modern Cryptography

by Laura Massey on October 24, 2011

Currently re-igniting the Shakespeare authorship controversy is Roland Emmerich's new movie *Anonymous*, which posits that the Earl of Oxford wrote Shakespeare's plays. With the filmmakers presenting themselves as "iconoclastic heroes of intellectual honesty" (Syme), and academics and bibliophiles of all types understandably up-in-arms in response, this 150-year-old battle seems a no-win situation. But that doesn't mean there's no silver lining. In a fascinating and little-known by-way of history, the authorship controversy led directly to some of the most important 20th-century advances in a seemingly unrelated field: cryptography.

The belief that Shakespeare did not write the works attributed to him originated in the mid 19th century, coinciding with an upsurge in his popularity and with the Victorian interest in puzzles and mysteries. Though more than 70 candidates have been proposed as the true author, for many years the most popular option was the natural philosopher and politician Sir Francis Bacon (1561–1626).

As a young man Bacon lived for several years in France, where he studied statecraft and learned about cryptography, a field in which that nation was leading the rest of Europe. He developed his own "bilateral" cipher, which used the letters *a* and *b* to generate the entire alphabet, like this:

a = aaaaa

b = aaaab

c = aaaba

d = aaabb

… and so on. But if used outright this was still identifiable as a code and could be broken. Instead, Bacon needed to disguise the fact that the message was in code, and the power of his cipher lies in his realisation that a and b don't have to be letters–they can be anything that can be divided into two classes. For example, regular text and bold text. To warn a secret agent to "fly", Bacon could send a message saying the opposite:

do **n**ot g**o** t**i**l **i** c**om**e

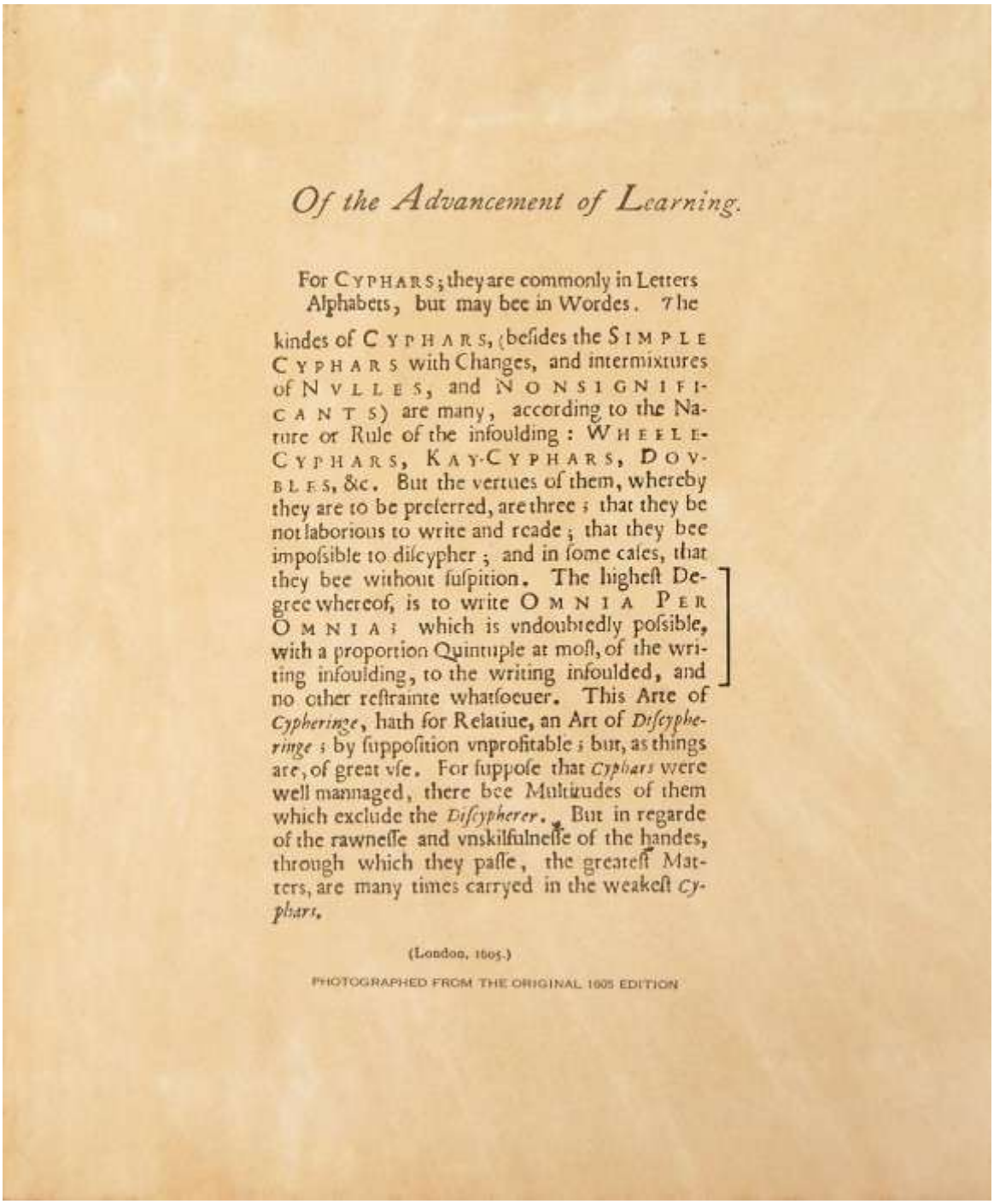
aabab ababa babba

fly

Here the words "do not go til I come" are meaningless to the intended recipient; all that matters is the pattern of plain and bold text, where plain letters stand in for *a* and bold letters for *b*, which in turn code for the true message. The cipher was ingeniously flexible, meaning that Bacon could "make anything signify anything". Poetry, numbers, musical notation, even a drawing or a group of objects could disguise a secret message.

Though Bacon developed his cipher in the 1570s it wasn't fully published until his first philosophical work, *The Advancement of Learning*, appeared in its Latin edition of 1623. He did, however, discuss ciphers in general in the first edition of 1605, and in the reproduced passage below he explains that anything may signify anything – "omnia per omnia" – by "infoulding", or encoding, it:

Elizabeth Gallup



Of the Advancement of Learning.

For CYPHARS; they are commonly in Letters Alphabets, but may bee in Wordes. The kindes of CYPHARS, (beſides the SIMPLE CYPHARS with Changes, and intermixtures of NVLLES, and NONSIGNIFICANTS) are many, according to the Nature or Rule of the infoulding: WHEELE-CYPHARS, KAY-CYPHARS, DOVBLES, &c. But the vertues of them, whereby they are to be preferred, are three; that they be not laborious to write and reade; that they bee impoſsible to diſcypher; and in ſome caſes, that they bee without ſuſpition. The higheſt Degree whereof, is to write OMNIA PER OMNIA; which is vndoubtedly poſsible, with a proportion Quintuple at moſt, of the writing infoulding, to the writing infoulded, and no other reſtrainte whatſoeuer. This Arte of *Cypheringe*, hath for Relatiue, an Art of *Diſcypheringe*; by ſuppoſition vnprofitable; but, as things are, of great vſe. For ſuppoſe that *Cyphars* were well mannaged, there bee Multitudes of them which exclude the *Diſcypherer*. But in regarde of the rawneſſe and vnskilfulneſſe of the handes, through which they paſſe, the greateſt Matters, are many times carryed in the weakeſt *Cyphars*.

(London, 1605.)

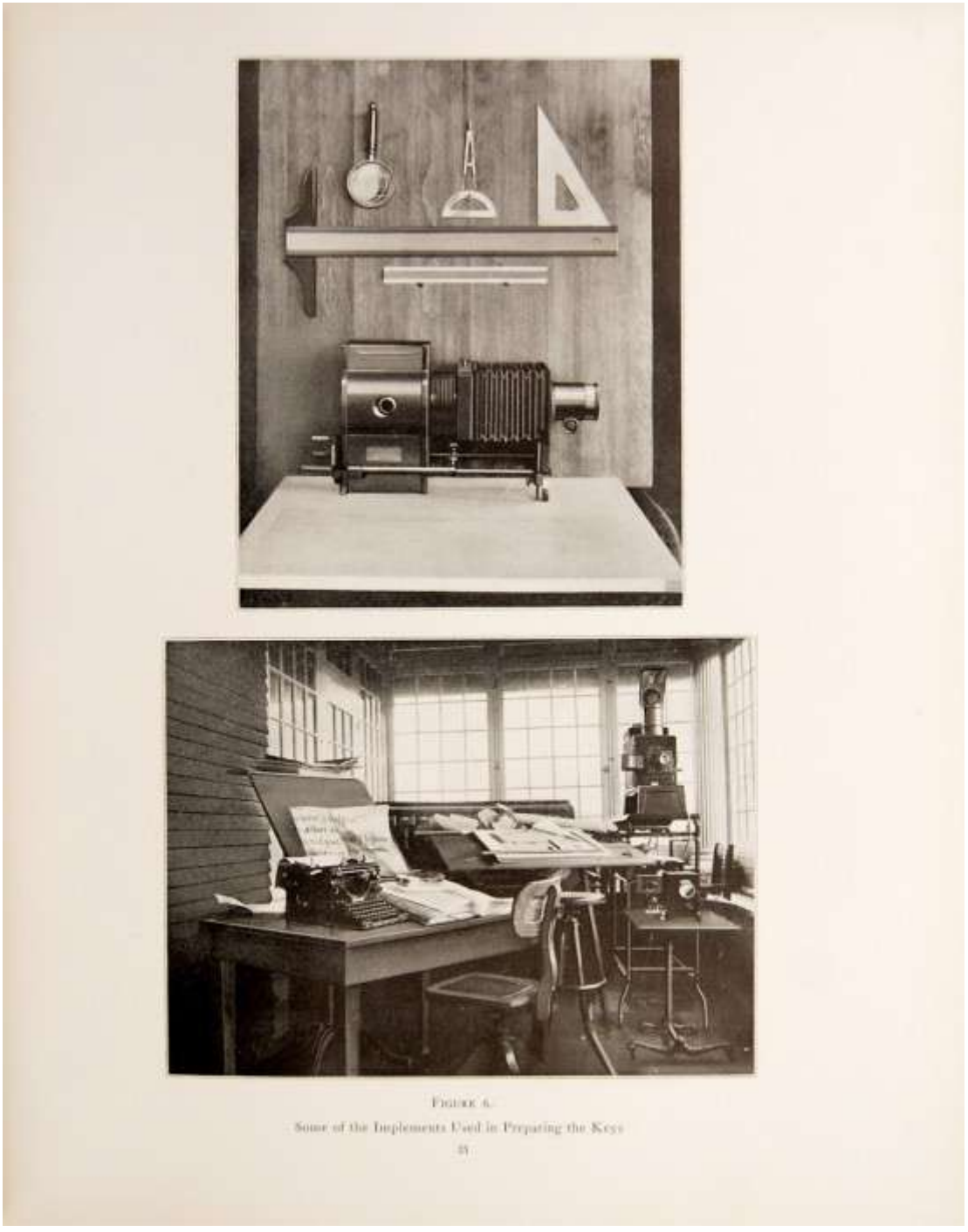
PHOTOGRAPHED FROM THE ORIGINAL 1605 EDITION

Returning to Shakespeare, one of the most well-known Baconians, an American school teacher named Elizabeth Gallup (1838–1934), became intrigued by the bilateral cipher. She believed that Bacon had used it to encode secret messages in the printed versions of the Shakespearean texts, with subtle differences between typefaces being the key to the cipher (the difficulties this would have presented to early modern printers seem to have been overlooked). To Gallup, the bilateral cipher proved that Bacon was not only the author of Shakespeare's plays, but also the son of Queen Elizabeth and brother of the Earl of Essex, and that he had

written works attributed to Christopher Marlowe and other authors, as well as five previously unknown tragedies based on contemporary events. She even travelled to London in the belief that the missing manuscripts were still hidden in the neighbourhood of Islington.

At the beginning of the 20th century a wealthy and eccentric Baconian named George Fabyan founded the Riverbank Institute, a private research organisation housed on his estate in Geneva, Illinois. In addition to departments investigating medicine and agricultural science, there would be an American Academy of Baconian Literature, which Elizabeth Gallup was hired to direct. Here she set out to research the bilateral cipher using new photographic techniques, and began producing books and articles explaining her work.

William Friedman with an AT&T cipher machine.



Photos of the Riverbank Laboratories and the equipment used to investigate the bilateral cipher in early modern texts.

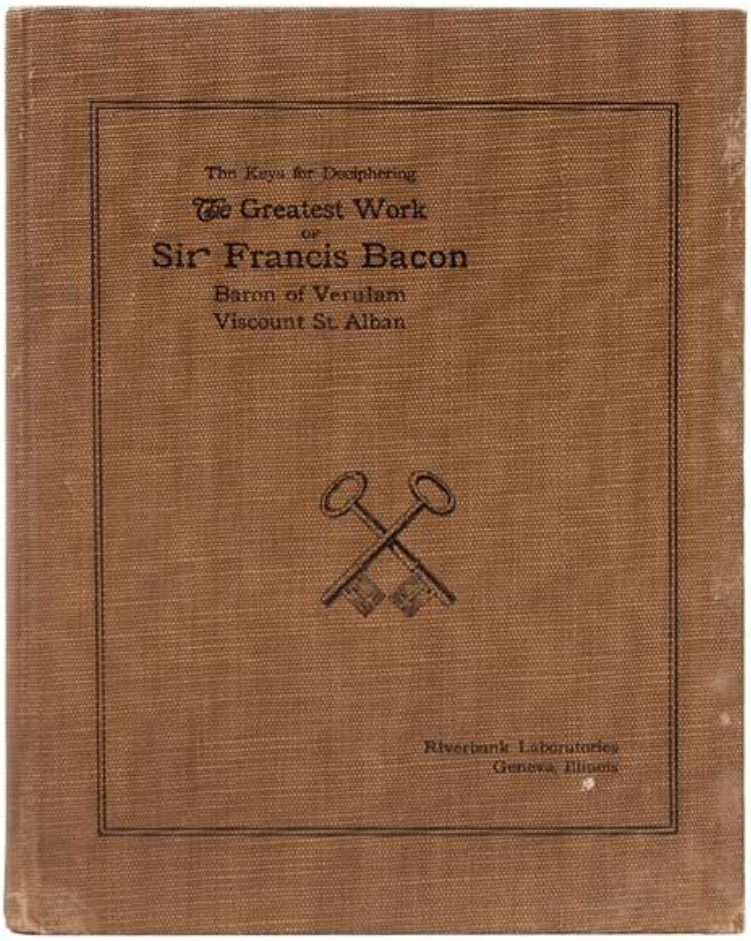
In 1915 a young biologist named William F. Friedman was hired to run Riverbank's Department of Genetics, but found himself drawn instead to Gallup's department. As a child he had been introduced to cryptography by Edgar Allan Poe's "The Gold Bug", and he was interested in the bibliographical and and photographic

methods the team used. He was also attracted to Gallup's young assistant, Elizebeth Smith, herself an expert cryptographer. Once he began working with the Baconians it became apparent that Friedman had "an intuitive grasp of cipher systems that must have been breathtaking" (Sherman). Soon he was creating many of the cryptographic images used in the department's publications, as well as producing his own work such as the first description of the index of coincidence, an important tool in code-breaking.

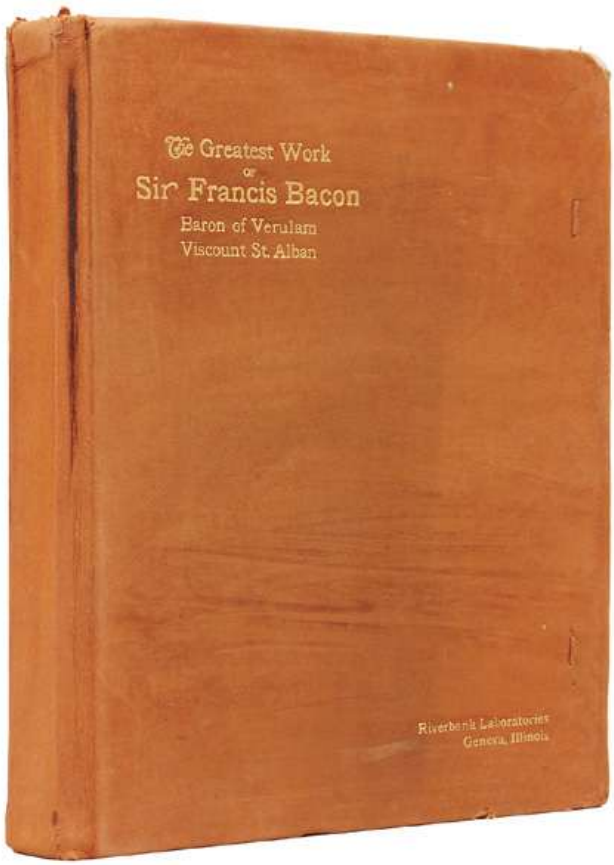
At the outbreak of the First World War Riverbank was the only institution in the United States with expertise in cryptography, and in a short time William and Elizebeth were cracking codes for the war effort and training the US military's first unit of elite cryptographers. In a beautiful example of the power of the Baconian cipher, Friedman had his recruits pose for a group photograph that used their bodies to encode the phrase "knowledge is power" (click here to see a decoded version of the photograph – the soldiers facing the camera represent *a* and those facing away represent *b).*

In May 1917 William and Elizebeth Smith married, and in 1918 he volunteered for military service, serving as the chief cryptographer to General Pershing. After the war the couple moved to Washington D. C., where both played important roles in the development of government cryptanalysis (a term that Friedman had himself coined). Friedman became chief cryptanalyst for the War Department in 1921. He helped develop the United States' most important cipher machine (SIGBA) and his numerous books and articles formed the foundation of modern, scientific cryptography. Elizebeth worked for the War Department and the Navy, and later during Prohibition for the Treasury, where she cracked bootleggers' codes. William Friedman's greatest success came at the outbreak of the Second World War, when his team broke the Japanese code PURPLE, allowing the US to intercept high-level Japanese diplomatic communications (including the order to cease negotiations that preceded the attack on Pearl Harbor). After the war he worked for the new National Security Administration, and retired in 1956, after more than thirty years as the government's leading cryptographer.

William and Elizebeth's work came full-circle in the 1950s, when they turned their attention back to Shakespeare and produced *The Shakespearean Ciphers Examined*, a masterful work on the Baconian controversy. Published in 1957, it conclusively demolished the theory that any encoded messages are present in early editions of Shakespeare. Despite being debunked, the early Riverside publications that gave "the world's greatest cryptographer" (Kahn) his start are highly sought-after by modern book collectors, and we are lucky enough to have two of these volumes in stock:

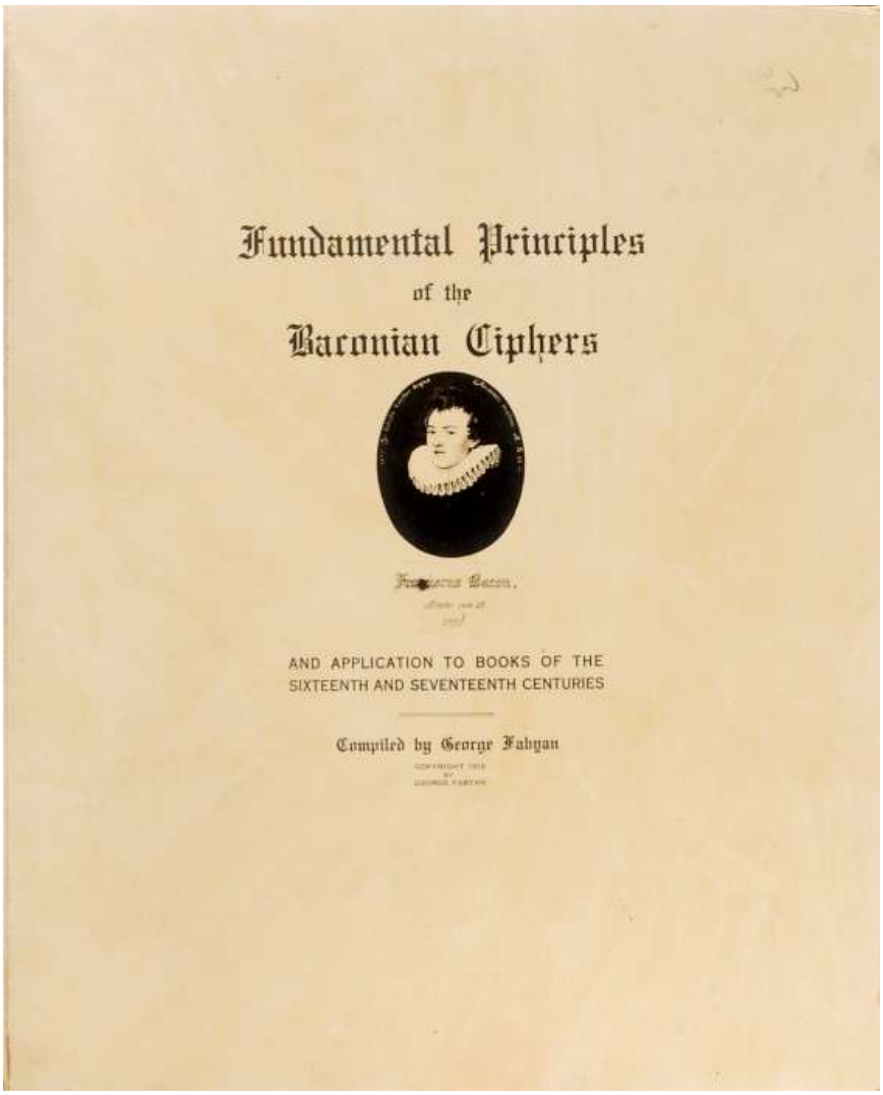


The Keys to Deciphering the Greatest Work of Sir Francis Bacon. Geneva, IL: Riverbank Laboratories, 1916.



Fundamental Principles of the Baconian Ciphers and Application to Books of the Sixteenth and Seventeenth Centuries. Geneva, IL: Riverbank Laboratories, 1916.

Many of Riverbank's publications were produced in unusual formats using materials suggestive of 17th-century England, such as the the light-brown reverse calf in the image above. The Riverbank team also took advantage of new photographic techniques, and many of the pages in these books are reproduced entirely photographically rather than by traditional printing methods. Originally published in very in low numbers, these fragile materials made the books even less likely to survive, and they are rare today, with only five copies of *Fundamental Principles of the Baconian Ciphers* known to be held institutionally.



Fundamental Principles

of the

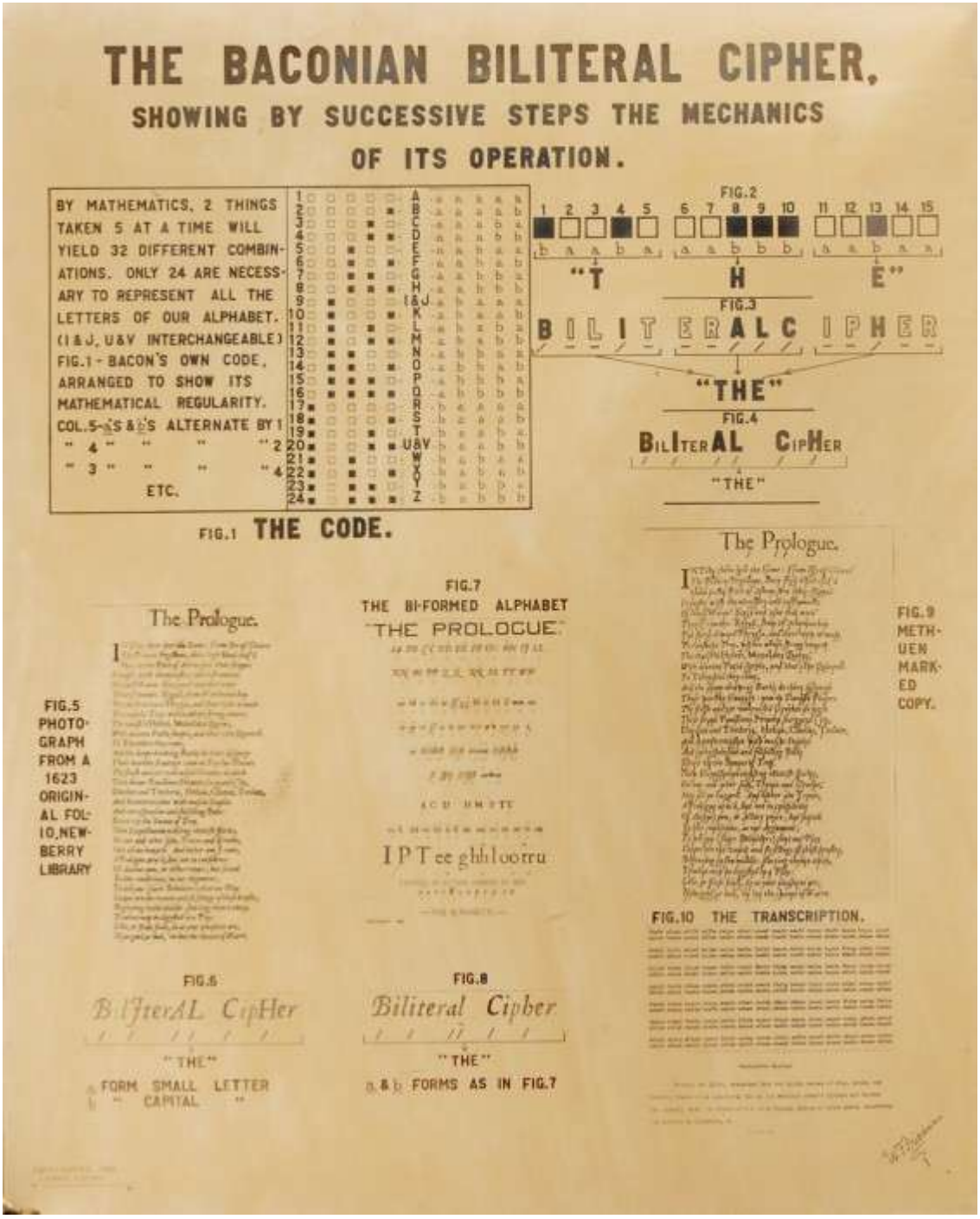
Baconian Ciphers

Francis Bacon.

AND APPLICATION TO BOOKS OF THE
SIXTEENTH AND SEVENTEENTH CENTURIES

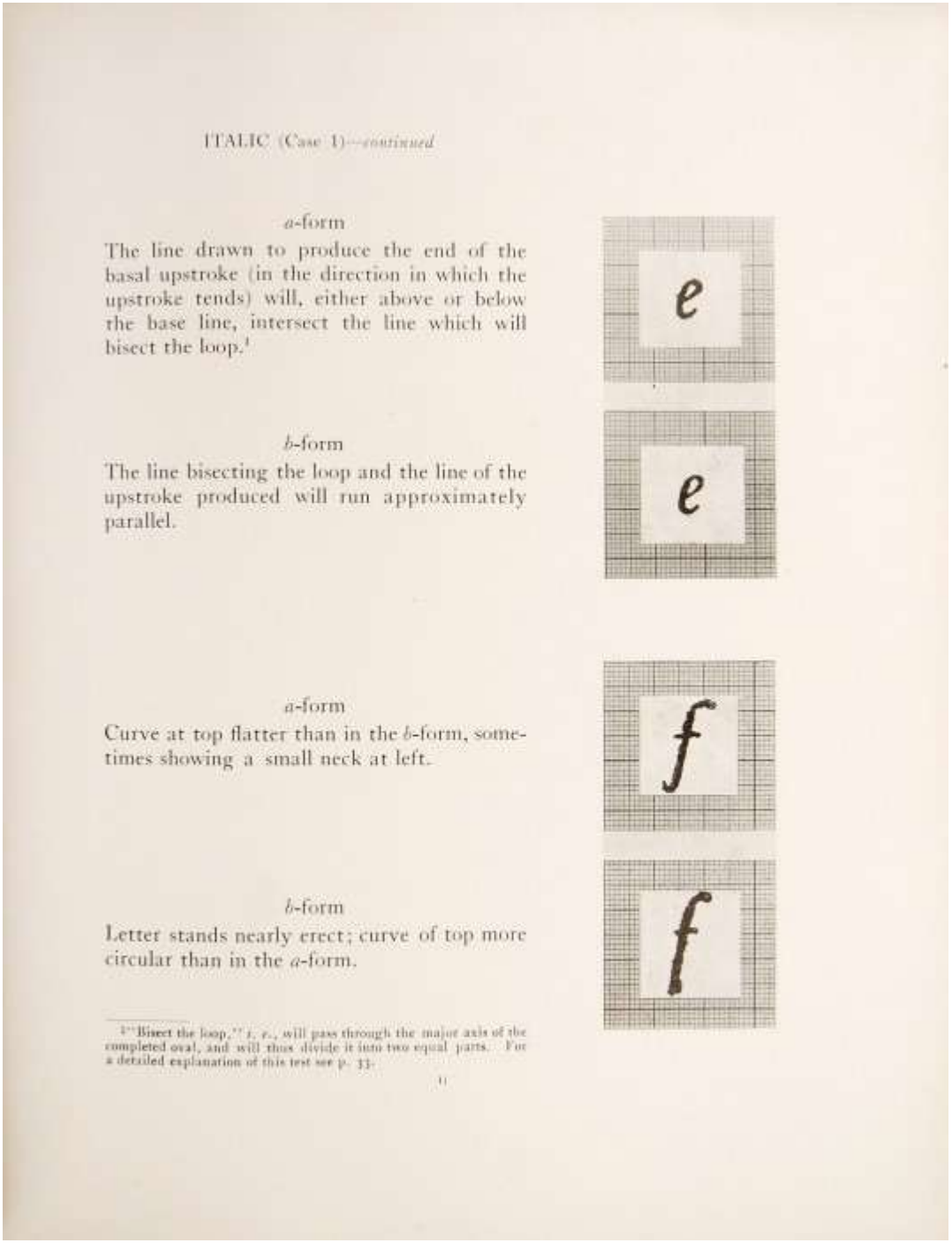
Compiled by George Fabyan

Title page.



The Baconian Bi-Lateral Cipher.

An explanation of Bacon's cipher (click to enlarge). Note William Friedman's signature on the lower right – this appears on many of the pages that he created for these publications.



ITALIC (Case 1)—*continued*

a-form

The line drawn to produce the end of the basal upstroke (in the direction in which the upstroke tends) will, either above or below the base line, intersect the line which will bisect the loop.[1]

b-form

The line bisecting the loop and the line of the upstroke produced will run approximately parallel.

a-form

Curve at top flatter than in the *b*-form, sometimes showing a small neck at left.

b-form

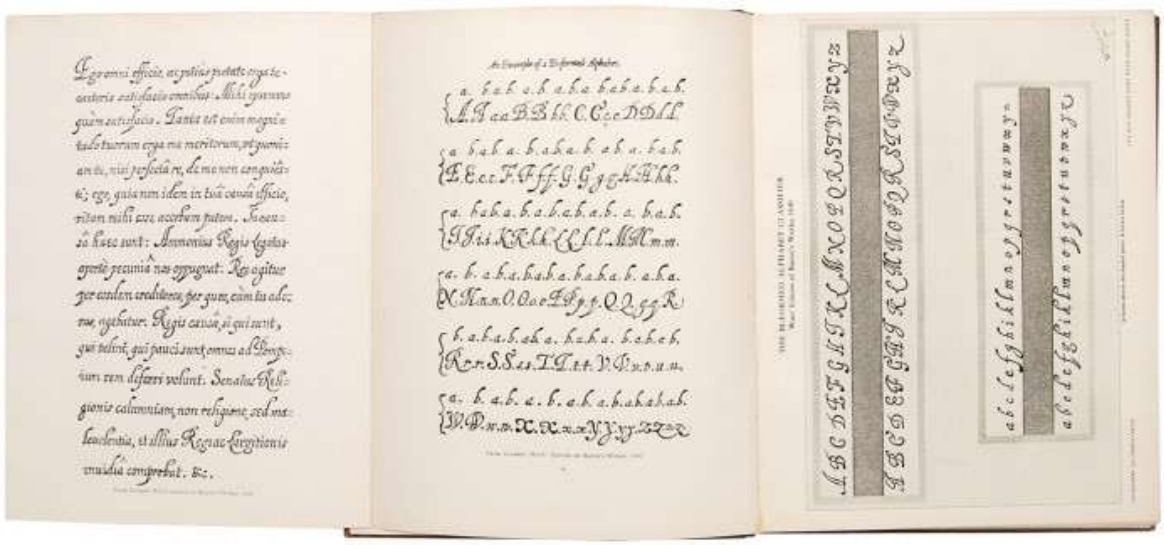
Letter stands nearly erect; curve of top more circular than in the *a*-form.

[1] "Bisect the loop," *i. e.*, will pass through the major axis of the completed oval, and will thus divide it into two equal parts. For a detailed explanation of this test see p. 33.

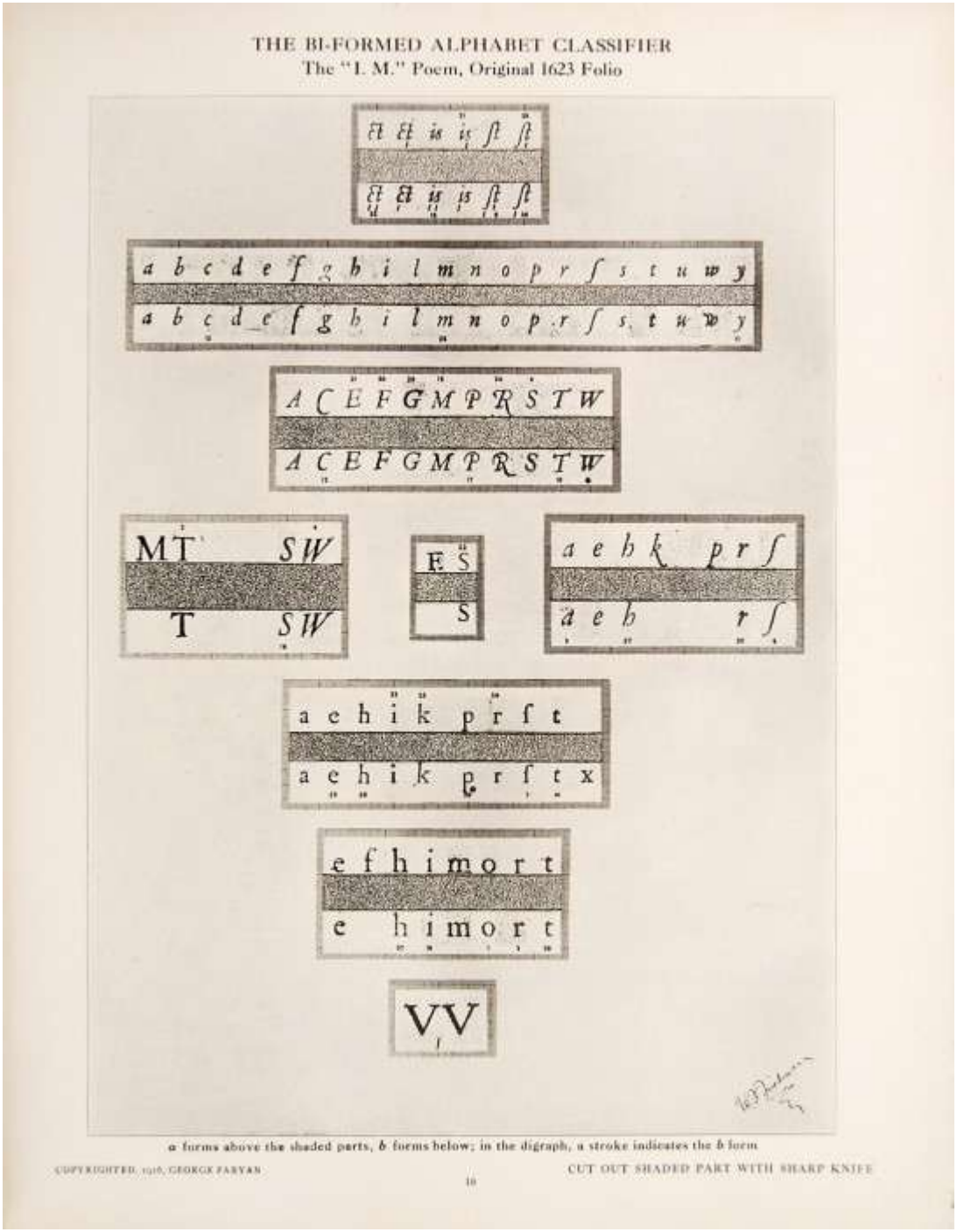
Examples of the purported a and b letterforms in the works of Shakespeare.

Elizabeth Gallup's theory rested on the use of two different types in the early editions of Shakespeare. Much of the *The Keys for Deciphering the Greatest Works of Sir Francis Bacon* is given over to analyzing the two forms of each letter. Unfortunately for her theory, it was common for early modern printers to use a variety of

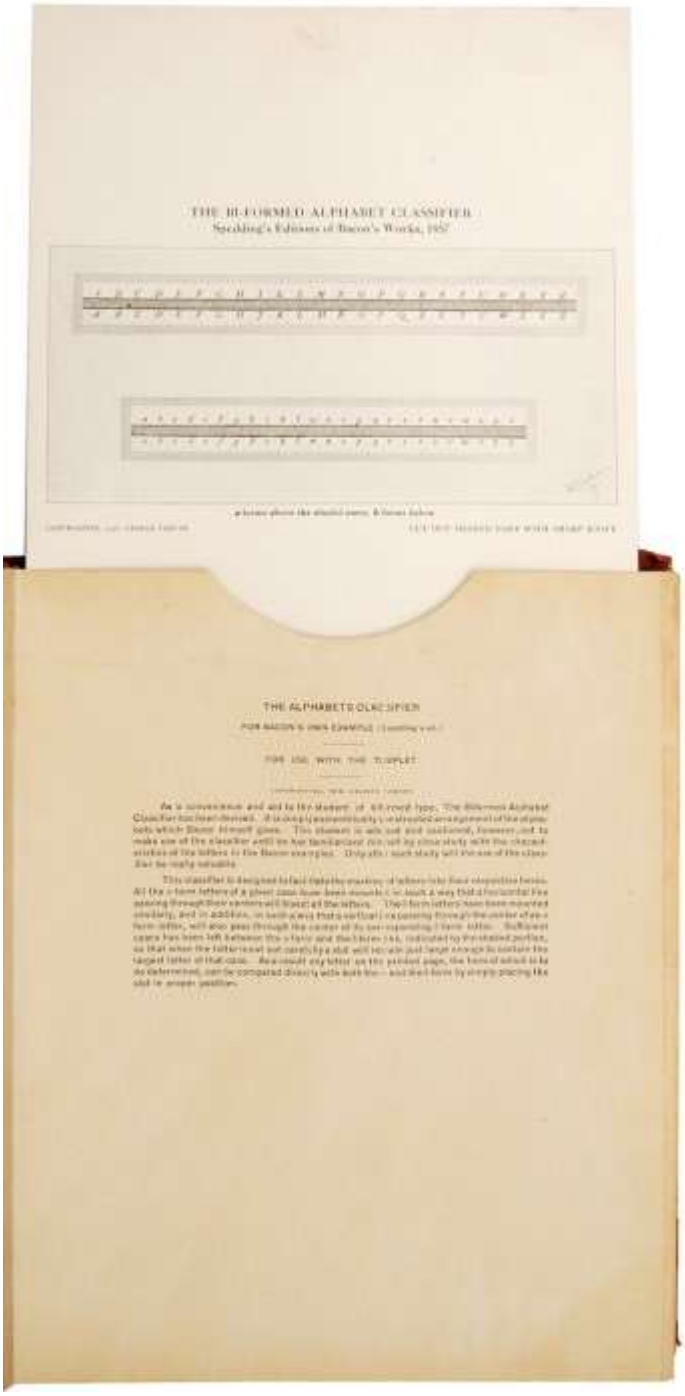
type, not all of which was identical. And it would have been almost impossible for the compositors to identify tiny variations in the letters while setting the type.



Example of a Bi-Formed Alphabet.



The Bi-Formed Alphabet Classifier.



The Bi-Formed Alphabet Classifier

The two removable guides shown above were meant to be used while reading the Shakespearean texts, for quick and easy identification of the letter-forms. Both include Friedman's signature.

"PRINCIPALL ACTORS."

S T W W

aa ee f hh ii kk l m oo p rr s ſ

A C H & ſt W ll ll N P T

aa cc dd eef g hh ii mm nn oo p rr ss tt

P a cc dd ee f gg hh ii ll T

nn oo rr ſ ss tt u y fi ſt ll

A BB CC E F G HH JI K L

N O P RR SS T T U W Ŵ

aa bb cc dd ee gg hh ii kk ll mm nn oo pp rr s

ſſ tt uu w x yy as as fi ffffff ſh ſſ ſtſt

Å A GG J̊ I LL NN OO RR

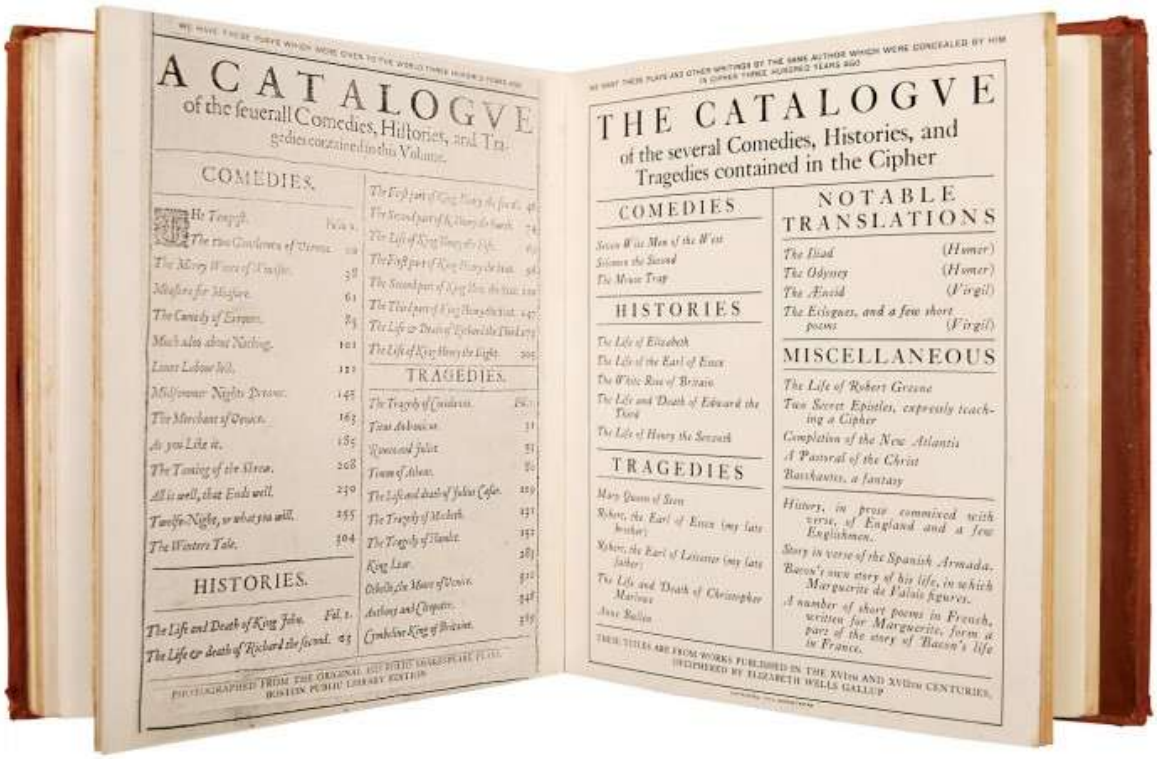
— THE ALPHABETS.—

The **a** forms are unmarked; the *b* forms are indicated by a stroke beneath the letter.

A number accompanying a letter indicates that it was taken from some other source, for comparison. This number refers to the *Index of Typical Letters*, in which the exact source of the letter may be found. (See pp. 74 ff.)

A large dot accompanying a letter indicates that it is a "dotted letter" or an "accented letter," an explanation of which will be found in the Index aforementioned.

The cipher as used in the list of principal actors.



A CATALOGVE
of the seuerall Comedies, Hiſtories, and Tra-
gedies contained in this Volume.

COMEDIES.

The Tempeſt.
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The Merry Wiues of Windſor.
Meaſure for Meaſure.
The Comedy of Errours.
Much adoe about Nothing.
Loues Labour loſt.
Midſommer Nights Dreame.
The Merchant of Venice.
As you Like it.
The Taming of the Shrew.
All is well, that Ends well.
Twelfe-Night, or what you will.
The Winters Tale.

HISTORIES.

The Life and Death of King John.
The Life & death of Richard the ſecond.
The Firſt part of King Henry the fourth.
The Second part of King Henry the fourth.
The Life of King Henry the fift.
The Firſt part of King Henry the ſixt.
The Second part of King Henry the ſixt.
The Third part of King Henry the ſixt.
The Life & Death of Richard the Third.
The Life of King Henry the Eight.

TRAGEDIES.

The Tragedy of Coriolanus.
Titus Andronicus.
Romeo and Iuliet.
Timon of Athens.
The Life and death of Iulius Cæſar.
The Tragedy of Macbeth.
The Tragedy of Hamlet.
King Lear.
Othello the Moore of Venice.
Anthony and Cleopatra.
Cymbeline King of Britaine.

PHOTOGRAPHED FROM THE ORIGINAL FIRST FOLIO SHAKESPEARE PLATE,
BOSTON PUBLIC LIBRARY EDITION

THE CATALOGVE
of the several Comedies, Histories, and
Tragedies contained in the Cipher

COMEDIES

Seven Wise Men of the West
Solomon the Second
The Mouse Trap

HISTORIES

The Life of Elizabeth
The Life of the Earl of Essex
The White Rose of Britain
The Life and Death of Edward the Third
The Life of Henry the Seventh

TRAGEDIES

Mary Queen of Scots
Robert, the Earl of Essex (my late brother)
Robert, the Earl of Leicester (my late father)
The Life and Death of Christopher Marlowe
Anne Boleyn

NOTABLE TRANSLATIONS

The Iliad (Homer)
The Odyssey (Homer)
The Aeneid (Virgil)
The Eclogues, and a few short poems (Virgil)

MISCELLANEOUS

The Life of Robert Greene
Two Secret Epistles, expressly teaching a Cipher
Completion of the New Atlantis
A Pastoral of the Christ
Bankwaites, a fantasy

History, in prose commixed with verse, of England and a few Englishmen.
Story in verse of the Spanish Armada.
Bacon's own story of his life, in which Marguerite de Valois figures.
A number of short poems in French, written for Marguerite, form a part of the story of Bacon's life in France.

THESE TITLES ARE FROM WORKS PUBLISHED IN THE XVIth AND XVIIth CENTURIES,
DECIPHERED BY ELIZABETH WELLS GALLUP

On the left, the original catalogue of Shakespeare's works, and on the right, Gallup's "updated" list.

Though it doesn't make the authorship controversy any less troublesome (or the film *Anonymous* any less laughable) we can take some comfort in thanking Bacon and his followers for many of the cryptographic breakthroughs of the 20th-century. As James Shapiro writes in *Contested Will*, "…Mrs. Gallup never achieved the fame [she] sought, but their work on ciphers helped win a war".

To learn more about these subjects you can explore the resources outlined below:

- How to Make Anything Signify Anything is an excellent piece by William H. Sherman published in the winter 2010/11 issue of Cabinet magazine. It contains a more detailed discussion of the bilateral cipher and of Friedman's work at Riverbank, as well as some excellent photographs (and the Knowledge is Power photo is available as a poster). Sherman is also the author of two of my favourite book history publications, *John Dee* and *Used Books*.

- The Friedmans' interest in books extended to the mysterious Voynich manuscript, which they spent much of their free time trying to decode. This article discusses their work on it in detail.

- Academic and blogger Harold Syme has written several excellent pieces on *Anonymous* and the Shakespeare controversy, particularly People Being Stupid About Shakespeare & Enough Already. His RSS feed is a must for anyone interested in the early modern era.

- Contested Will, by James Shapiro, examines the origins, history, and cultural implications of the authorship controversy. Shapiro has also written an excellent take-down of *Anonymous* published in the New York Times on 16 October.

- The Codebreakers, by David Kahn, is the definitive history of cryptography.
- The Shakespeare Authorship page is a comprehensive collection of resources on the authorship controversy, with the editors on the Stratfordian side.
- The Marshall Foundation houses the archives of William and Elizebeth Friedman, and each finding aid includes a short biography.
- The NSA also hosts short biographies of both William and Elizebeth Friedman.
- One of the world's most famous unsolved codes is the CIA's Kryptos sculpture, which remains uncracked by even the brightest minds in the security field.

http://www.peterharrington.co.uk/blog/2011/10/knowledge-is-power-shakespeare-bacon-modern-cryptography/

No One Better Lay a Finger on This Butterfinger

Do candy bars ever go bad?

By Forrest Wickman|Posted Thursday, Oct. 27, 2011, at 7:02 PM ET

How long does Halloween candy stay fresh?

Photograph by iStockphoto/Thinkstock.

Millions of trick-or-treaters will ring doorbells across the United States this year and take home bags overflowing with candy. Assuming they don't finish it off in one night, how long will it take before these sweets go bad? Does a candy bar ever expire?

Yes, but it might last until next Halloween or beyond. Candy bars are high in sugar and low in moisture, both of which help to prevent microbial growth. Pure chocolate can last for two years or more without presenting any acute health risks, but it's likely to change in texture and become less appetizing after about 12 months. Given enough time, some bars could even become so dry and hard as to be inedible (or at least a danger to your teeth). More serious, nondental health risks are very unlikely, however.

The ingredients within a candy bar, like almonds or peanut butter, may degrade more quickly than the chocolate coating. Nuts can begin to go rancid after about a year in the package, and faster if the bar has been left out in the open. Rancid nuts and any other ingredients that have begun to oxidize may produce some carcinogens, but by the time these pose any serious risk, the candy bar will have become too gross to eat.

The white spots or haze that sometimes appear on old chocolate bars is known among chocolatiers as "blooming," and it's harmless to your health. Blooming isn't mold, as some candy-lovers might think, but rather a splotch of fat or sugar that has risen to the surface. Fat blooming is caused by fluctuations in

temperature, while sugar blooming is caused by condensation and changes in humidity. To avoid the whitening—which affects a candy's appearance and its texture—store your candy bars in a cool, dry place away from the sun.

When chocolate bars do harbor dangerous microbes, it's usually because something got into the food before it was sealed into its package. Dangerous bacteria like salmonella have been found in chocolate, but the chances of these dangerous microorganisms getting into a candy bar that was properly manufactured are extremely low.

Not all candy bars will have expiration dates, and even an expired candy might be still be good to eat. In general, food expiration dates mean very little, and often pertain to product quality rather than safety. (Food companies want consumers to get the most out of their products, and also buy more of them.)

Bonus Explainer: What's the most unhealthy Halloween candy bar? Probably the Twix or the Baby Ruth. These two popular bars count themselves among the highest in both calories and saturated fat. As a general rule, sugar candies tend to be lower in calories than candy bars, at least per serving size—though sticky candies tend to be worse for your teeth.

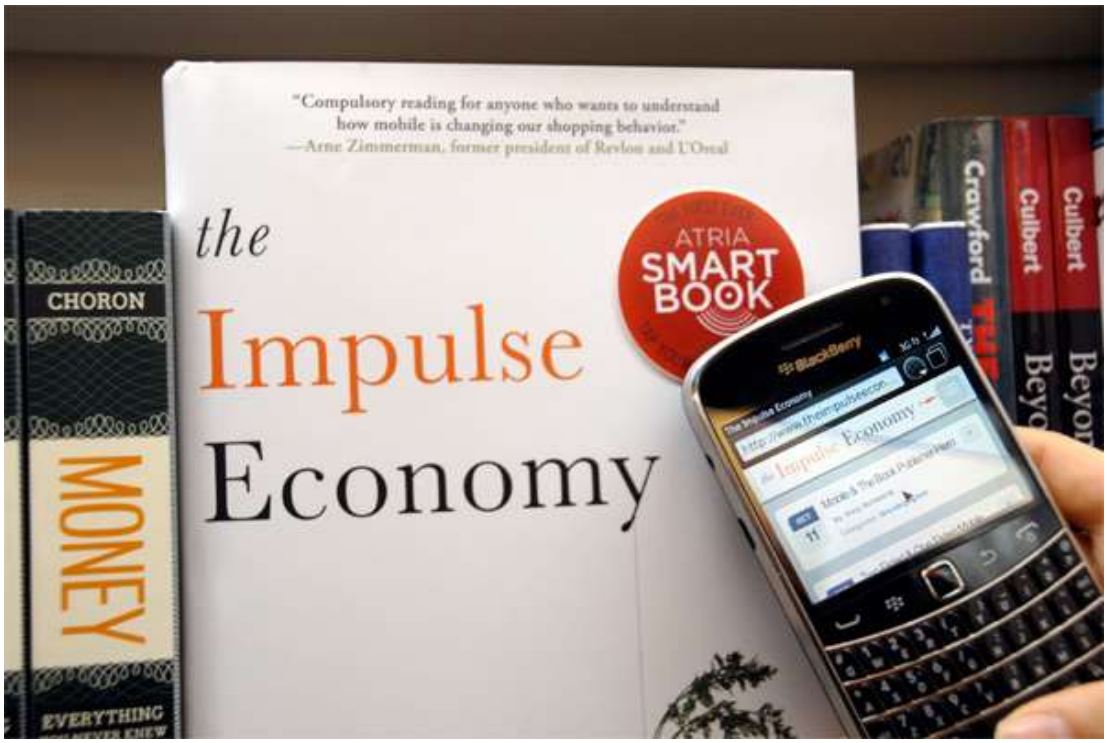
Got a question about today's news? Ask the Explainer.

Explainer thanks Nicki J. Engeseth of the University of Illinois and Theodore P. Labuza

http://www.slate.com/articles/health_and_science/explainer/2011/10/do_candy_bars_go_bad_halloween_health_concerns_addressed.html

Do you want a smart book?

October 28, 2011 | 8:59 am



Atria is publishing its first book to be equipped with a smart chip, the publisher announced Friday. Tapping the RFID-enabled sticker with an NFC-enabled smartphone will bring up a website with additional materials for the book. The debut smart book is "The Impulse Economy: Understanding Mobile Shoppers and What Makes Them Buy" by Gary Schwartz. Appropriate.

The smart book allows the physical book to become interactive for both the book buyer and the book browser, Judith Curr, Atria's executive vice president and publisher, said in a statement. "The reader can tap to rich interactive content on their phone. The goal is to engage the consumer and start a permission-based two-way relationship that may lead to the sale of this book or further sales in this category of interest."

The interesting thing about this take is that it seems to be a way for the publisher to try to sell the potential book-buyer on the book using interactive content. This buyer is someone who is browsing in a bookstore, sees the book and taps the sticker on the book without being obliged to purchase it. Now there is additional online marketing pizzazz convincing them to buy the book.

I guess this makes me old-fashioned: the way I decide to buy a book in a bookstore is to pick it up and look inside.

Would it be possible for a book with a smart chip that adds enhanced content, rather than marketing? How could it be packaged if the book is sitting there on the shelf, easy to flip through?

It will be a while before I find out. NFC-enabled phones use Near Field Communication to communicate with radio frequencies at short range and are often used for purchasing. Android phones can be NFC-enabled; iPhones cannot.

http://latimesblogs.latimes.com/jacketcopy/2011/10/does-your-book-have-a-smart-chip.html

Even in straitened times, we must encourage, not stifle, creativity

The new University of the Arts offers a vibrant corrective to those who question the value of such degrees

- 
- Tim Adams
- The Observer, Sunday 30 October 2011

On Friday morning, in search of an escape from another news screen full of bailouts and recapitalisations and market sentiments, I had a wander around London's new University of the Arts building, converted out of a vast former grain warehouse on the development land behind King's Cross station. The university, which you still get to across a construction site, is now the home of, among other colleges, Central St Martins School of Art and Design, which has relocated from its cramped and fabled buildings in and around Soho.

The new building opened just three weeks ago and students and faculty are still exploring its possibilities. It is already, though, clearly an exciting space. Design and fashion students don't need too many excuses to display some creative energy, but to sit in the cafe in the university's main atrium, with its glass roof and three storeys of glass-fronted studios and workshops rising all around is to remind yourself briefly what it is like to be 19, full of the sudden, lucky freedom of student life and the unlikely sense that, despite all your anxieties to the contrary, the world might yet have an interest in what you can do.

The university building has been designed with cross-fertilisation in mind, so the formerly sequestered departments have been encouraged by its architecture to collaborate and compete for attention: the fashion studios with their rows of half-dressed mannequins look over at the rigour of graphic design; fine arts gazes loftily down on the weaving room of the textile department, in which banks of looms display the threads of intricate pattern-making.

The corridors are open to the central covered courtyard and are punctuated by communal work areas in which students and teachers, many wearing their own creations, share ideas. There is an air of craft and ambition about the place – people are trying stuff on and setting up photo-shoots and chatting while they stitch and paint. You have the feeling that you have wandered into some rarified and animated workshop, a 21st-century rebirth of medieval guilds. In this sense, the one thing that the building – a postindustrial version of courtyard and quadrangle – demands you pay attention to is the primacy of public space, of the habits and attractions of shared attention and knowledge. And it reminds you, too, how often these collective, defining attributes of university are neglected in the continuing debate about the funding and relevance of degree-level study.

Successive governments have encouraged us to think about university – along with everything else – in terms of singular cost benefits ("What will I get out of it?") and as another facet of the inescapable narrative of bailout and debt. And it is in this context that it was revealed that applications to creative arts degrees were down by 27.1%, year on year, a figure that was seized on as a predictable effect of the government slashing direct grants to universities and the consequent trebling of student fees.

There is no breakdown of that 27%, but it is hard to believe it does not disproportionately include those who can afford it least and may benefit from it most. Other "harder" subjects – business,

accountancy, law – do not show that collapse in numbers, though across the board the figures are down something like 8% year on year.

In some quarters, perhaps governmental corridors, these numbers have been greeted with the kind of sigh of relief that exasperated parents might reserve for teenage kids bent on pursuing "worthless" enthusiasms. The overwhelming attitude of the blog posts, responding to this story, reflected on how the school leavers formerly attracted to the "soft" subjects offered by institutions such as Central St Martin's (alumni include Lucian Freud, James Dyson and Terence Conran) are "getting real", "doing the maths". This is thought to be a good thing.

There is undoubtedly increasing number-crunching to prove that the maths, on its own, doesn't add up. However, the picture is complicated, since on the plus side the "creative industries" employ nearly two million people in Britain – a figure that is growing at double the rate of the economy as a whole – and contribute nearly £20bn in exports. And though skeptics point out that a third of recent graduates from creative arts degrees are effectively unemployed, this figure needs to be placed alongside the fact that nearly the same holds true for last year's economics and engineering graduates. A recent study at Lancaster University suggested that over the course of a career student fees of anything more than £7,000 a year for a male arts graduate were, on average, unlikely to recoup the investment in terms of an uplift in salary (for women, who are still paid less, it just about made sense). American commentators have noted this "higher education bubble", the consequence of the equation that proves that study is increasingly not worth the outlay; bottom line – you will not make enough to cover your debt.

The government tacitly endorses such thinking; its white paper on higher education, nonsensically titled "Students at the heart of the system", was based on a report led by a former chief executive of BP, Lord Browne, whose committee included a partner at McKinsey's, a Treasury economist and a senior banker. The white paper was published after legislation on fees had been enacted and, not surprisingly, given the make-up of the advisory board, its tone took as read the prevailing wisdom that universities, if they had any value, were to be much more closely aligned with the needs of the economy, the desperate pursuit of growth. A degree, this wisdom suggests, should first and foremost be a matter of pragmatism rather than risk, a career calculation rather than a backing of talent. You should go in with a clear idea of what you might earn when you come out.

The thing that makes you smile about spending a little time in the new University of the Arts building is the feeling that, in the face of all that maths, the converse proposition still has the capacity to flourish. That's the one that suggests that if universities have a primary purpose it is as forums of open curiosity and rigorous criticism, as microcosms of democracy and free inquiry. The one that says students should be totally immersed in the here and now of what they might be capable of, and that making money from it should not only be the very least of their concerns, but all the more likely the less thought they give to it. That the drive to marginalise such ambitions, and to make them off-limits to the "common people" of that other St Martin's alumnus Jarvis Cocker, will have consequences far beyond the economic.

And that if we are to create a society that values public space and spirited collaboration and independent thought, that doesn't measure everything in terms of personal gain, then the new University of the Arts feels like it could be as good a place as any from which to start.

http://www.guardian.co.uk/commentisfree/2011/oct/30/students-future-earnings-degree-costs

Why Fingernails on Blackboards Sound So Horrible

- By Wired UK
- November 1, 2011

By Duncan Geere, Wired UK

Much time has been spent, over the past century, on working out exactly what it is about the sound of fingernails on a blackboard that's so unpleasant. A new study pins the blame on psychology and the design of our ear canals.

WIRED.CO.UK

Previous research on the subject suggested that the sound is acoustically similar to the warning call of a primate, but that theory was debunked after monkeys responded to amplitude-matched white noise and other high-pitched sounds, whereas humans did not. Another study, in 1986, manipulated a recording of blackboard scraping and found that the medium-pitched frequencies are the source of the adverse reaction, rather than the the higher pitches (as previously thought). The work won author Randolph Blake an Ig Nobel Prize in 2006.

The latest study, conducted by musicologists Michael Oehler of the Macromedia University for Media and Communication in Cologne, Germany, and Christoph Reuter of the University of Vienna, looked at other sounds that generate a similar reaction — including chalk on slate, styrofoam squeaks, a plate being scraped by a fork, and the ol' fingernails on blackboard.

Some participants were told the genuine source of the sound, and others were told that the sounds were part of a contemporary music composition. Researchers asked the participants to rank which were the worst, and also monitored physical indicators of distress — heart rate, blood pressure and the electrical conductivity of skin.

They found that disturbing sounds do cause a measurable physical reaction, with skin conductivity changing significantly, and that the frequencies involved with unpleasant sounds also lie firmly within the range of human speech — between 2,000 and 4,000 Hz. Removing those frequencies from the sound made them much easier to listen to. But, interestingly, removing the noisy, scraping part of the sound made little difference.

A powerful psychological component was identified. If the listeners knew that the sound was fingernails on the chalkboard, they rated it as more unpleasant than if they were told it was from a musical composition. Even when they thought it was from music, however, their skin conductivity still changed consistently, suggesting that the physical part of the response remained.

That physical response is likely generated by the shape of the human ear canal, which prior research has shown to amplify frequencies in the range of 2,000 to 4,000 Hz. What seems to happen, the researchers reckon, is that when a screech on a chalkboard is generated, the sound is amplified within our ears to painful effect.

The next step for the researchers is to further explore the parameters of unpleasant noises, with the eventual goal of trying to mask those frequencies within factory machinery, vacuum cleaners or construction equipment. For the time being, though, it's probably best to steer clear of blackboards.

Image: weegeebored/Flickr/CC-licensed

Source: Wired.co.uk

http://www.wired.com/wiredscience/2011/11/chalk-board-fingernail-sound/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+wired%2Findex+%28Wired%3A+Index+3+%28Top+Stories+2%29%29

Looks like Congress has declared war on the internet

By Mathew Ingram Oct. 27, 2011, 3:07pm PT 223 Comments

Many internet users in the United States have watched with horror as countries like France and Britain have proposed or instituted so-called "three strikes" laws, which cut off internet access to those accused of repeated acts of copyright infringement. Now the U.S. has its own version of this kind of law, and it is arguably much worse: the Stop Online Piracy Act, introduced in the House this week, would give governments and private corporations unprecedented powers to remove websites from the internet on the flimsiest of grounds, and would force internet service providers to play the role of copyright police.

To recap a bit of history, the Stop Online Piracy Act or SOPA is the House version of a previous bill proposed by the Senate, which was known as the PROTECT-IP Act (a name that was an abbreviation for "Preventing Real Online Threats to Economic Creativity and Theft of Intellectual Property"). That in turn was a rewritten version of a previous proposed bill that was introduced in the Senate last year. Not wanting to be outdone by their Senate colleagues when it comes to really long acronyms, the House version is also known as the E-PARASITE Act, which is short for "Enforcing and Protecting American Rights Against Sites Intent on Theft and Exploitation."

Copyright holders win, free speech and an open Internet lose

What it really is, however, is a disaster for the internet. As the Electronic Frontier Foundation notes in a post on the proposed legislation, the law would not only require ISPs to remove websites from the global network at the request of the government or the courts (by blocking any requests to the central domain-name system that directs internet traffic), but would also be forced to monitor their users' behavior in order to police acts of copyright infringement. Providers who do not comply with these requests and requirements would be subject to sanctions. And in many cases, legal hearings would not be required. As Senator Ron Wyden (D-Oregon) said of the PROTECT-IP Act:

At the expense of legitimate commerce, PIPA's prescription takes an overreaching approach to policing the Internet when a more balanced and targeted approach would be more effective. The collateral damage of this approach is speech, innovation and the very integrity of the Internet.

In effect, the new law would route around many of the protections in the Digital Millennium Copyright Act, including the "safe harbor" provisions (a number of law professors have said that they believe the proposed legislation would be unconstitutional because it is a restraint on freedom of speech). The idea that ISPs and internet users can avoid penalties if they remove content once they have been notified that it is infringing, for example, wouldn't apply under the new legislation — and anyone who provides tools that allow users to access blacklisted sites would also be subject to penalties.

In addition to using what some are calling the "internet death penalty" of removing infringing websites from the DNS system so they can't be found, the proposed bill would also allow copyright holders to push for websites and services to be removed from search engine results and to have their supply of advertising cut off — and would require that payment companies like PayPal and ad networks comply with these orders. If you liked what PayPal and others did when they shut off donations to WikiLeaks, you're going to love the new Stop Online Piracy Act.

Creating a firewall around the internet, just like China

According to Techdirt, which has been a vocal critic of the bill and its predecessors, the new legislation would create a "Great Firewall of America," similar to the firewall that the Chinese government uses to keep its citizens from accessing certain websites and servers that it deems to be illegal. Techdirt's Mike Masnick notes that the new bill actually *expands* the range of websites that could be targeted by the bill: the previous version referred to sites that were "dedicated to infringing activities" with no other obvious purpose, but the new law would allow the government to target any site that has "only limited purpose or use" other than infringement (by the government's definition).

The bottom line is that if it passes and becomes law, the new act would give the government and copyright holders a giant stick — if not an automatic weapon — with which to pursue websites and services they

believe are infringing on their content. With little or no requirement for a court hearing, they could remove websites from the internet and shut down their ability to be found by search engines or to process payments from users. DMCA takedown notices would effectively be replaced by this nuclear option, and innocent websites would have to fight to prove that they deserved to be restored to the internet — a reversal of the traditional American judicial approach of being assumed innocent until proven guilty — at which point any business they had would be destroyed.

That might make for the kind of internet that media and entertainment conglomerates would prefer, but it would clearly be a much diminished version of the internet we take for granted. Opponents of the bill have set up a website to try and convince voters to reject the legislation and tell their congressman not to support it. Embedded below is an interview that Senator Wyden did at the recent Web 2.0 Summit about his views on the PROTECT-IP Act and why it needs to be stopped:

http://gigaom.com/2011/10/27/looks-like-congress-has-declared-war-on-the-internet/

You are what you eat: Low-fat diet with fish oil slows growth of prostate cancer cells

By Kim Irwin October 25, 2011

Dr. William Aronson

Men who ate a low-fat diet with fish oil supplements for four to six weeks before having their prostate removed had slower cancer-cell growth in their prostate tissue than men who ate a traditional, high-fat Western diet, according to a study by researchers at UCLA's Jonsson Comprehensive Cancer Center.

The researchers also found a change in the composition of cell membranes in both healthy cells and cancer cells in the prostates of men on the low-fat, fish oil–supplement diet. The membranes had heightened levels of omega-3 fatty acids from fish oil and decreased levels of omega-6 fatty acids from corn oil, which may directly affect the biology of the cells, though further studies are needed, said Dr. William Aronson, the study's first author and a researcher with the Jonsson Cancer Center.

The short-term study also found that blood obtained from patients after the low-fat, fish oil diet slowed the growth of prostate cancer cells in a test tube, while blood from men on the Western diet did not slow cancer growth.

"The finding that the low-fat, fish oil diet reduced the number of rapidly dividing cells in the prostate cancer tissue is important because the rate at which the cells are dividing can be predictive of future cancer progression," Aronson said. "The lower the rate of proliferation, the lesser the chances that the cancer will spread outside the prostate, where it is much harder to treat."

The findings are published Oct. 25 in Cancer Prevention Research, a peer-reviewed journal of the American Association for Cancer Research.

The study, which evaluated blood samples before and after the diet began and examined tissue from removed prostates, validated previous studies Aronson and others had done on cell lines and in animal models. Aronson said using human blood and tissue in this study proved that the changes prompted by what the men were eating were clearly evident in their prostate tissue — that the "treatment" was indeed reaching the targeted organ because of the changes in the prostate cell membranes' fatty acid composition.

"You truly are what you eat," said Aronson, a clinical professor of urology who also serves as chief of urologic oncology at the West Los Angeles Veterans Affairs Medical Center. "Based on our animal studies, we were hopeful that we would see the same effects in humans. We are extremely pleased about our findings, which suggest that by altering the diet, we may favorably affect the biology of prostate cancer."

Aronson measured proliferation — the rate of prostate cancer cell division — by staining tissue obtained from the radical prostatectomy specimens with an antibody against Ki-67, a protein involved in the cell-cycle progression and growth.

"The percentage of prostate cancer cells that stained for Ki-67 was determined by the pathologist, and this gave us an objective measurement of the percentage of cells that were actively dividing and therefore more aggressive," Aronson said. "Previous studies found that patients with higher levels of Ki-67 in their prostate cancer tissue were more likely to have their prostate cancer progress to advanced stages and were more likely to die from their prostate cancer. Thus, we are extremely encouraged by our findings that a low-fat diet with fish oil lowered Ki-67 levels and may have the potential to slow the progression of prostate cancer."

Diet studies often are difficult to evaluate because getting patients to comply with dietary changes can be challenging. However, the food eaten by men in both arms of this study was precisely controlled, Aronson said. The meals were prepared by chefs at the UCLA Clinical Translational Research Center and delivered in bulk to study participants several times a week. Participants also met with a dietician, kept food diaries and were required to return uneaten food.

"The key to this study was having the meals prepared and delivered to the study participants," Aronson said. "This resulted in a very high rate of compliance, making the study very well controlled."

With the study's Western diet, 40 percent of the calories came from fat, which is generally equivalent to what many Americans consume today. The fat sources also were typical of the American diet and included high levels of omega-6 fatty acids from corn oil and low levels of fish oil that provides omega-3 fatty acids.

With the low-fat diet, 15 percent of the calories from fat. Additionally, the men on this diet took five grams of fish oil per day in five capsules, three with breakfast and two with dinner, to provide omega-3 fatty acids. Omega-3 fatty acids have been found to reduce the incidence of heart disease and to fight inflammation, which has been associated with certain cancers.

"Preclinical studies suggest that lowering dietary omega-6 fatty acids from corn oil and increasing omega-3 fatty acids from fish oil decreases the risk of prostate cancer development and progression," the study states. "We found this diet intervention resulted in a decrease in omega-6 vs. omega-3 fatty acid ratios in benign and malignant prostate tissue and a decrease in malignant cell proliferation."

Aronson cautioned that he could not recommend dietary changes based on this study, which included 48 men, because of its short duration and small sample size. However, based on these results, he is organizing a much larger study of 100 men with prostate cancers who have elected active surveillance, meaning they're not getting any treatment for their disease but are getting regular biopsies and check-ups.

The future study will randomly divide the men into a low-fat, fish oil–supplement group and a traditional Western diet group and follow them for a year to evaluate the diets' effects on prostate cancer proliferation.

This study was funded in part by the National Cancer Institute; the Department of Veterans Affairs; and Ken Ruby, President, and Wendy L. Ruby, Secretary, of the Ruby Family Foundation.

UCLA's Jonsson Comprehensive Cancer Center **has more than 240 researchers and clinicians engaged in disease research, prevention, detection, control, treatment and education. One of the nation's largest comprehensive cancer centers, the Jonsson Center is dedicated to promoting research and translating basic science into leading-edge clinical studies. In July 2011, the center was named among the top 10 cancer centers nationwide by U.S. News & World Report, a ranking it has held for 10 of the last 12 years.**

http://newsroom.ucla.edu/portal/ucla/you-are-what-you-eat-low-fat-diet-217897.aspx

Dr. Livingstone's lost 1871 'massacre' diary recovered; discovery rewrites history

By Dawn Setzer November 01, 2011

In Africa 140 years ago, David Livingstone, the Victorian explorer, met Henry M. Stanley of the New York Herald and gave him a harrowing account of a massacre he witnessed, in which slave traders slaughtered 400 innocent people. Stanley's press reports prompted the British government to close the East African slave trade, secured Livingstone's place in history and launched Stanley's own career as an imperialist in Africa.

Today, an international team of scholars and scientists led by Dr. Adrian Wisnicki of Indiana University of Pennsylvania, publishes the results of an 18-month project to recover Livingstone's original account of the massacre. The story, found in a diary that was illegible until it was restored with advanced digital imaging, offers a unique insight into Livingstone's mind during the greatest crisis of his last expedition, on which he would die in 1873.

Livingstone's 1871 Field Diary is a free online public resource published by the UCLA Digital Library Program in Los Angeles (http://livingstone.library.ucla.edu/1871diary/). The project was made possible by the generous funding and support provided by the National Endowment for the Humanities (http://www.neh.gov/), an independent grant-making agency of the U.S. government dedicated to supporting research, education, preservation and public programs. The British Academy has also helped fund the endeavour. With these grants, the research and all the data is made available to advance humanities and technology studies across the United States and globally.

The story the diary tells is electrifying. Livingstone had once been a national hero, but when he wrote this diary, he had been forgotten by the public and was stranded without supplies in Central Africa. A dedicated

writer, he made ink from berry seeds and wrote over the pages of a single copy of the London Standard — the precursor to today's Evening Standard. Exposed to the African environment, the manuscript deteriorated rapidly and today is virtually invisible to the naked eye.

The diary depicts, in Livingstone's words, "the unspeakable horror" of the slave trade in what is now the Eastern Democratic Republic of Congo. It provides an eye-witness account of the shocking massacre, perpetrated by armed slave traders in Nyangwe, a Congolese village. The event forced Livingstone to change his travel plans and led to his famous meeting with Stanley. Had Stanley not found Livingstone and greeted him with the words "Dr. Livingstone, I presume?", the world might never have heard of Livingstone again.

The massacre is one of the most important events in "The Last Journals of David Livingstone" (1874), edited after Livingstone's death in 1873 by his friend Horace Waller. Until now, this book was the main source for historians and biographers. However, critical and forensic analysis of the original 1871 text reveals a very different story from Waller's heavily edited version. In particular, it sheds light on a heart-stopping moment when Livingstone gazes with "wonder" as three Arab slavers with guns enter the market in Nyangwe, where 1,500 people are gathered, most of them women:

"50 yards off two guns were fired and a general flight took place — shot after shot followed on the terrified fugitives — great numbers died — It is awful — terrible, a dreadful world this," writes Livingstone in despair as he witnesses the massacre. "As I write, shot after shot falls on the fugitives on the other side [of the river] who are wailing loudly over those they know are already slain — Oh let thy kingdom come."

Wisnicki, an assistant professor at Indiana University of Pennsylvania and an honorary research fellow at Birkbeck, University of London, says, "Evidence in the diary suggests that members of Livingstone's party might have been involved in the massacre. Livingstone seems to have considered this possibility and this, together with his failure to intervene, appears to have left him with a profound sense of remorse. In copying over the 1871 diary into his journal, Livingstone decided to rewrite or remove a series of problematic passages. His revised journal account, on which the 1874 book is based, did not reflect his original record. It's taken 140 years to discover Livingstone's original words and reveal the many secrets of the original diary."

The original account of the massacre is just one of many passages in the diary that are significantly different from the 1874 book.

"Livingstone would never have published this private diary in his own lifetime," says Wisnicki. "In particular, his attitude to the liberated slaves in his entourage is one of disgust — an attitude greatly at odds with his public persona as a dedicated abolitionist."

Wisnicki anticipates that the publication of the 1871 diary will change the way history interprets Livingstone's legacy.

"Instead of the saintly hero of Victorian mythology, the man who speaks directly to us from the pages of his private diary is passionate, vulnerable and deeply conflicted about the violent events he witnesses, his culpability and the best way to intervene — if at all," he says.

Spectral imaging, the process used to recover Livingstone's original text, involves illuminating the manuscript with successive wavelengths of light — starting with ultraviolet, working through the visible spectrum and ending with infrared. Processed digital images enhanced the selected text.

The scientific and technical team, led by Mike Toth of R.B. Toth Associates, an expert in technical studies of cultural objects for museums and libraries, includes Keith Knox of Eureka Imaging (Kihei, Hawaii), Roger L. Easton Jr. of the Rochester Institute of Technology (Rochester, N.Y.), Bill Christens-Barry of Equipoise Imaging LLC (Ellicott City, Md.), Ken Boydston of MegaVision Inc. (Santa Barbara, Calif.) and Doug Emery of EmeryIT (Baltimore, Md.). The Library of Congress provided invaluable support in system development

and technical advice. Together, the scholars and scientists involved in this interdisciplinary project help usher in a new era of academic endeavour in which advanced imaging technology is applied to the study of 19th-century manuscripts.

Toth says, "The results of this diary project, which enhanced Livingstone's faded handwriting and suppressed the underlying printed text, demonstrate the significance of the spectral imaging process for the digital recovery of damaged and old manuscripts. By making the results available online, the project helps preserve the original diary, which is too fragile to be made available to the public."

Analysis and images for download are available at
http://www.bbk.ac.uk/news/dr.-livingstones-lost-1871-massacre-diary-recovered.

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Notes to editors:

Academic project team:
Project director Dr. Adrian S. Wisnicki; contributing editor and medical historian Dr. Debbie Harrison; and research assistant Kate Simpson, together represent the pioneering Victorian scholarship of Indiana University of Pennsylvania (IUP); Birkbeck, University of London; and Napier University of Edinburgh.

Scientific and technical team:
Led by Mike Toth of R.B. Toth Associates, an expert in technical studies of cultural objects for museums and libraries, the team comprises imaging scientists Keith Knox, Roger L. Easton Jr. and William Christens-Barry; data manager Doug Emery; and camera engineer Ken Boydston. Members of the scientific team have worked on previous projects in support of major manuscript studies, most notably the Archimedes Palimpsest (www.archimedespalimpsest.org) at the Walters Art Museum, palimpsests at St. Catherine's Monastery, and manuscripts at the U.S. Library of Congress, including drafts of the U.S. Declaration of Independence and President Lincoln's Gettysburg Address. The scientific and technical team was supported by the U.S. Library of Congress, and in particular by Dr. Fenella France.

Project sponsors:
The project would not have been possible without the generous funding provided by the U.S. National Endowment for the Humanities (http://www.neh.gov) and also by the British Academy (http://www.britac.ac.uk). The NEH has previously funded the Islamic and Western manuscript imaging at the Walters Art Museum mentioned above.

Digital publishers:
The UCLA Digital Library Program (http://www.library.ucla.edu/libraries/2627.cfm), the publisher of the diary, coordinates the creation, management and delivery of digital content in support of the UCLA Library's mission and goals. The program, led by Stephen Davison, digitizes and publishes online content drawn from the university's collections and engages with U.S. and international partners to build innovative digital collections, services and technologies.

Diary manuscript:
The manuscript has been carefully preserved by the National Trust for Scotland's David Livingstone Centre in Blantyre (http://www.nts.org.uk/Property/23). Further segments of the diary and additional letters are held at the National Library of Scotland, the largest repository of Livingstone documents in the world (http://www.nls.uk). These institutions collaborated with the project team to help bring the 1871 diary to the light of day.

http://newsroom.ucla.edu/portal/ucla/dr-livingstone-s-lost-1871-massacre-218211.aspx

Study shows promise for teen suicide prevention

By Mark Wheeler November 02, 2011
Roughly 1 million people die by suicide each year. In the U.S., where nearly 36,000 people take their own lives annually, more than 4,600 victims are between the ages of 10 and 24, making suicide the third leading cause of death in this age group.

Youths treated at hospital emergency rooms for suicidal behavior remain at very high risk for future suicide attempts. But despite the urgent need to provide them with mental health follow-up care, many don't receive any such care after their discharge. Consequently, a major goal of the U.S. Department of Health and Human Service's National Strategy for Suicide Prevention has been to increase rates of follow-up care after discharge for patients who come to the emergency department (ED) due to suicidal behavior.

Now, a new study by UCLA researchers shows that a specialized mental health intervention for suicidal youth can help. Reporting in the November issue of the journal Psychiatric Services, Joan Asarnow, a professor of psychiatry at the Semel Institute for Neuroscience and Human Behavior at UCLA, and colleagues show that a family-based intervention conducted while troubled youths were still being treated in the ED led to dramatic improvements in linking these youths to outpatient treatment following their discharge.

"Youths who are treated for suicidal behavior in emergency departments are at very high risk for future attempts," said Asarnow, the study's first author. "Because a large proportion of youths seen in the ED for suicide don't receive outpatient treatment after discharge, the United States National Strategy for Suicide Prevention identifies the ED as an important suicide prevention site. So, a national objective is to increase the rates of mental health follow-up treatment for suicidal patients coming out of EDs."

But how to encourage this with youths when they are at their most vulnerable? The study involved 181 suicidal youths at two EDs in Los Angeles County, with a mean age of 15. Sixty-nine percent were female, and 67 percent were from racial or ethnic minority groups. For 53 percent of the participants, their emergency department visit was due to a suicide attempt. The remainder were seen because they had thoughts of suicide.

The youths were randomly assigned to either the usual ED treatment or an enhanced mental health intervention that involved a family-based crisis-therapy session designed to increase motivation for outpatient follow-up treatment and improve the youths' safety, supplemented by telephone contacts aimed at supporting families in linking to further outpatient treatment.

The results of the study show that the enhanced mental health intervention was associated with higher rates of follow-up treatment. Of the participants in the enhanced intervention, 92 percent received follow-up treatment after discharge, compared with 76 percent in the standard ED treatment arm — a clinically significant difference.

While the results are positive, the study is only a first step, according to Asarnow, who also directs UCLA's Youth Stress and Mood Program.

"The results underscore the urgent need for improved community outpatient treatment for suicidal youths," she said. "Unfortunately, the follow-up data collected at about two months after discharge did not indicate clinical or functioning differences among youths who received community outpatient treatment and those who did not."

Still, Asarnow said, the data from the new study underscores the critical importance of this work. To address the need for effective follow-up treatment for troubled youths, the UCLA Youth Stress and Mood Program has major research trials in progress aimed at evaluating outpatient treatments for preventing suicide and suicide attempts.

Funding for the study was provided by the Centers for Disease Control and Prevention, the National Institute of Mental Health and the American Foundation for Suicide Prevention.

Other authors included Larry Baraff, Robert Suddath, John Piacentini, Mary Jane Rotheram-Borus and Lingqi Tang, all of UCLA; Michele Berk and Charles Grob of Harbor–UCLA Medical Center, Los Angeles Biomedical Research Institute; Mona Devich-Navarro of Santa Monica College; and Daniel Cohen of Johns Hopkins University.

Asarnow reports receiving honoraria from Hathaways-Sycamores, Casa Pacifica, the California Institute of Mental Health and the Melissa Institute. Piacentini has received royalties from Oxford University Press for treatment manuals and from Guilford Press and the American Psychological Association Press for books on child mental health. In addition, he has received a consultancy fee from Bayer Schering Pharma. The other authors report no competing interests.

The UCLA Department of Psychiatry and Biobehavioral Sciences is the home within the David Geffen School of Medicine at UCLA for faculty who are experts in the origins and treatment of disorders of complex human behavior. The department is part of the Semel Institute for Neuroscience and Human Behavior at UCLA, a world-leading interdisciplinary research and education institute devoted to the understanding of complex human behavior and the causes and consequences of neuropsychiatric disorders.

http://newsroom.ucla.edu/portal/ucla/study-shows-promise-for-teen-suicide-217705.aspx

UCLA helps convert East L.A. corner stores from 'food deserts' into healthy food oases

Supervisor Gloria Molina, local leaders celebrate first store's reopening

By Sarah Anderson November 01, 2011

To determine whether stores that prominently display healthy food items while relegating chips, soda and candy to the back of the store can be financially sustainable and improve the health behaviors of a community, the UCLA–USC Center for Population Health and Health Disparities at the UCLA School of Public Health, along with Los Angeles County Supervisor Gloria Molina, announced Oct. 29 the conversion of the first of four corner stores in East Los Angeles to offer healthier food choices.

The first converted store to be reopened was the YASH La Casa Market on Hammel Street, which underwent a substantial overhaul to both the exterior and interior, including the removal of boards and re-bar that covered the front of the store, the removal of all soda and beer advertising posters, new paint, and larger windows to allow for natural light to the interior.

Inside, displays were rearranged to more prominently display healthier food items at the front of the store, including canned fruits and vegetables, fresh produce, bottled waters and healthy snacks. A juice bar with high tables and stools will also be a new feature, along with free Wi-Fi. An empty lot at the back of the store was converted into a vegetable garden with a sitting area for customers.

The conversion was funded by the National Institutes of Health as part of an ongoing effort to reduce cardiovascular disease risk among Latinos in East Los Angeles, where high rates of obesity-related chronic diseases are the norm. East L.A. is a neighborhood that is considered by many to be a "food desert" due to its poor access to comprehensive grocery stores and foods recommended for a healthy and balanced diet and its preponderance of fast food restaurants.

Los Angeles County Supervisor Gloria Molina (District 1) was on hand, along with UCLA faculty and community members, to celebrate the reopening of the converted store.

"The conversion of this corner store is an important step in the right direction for the residents of East Los Angeles," Molina said. "I would like to applaud the Songu Family, owners of the YASH La Casa Market, for allowing this wonderful transformation that will help improve the health of the residents of our community."

In addition to the store conversions, the community-based projects also include an intensive home-environment intervention involving families in which one member is newly enrolled in a diabetes clinic, as well as an evaluation of vascular function and cardiovascular disease risk biomarkers among individuals of various generational and immigrant statuses in order to increase understanding of the basis for the Latino "acculturation paradox" in cardiovascular disease risk.

"These store conversions are part of a comprehensive intervention to understand the effects of immigration and acculturation on health outcomes," said Michael Prelip, principal investigator for the Corner Store Makeover in East Los Angeles and a professor of community health sciences at the UCLA School of Public Health. "We hope our findings will lead to improvements in the overall health of underserved communities."

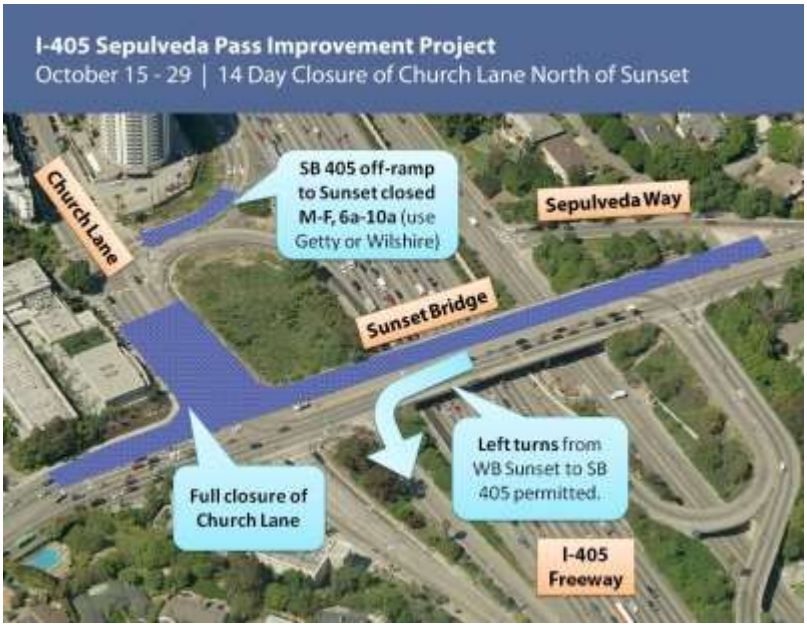
The project is also working with high school students from various East Los Angeles high schools to promote corner store conversions and encourage healthier food options and meal-preparation strategies.

As part of the project, the four converted stores will be evaluated over two years using community surveys, patron surveys and observations. Final results of entire evaluation will be available in two to three years.

The UCLA School of Public Health **is dedicated to enhancing the public's health by conducting innovative research; training future leaders and health professionals; translating research into policy and practice; and serving local, national and international communities.**

http://newsroom.ucla.edu/portal/ucla/ucla-helps-convert-first-of-four-218092.aspx

Explained: Why is the Sunset ramp only closed during rush hour?



Click to enlarge: UCLA Transportation's diagram shows the Oct. 15-29 Sunset closures in blue.
So why is the Sunset ramp closed just when we need it most?

Because the detour can't handle morning rush-hour traffic.

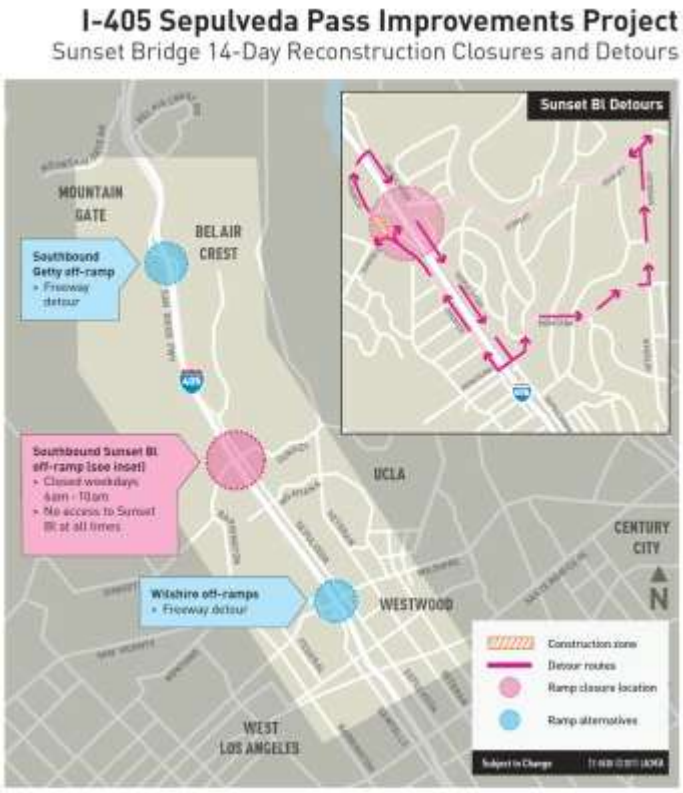
As many commuters have already noticed, current construction means that the Sunset Boulevard exit off of the southbound 405 freeway is closed every weekday morning from Oct. 17-28. Metro crews are revamping the Sunset Boulevard bridge over the 405, and that includes raising the bridge – and part of the intersection at Church Lane – by four feet. The construction makes Church Lane impassable between the Sunset exit from 405 South and Sunset Boulevard, so the Metropolitan Transportation Authority is diverting traffic in the opposite direction on Church Lane. Then traffic must drive on Sepulveda Boulevard, which has lane closures due to utility work, and then down to the more residential Montana Avenue.

The 6 a.m. to 10 a.m. rush would overwhelm those streets, said Metro spokesman Dave Sotero.

"Church Lane can't accommodate those traffic loads," Sotero said. "It's too narrow. Even when we don't have all the construction, it's a choke point."

So even though there's no construction work on the Sunset exit ramp, Metro closes it every morning – not in spite of that being the busiest time, but precisely because that's the busiest time.

Commuters can use the Getty Center Drive and Wilshire Boulevard exits instead, Sotero said. So why not let drivers have the choice of using all three?



A Metro/CalTrans map details the Sunset closures and detours.

"If we were to allow all of the traffic off at Sunset, it would create even more congestion, and motorists would be backing up on the freeway as well," he explained. "Wilshire is better able to handle that traffic."

Metro knows that the Sunset exit closure is causing backup, but it's less traffic than the alternative, Sotero said.

"We're very mindful of the congestion we're creating, and trying to get the work done as fast as we can," he added. "We just started it, but if we can conclude early like we did with Carmageddon, we will. So we're asking the public to bear with us as we work as quickly as possible to get better mobility on the bridge when we're done."

Church Lane and the Sunset exit are scheduled to re-open Oct. 30, although construction will continue on the Sunset bridge. The bridge will have more lanes and additional ramp capacity when construction finishes.

http://today.ucla.edu/portal/ut/explainer-why-is-the-sunset-ramp-217600.aspx

Royal Society journal archive made permanently free to access

26 October 2011

The Royal Society has today announced that its world-famous historical journal archive – which includes the first ever peer-reviewed scientific journal – has been made permanently free to access online.

Around 60,000 historical scientific papers are accessible via a fully searchable online archive, with papers published more than 70 years ago now becoming freely available.

The Royal Society is the world's oldest scientific publisher, with the first edition of Philosophical Transactions of the Royal Society appearing in 1665. Henry Oldenburg – Secretary of the Royal Society and first Editor of the publication – ensured that it was "licensed by the council of the society, being first reviewed by some of the members of the same", thus making it the first ever peer-reviewed journal.

Philosophical Transactions had to overcome early setbacks including plague, the Great Fire of London and even the imprisonment of Oldenburg, but against the odds the publication survived to the present day. Its foundation would eventually be recognised as one of the most pivotal moments of the scientific revolution.

Professor Uta Frith FRS, Chair of the Royal Society library committee, said: "I'm delighted that the Royal Society is continuing to increase access to its wonderful resources by opening up its publishing archives. The release of these papers opens a fascinating window on the history of scientific progress over the last few centuries and will be of interest to anybody who wants to understand how science has evolved since the days of the Royal Society's foundation."

Treasures in the archive include Isaac Newton's first published scientific paper, geological work by a young Charles Darwin, and Benjamin Franklin's celebrated account of his electrical kite experiment. And nestling amongst these illustrious papers, readers willing to delve a little deeper into the archive may find some undiscovered gems from the dawn of the scientific revolution – including accounts of monstrous calves, grisly tales of students being struck by lightning, and early experiments on to how to cool drinks "without the Help of Snow, Ice, Haile, Wind or Niter, and That at Any Time of the Year."

Henry Oldenburg writes in his introduction to the first edition: "...it is therefore thought fit to employ the Press, as the most proper way to gratify those, whose...delight in the advancement of Learning and profitable Discoveries, doth entitle them to the knowledge of what this Kingdom, or other parts of the World, do, from time to time, afford...", going on to state that potential contributors are: "...invited and encouraged to search, try, and find out new things, impart their knowledge to one another, and contribute what they can to the Grand design of improving natural knowledge, and perfecting all Philosophical Arts, and Sciences."

Thomas Huxley FRS wrote in 1870: "If all the books in the world, except the Philosophical Transactions, were to be destroyed, it is safe to say that the foundations of physical science would remain unshaken, and that the vast intellectual progress of the last two centuries would be largely, though incompletely, recorded."

The move is being made as part of the Royal Society's ongoing commitment to open access in scientific publishing. Opening of the archive is being timed to coincide with Open Access Week, and also comes soon after the Royal Society announced its first ever fully open access journal, *Open Biology*.

http://royalsociety.org/news/Royal-Society-journal-archive-made-permanently-free-to-access/

What Wikipedia Deletes, and Why

October 26, 2011, 2:02 pm

By Alexandra Rice

Wikipedia, the online encyclopedia, famously allows anyone to write or revise its entries, and the history of each item is open for anyone to review. Except for material that leaders of the effort consider too "dangerous" to leave online.

The fine print of its stated practices notes that in some cases, material is completely spiked from the record. Or, as the policy reads: "a revision with libelous content, criminal threats or copyright infringements may be removed afterwards."

These total redactions are what a University of Pennsylvania research team has been mining for the past year in the hopes of shedding some light on what Wikipedia deletes forever and why. In 2010 redactions accounted for more than 56,000 of the 47.1 million revisions, according to the research team.

The researchers, Andrew G. West and Insup Lee, wondered what content on the enormously popular Web site could be so troubling that Wikipedia administrators would decide to remove it forever. "Wikipedia is at that paramount example of open-source transparency," Mr. Lee said. "So when you see them behaving in a nontransparent manner, you want to see what motivates them to do this."

Copyright infringement was the most common reason Wikipedia stated for deleting material, Mr. West and Mr. Lee found.

The Wikimedia Foundation has been sued over copyright and privacy issues in the past. While only 0.007 percent of page views in 2010 to the English Wikipedia site resulted in content that was later redacted, that's enough to land the organization and its operators in hot water. That's why leaders of the encyclopedia refer to the material it redacts as "dangerous content."

"We've identified that on the surface these copyright cases are the worst," said Mr. Lee.

"The research goal for us is, how can we provide some automated way to detect the problems so they can be removed immediately?" Mr. West added. "It's very difficult to stop people from adding something, but we can find a way to get rid of it quickly."

The difficulty in identifying instances of plagiarism, the pair said, is evident in the numbers. Most "dangerous content," such as libel or invasions of privacy, is taken down within two minutes, on average. But copyright-related issues stayed up for an average of 21 days, they found.

Wikipedia's leaders have recently increased the number of people with the ability to permanently delete text, including entries in the history pages. In May 2010, approximately 40 people held these rights; now more than 1,800 people do, Mr. West and Mr. Lee said.

The larger work force has helped to reduce the amount of dangerous content found on the site, the researchers said. But humans alone won't solve the problem in its entirety. Sometimes they even introduce problems when trying to delete dangerous content and removing beneficial revisions in the process, which the research team refers to as "collateral damage." This brings up the question, then, of who even gets to make the call when something is dangerous content or not.

"For all the problems on Wikipedia," Mr. West said, "I feel strongly that the solutions have to be automatic in nature because these attackers increasingly have these machines doing their bidding for them."

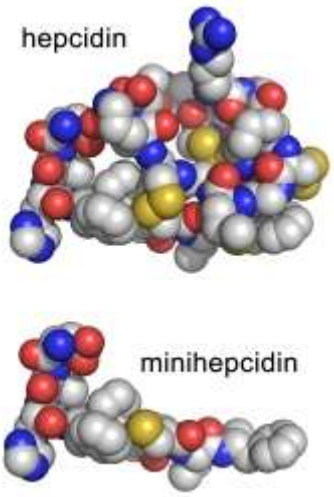
The biggest hurdle the Wikipedia operators need to overcome, in the minds of the research team, is trust. If the encyclopedia hopes to see continued success, that will be the main obstacle, they said.

More on the authors' Wikipedia redaction research can be viewed in their full paper, "What Wikipedia Deletes: Characterizing Dangerous Collaborative Content."

http://chronicle.com/blogs/wiredcampus/what-wikipedia-deletes-and-why/33930

UCLA scientists design experimental treatment for iron-overload diseases

By Rachel Champeau November 01, 2011



Iron overload is a common condition affecting millions of people worldwide. Excess iron in the body is toxic, and deposits can cause damage to the liver, heart and other organs. Current treatments, researchers say, are not ideal and have significant side effects.

Iron in the body is regulated by a hormone called hepcidin, and a deficiency in this hormone can cause the iron overload seen in genetic disorders like hereditary hemochromatosis and Cooley's anemia.

In the hopes of finding a treatment for iron overload, UCLA researchers have developed a new type of therapy based on small molecules that mimic the effects of hepcidin in mice. Published online Nov. 1 in the peer-reviewed Journal of Clinical Investigation, their findings could lead to new drugs to help prevent the condition.

Hepcidin works by fitting into a receptor protein known as ferroportin, which causes a change in iron flow in the body. The UCLA team systematically worked with the hormone–receptor interface to learn how the two pieces fit together and which part of hepcidin is the most important for binding to ferroportin.

"Like with jigsaw puzzle pieces, we tried to find the best fit," said Dr. Elizabeta Nemeth, the study's senior author and an associate professor of medicine at the David Geffen School of Medicine at UCLA.

Nemeth, co-director of the UCLA Center for Iron Disorders, noted that this is the first attempt to develop medications that mimic hepcidin. Because hepcidin contains 25 amino acids and numerous disulfide bonds, it would be expensive and difficult to reproduce the hormone as a medication.

The UCLA team zeroed in on the areas of hepcidin and ferroportin that provided the best fit to generate iron-regulating activity. Surprisingly, they found that the first third of the hepcidin molecule had an effect similar to that of the whole molecule. They then re-engineered this portion of the molecule to make it even more effective and named the resulting new molecules "minihepcidins."

"We found that just a few amino acids were enough to provide an effective scaffold for the minihepcidin design," said Piotr Ruchala, a visiting assistant professor of medicine at the Geffen School of Medicine.

The team confirmed that the minihepcidins were effective in healthy mice and demonstrated that they could prevent iron overload in mouse models of hereditary hemochromatosis.

"Using this structure and function analysis, we were able to develop minihepcidins that were even more effective than the naturally occurring hormone," said study author Dr. Tomas Ganz, a professor of medicine and pathology and co-director of the Center for Iron Disorders at the Geffen School of Medicine.

Ganz added that the UCLA findings built on previous research by the team and collaborators around the world that originally helped identify the role of hepcidin and ferroportin in iron regulation.

The next step is to identify the optimal form of minihepcidin for human trials. According to UCLA researchers, if the molecules' safety and efficacy is confirmed, minihepcidins could be used alone or together with current treatments for iron-overload diseases.

The study was funded by the National Institute of Diabetes, Digestive and Kidney Diseases, which is part of the National Institutes of Health, and the Will Rogers Fund.

UCLA is currently negotiating a license to this technology with a biotechnology company that will take the minihepcidins through pre-clinical development and into clinical trials.

Other study authors included Gloria C. Preza of the UCLA Department of Pathology; Rogelio Pinon and Bo Qiao of the UCLA Department of Medicine; Emilio Ramos of the UCLA Department of Chemistry and Biochemistry; Michael Peralta of the Columbia University Department of Chemistry; Shantanu Sharma of the California Institute of Technology's Materials and Process Simulation Center; and Alan Waring of the UC Irvine School of Medicine's Department of Physiology and Biophysics.

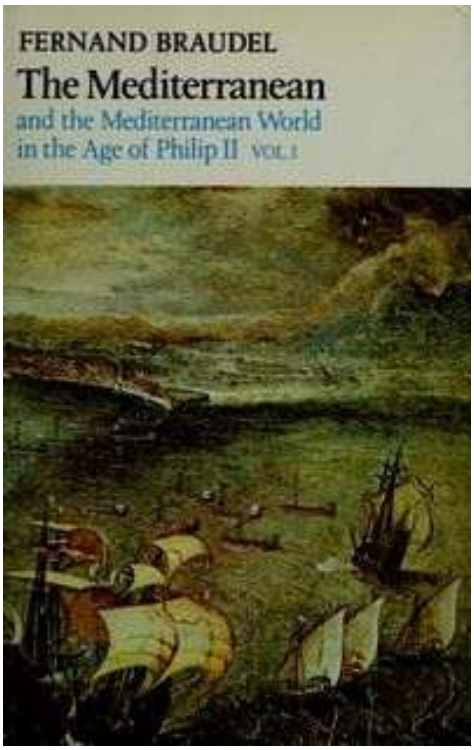
http://newsroom.ucla.edu/portal/ucla/ucla-scientists-design-experimental-217273.aspx

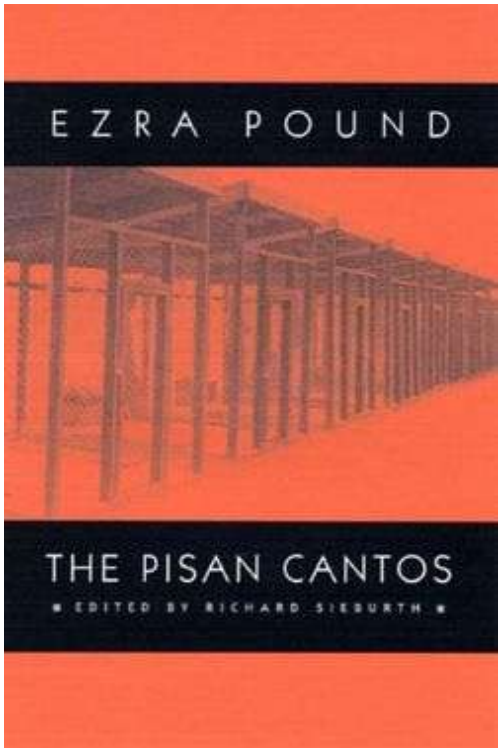
Penned in Prison for The Private Library

Here's an interesting idea for a private library: collect nothing but titles that have been penned by prisoners.

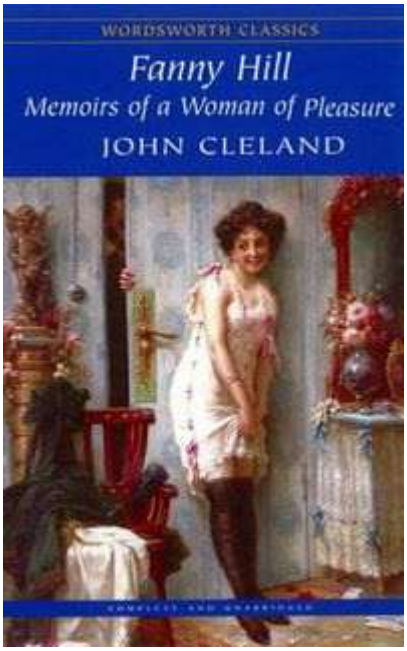
If you think such a book collection might contain mostly accounts of prison life, think again ... some of the world's greatest, as well as some of the most influential, literature ever written was penned by prisoners.

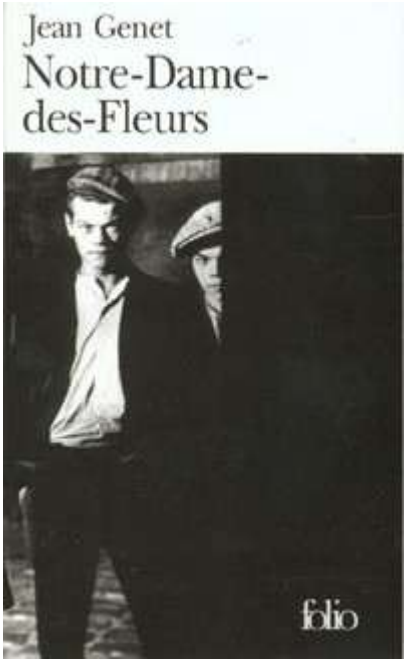
Among such titles are Fernand Braudel's magisterial The Mediterranean and the Mediterranean World in the Age of Philip II (the first draft of which was written *without access to books or notes* while Braudel was a German prisoner-of-war in World War II); Cervantes' Don Quixote (begun while the author was locked up in debtor's prison); Ezra Pound's Pisan Cantos (written while the author was imprisoned by Italian partisans during World War II); and Boethius' Consolation of Philosophy (written while the author was under arrest on false charges of treason):



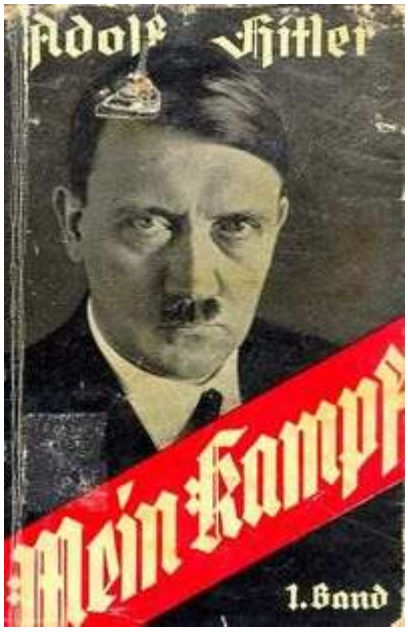


A focus on such books would net you novels such as Jean Genet's Our Lady of the Flowers (written while Genet was imprisoned for theft), John Cleland's Fanny Hill: or, Memoirs of a Woman of Pleasure (another product of debtor's prison) and the Marquis de Sade's Justine, or the Misfortunes of Virtue (the notorious libertine, famed more for his subject matter than the quality of his writing, was imprisoned in the Bastille when he wrote the first draft). But such a focus also would net you what are perhaps the most famous poetic lines ever penned in prison: *Stone walls do not a prison make; / Nor iron bars a cage; / Minds innocent and quiet take / That for an hermitage* ("To Althea, from Prison" by Richard Lovelace):



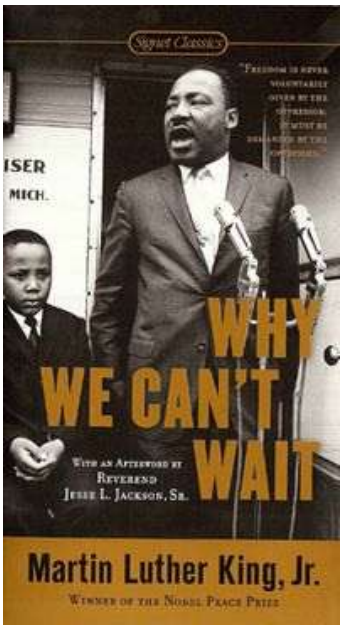


One of the most infamous titles of all time, Hitler's Mein Kampf, was written while its author was serving time in Munich's Landsberg Castle for his role in the 1923 Beer Hall Putsch. That compilation of all things Arthurian, Le Morte d'Arthur, was supposedly penned while Sir Thomas Malory was imprisoned for theft, thuggery and (possibly) rape. Arguably the greatest of all medieval Western European travel accounts, The Travels of Marco Polo, was dictated to a scribe while the famed traveler was a prisoner of war in Genoa:



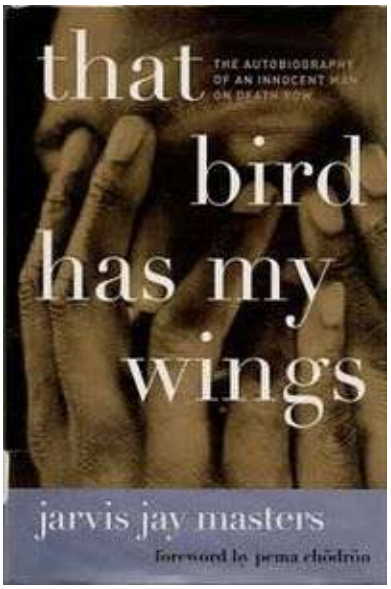
A private library built around books penned by prisoners might see the Rev. Dr. Martin Luther King, Jr.'s Why We Can't Wait (which includes the full text of King's *Letter from Birmingham City Jail*) next to Dietrich Bonhoeffer's Letters and Papers from Prison (written while the distinguished theologian was imprisoned for

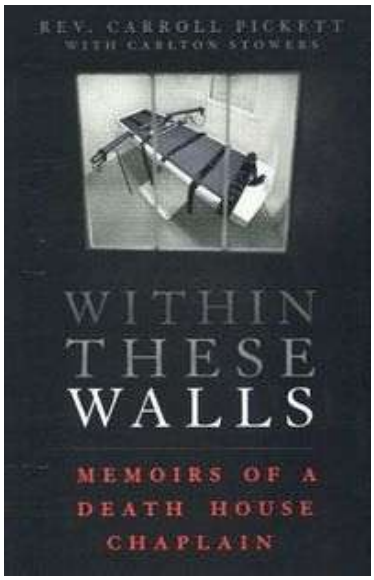
plotting to assassinate Hitler) next to Antonio Gramsci's Selections from the Prison Notebooks (the famous Marxist theorist, imprisoned by Italian Fascists during World War II, died six days after his release from captivity):



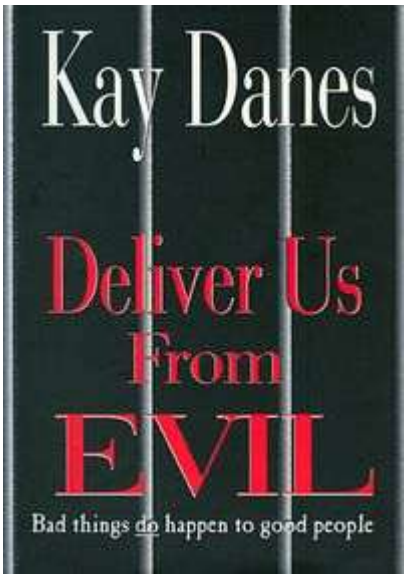
Of course, all this is but the tip of a very large literary iceberg. So much has been published by imprisoned authors that one could easily *specialize* if one so desired.

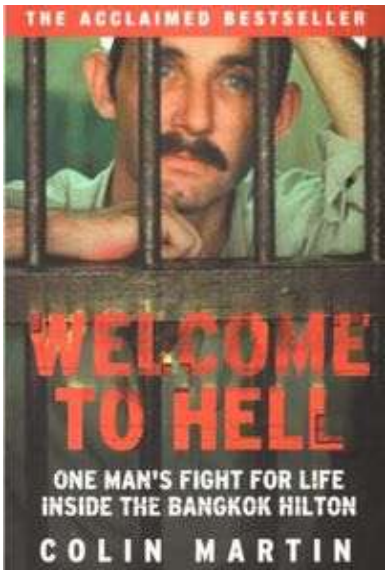
Instead of focusing on great or influential literature penned by prisoners, you might choose instead to focus on memoirs of prison life. So-called Death Row biographies, written by prisoners awaiting a visit from the Grim Reaper (or written by folks trying to get these prisoners released, or by those who work with such prisoners), suggest one possible area of specialization:





Another possible area of specialization is memoirs of life spent in *foreign* prisons:





Something to collect next time you think ***you*** are having a really bad day....

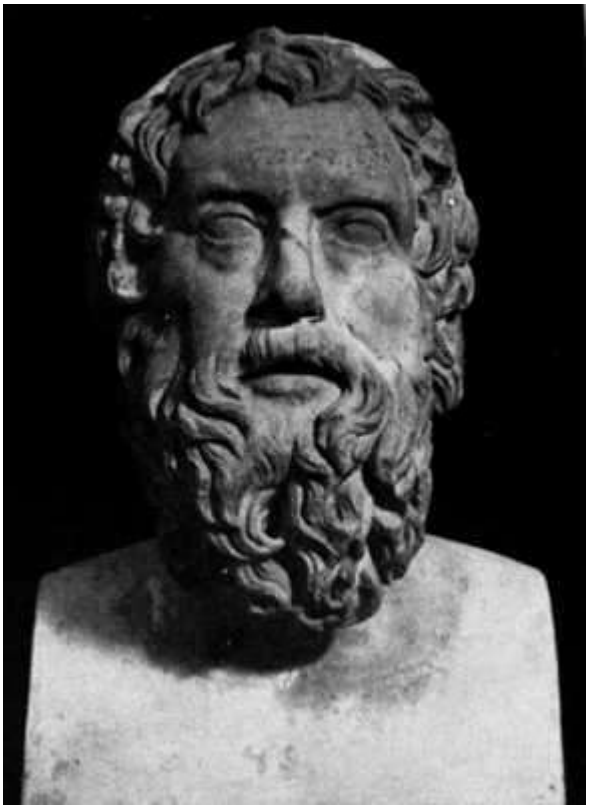
http://privatelibrary.typepad.com/the_private_library/2011/10/penned-in-prison-for-the-private-library.html

Top 10 Great Satirists

by **LordZB**

Satire is the form of humor that holds people, or society in general, up for examination, and ridicules the follies revealed. Good satire should offer improving examples or at least make us consider choices we often take for granted. In this sense, satire is of huge value to society. While satire can be cruel to the victims it mocks, it should always be funny. These ten individuals are the best satirists that have ever lived. As with so many lists, that last sentence requires the caveat 'In my opinion.' If you think I missed anyone, pop them in the comments.

10
Aristophanes

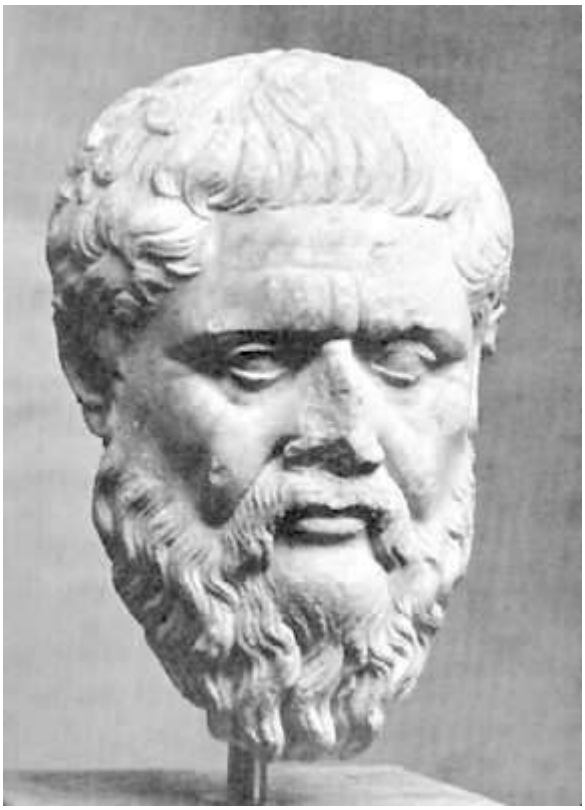


"You have all the characteristics of a popular politician: a horrible voice, bad breeding and a vulgar manner."

Classical Athens was a deeply political city, as you would expect from a democracy. In a democracy the voters like to be informed, and they like to laugh at the people in charge. Aristophanes was a master of comedic plays in Athens. Special festivals were held each year for comedy, and attendance was considered a religious necessity. A deeply conservative thinker, Aristophanes took aim at all the innovations he saw as dangerous. His targets included politicians (like the demagogue Cleon), the new thinkers (sophists, with

whom he lumped Socrates) and fellow dramatists (such as Euripides, with his low born characters). His plays range from absurd situations (the search for the city of the birds) to the familiar (jury service), but all are packed with wit. Translation can be hard as his works are hugely topical and contain references we might miss. A good translation, when performed well, can still have people roaring with laughter and make a point. In the run up to the second Iraq War Aristophanes' Lysistrata was performed world-wide as a call for peace. Aristophanes may have had the last laugh as at least some people, myself included, see the Lysistrata as an argument to see a war through to the end.

9
Plato



"I entirely agree," said Aristophanes, "that we should, by all means, avoid hard drinking, for I was myself one of those who were yesterday drowned in drink."

Until I actually read the dialogues of Plato, instead of simply learning about them, I had no idea that Plato was hilarious. Anecdotes have a young Plato writing dramas before taking to philosophy. It would seem he never lost the knack for drama, or for mimicry. Plato satirizes all the way through the dialogues. Aristophanes is mocked in the Symposium as a boorish individual, who can tell an entertaining story but is incapable of deep thought. Plato catches Aristophanes' backwards looking voice perfectly. In most of the dialogues, whenever Socrates, always a paragon of virtue, talks with someone, the other person is satirized. The interlocutor almost always misses the fact that they are being mocked, but we can hear the smirk Socrates was hiding. Plato uses satire to underline his philosophy of virtue so that those who may not be able to follow the philosophical thread of the dialogues may still profit from them.

8
Juvenal

"Of all the Griefs that harass the Distrest,
Sure the most bitter is a scornful Jest."

Like Athens, Rome was a political hotbed, and so satire flourished. Two styles of satire developed. The first is based on the works of Horace, who used poetry to gently point out peoples' follies. The second, far harsher, was based on the poems of Juvenal. It is hard not to like Juvenal, even when he is at his most vulgar. His book of satirical poems begins with a lament; "It is hard not to write satire…" Like Aristophanes, Juvenal is conservative and attacks what he sees as moral decay. He mocks the people who fawn to the emperor, how hard it is to flatter effectively, female morals and people who lack common human feeling. Like many satirists, Juvenal suffered for his sharp tongue, being exiled for his wit. While his words were sharp they have become proverbial. We still say people long for 'bread and circuses' and ask 'who will watch the watchers?'

7
Chaucer

"Ful del she sange the service devine,
Entuned in hire nose ful swetely;
And Frenche she spake flu fayre and fetidly,
After the scale of Stratford atte bowe,
For Frenche of Paris was to hire unknown."

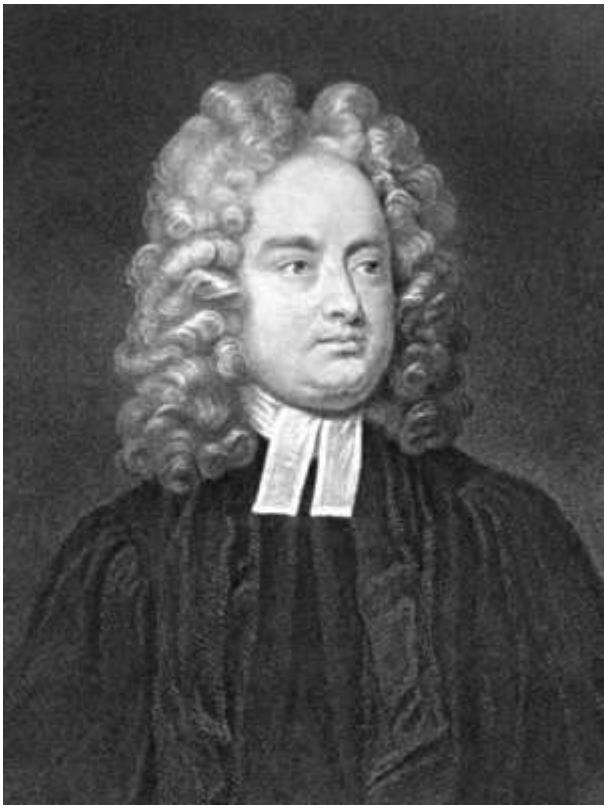
Chaucer's Canterbury Tales is one of the greatest poems in English. It offers us an insight into the medieval mind and the social situation of a wide slice of society. By holding his dramatic mirror up to such an assorted group of pilgrims, Chaucer is bound to notice certain follies. We all recognize the social climber who tries to do as their betters do (in this case, speak French) and fails miserably (The prioress speaks French well, but with a heavy English accent). What makes Chaucer such a skillful satirist is that he spares no one their foibles, but he tempers his mockery. The knight is a good man and so the mockery is gentle, almost affectionate. The Pardoner, a man who preys on people's fears of hell to make money by fraud, is scourged with all of Chaucer's force. Knowing which targets are worthy of abuse is the satirist's art.

6
Erasmus

"Wherefore farewell, clap your hands, live and drink lustily, my most excellent disciples of Folly."

Erasmus was one of the greatest minds of the European renaissance, and a founder of the reformation, famed for his learned collection and comparison of biblical texts. While Luther, the most dour man of the age, was inspired by that work, we take our inspiration from Erasmus' 'In Praise of Folly.' In this short essay, written in the form of a speech by the goddess Folly, every folly of the age is held up for mocking praise. What makes this work so notable is that no one escapes the prodding satire. In the work the following people are mocked – the young, the old, women, those who have children, scholars, monks, kings, theologians… The list goes on. Since everyone takes their share of satire, no one feels hard done by and we all must consider; why do we do what we do?

5
Swift



"It is computed that eleven thousand persons have at several times suffered death, rather than submit to break their eggs at the smaller end."

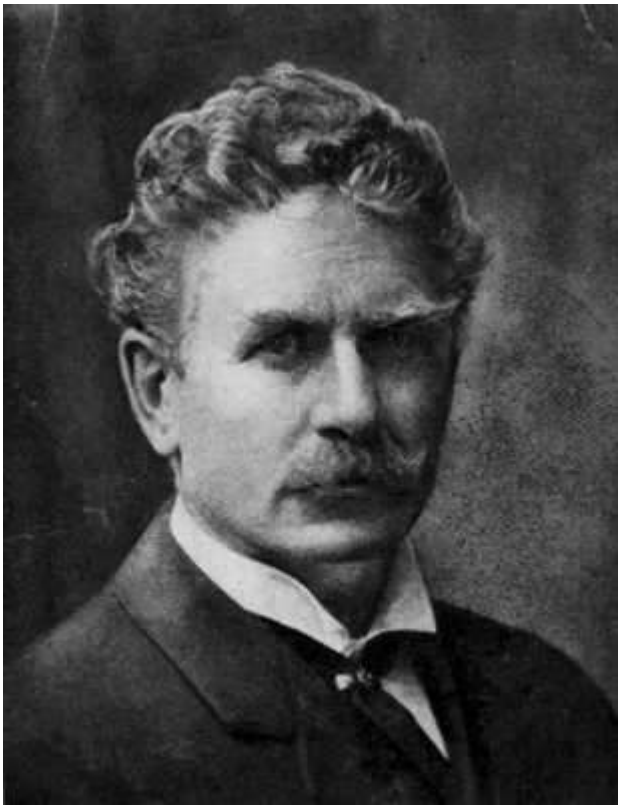
We leave the gentle satire of Erasmus now, for a far sharper satirical mind. Jonathan Swift is best known today for Gulliver's Travels, but his writings are extensive. Gulliver's Travels takes the form of a travelogue, where each of the places Gulliver reaches reflects, in grotesque form, some wrong of contemporary society. Gulliver feels morally superior to the tiny men of Lilliput, but is revealed inferior to the giants of Brobdingnag. The humor in Gulliver's Travels is sharp, but nothing compared to the pamphlet A Modest Proposal. The proposal involved is one to solve the Irish famines, that occurred regularly, by the cooking and eating of babies. Even today, people are shocked if they do not understand the subtle satire.

4
Voltaire

"Optimism," said Cacambo, "what is that?"
"Alas!" replied Candide, "it is the obstinacy of maintaining that everything is well when it is hell."

Voltaire was one of the wittiest men in an age of wits. His Candide is one of the best books you can read in a few hours. It is the story of a young man, Candide, under the influence of a teacher of Optimism, Pangloss. Before the first page is over dreadful things begin to happen to all the characters. When asked why such things occur, Pangloss will explain "All is for the best in the best of all worlds." The book may be seen as a narrow attack on the work of Leibniz, but in reality it is much more. It mocks the native optimism of youth, justice, Christian prejudice, war and class distinctions, as the deluge of disaster is dumped on the protagonists. What final advice does Candide offer us, who do not live in the best of all possible worlds? We must tend our gardens.

3
Ambrose Bierce

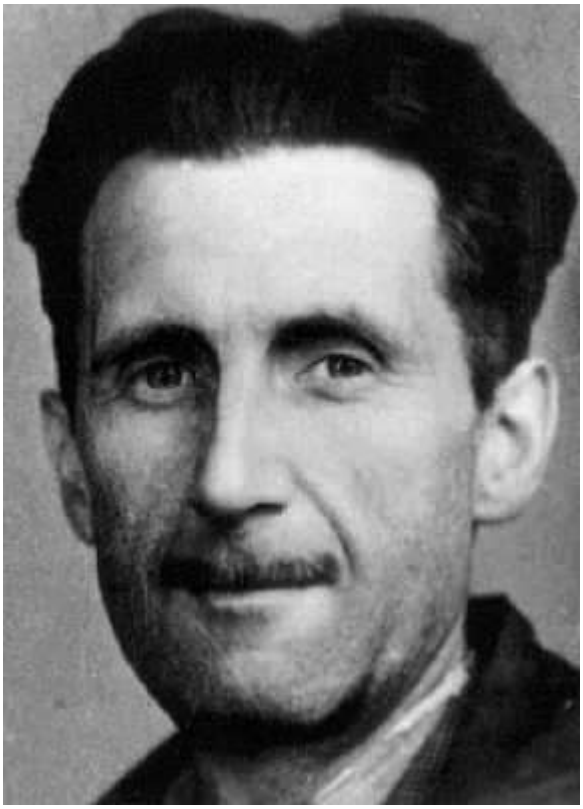


“Satire; Noun. An obsolete kind of literary composition in which the vices and follies of the author’s enemies were expounded with imperfect tenderness.”

Bierce has divided opinion on his merits. Is he a vulgar and obscene cynic? Is he a keen and witty observer of human nature? His inclusion here tells you which way I come down on the matter. His ‘Devil’s Dictionary’ gives satirical definitions of words that, as well as making you laugh, make you wonder how much truth there is in his satire. The Devil’s Dictionary remains popular after a century, and is the perfect companion if you wish to puncture an enemy’s arguments.

“Conservative; Noun. A statesman who is enamored of existing evils, as distinguished from the Liberal, who wishes to replace them with others.”

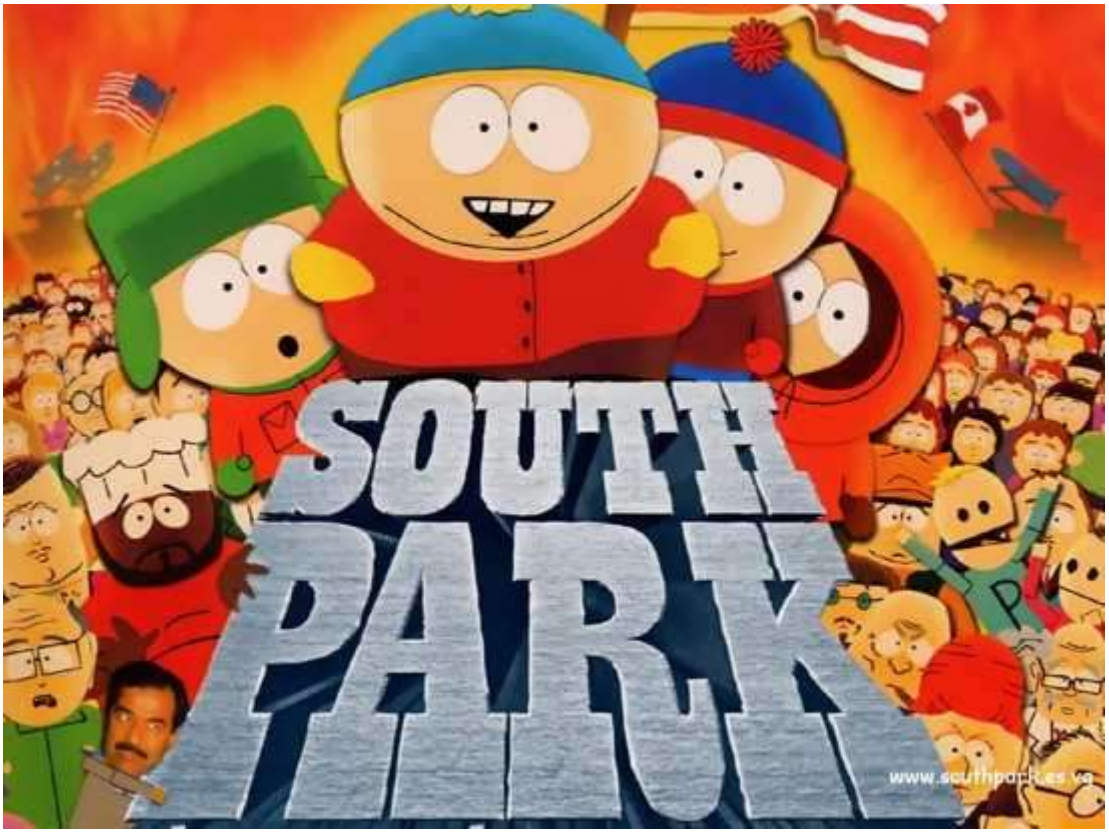
2
Orwell



"All animals are equal but some are more equal than others."

The theory of communism is alluring. Who does not want to think that everyone is equal, and that utopia is just around the corner, if only we could learn to share? George Orwell, the product of an upper-middle class background and Eton, was deeply concerned for his fellow man, and toyed with communism as a weapon against fascism. His experiences in the Spanish civil war taught him that communism can descend into totalitarianism, purges and beastliness. So Orwell wrote a fable of communism, Animal Farm, to explain what evils it can lead to. In a few short chapters we see the rise of an idealistic idea to dominance, and the descent into a regime just as bad as anything that preceded it. The humor here is dark, but so were the times he was writing it in.

1
Matt Stone and Trey Parker



I do not know what quote to start this entry off with. A bit of a cheat, but these two have worked together to create a great satiric force. South Park has set its satiric sights on just about everyone in its fourteen years. The humor is absurdist and shotgun, no one escapes without having their ludicrous aspects exposed. Even though many view it as offensive, they seem to miss that everyone is getting their fair share of abuse. To watch South Park and feel you are being unfairly targeted is to reveal your own insecurities. Whatever your religious or political standpoints, by mocking all sides, South Park asks everyone to question their beliefs and accept nothing on the basis of an outside authority.

http://listverse.com/2011/10/31/top-10-great-satirists/

Twitterology: A New Science?

By BEN ZIMMER

DENIZENS of the Twitter-verse, please be advised: Whether you are a Libyan celebrating the demise of Col. Muammar el-Qaddafi, a New Zealand office worker sleepily starting your day or a California teenager trying out the latest slang, your words are being analyzed.

Twitter is many things to many people, but lately it has been a gold mine for scholars in fields like linguistics, sociology and psychology who are looking for real-time language data to analyze.

Twitter's appeal to researchers is its immediacy — and its immensity. Instead of relying on questionnaires and other laborious and time-consuming methods of data collection, social scientists can simply take advantage of Twitter's stream to eavesdrop on a virtually limitless array of language in action.

At the University of Texas, for example, a group of linguists and social psychologists has been monitoring Twitter to track on-the-ground sentiment over the course of the Arab Spring, particularly in Egypt and Libya. After the death of Colonel Qaddafi, the linguist David Beaver and his assistants quickly summoned thousands of Arabic-language tweets before and after the event. They zeroed in on messages known to be from Libya by using Twitter's system of geocoding. (Posts from cellphones, for instance, very often encode the user's geographic coordinates.) The tweets were then automatically translated from Arabic to English and fed into a text-analysis computer program.

The researchers were able to create a dynamic portrait of Libya's Twitter traffic. The overall traffic skyrocketed in the hours after Colonel Qaddafi's death was announced, as did terms related to positive sentiment like "good" and "wonderful." Religious sentiment was also on display, with a significant increase in the frequency of words like "Allah," "sacrifice" and "gospel."

In this burgeoning field of Twitterology, moods are also being gauged on a more global level. Two sociologists at Cornell University, Scott A. Golder and Michael W. Macy, recently published a study in the journal Science that looked at how emotions may relate to the rhythms of daily life, across many English-

speaking countries. They observed a gradual falloff in positive terms from the beginning of the workday, bottoming out in the late afternoon.

One criticism of "sentiment analysis," as such research is known, is that it takes a naïve view of emotional states, assuming that personal moods can simply be divined from word selection. This might seem particularly perilous on a medium like Twitter, where sarcasm and other playful uses of language often subvert the surface meaning.

James W. Pennebaker, a social psychologist at the University of Texas who pioneered the text-analysis program often used in this kind of research, warns that positive and negative emotion words are the "low-hanging fruit" in such studies, and that deeper linguistic analysis should be explored to provide a "richer, more nuanced view" of how people present themselves to the world.

But even if we can't expect Twitter to be an unerring emotional barometer, it is proving extremely valuable for understanding how language varies among different demographic groups. A team of computational linguists at Carnegie Mellon University led by Jacob Eisenstein and Brendan O'Connor has used geocoded tweets to build maps of regional language use across the United States. The amount of data available for analysis is many orders of magnitude bigger than what could be collected with traditional dialect surveys.

From these mountains of data can be gleaned hidden patterns of informal English, like the profusion of *hella* as a form of emphasis in Northern California, as in, "It's hella cold out there." Slangy phonetic spellings also show distinct patterns of distribution, with New Yorkers preferring *suttin* to *sumthin* (for *something*) and Californians writing *koo* or *coo* for *cool*. Even emoticons differ from region to region.

This study attracted negative attention this year from Senator Tom Coburn of Oklahoma, who listed it as one of the "questionable" projects financed by the National Science Foundation in a report challenging the foundation's budget for the social sciences. But the research was vigorously defended by Randal E. Bryant, dean of Carnegie Mellon's School of Computer Science, who pointed to its real-world applications. "The key finding was that seemingly meaningless slang and jargon can reveal important properties of the author's identity, a point of interest for both corporations and the intelligence community," Mr. Bryant said.

Still, the Twitterologists will continue to have a tough row to hoe in justifying their research to those who think that Twitter is a trivial form of communication. No less a figure than Noam Chomsky has taken Twitter to task recently for its "superficiality."

"It is not a medium of a serious interchange," Mr. Chomsky said, a blanket charge that ignores the diversity of voices to be found on Twitter. Regardless of how unserious Twitter exchanges may appear on the surface, many of Mr. Chomsky's fellow linguists are discovering that Twitter can help uncover truths about our social interactions that are quite serious indeed.

Ben Zimmer, a former On Language columnist for The New York Times Magazine, is the executive producer of VisualThesaurus.com and Vocabulary.com.

http://www.nytimes.com/2011/10/30/opinion/sunday/twitterology-a-new-science.html?_r=1&pagewanted=print

Grad students help undergrads get most out of UCLA

Graduate mentor Laura Jacobson answers a student's question at the walk-up window.
Three days before classes started, a small group of international undergrads wheeling suitcases appeared at the walk-up window of the College Academic Counseling office in Murphy Hall.

They were fresh from LAX, feeling overwhelmed and unsure of where to begin. Staffing the window was a grad student, a specially trained mentor, who started with the basics and gave them a campus map.

That map is an apt symbol of what UCLA's graduate student College Academic Mentors (CAMs) do: They give undergrads the guidance and resources to solve problems.

"We're like a hub of campus information where you can find all the resources you need to get help or make an educated decision," said Mekeila Cook, a sixth-year public health grad student who has mentored undergrads for four years.

The 21 mentors have the answers to questions ranging from whether a class will fulfill a GE and when to drop a class without incurring a penalty, to the bigger issues of how to deal with stress and what to major in. Count on mentors to know every corner of the university as they point students to the Career Center, the Office for Students with Disabilities and the study-abroad office.

Mentor Mekeila Cook with one of her PEERS students, fourth-year biology major Vanessa Rangel.
The mentoring program, funded by the Division of Undergraduate Education, is especially needed this year as UCLA welcomes its largest freshman class ever. The CAMs, who earn tuition remission and work alongside full-time counselors, offer a unique perspective since they were in the undergrads' shoes so recently.

The mentors are nominated for the job by their home departments, giving the counseling office connections across campus, said Penny Hein-Unruh, the assistant vice provost of academic advising. "We support one

another," Hein-Unruh said. "And many of our mentors work part-time in their own department, so they're very knowledgeable."

The mentors even keep the counselors up-to-date on recent changes.

"These grad students are amazing," said Bill Gordon, the College Academic Mentor program coordinator. Gordon, a full-time counselor, trains all the mentors and guides them throughout the year. They sometimes help upperclassmen make post-graduation plans, but mostly, they meet with first- and second-year students.

"The mentors help the undergrads find their way," he said. "At a large research university, it's easy to get lost in the scramble. We want students to know about all their opportunities and to help them integrate into the big university."

Mentor Diana Ichpekova counsels an undergrad.

Many students come in feeling stuck because they've planned to become doctors or lawyers, but decide in college that it's not right for them, Gordon said. "Sometimes there's a lot of pressure from home to be a doctor," but partly because students and their families don't know enough about other promising career paths, he said. "We're able to show them all the options to decide for themselves, and give them the information to advocate at home for a different direction."

The CAMs work with students through one-on-one appointments, group workshops, email, online counseling and the walk-up window. "Anything can happen at the window," a couple of them joked.

At workshops, the mentors instruct students on the do's and don'ts of talking to professors and TAs; how to get course credit or a paycheck for internships; and the merits of master's versus Ph.D. programs. But a big part of the job is cluing students in to options they don't know about, Cook said.

"I'll ask, 'Have you thought about study abroad?' and they'll say, 'I think it would be really great, but I don't have time.' So I'll explain they can clear some of their GEs with classes abroad," Cook said. Other students have ruled out internships for time reasons, not realizing that some carry academic credit, she noted.

The program also offers benefits to the mentors, who find that it's good training if they want to become professors, added Hein-Unruh. "Former CAMs have found that having the extensive mentoring experience gave them the edge in applying for competitive academic jobs," she said. "Many institutions now require faculty to do academic counseling."

"We like to think we're creating better faculty," Gordon said. "The mentors are getting to know the students in a holistic way." And because mentors are looking at each mentee as a whole person, they uncover problems that undergrads might not take to their professors.

A struggling student might disclose to a mentor rather than a faculty member or TA that they have to work 40 hours a week, Gordon said. “Once you know what they’re up against, you can recommend university resources that will help them. We’re not just here to say, ‘You’ve got to do better and study more.’ We’re here to help them figure out how.”

In one mentoring program, the Program for Excellence in Education and Research in the Sciences (PEERS), first-year students come in as a cohort that stays together for two years with a single mentor. The program seeks to encourage students who are traditionally underrepresented in the sciences to study a south-campus discipline. Many are first-generation or low-income college students who look to the mentors to demystify the college experience and guide them through a tangle of class assignments, university paperwork and pesky problems such as where to find a grocery store.

Although technically PEERS covers only freshman and sophomore year, mentor Cook has been the mainstay for some of her mentees for their entire college career.

One of Cook’s original PEERS students, Deborah Akinsilo, now a fourth-year, recalled how nervous she was when she came as a freshman. “She’s (Cook) the one I always turn to when I’m freaking out about my classes, or whether or not I’ll be able to graduate on time,” said Akinsilo.

One of her first hurdles was getting credit for classes from community college onto her UCLA transcript. “It was confusing to figure out where to start,” Akinsilo recalled. “She explained how to do it, exactly where to go and helped me with the petitioning process.” Now Akinsilo, a history major with a load of science classes under her belt, is talking about medical school with Cook.

Cook’s challenge, as always, is finding the best approach for every student. “There’s so much variety,” she said. “It keeps you on your toes.”

http://today.ucla.edu/portal/ut/college-academic-mentors-216883.aspx

Breast tenderness following combo hormone therapy linked to increased breast density

Study examines biology underlying link between tenderness, cancer risk

By Kim Irwin October 21, 2011

Dr. Carolyn Crandall

Post-menopausal women who experience breast tenderness after starting combination hormone therapy have a higher risk of breast cancer than women who don't, a study by researchers with UCLA's Jonsson Comprehensive Cancer Center has shown. One reason for this, they now say, may be that these women's breasts are becoming more dense.

Such new-onset tenderness was found to be more pronounced after the start of combination estrogen-and-progestin therapy than with estrogen therapy alone. The link between new-onset tenderness and changes in breast density also was more pronounced in women on combination therapy, said the study's first author, Dr. Carolyn Crandall, a UCLA professor of general internal medicine and a scientist with the Jonsson Cancer Center.

Multiple population studies have shown that higher breast density is associated with an increased risk of breast cancer. For women with extremely dense breasts, the risk can be four to six times higher than for women whose breasts are not dense, Crandall said.

Although the present study design did not permit researchers to directly test whether combined hormone therapy–induced breast tenderness represents increased breast cell proliferation, mammographic density — which *was* analyzed in the study — is felt to be an indirect measure of breast tissue growth, Crandall said.

The study appeared Oct. 14 in the early online edition of the peer-reviewed journal Breast Cancer Research and Treatment.

For this prospective study, Crandall and her team examined the association between new-onset breast tenderness and changes in mammographic density after the initiation of hormone therapy in 695 women enrolled in the Women's Health Initiative (WHI). Launched in 1991, the WHI consisted of a set of clinical trials and an observational study involving 161,808 generally healthy, post-menopausal women.

Crandall's team looked at women on combination therapy and at women taking only estrogen. They analyzed the development of breast tenderness — the absence of tenderness at baseline and the presence of tenderness at year one follow-up. They also examined changes from baseline breast density in mammograms (the percent of tissue that was dense) at year one and two of the WHI.

"New breast tenderness that begins after a woman initiates therapy with routine doses of estrogen is common and almost double that of women taking a placebo," Crandall said. "It's even higher in women who also are taking progestin — about three times higher than women given placebos."

Among women assigned to combination therapy, the mean increase in mammographic density was greater among those reporting new-onset breast tenderness than among those without tenderness (11.3 percent versus 3.9 percent at year one, and 9.4 percent versus 3.2 percent at year two). However, for women who took estrogen alone, there was no difference in breast density between those who experienced new-onset tenderness and those who didn't, Crandall said.

That is important, she said, because estrogens can increase the risk of uterine cancer and often are paired with progestin to prevent malignancies in women who haven't had a hysterectomy. So while the combination protects women from uterine cancer, it increases their risk of developing breast cancer.

"These findings parallel what is known about breast cancer risk from the WHI," Crandall said. "Breast cancer risk was elevated by combination estrogen-and-progestin therapy but not by estrogen alone. Now we know that new-onset breast tenderness after combination therapy, but not estrogen alone, is associated with greater increases in breast density."

In 2009, Crandall's team, using the WHI data, had shown that women who experienced new-onset breast tenderness after initiating combination hormone therapy had a 48 percent higher risk of subsequent breast cancer than women who didn't have tenderness.

These new findings shed light on the biology that might partly explain the link between new-onset tenderness and increased breast cancer risk during combination therapy, Crandall said. Understanding the factors associated with mammographic density changes during therapy with estrogen and progestin may help provide biological insights into hormone
therapy–associated breast cancer risk.

"These findings emphasize the complexity inherent in the use of surrogate risk markers to assess menopausal hormone therapy–associated breast cancer risk," the study concludes.

The study was funded in part by the National Heart, Lung and Blood Institute; the National Institutes of Health; the U.S. Department of Health and Human Services; and the Eileen Ogle Award of the Iris Cancer–UCLA Women's Health Center.

UCLA's Jonsson Comprehensive Cancer Center has more than 240 researchers and clinicians engaged in disease research, prevention, detection, control, treatment and education. One of the nation's largest comprehensive cancer centers, the Jonsson Center is dedicated to promoting research and translating basic science into leading-edge clinical studies. In July 2011, the center was named among the top 10 cancer centers nationwide by U.S. News & World Report, a ranking it has held for 10 of the last 12 years.

http://newsroom.ucla.edu/portal/ucla/breats-tenderness-in-postmenopausal-217769.aspx

Citation Obsession? Get Over It!

Michael Morgenstern for The Chronicle

By Kurt Schick

My university recently convened an emergency "summit" for librarians, tutors, and concerned faculty members to solve a citation crisis. Our library help desks reportedly cannot complete their core mission of assisting students with information literacy (finding, choosing, and using sources) because students keep pestering them with questions about how to format obscure citations: "I'm analyzing poetry for my 'Punk Literature' seminar. Using MLA style, how do I cite a limerick scribbled in the third-floor toilet?"

Meanwhile, the writing center stinks of fear as students struggle to decipher APA, MLA, AP, and Chicago (or is it Turabian?) documentation styles, which seem as alien and absurd to them as using a typewriter. Academic departments and even whole colleges consistently beg the library and writing center for workshops to rehabilitate their worst citation transgressors. Bibliographic citation has apparently eclipsed perfect grammar and the five-paragraph theme as the preoccupation of persnickety professors.

What a colossal waste. Citation style remains the most arbitrary, formulaic, and prescriptive element of academic writing taught in American high schools and colleges. Now a sacred academic shibboleth, citation persists despite the incredibly high cost-benefit ratio of trying to teach students something they (and we should also) recognize as relatively useless to them as developing writers.

Professors' obsession with citation formatting is relatively new. Many of us over the age of 40 probably cannot remember learning much about citation styles until graduate school—not because our memories have faded, but because our teachers knew better than to demand that we fret about such specialized, scholarly formalities. It's not that they were teaching us to be sloppy scholars, either. On the contrary, they emphasized how to effectively and responsibly locate, evaluate, and integrate other writers' words and ideas into our own writing better, perhaps, than we teach students to do today. Surely, the uneven quality of information available online makes it more important for writers to know how to evaluate the worth of their sources than how to parse pedantic rules and display their expertise in footnoting.

What I advocate here is not to dispense with teaching students how to use sources but rather to abandon our fixation on the form rather than the function of source attribution. Here's why: We cannot control how much time and effort students invest in a particular writing assignment; we can only influence how they distribute their energies. Professors' overattention to flawless citation (or grammar) creates predictable results: Students expend a disproportionate amount of precious time and attention trying to avoid making mistakes. Soon, they also begin to associate "good" writing with mechanically following rules rather than developing good ideas.

In contrast, experienced writers (like us) edit meticulously only after they have allocated substantial effort to more complex and consequential writing tasks, such as refining their topics, selecting and processing their sources, organizing their ideas, and drafting and revising their manuscripts to improve focus and coherence. Nitpicky professors hinder student writers' development by effectively forcing them to invest more time and thinking in less important elements of writing.

Recent research by the Citation Project corroborates how severely teachers' citation psychosis has diminished students' information-literacy skills, in particular. Rebecca Moore Howard and Sandra Jamieson blame "plagiarism hysteria," which compels teachers to punish improper citation more than reward students' effective use of sources' words and ideas. Thus, clever students master quotation "mining" and sloppy paraphrasing, and they rarely summarize (or, presumably, deeply read or understand) their sources. Why should they, when success equals completing a checklist ("*minimum of six sources including two books, two peer-reviewed articles ... proper MLA format, including a period before the parenthetical citation for block quotations*") rather than composing writing that engages readers with sophisticated content or, heaven forbid, eloquent prose? Should we not judge writing on its content and character rather than its surface features?

The intricacies and formalities of citation become useful to scholars only when they publish their work. Until then, they need a bookkeeping system to keep track of where they found things (a system that others might later use to retrace their steps), and some means of attributing their sources and thus establishing the credibility of information for their audiences. More than anything, source attribution enables students—who, by virtue of being students, don't yet know much about a subject—to borrow knowledge and ethos from those who do. It's just about that simple.

What might be more surprising is how simple formal citation mechanics really are. Citation contents are virtually the same across styles and disciplines: author's name(s), title(s), publication information. As anyone who's translated a manuscript from MLA to APA and then to Chicago format knows, the only differences are sequence, punctuation, and format. Why, then, could we not simply ask students to include a list of references with the essential information? Why couldn't we wait to infect them with citation fever until they are ready to publish (and then hand them the appropriate style guide, which is typically no more difficult to follow than instructions for programming your DVR)?

We could then reinvest time wasted on formatting to teach more-important skills like selecting credible sources, recognizing bias or faulty arguments, paraphrasing and summarizing effectively, and attributing sourced information persuasively and responsibly.

If anything, we should abandon trivial roadblocks so that students can write more often in more classes. Recent research demonstrates how effectively and efficiently writing can improve comprehension of content in any discipline. Writing also enables students to practice analysis, synthesis, and other skills that constitute critical, creative, and even civic thinking. If writing provides one of our best means to enhance learning outcomes across the curriculum, then more writing equals more learning. Why would we design writing assignments with obstacles that discourage students from learning?

Kurt Schick teaches writing at James Madison University.

http://chronicle.com/article/Citation-Obsession-Get-Over/129575/

Global Economy Exposes Japan's Shortage of English-Speaking Graduates

By David McNeill

Tokyo

In Japan's business world, they call it the "Rakuten English shock." The country's largest online retailer has told its 6,000 employees that they must be fluent enough in English to converse with one another by next year. Executives who aren't up to speed will be fired; rank-and-file workers will find their path to promotion blocked.

That dramatic move by Rakuten's Harvard Business School-educated founder, Hiroshi Mikitani, is the latest sign that some Japanese companies are accepting a long-held truism: English is the language of global business. It is also, however, exposing a long-term shortage of local university graduates fluent in the world's lingua franca.

Japanese children learn English starting in elementary school and throughout high school, and many go on to study it at college. By the time they're ready for work, hundreds of thousands of graduates have spent nearly 10 years struggling with the language, but few can do more than speak a handful of wobbly phrases: Japan ranks lower than North Korea, Mongolia, and Myanmar in the much-watched Test of English as a Foreign Language, or Toefl.

The problem is compounded by a sharp cooling among Japanese for study abroad, a trend that has rung alarm bells at the highest levels of government. U.S. Secretary of State Hillary Clinton recently joined a growing list of officials expressing concern that Japanese university students are increasingly staying at home.

"As recently as 1997, Japan sent more students than any other country in the world to study in America," Secretary Clinton told the U.S.-Japan Council in Washington last month. Today "Japan ranks sixth." She pointed out that the number of Japanese students studying in America has dropped by almost 50 percent over the last 14 years.

While cost is certainly a factor, experts in Japan also noted structural barriers at home, including the lack of credit reciprocity, the traditionally low value attached by Japanese employers to foreign degrees, and the reluctance of most Japanese universities to waive fees for students who decide to study outside the country.

John Belcher, president and co-chief executive of the Study Abroad Foundation, a nonprofit that provides study-abroad opportunities, cites another key factor: "the sheer force" of Japan's lopsided, aging demographic. "With a shortfall of some 20 million people in 50 years, this does mean significantly fewer young people today."

The fear that Japanese graduates are unprepared to work in international companies has become more urgent since Japan's currency began to surge against the dollar this year. Now at a record high, the yen's strength will push more Japanese corporations to shift production offshore, warned Prime Minister Yoshihiko Noda of Japan in October, increasing the demand for workers who are fluent in foreign languages.

Japan's largest business federation, the Nippon Keidanren, takes that demand seriously enough to have organized a summer conference bringing together the country's top universities and corporate bosses. Among the problems discussed by a university-business forum held by Global 30, a group that aims to

internationalize 30 Japanese universities, was how to bring Japan's traditionally aloof institutions closer to the corporate table.

In a striking acknowledgment that the decline in foreign study must be halted, the Keidanren used the forum to announce a scholarship plan that will, from next year, give 1 million yen, or $12,835, each to 30 students from the 13 universities now designated Global 30 institutions. Every little bit helps, says William Saito, a venture capitalist and adviser to Japan's ministry of education who himself finances up to four scholarships a year to the United States out of his own pocket.

"Awareness of the problem is growing, I think. I'm seeing a lot more companies this year using English as a hiring criteria, and a lot more discussion at the university level."

Mr. Saito says that Japanese universities are slowly dealing with some of the key barriers to study abroad, including harmonizing the amount of credit awarded to students who study at other universities. He is encouraged by news that the University of Tokyo, Japan's leading education institution, is mulling enrolling Japanese students in study-abroad programs in the fall, a move that would help harmonize the nation's higher-education system with the West.

Will that be enough? Mr. Belcher points out that the number of students going abroad would rise quickly if more colleges dropped their insistence that they pay fees at home. "The biggest obstacle to studying abroad is the universities," he says. His organization has been very successful in brokering deals with colleges that they drop this requirement. "We get more students per university in Japan than anywhere else."

It remains to be seen, however, if the lumbering universities will move fast enough for Japan's companies, some of which are now hiring abroad rather than trying to find fluent English speakers at home. Mr. Mikitani is one of an ambitious new breed of foreign-educated entrepreneurs who acknowledges that his companywide edict wants was a "desperate measure." It may not be the last.

http://chronicle.com/article/Global-Economy-Exposes-Japans/129596/

Oct 07, 2011 By Jack Feuer

10 Questions for virus hunter Anne Rimoin

In the Democratic Republic of the Congo (DRC), they call her Mama Etete — The Woman Who Never Gives Up. UCLA Assistant Professor of Epidemiology Anne Rimoin is a virus hunter and an American archetype: the brave and resourceful scientist/adventurer. She's worked in India, Nepal, Egypt, Brazil, Croatia, Ethiopia, Eritrea and, since 2002, Congo. Rimoin talked to Jack Feuer of UCLA Magazine about her work and a life that's anything but ordinary.

Why Africa?

I was always fascinated with Africa. My undergraduate degree was in African history at Middlebury College in Vermont. Before I was born, my dad [David Rimoin, professor of pediatrics, medicine and human genetics at UCLA and director of the Medical Genetics Institute at Cedars-Sinai] spent time in Africa studying pygmies, and my mom went with him. I grew up with maps of Africa in the house and things from their trips and so there was a romantic association with it. I didn't find Africa through epidemiology; I found epidemiology through Africa.

And then you went into the Peace Corps?

After I graduated from Middlebury. I was put by chance into a public health program in Benin in West Africa. I was seconded to UNICEF, and they gave me a motorcycle and taught me how to do disease surveillance. And I've been doing the same thing ever since.

How did you end up in Congo?

When I graduated from Johns Hopkins [where she earned her Ph.D.], I was offered a job at the National Institutes of Health in a program called the Global Network for Women and Children's Health Research. When they offered me the job, they said, 'We have to warn you that we're going to need you to set up clinical sites in some really hard places, and one of them is Congo.' Of course, they expected me to run out the door screaming. [The Second Congo War, which began in 1998 and officially ended in 2003, claimed more than 5 million lives. In some parts of the country, fighting continues to this day.] But I was like, 'OK, I'm in, how do I start?' Congo was a place I had been dreaming about my whole life. It's the best and the worst of Africa, all rolled up into one.

And when you're there, you are the embodiment of the phrase, "You're not from around here." So how do you get things done?

When I started working in DRC [Democratic Republic of the Congo], I already understood a lot about the culture and political history, and I spoke French [widely spoken in the country], and it was very easy for me to learn Lingala, the most commonly spoken language. So I could communicate with people and work with them. And I've been very concerned about capacity building in DRC and making sure the Congolese are trained, getting people into doctoral programs, bringing equipment and infrastructure to DRC.

At the end of the day, the goal of what we do is to empower them to take control of their own health agenda. I think they realize I mean what I say, and I don't promise what I can't deliver — and I always put the Congolese first.

How often do you go?

In general, three or four times a year for visits that are anywhere from two to six weeks long.

What do you do on a typical trip?

If it's a short trip, I spend a lot of time in Kinshasa [the capital and largest city] where I have a lab and an office, supervising activities, working up new studies, analyzing data, making sure the administration is happening appropriately and negotiating agreements with other NGOs or Congolese entities and ministries. But often, we'll spend time in our field site, which is literally right in the middle of Congo. We have a clinical research center with trucks and motorcycles, satellite phones, etc. The only way you can get there is by chartering a plane. No other way in or out.

Is it true that villagers participating in one of your studies thought you were stealing their blood for white Europeans to stay young?

There was one study in which we took blood from every human being over the age of 1 — 4,000 people in 15 villages. And they legitimately wondered what we were doing with their blood. These were very remote villages. It's easy for rumors to get started and that was one of them. I said, "I've aged at least 15 years doing this study so if that were the case, I would be feeling a lot better than I do right now."

And what do you typically do out in the field?

I'll go out with my staff and do disease surveillance and case investigations and collect samples. We're also doing a lot of work now looking at cross-species transmission of disease, from animals to people, so we are doing a lot of sampling of bush meat — monkeys, squirrels, rodents, bats, all the different animals that are their main sources of food.

What was your most satisfying moment working in Congo?

There are so many of them. I think what I am most proud of in general is getting my former lab manager in Congo, Neville Kisalu, into the doctoral program at the Department of Microbiology here at UCLA. He's in his fourth year and he's doing very well. He was able to bring his five children and his wife here.

Most unsatisfying moment?

Having to chase after funding all the time. People look at the work that I do — looking for new viruses, crossing species from animals to humans, surveillance — and they think of it as needle-in-a-haystack work. It's very easy to get funding to analyze samples. But not to actually collect the samples. They don't magically

appear in a place like DRC where there are no roads, no communication, and no infrastructure. I've been looking for these diseases in the places where it's most difficult to look for them — places where you have to spend days walking, or riding motorcycles, or taking canoes.

If most people are going to traditional healers and informal health providers, then those are the people you need to focus on, but there is no formal structure to reach them. You have to work in the communities, figure out what their value systems are, how to motivate them to report things, so that to me are the most challenging and interesting things. Coming up with innovative ways to do disease surveillance is important work. It's kind of the basis for epidemiology.

http://today.ucla.edu/portal/ut/10-questions-for-virus-hunter-217123.aspx

Use Strong Verbs: a Fairy Tale

October 30, 2011, 4:44 pm

By Allan Metcalf

Want to get a great job? Here's what the experts say: Garnish your résumé with strong verbs.

LinkedIn, for example, declares: "Use strong verbs to make your résumé more vibrant."

All right, let's vibrate:

Stop! Look! Listen!

Create!

Decide! Succeed!

Paste verbs like those in your résumé, we're told, and you'll knock the socks off of a potential employer, with zingers like

* Disrupted schedules

* Insulted supervisors

* Laughed at urgent requests

* Created chaos in office

* Crushed hopes

* Exemplified idleness

Strong, eh?

We grammarians know better. Those verbs aren't strong. They are weaklings, every one.

See the telltale sign? It's the wimpy *–ed* ending for the past tense (Yesterday I *laughed*) and past participle (I have *laughed*).

Alas, most verbs in English, including favorites like *accomplish, succeed, devise, prepare*, are weak. What weaklings!

Fortunately, however, there are a few, about 200 in number, that are truly strong. True strong verbs don't change tense by wagging their little tails. No, strong verbs flex their interior muscles, changing vowels to show the change of tense, like this: I *break* (present tense), yesterday I *broke* (past tense), I have *broken* (past participle).

Who says this makes them strong? Jacob Grimm, that's who. Yes, half of the Brothers Grimm of fairy tale fame. He was the first to call them strong—strong because they manage to change their shapes with their own interior strength rather than needing the help of a tacky little ending.

For a language composed of true strong verbs, you have to go way back in history, back even before our Anglo-Saxon linguistic ancestors came over from the continent of Europe and kicked around the poor Celts.

This is the story:

Once upon a time, thousands of years ago, the great-grandparent of the English language had nothing but strong verbs. In those days when Germanic (yes, English is a Germanic language) tribes roamed the forests primeval, there was no room for weaklings.

But then, still a long time ago, another kind of inflection infected the verbs. Somebody started adding the equivalent of *did* to form the past tense and past participle of verbs, putting a little tail on them rather than letting them flex their vowels. Get it? *Walk + did = walked.*

So most of the formerly strong verbs weakened. For example, *help, holp, holpen* became *help, helped, helped,* and *laugh, lough, laughen* became *laugh, laughed, laughed.*

Even today the weaklings continue to nibble away at the hundred or so verbs that still remain strong. *Fly* is an example. In the 19th century, when that verb was put into play for the new sport of baseball, it became weak: instead of *He flew out* or *He has flown out,* a broadcaster will say *He flied out, He has flied out.*

And every new verb meekly tacks on an *-ed* to its tail: *e-mail, Google, unfriend,* for example, take the weak forms *e-mailed, Googled, unfriended*.

Still, like the Spartans at Thermopylae, our few strong verbs are holding out to the bitter end, even though resistance is futile. So give them some respect and use truly strong verbs like these in your résumé:

* Took frequent breaks

* Broke confidences

* Wrote ransom notes

* Gave away trade secrets

* Forgot important papers

* Drove colleagues crazy

http://chronicle.com/blogs/linguafranca/2011/10/30/use-strong-verbs-a-fairy-tale/

A bloody good read: 'Dracula' author's journal found

By **Ashley Fantz**, CNN
October 29, 2011 -- Updated 0604 GMT (1404 HKT)

Bela Lugosi about to take a bite.

STORY HIGHLIGHTS

- Bram Stoker's journal has been found in a home on Isle of Wight, England
- The journal contains notes that would inform Stoker's "Dracula" and other works
- An annotated book will be published 100 years after Stoker's 1912 death
- Dacre Stoker, the author's great-grandnephew, shared excerpts with CNN.com

(CNN) -- Bram Stoker's private journal sat unnoticed on his great-grandson's bookshelf in England for at least a year.

Full of notes that would inform his legendary novel "Dracula" and other stories, the thin, unmarked book had probably been lugged down from the attic at some point, along with other things the Stoker family had passed down for more than a century and placed inconspicuously in Noel Dobbs' Isle of Wight home.

Then, one day not long ago, a researcher working on a project about Stoker got in touch with Dobbs to ask if he might know anything about a journal his famous relative kept. Dobbs looked around and finally popped open this tiny book. It was signed "Abraham Stoker."

"It's kind of incredible, but Noel was rather blasé about it," laughed Dacre Stoker, Dobbs' cousin and a professor in South Carolina who has written a book about Bram Stoker. When news reached Dacre that the journal had been discovered, he cajoled his cousin into sending him photographs of a few pages.

"When I saw it, I was amazed," Dacre Stoker said. "I thought, 'The Holy Grail! We've found it!' There is so little written by Bram about Bram. Family, scholars and hard-core fans -- so many people have wanted to know what made the man who wrote 'Dracula' tick. And here we had a major set of clues."

Those clues will be published next March in "The Lost Journal," Dacre Stoker told CNN.com. The publication will mark 100 years since the author died in April 1912.

Dacre Stoker has worked with Bram Stoker scholars to annotate "The Lost Journal," which also offers quirky bits of folklore from Ireland, Stoker's homeland, and insight into the inspiration for his other work.

There are 305 entries, some pages-long, others just a few sentences.

Bram Stoker around the time he was writing his journal.

Bram Stoker was in his early 20s when the journal began in 1871. He had graduated from Ireland's Trinity College and was working at Dublin Castle.

It would be more than a decade before the author learned about the primary inspiration for his Count Dracula, "Vlad the Impaler." The real-life prince of Wallachia who ruled during the Ottoman conquest of the Balkans, Vlad earned his nickname by impaling his enemies. His viciousness became notorious in Germany and other parts of Europe where tales spread of a man-monster who lived off blood.

Vlad's father was a member of the Order of the Dragon, or Dracul. "Dracula" means son of the Dragon.

The last entry of Stoker's journal in 1881 hints at a major character he would use in "Dracula." In the novel, Renfield is an asylum inmate who has delusions that compel him to eat living beings, including flies, to gain their life force. The vampire Count Dracula seizes on Renfield's weakness and offers him as many creatures as he can eat in exchange for his eternal devotion.

It doesn't work out well for Renfield in the end.

In his journal, Stoker wrote: "I once knew a boy who put so many flies into a bottle that they had not room to die."

In another passage, the author seems to be alluding to a vampire's inability to see his own reflection. "Story of man who reflects everybody's self who meets him," he wrote.

Stoker's interest in spookiness shows up in other journal entries.

"A man builds up his shadow on a wall bit by bit by adding to substance," he wrote. "Suddenly the shadow becomes alive." The passage is believed to be a kernel of the "The Shadow Builder," one of Stoker's first attempts at a horror mystery.

The journal offers some surprising insight about the author, too. There are funny "memos" that Stoker wrote to himself, which Dacre Stoker believes were witticisms that the author may have wanted to use at a party or a pub to seem interesting.

The journal also contains romantic poems. "People don't think of Bram Stoker as being romantic, but there are some very romantic, sweet moments here," Dacre Stoker said.

The author apparently drew from his journal for material that would make up "Under the Sunset," a lesser-known collection of short stories for children that Stoker published in 1881.

One note in the journal alludes to the writer's fascination with children: "Palace of Fairy Queen. Child goes to sleep & palace grows -- sky changes into blue silk curtains etc." Dreaming kids would appear in several stories in "Under the Sunset," all darkly told tales that meditate on the blurry line between reality and imagination, science and folklore.

"Bram had a troubled childhood," Dacre Stoker said. "He was very lonely and thought about death a lot during seven years that he was just a boy and struggling through an undiagnosed illness."

The journal's first entry, titled "Night Fishing," is a kind of ode to the sea and the people who encounter it. The writing seems experimental and flowery.

"It's as if Bram were practicing," Stoker said. "He might have thought, 'Well, this is how a writer is supposed to write -- in very long sentences.' "

The author was fascinated with the theater and the act of observing, and he traveled a lot, a rare thing for his time. Journaling and touring are central in "Dracula." The novel's narrator, Jonathan Harker, writes in his journal as he travels across Europe, witnessing and questioning the day's superstitions and trying to make sense of his own bad dreams and bizarre, supernatural encounters. The novel centers on Dracula's attempt to move from Transylvania to England, and his battle with professor Abraham van Helsing.

"Bram traveled an unusual amount for the time that he lived," Dacre Stoker said. "He was curious. He loved to ask those questions: What is real and what is myth, and where do they meet? What is stronger, science or myth?"

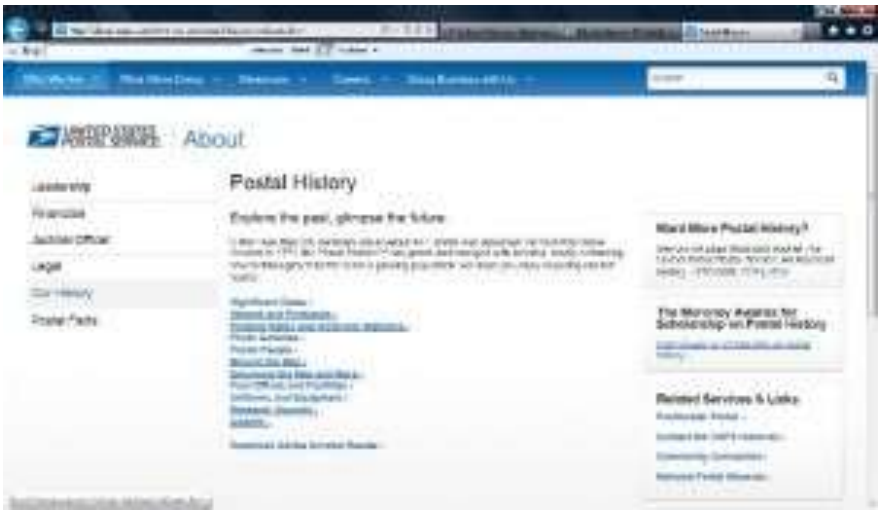
Though Stoker died before his Count Dracula became internationally famous when Bela Lugosi played him as a suave nobleman in the 1930s film, Dacre Stoker thinks the author would be flattered by how his character has stayed relevant over the years. From Lugosi to Anne Rice's Lestat and "Buffy the Vampire Slayer" to "Twilight" and "True Blood," Stoker's main question: "What does it mean to live forever?" has proved eternal.

And in true Bram Stoker style, he left one more mystery.In one of his books, the author alludes to another diary. He writes about an upcoming trip to London where one can get work as a writer. The journal of writing and notes that was recently found in the Isle of Wight home is not that diary.

"There's something else out there -- that missing piece, this mystery diary," Stoker said. "I'm dying to know where it is."

http://edition.cnn.com/2011/10/29/world/dracula-journal-discovered/index.html

Postal History at the Post Office



USPS History Web

The United States Postal Service provides a wealth of resources, reaching back to its roots in colonial America, for those interested in its history. Last summer the Historian's Office redesigned their Postal History web site. It provides access to the essays, reports, and lists they have written and compiled about people who have worked at the Post Office as well as information on Stamps, Postage Rates, Mail Transportation and Delivery, Postal Uniforms, Post Office Buildings, and Historical Statistics for the Post Office. The Photo Gallery displays a small fraction of the pictures held in the Post Office collection grouped by people, vehicles, buildings, equipment, airmail, and railroads. Research Sources links to other significant postal history collections and provides a link for contacting the Historian's Office.

Ochopee, Florida Post Office

Postmaster Finder is one of the most valuable resources. This growing database contains the names and dates of service for postmasters who served at more than 15,000 Post Offices, a number that increases weekly. It includes nearly all postmasters appointed after 1986 and for some post offices, the records stretch back to the 1700s. Besides personal names, the data can be searched by city, county, state, ZIP Code, or dates of establishment and discontinuance for post offices.

The USPS corporate library supports the information needs of the headquarters staff and is open to outside researchers by appointment. While its strength lies in the documents, reports, and magazines produced by the Post Office as well as Congressional reports and hearings about the Post Office, there is also a good collection of postal history books. For access, contact Raymond Plante, 202-268-2906 (raymond.r.plante@usps.gov) in the library, or Jenny Lynch, 202-268-2074 (jennifer.m.lynch@usps.gov) and Melody Selvage, 202-268-2532 (melody.a.selvage@usps.gov) in the Historian's Office.

October 30, 2011 · By David Straight

http://blog.stamplibrary.org/index.php/2011/10/30/postal-history-at-the-post-office/

Fighting violent gang crime with math

By Stuart Wolpert October 28, 2011

Andrea Bertozzi

UCLA mathematicians working with the Los Angeles Police Department to analyze crime patterns have designed a mathematical algorithm to identify street gangs involved in unsolved violent crimes. Their research is based on patterns of known criminal activity between gangs, and represents the first scholarly study of gang violence of its kind.

The research appears today on the website of the peer-reviewed mathematical journal Inverse Problems and will be published in a future print edition.

In developing their algorithm, the mathematicians analyzed more than 1,000 gang crimes and suspected gang crimes, about half of them unsolved, that occurred over a 10-year period in an East Los Angeles police district known as Hollenbeck, a small area in which there are some 30 gangs and nearly 70 gang rivalries.

To test the algorithm, the researchers created a set of simulated data that closely mimicked the crime patterns of the Hollenbeck gang network. They then dropped some of the key information out — at times the victim, the perpetrator or both — and tested how well the algorithm could calculate the missing information.

"If police believe a crime might have been committed by one of seven or eight rival gangs, our method would look at recent historical events in the area and compute probabilities as to which of these gangs are most likely to have committed crime," said the study's senior author, Andrea Bertozzi, a professor of mathematics and director of applied mathematics at UCLA.

About 80 percent of the time, the mathematicians could narrow it down to three gang rivalries that were most likely involved in a crime.

"Our algorithm placed the correct gang rivalry within the top three most likely rivalries 80 percent of the time, which is significantly better than chance," said Martin Short, a UCLA adjunct assistant professor of mathematics and co-author of the study. "That narrows it down quite a bit, and that is when we don't know anything about the crime victim or perpetrator."

The mathematicians also found that the correct gang was ranked No. 1 — rather than just among the top three — 50 percent of the time, compared with just 17 percent by chance.

Police can investigate further when the gangs are narrowed down.

"We can do even better," Bertozzi said. "This is the first paper that takes this new approach. We can only improve on that 80 percent by developing more sophisticated methods.

"Our algorithm exploits gang activity patterns to produce the best probability of which gang, or which three gangs, may have been responsible for the crimes," she said.

Bertozzi and her colleagues have been working with the LAPD on a variety of classes of crime. The implications of the research go beyond fighting gangs and beyond fighting crime.

"The algorithm we devised could apply to a much broader class of problems that involve activity on social networks," Bertozzi said. "You have events — they could be crimes or something else — that occur in a time series and a known network. There is activity between nodes, in this case a gang attacking another gang. With some of these activities, you know exactly who was involved and with others, you do not. The challenge is how to make the best educated judgment as to who was involved in the unknown activities. We believe there are a number of social networks that have this same kind of pattern."

Identifying hackers would be an example; helping businesses target advertising to consumers who would be most interested in their products and services in a way that would protect privacy would be another.

"An advertiser may not care who individual people are but just how they behave," Bertozzi said. "Advertisers could target consumers by knowing their shopping behavior without knowing their identities."

The lead author of the study is Alexey Stomakhin, a UCLA doctoral student in applied mathematics who worked for a year to design the algorithm that can fill in the missing information.

'**The best job in the world**'

Bertozzi describes her work as "the best job in the world — working with great young mathematicians and having an impact on society." She noted that UCLA is ranked No. 2 in the U.S. in applied mathematics. Bertozzi is interested in applying mathematics to address practical problems that affect peoples' lives.

"Nowhere else are they doing research like this — only at UCLA," Short said.

Last year Bertozzi, Short and colleagues, including Jeffrey Brantingham in anthropology, reported a new mathematical model that allows them to analyze different types of criminal "hotspots" — areas where many crimes occur, at least for a time.

The new research is federally funded by the National Science Foundation, the U.S. Army Research Office's mathematics division, the U.S. Office of Naval Research, and the U.S. Air Force Office of Scientific Research.

UCLA is California's largest university, with an enrollment of nearly 38,000 undergraduate and graduate students. The UCLA College of Letters and Science and the university's 11 professional schools feature renowned faculty and offer 337 degree programs and majors. UCLA is a national and international leader in the breadth and quality of its academic, research, health care, cultural, continuing education and athletic programs. Six alumni and five faculty have been awarded the Nobel Prize.

http://newsroom.ucla.edu/portal/ucla/fighting-violent-gang-crime-with-218046.aspx

Great Wall restoration gives untold history new life

Judy Baca at the Great Wall of Los Angeles, which she created nearly four decades ago and recently restored. (Photos by Christelle Nahas.)

Gaspar de Portola's expedition to the California coastline in 1769 — the beginning of the end for the native Chumash Indians — was fading.

Desperate Dustbowl refugees — thousands living in makeshift camps in the outskirts of L.A. in the 1930s — were peeling.

Rosa Parks, Paul Robeson, Ralph Bunche and others courageously breaking through barriers of race and class were cracking and crumbling.

There was trouble up and down the Great Wall of Los Angeles, a half-mile-long mural running along a concrete retaining wall of the Tujunga Wash Flood Control Channel in the San Fernando Valley. Nearly four decades of blazing-hot sunshine, smog, flash floods and infestation by burrowing trapdoor spiders had taken their toll on this monument to interracial harmony, created out of the vision of Judy Baca, a professor in both the Department of World Arts and Cultures and the César E. Chávez Department of Chicana/o Studies.

In the 1970s over seven summers, Baca pulled together hundreds of community members, artists, oral historians, ethnologists and other scholars to conceptualize and paint the mural, which is considered her signature piece. More recently, Baca led a new team in an equally daunting restoration of the Great Wall. In the process, a sense of community was rekindled, and a new generation of muralists was able to learn from an internationally renowned artist, who has dedicated her career to the creation of large-scale, public artworks.

Some of the original Great Wall participants — teens back then and now in their 40s or 50s — showed up to help restore — and in in some cases, to rethink — the aging wall.

"It's been an amazing experience to come together for one big purpose again," said Baca, dressed in paint-splattered coveralls and a wide-brimmed hat against the San Fernando Valley heat in the channel. Working

13½ feet below street level, with traffic whizzing by along Coldwater Canyon Boulevard in Valley Glen, formerly North Hollywood, she and her crew of students, volunteers and, at different times, muralists from around the world were finally finishing the job just three days before the mural's Sept. 17 rededication.

The unrelenting work of climbing up and down scaffolding, applying gallons of fresh paint in broad brushstrokes to faded figures the height of a living-room wall was, in many ways, reminiscent of Baca's first time in the channel.

Baca began the Great Wall in 1976 at the invitation of the U.S. Army Corps of Engineers, which wanted to add murals and bike paths along the new flood control channels after encasing nearly 60 miles of L.A.

riverbed in concrete. A native Angeleno, Baca was just a few years out of college at the time. She had earned

a B.A. in fine arts from Cal State Northridge and, later, would receive an M.A. in art education. At the time, she was running L.A.'s first mural program, engaging inner-city kids in painting murals in their neighborhoods.

Baca envisioned the Great Wall as an historical narrative depicting California and American history, but woven from the untold stories of often unrecognized ethnic groups that have shaped California's history, starting with prehistoric times and running through the 1950s.

After enlisting 10 fellow artists to help guide the project, Baca assembled a crew of novice muralists: teenage kids from L.A.'s juvenile justice system, which offered the project funding to support their rehabilitation.

"My first 80 kids had all been arrested at least once," Baca recalled. Ultimately, she would bring on some 400 young people, most of them from neighborhoods deeply divided by race and gang affiliation. "You can imagine … many were like complete lunatics," she said. "We had to figure out how to get them to work together — aside from killing each other, which was pretty close to occurring." Undaunted by the challenge, Baca turned the project into a veritable course on getting along across racial and class lines.

Around that same time, she also founded the Social and Public Art Resource Center (SPARC) to help support the Great Wall project and to replicate her model of mural-making as a form of healing in communities across the country.

Baca's young muralists also learned new lessons in history as they painted scenes showing, among other things, the decimation of thousands of indigenous people in epidemics at Mission San Fernando in Mexico and its sister missions up and down the coast. The teens also heard first-hand from Great Wall consultants like Ami Ishii, who shared stories about her Japanese American family's relocation during World War II to the Manzanar internment camp. Her stories would form the basis for Great Wall scenes about that period and the history of Japanese Americans in California.

The mural also calls attention to another often overlooked tragedy, Baca said. By its very location at the site of a once free-flowing river now encased in concrete, "it makes a relationship between the history of the people and the history of the river," she said. "Environmental justice and social justice are interwoven."

The flood channel where the mural is located is part of 60 miles of L.A. waterways encased in concrete.
The flood channel, which conveys run-off from points north and east into the Pacific, provided its own challenges during the restoration. On several occasions, said restoration project manager and UCLA alumnus Carlos Rogel, the crew had to pull everything from paint supplies to scaffolding and trucks out of the channel to escape storm-water floods.

Rogel is one of many UCLA-affiliated participants, from current students to Social Welfare Professor Rosina Beccera, former vice provost for faculty diversity and development who serves on SPARC's board of directors. Most of the students have taken Baca's "Beyond the Mexican Mural" class, which incorporates both academics and actual work on a public artwork.

Part of their UCLA training takes place in the César E. Chávez Digital/Mural Lab at SPARC's Venice headquarters. The sophisticated computer facility enables the creation of ambitious artworks that combine

high-resolution digital and hand-painted images. Baca and her students have created a number of acclaimed artworks, among them, the world's largest monument to Cesar Chavez at San Jose State University.

Carlos Rogel, a UCLA graduate, found inspiration in Baca's ability to turn painful history into art.

http://today.ucla.edu/portal/ut/judy-baca-great-wall-of-la-216853.aspx

Woody Woodpecker's Great Big Little Secret

By Jack Feuer

Published Oct 1, 2011 12:00 AM

Photos courtesy of Universal Studios.

Some people are astronauts. Others are politicians or artists. But few achievements can match being a Woody Woodpecker expert.

That, however, is the rare distinction earned by animation veteran and scholar Tom Klein M.F.A. '02. The seeds of his expertise were planted in the early '90s when Klein, then a School of Theater, Film and Television graduate student at UCLA, had what he describes as "the most amazing job": archiving the UCLA Performing Arts Special Collections and Music Library's collections of Walter Lantz, the legendary animation pioneer who created the aforementioned wild-and-crazy cartoon bird.

In 1993, as editor of the UCLA Animation Workshop's magazine ***Animatrix***, Klein interviewed Shamus Culhane, director of the classic Woody Woodpecker cartoons of the 1940s. The story was about a conflict Culhane had with a background artist but, afterwards, Klein realized he had, as he says, "written the wrong story."

Modern art within a cartoon

Tom Klein M.F.A. '02 talks about his discovery of modern art "mini-films" hidden in classic Woody Woodpecker cartoons.

From School of Film and Television at LMU

That's because nobody, apparently, had ever noticed that embedded in the Woody Woodpecker cartoons were fleeting, almost subliminal works of modern art, created and inserted into the 'toons by Culhane.

Culhane wanted to do modern art and avant-garde cinema. Cartoons didn't offer that opportunity. That is, until the director realized that Woody's manic character and the mayhem he created was a great way to sneak in Culhane's serious work — embedded within the cartoons' frequent explosions.

Culhane inserted his "mini-films" into many Woody cartoons, almost always in an eye-blink's worth of film. But in one, 1945's *The Loose Nut*, the director's modern images are on screen for several seconds. Boom! Suddenly Klein wasn't just an animated acorn woodpecker scholar. Now he was an animation history maker as well.

"It was staggering to me that no one had noticed it," he recalls. "It's a little bold to say I discovered it. I'm sure someone saw it, but honestly, of all the cartoon enthusiasts and scholars I've contacted, [the impish insertions] never appeared."

Woody even followed the Bruin animator into the workforce, where Klein established himself as a top-flight animator for Universal — which decades before distributed Walter Lantz cartoons, including the ones starring a certain peripatetic acorn woodpecker. And in 1999, Klein was asked to consult for the Fox Kids series *The New Woody Woodpecker Show*.

Klein is now professor of animation at Loyola Marymount University's School of Film and Television. And his, shall we say, unique distinction as an expert on everybody's favorite redheaded avian troublemaker?

"It's an odd thing," says Klein of his notoriety as a Woody Woodpecker expert, but he does admit that "as professional animators, we see cartoons differently."

In Woody Woodpecker cartoons, Culhane's modern art appears for an instant within explosions. But in this one, 1945's *The Loose Nute*, the images appear on-screen for several seconds.

http://magazine.ucla.edu/depts/quicktakes/woody-woodpeckers-great-big-little-secret/print/

Pertinent & Impertinent
Waves of Memories

The sea can be a dangerous force. And a powerful reminder.
By Stefany Anne Golberg

Somewhere around Bentota, you start to notice the graveyards. Small clusters of tombstones emerge here and there along the coastal road, grown over with tropical shrubbery and mold. Some of the graves fall back into the hills, where fishermen's wives hang laundry, and some are right along the beach, not far from the little wooden shacks where locals mingle around tables of freshly caught fish. The graves look old. But they aren't old — it just doesn't take long for anything left alone in Sri Lanka to be invaded by the erosion of damp clingy natural stuff. When the bus slows down to avoid a stray dog or road bump, you see the date repeated: 26-12-2004, 26-12-2004. Everything here is so close to the shoreline: the road, the graves, the people, the small abandoned houses that are also covered with mold, plus shrubs and laundry and the morning's fish haul. On one hand, the scene from the bus window is just daily life. Conversation, homemaking, the marketplace. The activities are innocuous. At the same time, civilization here is at its most vulnerable, because behind the road is the pounding, pulsing, thirsty Indian Ocean. You can imagine how, with one good push of the sea, life could easily come tumbling apart. Being an island, Sri Lanka is never far from the ocean in any direction. The water is always there and everybody knows it.

Driving south, you see the train tracks to the right of the road. They are practically in the water. We wanted to take the train south from Colombo to Unawatuna, but the tracks have still not recovered from the December 26, 2004 tsunami, also known as the Boxing Day tsunami and the South Asian tsunami, among other names. Specifically, the tracks have still not recovered from the Queen of the Sea incident, when a tsunami gust overtook a crowded passenger train traveling to the southern city of Galle and swallowed 1,700 people. This was one of the most devastating railway disasters that anyone can remember, which is saying a lot, considering that the 2004 Indian Ocean tsunami, which killed hundreds of thousands in 14 countries, disappeared tens of thousands, and displaced millions, was the most devastating natural disaster that anyone remembers. Except no one remembers, save the survivors in Aceh, Tamil Nadu, Batticaloa. Now, the tracks to the right of the road are bare. We were told that the train would be running in no time, four or five months tops, though it's been seven years.

A few days before we got on the bus toward Unawatuna, I asked Dinuka if Sri Lankans still thought about the tsunami. It was then that he told me about the feet. They say, he said, that feet have been washing up on the coasts of America and Canada. The theory, he said, is that they are the feet of tsunami victims. The feet were arriving with shoes. One foot was identified as wearing a shoe that had been popular in India in 2003. Really? I asked. I hadn't heard this story. Yes, he said, smiling as if to say, I know that the story might not be true, but of course we all know it is. On the bus south, I started thinking about the feet, about what it must feel like to picture the feet of your countrymen — or wife or brother or child — drifting over to faraway lands, to Canada even, discovered by strangers who last thought of the tsunami in 2009, when a five-year anniversary presented itself as a news story. If they thought about it.

The ocean's power is so big that it not only generates our worst disasters, it recycles our tragedies for later consideration, just when the whole fuss finally starts to die down. The day I returned from Unawatuna, international news outlets reported that a boat had been found in the sea. This fact alone is not surprising. The surprise is that the boat was so far from home — roughly 3,000 kilometers. The boat was small, a fishing boat, too small to be venturing into the ocean's middle. It was from Japan. Markings on the wheelhouse showed its homeport to be the Fukushima Prefecture. The boat was picked up by a Russian ship, the STS Pallada, on a voyage home from Honolulu to Vladivostok. The ship's crew was surprisingly unsurprised by the sight of the boat. They had been warned by scientists at the University of Hawaii at Manoa's International Pacific Research Center (IPRC) that debris from the March 11 earthquake and tsunami that devastated Japan would be creeping across the Pacific. According to Pallada crewmember Natalia Borodina, the ship also saw a television set, a refrigerator, and a couple of other home appliances. "We keep sighting everyday things," she wrote in the ship's log, "like wooden boards, plastic bottles, buoys from fishing nets (small and big ones), an object resembling a washbasin, drums, boots, other wastes. All these objects are floating by the ship."

The National Oceanic and Atmospheric Administration (NOAA) predicted something else this month. By next spring, they announced, debris from Japan's tsunami could start washing up along the coast of Hawaii. In two years, it could travel to the West Coast of the United States — to Washington, California, Oregon. For two more years after that, from 2014 to 2016, bits of crushed homes, children's toys, fishing nets — up to 20 million tons of homeless stuff — could circle back to Hawaii. It might be, researchers say, that for the next 10 years, tsunami souvenirs could hover around coastal landlines, visiting the shores of America again and again.

For almost six months, senior researcher Nikolai Maximenko and computer programmer Jan Hafner of the IPRC have been working on a computer model to track the trajectory of the tsunami debris. Now their predictions are coming true. "We are using this tsunami as a tragic experiment of nature…to better understand how debris moves in the North Pacific," Maximenko told the press. In an October 12 article for *The New York Times* writer Bettina Wassener concurred with Nikolai Maximenko's summation that the tsunami could offer exciting chances to learn about the mysterious partnership between the oceans and our stuff: "In essence, as devastating as it was, the March 11 tsunami affords a unique opportunity for studying the phenomenon of marine pollution. After all, rarely are such huge amounts of debris swept simultaneously into the ocean from a single location." Jan Hafner was rather less effusive but he tried to be comforting. "We don't want to create a panic," Hafner told reporters, "but it's good to know it's coming."

For many Americans, the story of the Japanese debris has been more startling than comforting. An ABC News story about the debris ended, "Back here on land in Japan, the search is on for the missing nearly 15,000 people whose bodies have never been found," prompting the online headline "Thousands Of Rotting Bodies Heading To America." "All kinds of debris swept up by the tsunami," reported a furrow-browed George Stephanopoulos, "are now floating in the Pacific and making their way to *our* West Coast," and the way he emphasizes "our" makes it pretty clear that Americans are due for an *Invasion of the Body Snatchers* attack, and that Malibu will soon be occupied by thousands of Japanese zombies.

The worst fears have been over radiation. Fukushima Prefecture was the area of Japan hardest hit by the tsunami. It is also the site of the Fukushima Daiichi nuclear power plant disaster, one of multiple nuclear meltdowns triggered by the earthquake and ensuing tsunami. Fukushima is no longer a place in the eyes of the

world. It is simply the largest nuclear accident since Chernobyl. When the Japanese fishing boat was found by the STS Pallada, it was immediately checked for radioactive contamination. And even though the Environmental Protection Agency, the Nuclear Regulatory Commission, and a host of other expert agencies have been trying to stave the nuclear panic since the tsunami first hit, some will not be calmed. In March, Americans learned that tens of thousands of potassium iodine pills (which are used to prevent the thyroid from absorbing radiation) were being distributed to citizens of Fukushima and surrounding areas. They decided that they too should take precaution. Soon after, reports came from across the North American coast that pharmacies were selling out of the drug, and that some American citizens were landing in poison control centers from potassium iodine overdose. Japanese officials had told the international press that after the initial explosions and fire, the Fukushima nuclear complex released radiation of up to 400 millisieverts per hour. On March 16, Dr. James Thrall, radiologist-in-chief at Massachusetts General Hospital in Boston and president of the American College of Radiology, told the *Los Angeles Times* that "anything more than about 50 millisieverts may be cause for alarm…Studies conducted after the atomic bombing of Japan during World War II showed those exposed to 50 millisieverts or more of radiation were at increased risk for leukemia and cancer."

I suppose it's hardly strange that American fear of radiation is so profound since America herself invented nuclear fear. She created it decades past, in the cities of Hiroshima and Nagasaki. Perhaps she has harbored an anxiety in her citizens ever since, an anxiety that they would in time reabsorb the radiation America released on the people of Japan during the Second World War. Now, the very things Americans always counted on to protect them from enemies — the oceans at America's sides — are threatening to turn against them, threatening to be rather the deliverer of foreign terror, and to bring it in the most insidious way: little by little, doled out slowly over years.

Disasters, by definition, are thorough and swift. They are impossible to fathom as they are happening. We can only sort through traumatic events in the haunted leftovers — in the trains that no longer go, in the lonely boats, in the rooftops washed ashore, in the feet. Debris is the ocean's ghost. It is memory in material form. And when our human stuff goes to the sea, the haunting is all the more persistent because it washes back when we least expect it. This is the whimsy of the sea, to delay and return. And return and return. The ocean is our life force and it is our collective memory. Asians are anxious about the debris, too, worried about their very body parts being swept across the seas to be found by North American beachcombers. But maybe there is some silent consolation for tsunami survivors in the arrival of their tragic detritus across the Pacific. Maybe, if the ocean keeps generating material memories, if enough feet wash to faraway shores, maybe the rest of the world will remember what has been so hard for Sri Lankans, and Indonesians, and Japanese to forget.

Reminders of faraway disasters are not new. Early one August morning in 1883, an Indonesian volcano called Krakatoa erupted in a furious chaos of magma and steam. The brute force of the explosion caused tsunamis that instantly wiped out villages in Java and Sumatra forever. The sound of Krakatoa is said to be the loudest on record, shattering the eardrums of passing sailors, and heard as far as Australia 3,500 kilometers away, and on the island of Rodrigues near Mauritius, 4,800 kilometers away. All the world knew the name Krakatoa. Up to a year later, human skeletons were seen floating around the Indian Ocean and up the coasts of Africa, buoyed by rafts of volcanic pumice. And even still, most people would have quickly moved on from Krakatoa had it not been for the sunsets. For months after the event, all around the world, electric sunsets blazed out in the fiery blood reds and oranges of apocalyptic nights. Paintings of the time took on sanguine hues — William Ashcroft turned the banks of the river Thames into a river of fire and, debatably, the terrifying Norwegian sky in Edvard Munch's *The Scream* is also Krakatoan. Not a few people were convinced that the apocalypse had in fact arrived.

With each Lisbon, each Krakatoa, each Fukushima, each tsunami, civilization ends, collapses into the sea, Atlantis-style. And then, it emerges. Until the day our civilization no longer floats back to us, we'll keep trying to live with the sea, stealing its supplies and bringing them to land, feeding it crap in return, pretending that the relationship is an equal one and knowing that it isn't, knowing that the sea is ready at any moment to turn on us, to deposit our crap right back in our laps. In the next 10 years, most of the trash that beachcombers

find will be not be from any natural disaster; it will be accidental, incidental trash — trash from cargo spills, trash from litter. But each baby toy and shoe found always has attached to it a story of possible tragedy.

Nothing expresses the complex relationship we have to the sea more than seaside graves like those along the coast of Sri Lanka. A landlocked grave is created to protect the dead. But it only remains protected as long as a civilization exists to care for it. Conversely, a seaside grave's days are always numbered. It is a temporary memorial, because at any moment a seaside grave — and the memories it represents — can go tumbling into the watery abyss, to disappear forever, or perhaps to find new life in a land of strangers. • *4 November 2011*

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http://thesmartset.com/article/article11041101.aspx

Space station may be site for next mock Mars mission

18:05 4 November 2011
Space

Anne-Marie Corley, contributor, Moscow

(Image: ESA)

A 17-month mock mission to Mars on Earth could be followed up by a shorter simulation in low-Earth orbit, Russian space officials say.

Today, a six-man, four-nation crew emerged one by one after 520 days in a sealed habitat in Moscow meant to simulate a mission to Mars - the longest isolation experiment ever achieved.

The Mars 500 "astronauts" smiled and waved as they greeted a sea of faces, glimpsed their first daylight and breathed their first fresh air in almost a year and a half. As they lined up for photos and brief remarks, Diego Urbina, the Italian participant, pummelled his fists in the air in a classic victory gesture as if to say, "Yes! We did it!"

Even the normally stoic Russian commander, Aleksey Sitev (pictured), grinned from ear to ear as he stepped out of the capsule, bringing up the rear, and waved to the guests present.

"We are proud today to prove that humans can go to Mars," said Romain Charles, the French participant. His smile grew wider and wider as he gazed at all the people around him. Urbina called his five colleagues "the most professional, friendly and resilient individuals I have ever worked with". Wang Yue, of China, greeted the audience in English, Chinese and Russian.

Sergey Krasnov, the head of human space flight programmes for Russia's space agency, Roscosmos, told guests and press that the next step will be to carry out a "shorter version" of Mars 500 on the International Space Station.

He admitted to the difficulty of recreating absolute isolation on the station, but suggested that a simulation of other Mars 500 elements, such as a Mars-like communications delay between crew and ground control, would be useful in laying the groundwork for space travel beyond low-Earth orbit. The experiment would be carried out in microgravity, with greater potential danger and no ability to walk out at any time, so it would be a more realistic simulation of a Mars mission. An ISS experiment would most likely take place two to three years from now, he said. As for the date of a real mission to Mars, Krasnov could not be specific.

A few minutes before the crew's exit, they were visible via video, pacing in their confined quarters. Then a technician on the outside dramatically unwound the simple brown string that was sealed across the door 520 days ago and opened the hatch to let the crew out.

In response to questions about bets being placed on which of the crew would walk out of the experiment before it was finished, Urbina told the news agency Russia Today that he and the other crew members were happy that someone would make money on the wager "that none of us would go crazy or go out early".

The men will now spend four days in quarantine for medical tests before they begin to reintegrate into their normal lives. In April, the results from more than 100 medical and scientific experiments performed during the mission will be presented at a conference in Moscow.

http://www.newscientist.com/blogs/shortsharpscience/2011/11/space-station-may-be-site-for.html

Creative Class

Cezanne, Michelangelo, and Greek sculpture in Picasso's early drawings.
By James Polchin

"Study of a Torso" (1895)

The idea of Picasso always precedes the experience of seeing Picasso's art. Looking at drawings from the artist's early years in the Frick Collection's cramped basement, I wondered what we can say about Picasso that hasn't already been said. I've previously encountered this question with artists whose reputations (and market value) are in such high esteem that it is almost impossible to see the work as separate from the artist's image. Even in this small show, with works that look decidedly un-Picasso, I found it difficult to view the drawings as anything other than work of this great artist.

- **"Picasso's Drawings, 1890-1921: Reinventing Tradition. Through January 8, 2012. Frick Collection, New York. January 29 through May 6, 2012. National Gallery of Art, Washington, D.C.**

It's a bit like standing in front of the eye exam chart, squinting to see the letters we can barely make out but that we know are there. "He is getting more cube-like in this drawing," I overheard a patron explain to her companion. "People kind of look like people in this one," another said.

Running through my head, of course, were echoes of Walter Benjamin. His critique of modern culture's stripping away of art's unique quality (what he termed its "aura") seemed potent. As if Benjamin predicted our fate, the loss of an artwork's aura has withered away in an age when the surfeit of calendars and posters — not to mention the T-shirts and coffee mugs and refrigerator magnets — reproduce Picasso images for casual consumption. When we actually confront the original, can we see it for its own sake, or do we compare it to the copy in our minds?

Beyond this withering aura, something else strikes the viewer of these drawings: they question our understanding of creativity itself as a uniquely original endeavor. This question begins with the earliest of drawings. Created in his teens and 20s, when Picasso was caught between the classicism of academic art and the rumblings of Modernism, these works reveal both the careful eye of a draftsman and an experimentation with form. Picasso completed "Study of a Torso" when he was 14 years old.

The delicate pencil drawing uses light and shading to create a three-dimensional space that renders with realistic precision the shape of a sculptural torso, reclining and contorted in its headless repose. The drawing was most likely completed just after Picasso entered La Llotja, an art academy in Barcelona where his father taught drawing. The subject was a plaster cast of a Greek sculpture; in the 19th century, imitating earlier artists was central to studio practice in art school. For this drawing, the copy is layered, for the plaster cast itself is a copy of the original. The drawing, then, is an imitation of an imitation. I wondered how to categorize the postcard of this drawing, which was on sale in the bookstore.

Other examples of Picasso's realist precision include "Portrait of the Artist's Father," which renders the aging face in sharp contrasts of shadow and light. The realistic image is made up of small details that were undoubtedly taught to the young artist by the sitter himself. Such realism was the rule of art education at the time, and following rules in the academy meant success. But Picasso was dubious of the rules, as the unfinished quality of this and other drawings suggests. The portrait of Picasso's father fades into outlines of shoulders and torso; in a self-portrait from 1901, the face similarly centers the drawing's energy, with the body rendered in flat lines and streaks of color.

According to art instruction standards, a drawing was meant to present a full image, complete and mimetic to the scene. In many of these early drawings, Picasso reminds us that we are not looking at a mirror of reality, but rather an imitation of the world created by the hand of the artist.

This sense of imitation is present in other works. "Woman with a Pitcher" is drawn from a 19th-century photograph by G. Lekegian entitled "Woman with Ballas, Egypt." Like his portraits, the drawing emphasizes the head of the subject, which is drawn with rich detail and tones, while the body and hands fade into quick, flat lines. The catalog notes, "[W]hat is remarkable about this drawing and others that can be associated with specific photographs done around the same time is how they differ from the original rather than how close they are to the photographic source." But this is not remarkable, for each drawing attempts a new creation as much as it borrows from the photograph itself. Picasso's drawing turns the photograph into its own artistic creation, which he then renders though his own unique drawing. The reality of a woman captured in a photograph, which was then imitated in a Picasso drawing, point to the layers of images and history behind every act of originality.

Through the displayed works and an extensive catalog archive of drawings, "Reinventing Tradition" aims to situate Picasso's drawings within the long tradition of great artists that preceded him. "Acrobat in Blue" presents a hauntingly beautiful portrait of a young man rendered in stern lines and watery colors that lie flat against the cardboard surface. The acrobat's languid features evoke a contemplative moment as the he looks off into the distance (a common technique for the artist). Picasso captures this portrait with little shading or

precision of detail, instead using thick black lines that define the contours of the acrobat's body against the brown background. The catalog tells us that the simplicity and colors of the image "brings to mind the work

of 15th-century masters" such as Fra Angelico's frescoes. This claim intrigued me, for it suggested that when we look at Acrobat in Blue, we see more than Picasso, more than simply his lines and colors. We see instead a history of such lines and colors, with "Acrobat in Blue" a remix of earlier techniques.

"Mother and Child and Study of Hands" (1904)

In this art history exercise, I started to wonder how much of Picasso we see in these drawings. Where do we find Picasso amidst drawings that recreate a plaster copy of a marble sculpture? In works made from earlier photographs? In "Mother and Child and Study of Hands," which recalls with astute certainty a drawing by Ingres?

Or in "Nudes in a Forest," which echoes Cezanne's "Bathers by a Bridge" and even Michelangelo's sculpture "Dying Slave"? Is what we see in these drawings just bits and fragments, techniques and styles that came before? Could we not look at "Standing Nude" — with its highly conceptual rendering of the human body through lines and markings, and the abstraction of the human body as open rather than closed — and not see Leonardo's anatomical drawings?

These early drawings show us an artistic vision in formation. We see the lines and colors that would define so much of Picasso's work from the 1930s onward. The pleasure of these drawings rests in seeing Picasso becoming Picasso. But the drawings also question a notion of Picasso's uniqueness. I started to consider his Cubist paintings and large abstract murals, such as "Guernica," as less dramatically revolutionary than they might have seemed. If we agree that Picasso was "reinventing tradition" in these early drawings, he did so through a number of borrowings and imitations. Imitation breeds creativity, which in turn breeds imitation: this is the cycle that Picasso's drawings suggest, a kind of visual theft that lies at the heart of so much creativity.

"Standing Nude" (1910)

Neither the show nor the catalog mentions that 100 years ago this fall, the 29- year-old Picasso was arrested in Paris on suspicion of stealing da Vinci's *Mona Lisa*. The painting was taken from the Louvre on a hot and humid day in late August, without much evidence of how or why. When news of the heist broke, France closed its ports and halted train service. After nine days of internal investigations, the Louvre reopened its doors to large crowds of patrons who came to look at the empty space on the wall where the painting had been. One of the patrons was the 28-year-old Franz Kafka who was visiting Paris. I can only imagine what Kafka might have thought as he stood there among the crowd, staring at that blank space on the wall of the Louvre with only the hooks left behind.

Lacking any real leads, the Paris police turned to the bohemian enclaves of radical modern artists and anarchists of Montmartre. When Honoré Joseph Gére Pieret, a Belgian immigrant, confessed to the police that

he had stolen several statuettes from the Louvre (not such a difficult task at the time, as it turns out), his associations led to Picasso. Pieret was close friends with Guillaume Apollinaire, the poet, critic, and avid promoter of Cubism, and had sold Picasso two Iberian Roman era statuettes he had take from the Louvre back in 1907.

The police arrested Apollinaire and Picasso, both foreigners and, more threatening, both well-known advocates of modern art's revolutionary power. Apollinaire often proclaimed, "in art, one has to kill one's father," and had signed a petition in support of burning down the Louvre. Picasso himself had advocated against museums as "petty and ridiculous things." While such words were fine as provocations of young artists and poets in the cafes of Montmartre, they were more threatening in those hot, autumn days when all of Paris and much of Europe was searching for "Mona Lisa." In court, Picasso claimed his innocence. He said he had no idea the statuettes he owned were stolen from the Louvre. Neither Picasso nor Apollinaire were ever tried for the theft of "Mona Lisa." Da Vinci's painting would emerge two years later in a hotel room in Florence, Italy.

In *Vanishing Smile: The Mysterious Theft of Mona Lisa*, R. A. Scotti questions Picasso's ignorance of the stolen art he bought from Pieret. She writes that Picasso

had visited the Louvre exhibit several times, and he had probably heard the flamboyant Belgian boast of his light fingered activities. At the very least, Picasso knew the statues he had bought…belonged to the museum. At worst, he may have commissioned their theft, ordering two specific figures from the exhibit, describing exactly which pieces he wanted to use in his new painting.

The new painting was "Les Demoiselle d'Avignon." Small studies for this work are on display at the Frick. "Yellow Nude (Study for Les Demoiselle d'Avignon)" renders a heaviness of line and color, red crosshatching giving texture to the body.

The large head and limbs evoke another aesthetic from a far earlier era. The stolen statuettes, used as models for his early drawings, would come to define one of Picasso's most famous paintings. As Scotti points out, several years after the "Mona Lisa" theft, Picasso spoke of his painting's origins: "You will recall the affair in which I was involved when Apollinaire stole some statuette from the Louvre? They were Iberian statuettes…well, if you look at the ears of "Les Demoiselles d'Avignon," you will recognize the ears of those pieces of sculpture! From this point of view it is true that Cubism is Spanish in origin and that it was I who invented Cubism."

"Yellow Nude (Study for Les Demoiselle d'Avignon)" (1907)

Picasso borrowed more than ears to invent Cubism, but that's not really the point. Or perhaps it is. I came away from his drawings thinking they are a kind of palimpsest through which we can see the outlines and shapes of past aesthetics, from Roman figures or African masks, to Greek sculptures and French paintings. To look at Picasso's drawings is to better understand his paintings as something greater than Picasso, an artistic vision based on imitation and purloined art. If we look beyond the artist, we might actually see his art and access his creative process without the shadow and burden of Picasso's name getting in the way. We might call what Picasso created "invention" or "reinvention," but it is hard to look at these drawings and not have a sense that so much of what we call originality relies on a good deal of imitation and even a bit of theft. • *31 October 2011*

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http://www.thesmartset.com/article/article10311101.aspx

It Takes Two: Brains Come Wired for Cooperation, Neuroscientists Discover

Plain-tailed wren in its natural habitat in Ecuador's cloud forests. (Credit: Eric Fortune, Johns Hopkins University)

ScienceDaily (Nov. 3, 2011) — When Nancy Grace and her partner danced a lively rumba to Spandau Ballet's 1980's hit, "True," on a recent "Dancing With the Stars," more was going on in the legal commentator's brain than worry over a possible wardrobe malfunction.

Deep in Grace's cortex, millions of neurons were hard at work doing what they apparently had been built to do: act and react to partner Tristan MacManus's movements to create a pas de deux that had the dancers functioning together (for the most part) like a well-oiled machine.

That is because the brain was built for cooperative activity, whether it be dancing on a reality television show, constructing a skyscraper or working in an office, according to a study led by Johns Hopkins behavioral neuroscientist Eric Fortune and published in the November 4 issue of the journal *Science.*

"What we learned is that when it comes to the brain and cooperation, the whole is definitely greater than the sum of its parts," said Fortune, of the Department of Psychological and Brain Sciences at the Krieger School of Arts and Sciences. "We found that the brain of each individual participant prefers the combined activity over his or her own part."

In addition to shedding light on ourselves as social and cooperative beings, the results have important implications for engineers who want to be able to program autonomous robots to work effectively as teams in settings such as bomb squads and combat.

But Fortune's work didn't involve androids or take place on a battlefield. Instead, he and his team took to the cloud forests of Ecuador, on the slopes of the active Antisana Volcano. Why? It's one of the only places in the world where you can find plain-tailed wrens. These chubby-breasted rust-and-gray birds, who don't fly so much as hop and flit through the area's bamboo thickets, are famous for their unusual duets. Their songs -- sung by one male and one female -- take an ABCD form, with the male singing the A and C phrases and the female (who seems to be the song leader) singing B and D.

"What's happening is that the male and female are alternating syllables, though it often sounds like one bird singing alone, very sharply, shrilly and loudly," explained Fortune, who spent hours hacking through the thick bamboo with a machete, trying to catch the songbirds in nets. "The wrens made an ideal subject to study cooperation because we were easily able to tape-record their singing and then make detailed measurements of the timing and sequences of syllables, and of errors and variability in singing performances."

The team then captured some of the wrens and monitored activity in the area of their brains that control singing. They expected to find that the brain responded most to the animal's own singing voice. But that's not what happened.

"In both males and females, we found that neurons reacted more strongly to the duet song -- with both the male and female birds singing -- over singing their own parts alone. In fact, the brain's responses to duet songs were stronger than were responses to any other sound," he said. "It looked like the brains of wrens are wired to cooperate."

So it's clear that nature has equipped the brains of plain-tailed wrens in the Andes of Ecuador to work cooperatively, and to prefer "team" activities to solo ones. But what does that have to do with people?

"Brains among vertebrate animals -- frogs, cats, fish, bears and even humans -- are more similar than most people realize," Fortune said. "The neurotransmitter systems that control brain activity at the molecular level are nearly identical among all vertebrates and the layout of the brain structures is the same. Thus, the kinds of phenomena that we have described in these wrens is very relevant to the brains of most, if not all, vertebrate species, including us humans."

Co-authors on the study are Gregory F. Ball of the Department of Psychological and Brain Sciences at the Johns Hopkins University; Carlos Rodriguez of Pontificia Universidad Catolica del Ecuador; and Melissa Coleman, of Claremont McKenna College. David Li, an undergraduate student majoring in neuroscience at Johns Hopkins, also is a co-author.

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Journal Reference:

1. E. S. Fortune, C. Rodriguez, D. Li, G. F. Ball, M. J. Coleman. **Neural Mechanisms for the Coordination of Duet Singing in Wrens**. *Science*, 2011; 334 (6056): 666 DOI: 10.1126/science.1209867

http://www.sciencedaily.com/releases/2011/11/111103190351.htm

Burning Down the House

Miró's destructive tendencies at the Tate Modern.
By James Polchin

Exploring the more than 150 works in the retrospective of Spanish artist Joan Miró at the Tate Modern, I was reminded of the series of 11 lithographs of a bull that Miró's friend Pablo Picasso produced in the winter of 1945. In that series, the realistic image of the massive animal slowly progresses to the minimalist outlines of the bull's shape, each successive lithograph a more precise rendering of form until the final image is only 12 thin pen strokes. The Miró show evokes a similar meditation on the force of destroying one kind of image in an effort to capture another.

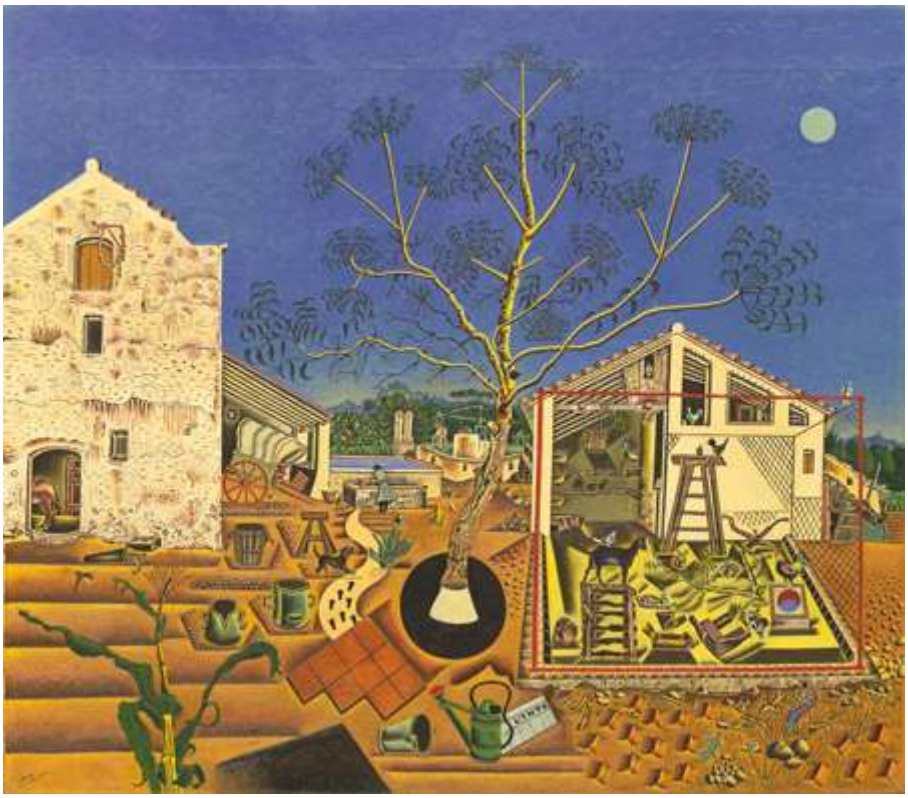
- **"Miró: The Ladder of Escape." Through September 11. Tate Modern, London. October 13 through March 25, 2012. Fundació Joan Miró, Barcelona. May 6 through August 12, 2012. National Gallery of Art, Washington, D.C.**

We see this in the trajectory of Miró's creativity. His work moves from modernist and surrealist treatments of the Catalan countryside toward a unique vocabulary of symbols and signs that erases any sense of realist representations, offering instead an art of figures and symbols composed on small works of paper or large abstract canvases. Over the years, Miró's work moved far beyond surrealist intentions but remained deeply grounded in the natural world.

The show, subtitled "The Ladder of Escape," traces the beginnings of Miró's creative work in the early 1920s to his death in 1983. Born in Barcelona in 1893, just five years before defeat in the Spanish-American War would tear away Spain's colonial empire, Miró witnessed much of the political violence and social transformations that have shaped the modern country. The show foregrounds this history of violence and regime changes, of dictatorships and partisan debates, as it presents Miró's work as engaged with and, at times, motivated by his dedication to Catalan identity and the political upheavals of his time: specifically his opposition to the Fascist dictatorship of Francisco Franco who came to power after the bloody Spanish Civil War in the late 1930s. The war prompted Miró to remain in exile in France, but as the Germans were marching toward Paris, he returned to Spain to live the rest of his life in "internal exile." The ladder of escape ultimately led back to Spain.

Curators Marko Daniel and Matthew Gale remind us in each gallery how exile infused Miró's art with a vision of political engagement and critique. While they admit that the ladder of escape "signals [Miró's] desire for withdrawal to his own artistic world," which he ultimately created in a large studio space in Palma de Mallorca, the show is organized with a concern for what the curators call "Miró's sometimes uncomfortable confrontations with social and political concerns." While Miró refused inclusion in official Spanish exhibitions — refused to even represent Spain in international shows — his reputation grew steadily after World War II beyond the borders of Spain.

Yet, aside from the "Barcelona Series" — 50 black-and-white lithographs completed in the 1940s that present stark, violent images of ogres and dictators and their victims — the show often struggles with defining Miró's work as politically confrontational. Words like "perhaps" and "may" are often used to suggest the links between politics and the motivations for his art. Despite this limitation, the show does well at engaging the political potential in Miró's art, asking us to consider his canvases and ceramics against the historical context of war and nearly four decades of dictatorship.


"The Farm"

But the show quietly evokes another Miró: the paradox of an artist whose creativity rests on destruction. Early in his career, when he was inspired by the revolutionary fervor of the surrealists, Miró professed a desire for the "assassination of painting." And as you move through the many decades of his work in just a few hours, you get the strong sense that Miró remained committed to destroying art — or rather to destroying the ways art had been defined, experienced, and valued.

"The Farm" (1921-02) marked that moment when Miró's canvases broke from the illusions of perspective to the flat cosmos of colors, lines, symbols, and shapes for which he is so often recognized today. The painting anchors itself around a large, stylized tree that is surrounded by a collection of animals and farming implements. The brown, sun-drenched earth compliments the well and yellow stone buildings off in the horizon. Beyond the well, the land is lush and green and rises up toward the deep blues of an evening sky with a full moon hovering in the corner. The colors and lighting create a strange paradox where the foreground feels like midday while the background turns to evening. The objects of the paintings are juxtaposed not for the purpose of any realistic details, but rather as a catalogue of memories and experiences all imagined within a singular, framed moment in time. "Landscape (Landscape with Rooster)" (1927) echoes this earlier painting — the sandy-brown earth and dark blue evening sky create a flat surface where land and air mix. The colorful geometries of the rooster direct our gaze upward to the thin, uncertain ladder that rises vertically into the evening blue, enticing us toward something.

The mix of experience and imagination become the reality of Miró's paintings from the 1930s to the '50s. In this period, he moved away from perspective and the representational imagery of surrealism, leaving you helpless in front of his art, searching for something certain amid the intense colors and mysterious shapes that appear both natural and alien at the same time: human bodies distorted and twisted, and enlarged penises and engorged vaginas (or the other way around). Floating alongside them are animals of similar confusions and marvelous distortions. Each shape, body, or disembodied eye or animal figure is connected to the others through simple lines that flow across a flat canvas.

"The Escape Ladder"

His “Constellation Series,” a group of 23 works on paper completed in the early 1940s, illuminate the energy and complexities of his imagery. These are the works that so often get reproduced on coffee mugs and T-shirts. They are small and delicate, seducing you to look closely and directly at the forms of animals and humans crafted with the simplicity of black outlines that flow into one another, each connected to a larger universe. Boundaries and borders disappear in these works. Like the cosmos itself, Earth and sky, plants, humans and animals are all tied together.

Increasingly, the images dissolve from the complexities of tightly composed, inter-connected worlds to large canvases of flat colors and isolated objects and lines. In the 1950s and ’60s, after an extended stay in New York and encounters with the work of the Abstract Expressionists, Miró complete a series of large canvas triptychs, which fill separate, octagonal galleries at the Tate. In “Blue I/II/III” (1961), deep azure canvases with rough and uneven brushstrokes serve as a background to circular black shapes and a singular red gash of paint. In “Blue II,” this red gash is a long, dagger-like stripe along the left side. These works echo the flat, stark canvases of Mark Rothko, but these are much less aware of themselves as paintings. To sit for a while and stare at Miró’s canvases is to forget you are looking at paintings at all.

This was especially true in “Painting on White Background for the Cell of a Recluse, I, II, III” (1968) where the murky whiteness of each life-sized canvas is broken by a thin black line meandering upward or across the canvas. All symbols and signs are gone now, and we are left with an unsteady line that looks like a pathway, like some conceptual map leading you from point A to point somewhere else. The galleries for the triptychs are designed to surround you with these canvases, such that you don’t simply look at them but rather experience them and almost inhabit them for a while. The boundaries between the viewer and the canvas disappear and you’re left staring at that thin, uncertain line. Eventually the art itself begins to disappear.

In 1969, Miró participated in a privately sponsored show in Barcelona in collaboration with a group of architects. The focus of “Miró Otro” was the artist’s politically engaged works; it also aimed to question the

conventional exhibition formats that contain such art. Just days before the official opening, Miró painted an elaborate mural across the large glass windows of the exhibition building. His mural was a kind of palimpsest, for behind the glass the architects mounted a collage of slogans and images advocating Catalan independence. When "Miró Otro" closed two months later, Miró and the others scraped the mural off the windows, much to the dismay and frustration of many (it even provoked a day-long university conference). In a world where Miró's market value was quite high, destroying his own work defied both the emerging logic of the contemporary art market and the importance his work had in symbolizing a modern, democratic Spain in the waning years of the dictatorship.

The heart of the show for me comes near the end: Miró's five "Burnt Canvases," made for a 1974 retrospective of his work at the Grand Palais in Paris. These paintings resist easy definition. Their appearance is that of powerful wreckage. The burned holes reveal each work's blackened stretcher bars, the paint harshly applied in primary colors of red and yellow mixed with thick strokes of black. Two paintings are suspended from the ceiling, as they were in 1974, revealing both sides of the canvas and removing all illusion that the canvas is anything more than a crafted object. In commenting on such display, Miró said, "Both sides were living, the front and the back, and the void in the middle, through which anything could pass."

At the Tate, a spotlight directed toward one of the suspended paintings, projecting an eerie silhouette against the white wall. The silhouette looks like the profile of a fragmented burned corpse. While these paintings recall Yves Klein's "Fire Paintings" of the early 1960s, they are much different in intent, for unlike Klein's use of fire as a brush, Miró was intent on using fire as a force. "Fire has unforeseeable consequences," he wrote. "It destroys less than it transforms."

In his catalog essay, William Jeffett relates Miró's process of creating these canvases. "First the canvases were cut with a knife and punctured with sharp objects; paint was then applied and petrol was poured over them and ignited. Further paint was applied and again burned with considerable care; a wet mop was used for control and a blowtorch for concentration on specific areas." While Jeffett claims the inspiration for these canvases rests in the shattered facades and street chaos of the youth protests of the late 1960s, he also admits that they represent an "attack on art itself…on the bourgeois reduction of art to elite culture or economic commodity."

In an interview, Miró made clear the intentions behind these works: "I have burned these canvases on the level of form and profession, and as another way of saying shit to all of those people who say that these

canvases are worth a fortune." The "Burnt Canvases" anchor a fundamental quality of Miró's later works, where his confrontations with Fascist Spain were intertwined with his critiques of an international art market that he saw as powerfully corrupting in its own right.

Just days before I attended the retrospective, I read that international auction house Christie's reported record profits in their global art sales. The *Guardian* quoted Jussi Pylkkanen, Christie's president for Europe, who explained: "At times of financial weakness, there is a flight towards quality, as people seek out security and real value that reside within works of art." Seeing Miró is difficult enough without the specter of the "global rich" breathing down your back. Civil wars and dictators are the least of the problem. The intrigue of "Miró: The Ladder of Escape" rests not only on how the artist may have confronted the political conservatism of his times, but also how many of his works remind us of the caustic effects that marketplace thinking can have on art itself.

Leaving the final galleries of the show, I pushed through the heavy doors that led into the cafe and the Tate bookstore, filled with the usual offerings of T-shirts, coffee cups, greeting cards, refrigerator magnets, calendars, tote bags, and pillows all decorated with Miró images. These are the reproductions and art objects those of us outside the global rich can afford. I would have bought a reproduction of the "Burnt Canvases" but there were none for sale. I started to imagine the possibilities of burned and painted T-shirts, or postcards scratched and charred, or even a cut up tote bag with its center burned through to the inside. But then, they probably would not sell very well. • *2 August 2011*

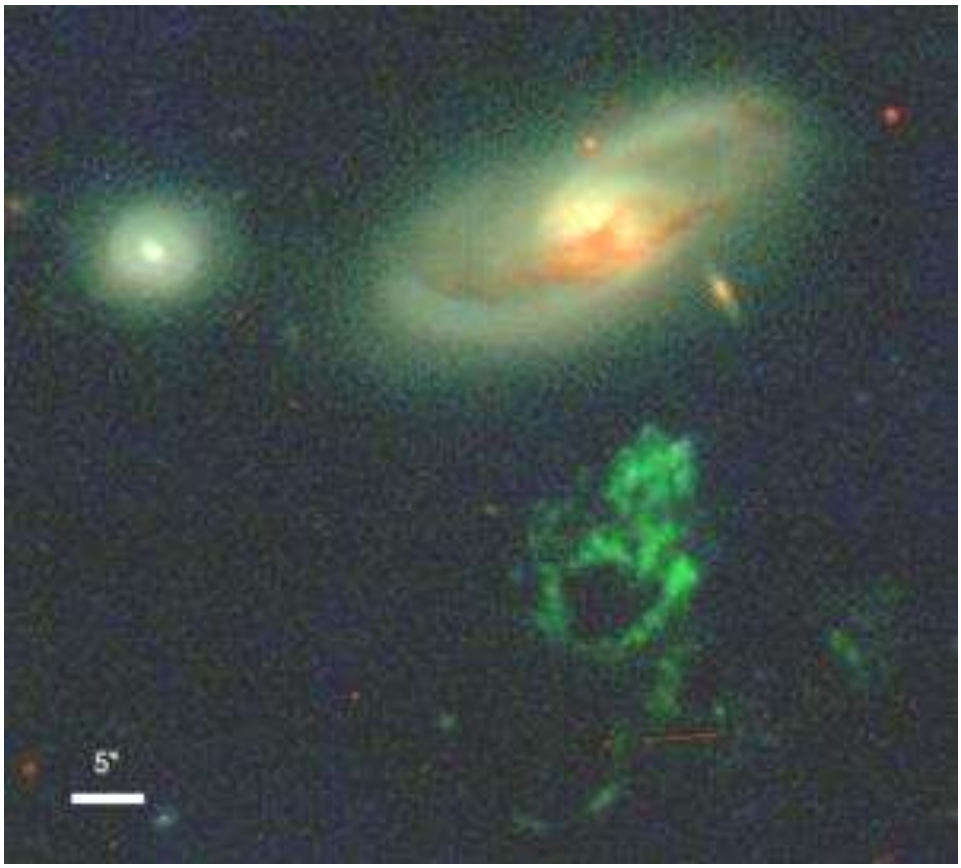
James Polchin teaches writing at NYU and is the founder and editor of the site Writing in Public.

Images courtesy of the Tate Modern.

http://www.thesmartset.com/article/article08021101.aspx

Attack of the mystery green blobs

- 16:42 04 November 2011 by **David Shiga**



Officially a thing *(Image: WIYN/William Keel/Anna Manning/NASAblueshift)*

Astrophile is our weekly column covering curious cosmic objects, from within the solar system to the furthest reaches of the multiverse

Object type: Glowing gas cloud
Mass: Billions of times the mass of the sun

Imagine making a night-time trek to a remote stretch of desert, far from any sign of civilisation. You crest a hill and are astonished to find a building ablaze with artificial lighting.

That is a little like the puzzlement that greeted the discovery of Hanny's Voorwerp, a curious gas cloud found floating in intergalactic space in 2007. It is brighter than 30,000 suns but has no obvious power source. Now, 19 similar clouds have been discovered, all glowing apparently without internal power.

The clouds were probably energised by nearby monster black holes that had blasted them with intense radiation. This link to huge black holes is exciting because it means the clouds could be an excellent new way to probe the growth and feeding habits of these inscrutable behemoths.

Hanny's Voorwerp was discovered by the schoolteacher Hanny van Arkel while she was classifying galaxies as a volunteer for the Galaxy Zoo citizen science project. She noticed a weird blob that appeared intensely blue in the false-colour image she was examining and emailed the Galaxy Zoo researchers about it. *Voorwerp* means "thing" in Dutch, Van Arkel's native language.

Monster suspect

Intrigued, the researchers scheduled new telescopic observations of the object. "It became clear quickly just how special it was," says William Keel of the University of Alabama in Tuscaloosa, a member of the observation team, which was led by Chris Lintott of the University of Oxford.

The object's light spectrum shows that its glow comes from oxygen that has been ionised – stripped of some of its electrons – along with other ionised elements, making its true hue a greenish colour. It would take a huge amount of energy to ionise all this gas, but there was no hint of a source. Radiation from hot young stars could account for ionised oxygen in the cloud, but not the ionised neon: neon doesn't shine in the ultraviolet, as seen in the cloud, without lots of X-rays hitting it.

That suggested a monster black hole was involved. Most galaxies are thought to host one in their cores and in many cases matter spiralling into the black holes produces huge amounts of X-rays.

A galaxy called IC 2497 lies about 45,000 to 70,000 light years from the glowing cloud, and a black hole at its core could easily blast Hanny's Voorwerp with X-rays. But there's a catch. IC 2497's core shows no sign of emitting X-rays.

Brutal binges

In 2008, the team concluded that less than 100,000 years before IC 2497 became the galaxy we see today , its black hole was gulping down a big meal and sending out a torrent of X-rays. Because it takes time for the X-rays to reach the cloud, some of them were still arriving and making it glow when it emitted the light Van Arkel saw, even though the black hole was by then quiet.

That's a rare bit of evidence of how much black-hole feeding can vary over tens of thousands of years. Researchers are keen to understand the feeding habits of black holes because such binges, called accretion events, have an enormous effect on their surroundings, shutting off galaxy growth by heating and expelling the gas needed to form new stars.

No freak

But it was not clear how representative Hanny's Voorwerp was of black-hole behaviour. Now, professional researchers and Galaxy Zoo volunteers working together have found 19 similar objects – glowing gas clouds near galaxies whose black holes appear quiet but probably blasted the clouds in the past.

Three-quarters of the newly discovered clouds have a nearby galaxy that is interacting or merging with another galaxy, according to the new study, which Keel is leading. That fits with the black-hole-blast explanation, because such encounters tend to shake loose gas clouds that then stray into intergalactic space – providing targets to be illuminated by black hole X-rays.

It also shows Hanny's Voorwerp is not a freak. All over the universe, black holes are apparently firing broadsides at their surroundings, then quickly quietening down and fading from view, like flashing lights.

"If you could watch the cosmic movie and speed it up, it would be like a Christmas tree, with these [X-ray blasts] popping off in one galaxy, then the next," says Keel.

Journal reference: The research will be published in a forthcoming edition of *Monthly Notices of the Royal Astronomical Society*

http://www.newscientist.com/article/dn21128-astrophile-attack-of-the-mystery-green-blobs.html?full=true&print=true

Murky Muybridge

On the 19th-century history and 21st-century relevancy of the famed photographer.
By James Polchin

In her book *Motion Studies: Time, Space and Eadweard Muybridge,* Rebecca Solnit writes that one of the most common phrases of the late 19th century was "the annihilation of time and space." The steamship, the telegraph, the railroad — what Emerson called "one web" of a "thousand various threads" — and the photograph each played a role in destroying older notions of time and place. But as Solnit suggests, at heart of this annihilation was a conviction that viewed "the terms of our bodily existence as burdensome," and that believed technology could do for us what our bodies couldn't.

- **"Helios: Eadweard Muybridge in a Time of Change" February 26 through June 7. San Francisco Museum of Modern Art, San Francisco.**

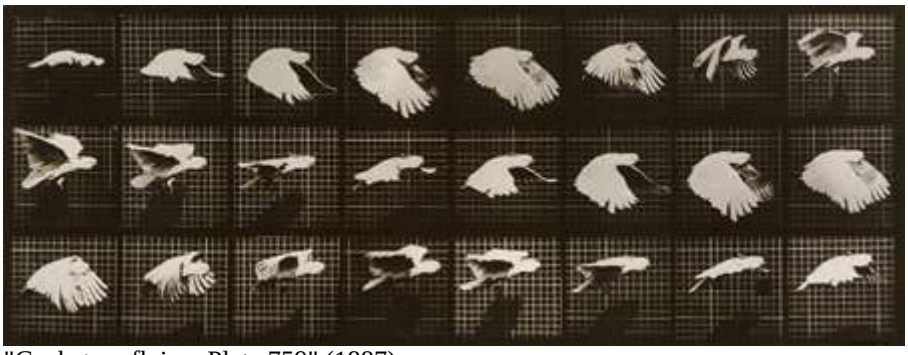
You can't get better evidence for this burdensome body than the photographs that Muybridge made of Leland Stanford's white racehorse Occident. The animal's body was carved into a sequence of 24 silhouetted images that record the graceful form of the animal's gait. These motion studies, as they are known, were a first of their kind and were a precursor to the moving image. Because of Muybridge's motion studies, we learned that for a split second, a galloping horse has all four hooves off the ground — a reality never witnessed before. Muybridge photographed Occident at Stanford's Palo Alto estate in the spring of 1872 with the aim of improving the racehorse's performance. Using a sequence of cameras set along a marked path, Muybridge transformed the body of the animal into an object frozen in time to be studied and improved. The symbolic force of the railroad millionaire turning his prized racehorse into a series of mechanical images cannot be overstated. And it was Muybridge who enacted this feat of industrial will.

That same spring, as Occident went running along a numbered path, small banks that served middle-class and working-class patrons were failing across Europe due to dodgy loans, speculative lending practices, and the excessive costs of the Franco-Prussian War. By the fall of 1873 the crisis reached the U.S., plunging even the robust American economy into what contemporaries called "The Great Depression" — a name that stuck until the 1930s. The U.S. economy faltered to a large extent through bond speculations by railroad corporations. Stanford and his colleagues at the Central Pacific Railroad played the market game well. It all sounds familiar and contemporary, doesn't it?

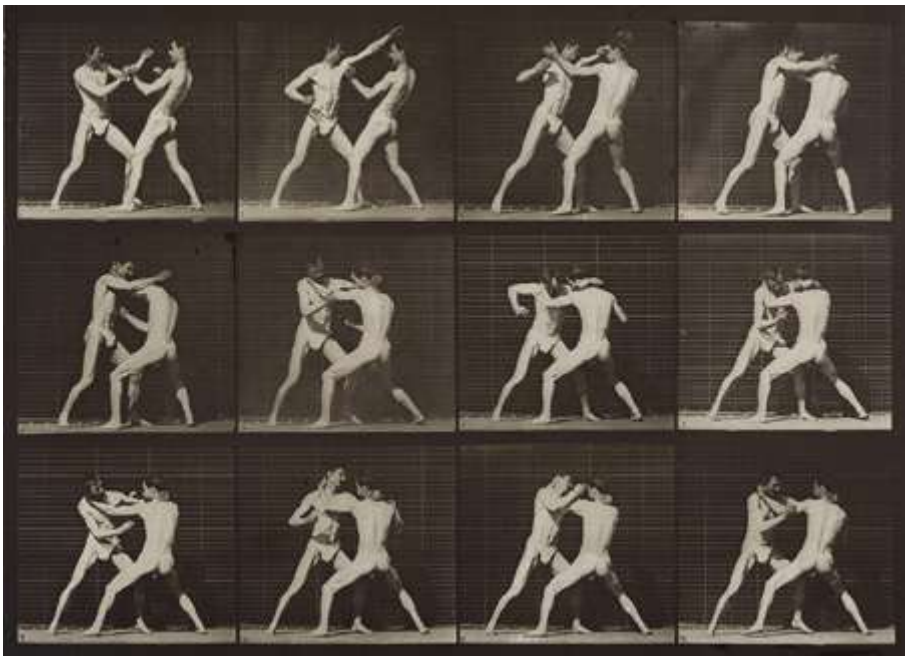
This thought struck me while walking through the recent exhibit of Muybride's work at London's Tate Britain. The retrospective opened amidst new austerity programs in the U.K. The right-leaning coalition government announced drastic cuts in public spending, slashing budgets for cultural institutions and universities, cutting back on social services, setting up plans to sell off forest lands that have been protected since the Magna Carta. Last spring in Washington, D.C., Muybridge's sepia landscapes and innovative motion studies captivated patrons at the Corcoran Gallery not far from where Congress debated bank regulations and cuts in social programs. But those are political questions, and the Muybridge exhibit was about art, and the particular passions and inventions of a man who pioneered the science of photography. As the exhibition showed so well, Muybridge motion studies were about the experience of stopping time, and turning motion into mechanical reproduction. The show didn't mention the 19th-century economic collapse. Maybe it didn't want to remind us that industrialization and the annihilation of time and space had it collateral damage.

Stanford's racehorse was only the first step, for the motion studies would consume Muybridge as he increasingly saw the camera as a tool of science and himself as a scientist. He would pursue this work in San Francisco and later in Philadelphia, and he would lecture on his studies across the U.S. and Europe. Beyond

his initial studies of horses, there were other animals: pigs and dogs and cows, and wild animals from zoos.


"Cockatoo; flying. Plate 759" (1887)

But there were also humans: athletes wrestling naked, two workers hammering an anvil, an athlete making a long jump, or a person simply walking up a short set of steps. We see women walking naked and clothed, pouring buckets of water, the liquid suspended in motion and time. We see another women, naked pulling back the covers of the bed and settling in for sleep. We see sword fighters and a contortionist, and one beautifully evanescent sequence of a woman dancing in a white sheer skirt that flows with her movements and clings to her body as if she's an ancient Athenian statue. We also see Muybridge himself, aged and white bearded, half naked and fit, moving alone against a black background as if dancing or working or exercising. It's not clear. But these motion studies captivate with both curiosity and eroticism. The large gallery space accommodated a slowness of looking at these quite small, movie-like still photographs. It allowed visitors to contemplate each frame as a unique moment. What is fascinating is how each shot turns the bodily movement into a set of actions, such that the wholeness of the action, like walking down a sidewalk, is lost to the fragments of each gesture or contortion of the body.


"Boxing; open-hand. Plate 340" (1887)

Bodies are such curious objects in Muybridge's work. While the motion studies were obsessed with bodies, his earlier photographs all but ignored them. Muybridge was a child of Victorian England, born into a

merchant family just outside London. He immigrated to the United States in the 1850s as a salesman looking for new markets for a British engraver and book publisher. After a short stay in New York, he followed the gold seekers to San Francisco, and there moved from book sales to photography. His early work captured majestic views of Yosemite and the coastal lighthouses of California, along with panoramas of San Francisco. One reviewer described his work on Yosemite — completed in late 1860s — as "a true image of nature."

"Tokoya and Hunto. Valley of the Yosemite (The Basket,) (The Watching Eye,) 3,568 feet high. No. 24" (1872)

Here we get the colossal and the mystical all detailed with Muybridge's sensitivity to the camera's power through lighting effects and perspective. Because of the time exposures necessary, images of waterfalls glow with a haziness and contrast with the hard-edged rocks.

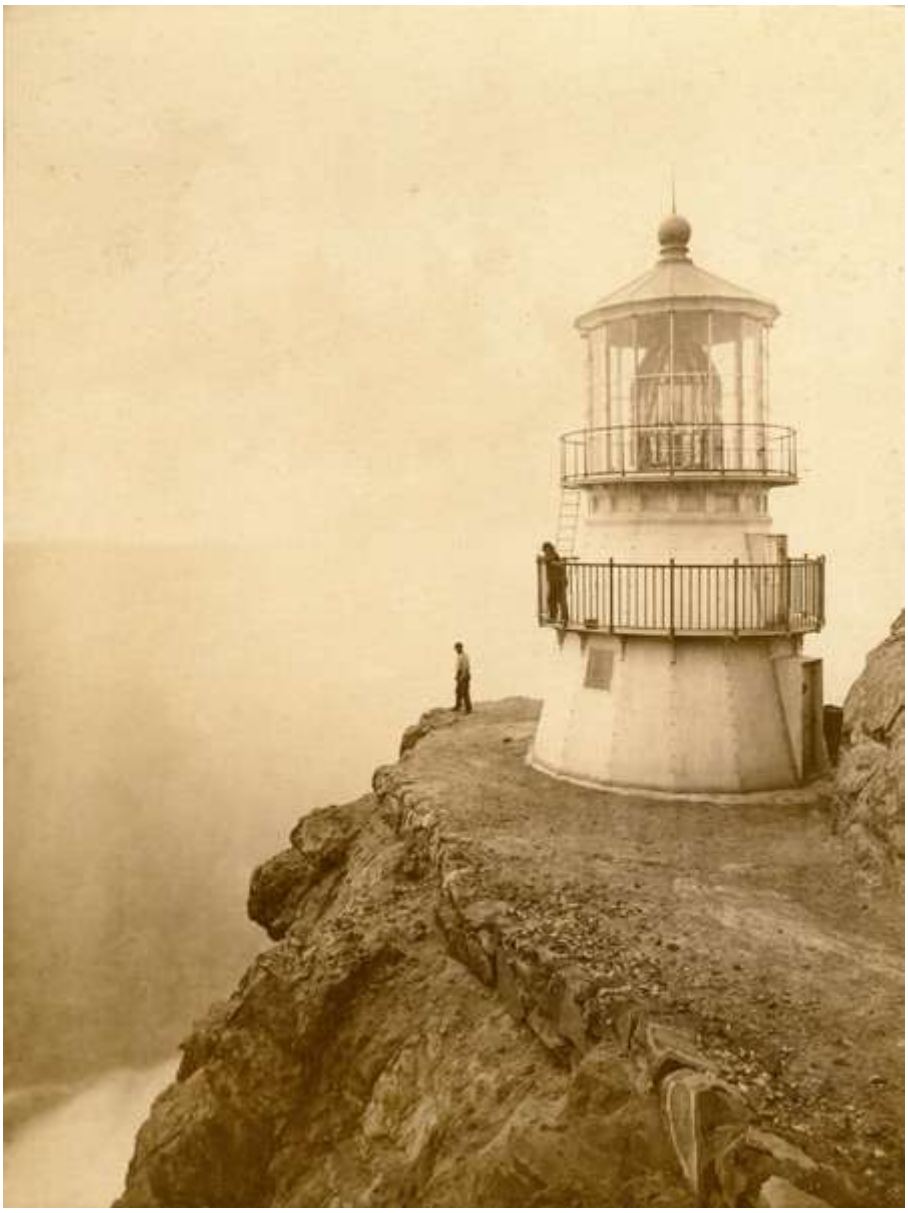
"Contemplation Rock, Glacier Point (1385)" (1872)

Serene lakes look like polished glass surrounded by expansive hills. Muybridge was fond of grand perspectives, and he knew such images of the frontier were in demand back east. Often he photographed the sides of summits or cliffs from a precarious point, giving us a feeling as if we were the first to see this site — a place untouched by humans. He put us there on a secret mountain trail, glimpsing a panoramic view of a cliff in foreground and the expansive hills lined with steeples of pine trees, fading into a vast immeasurable world of sepia tones.

"The Ramparts, Funnel Rock, Hole in the Wall, Pyramid, Sugar Loaf, Oil House, and Landing Cove on Fisherman's Bay, South Farallon Island (4150)" (1871)

Following these natural vistas are a number of photographs of San Francisco, the burgeoning city of commerce, speculation, and lawlessness. The city imagined all: immigrants from Asia and Europe, prostitutes, East Coast businessmen, ex-slaves from the South, Native Americans and Mexicans who traced their ancestors back centuries in the region. But we don't see these people in the Muybridge photos. His photographs show the built environment set against the hills of the Bay Area. He made his famous 360-degree panorama of San Francisco atop a mansion built on the highest point in the city and owned by a director of Stamford's Central Pacific Railroad Company. Requiring long hours of arduous labor, the panorama engages us by presenting the whole of the city in one sweeping vision. While the motion studies cut up the actions of humans and animals into gestures and movements, this panorama synthesized a singular image of the city absent of any real social life. The panorama gives us a god's-eye perspective from the mansion of one of the wealthiest men in the country. It is hard not to remember this fact, this recognition that we stand looking out over the city from a place of privilege.

Many of Muybridge's landscape photographs were government commissions that mixed documentation and propaganda. His series of lighthouses, commissioned in 1871, are stark and exacting. "Pigeon Point Lighthouse" for example, is cut in two by the dark cliffs on the right, the misty water and endless horizon of the ocean on the left. The white tower of the lighthouse rises behind a small white house; the afternoon sun is precise in its carving of shadows on the buildings, making the scene look like a Edward Hopper painting. There are two tiny, feathery figures just to the left of the buildings, standing on the cliff, facing each other. But it is hard to tell. They exist perhaps to show dimensions in the image, to give a sense of proportion between the structures and the horizon. But they are dwarfed by it all.



"First-Order Lighthouse at Punta de los Reyes, Seacoast of California, 296 Feet Above Sea (4136)" (1871)

His photograph of the Alaskan coast, another commission by the U.S. government just a few years after the U.S. purchased the territory from Russia, present a diversity of Alaskan inhabitants, from miners and Native Americans to Russian Orthodox clerics, often standing awkwardly for the camera. In "Alaska Ter.—Sitka. Russo Greek Priests, Alaska" three Russian Orthodox Priests in black robes stand stiffly against a wooden building. Here, as elsewhere in these Alaskan images, you notice the huge distance between Muybridge's camera and the subjects of his lens. But then, we can't forget that Muybridge was traveling with the Army, capturing images of the territory to calm criticisms back in Washington, D.C. about the land purchase. Alaska was expensive, and would require more money to take care of. Muybridge's photos were meant to illustrate the beauty of the region (though its hard not to think that the inhabitants often look as if they were lined up for a firing squad).

Another Army commission came for the Modoc Wars, which were one of the more sensationalized conflicts of the Indian Wars, fought along the lava beds between Oregon and California. For several months in 1873 a small group of Modocs — returning to their ancestral land after forced removal 10 years earlier — fought with both the Army and locals white settlers. Though vastly outnumbered, the Modocs nearly won the battle. Muybridge's photographs were meant to illustrate the difficult terrain of the area for both internal Army reports and news stories back East. But by the time he arrived in the area, the Modocs were escaping, and so the inventive photographer used a scout from the Warm Springs reservation to pose, rifle at the ready, hiding behind a mound of rocks. The photograph captures a close up image of the scout, as if we are sitting there with him in his threatening pose. The image was soon turned into an engraving and published in the widely circulated *Harper's Weekly* with the caption: "Modoc Brave Lying in Wait for a Shot." The images of the war were staged accounts meant to calm concerns that the Army was facing a losing battle. As Philip Bookman notes in his fine introduction to the exhibition catalogue, Muybridge's photographs of the Modoc War "were at once documents of the landscape and publicity pictures of the military operations, used to provide visual cues to an unpopular war."

Across the room from these publicity photographs, you learn that Muybridge was a murderer. The show displayed sensational news accounts and front page headlines that recount the night in October 1874 when the 44-year-old Muybridge tracked down Harry Larkyns, the alleged lover of his wife, Flora. Greeting Larkyns with the words "My name is Muybridge and I have a message for you from my wife," Muybridge shot Larkyns in the chest. He died minutes later.

What sparked Muybridge rage? Coincidentally, it was a photograph. He found one of his infant son inscribed on the back by his wife with the words "Little Harry." This, for Muybridge, confirmed what he had suspected for some time: that Larkyns, a tall and attractive dilettante and scam artist who had become close friends with his wife, was in fact the father of his child. While a jury acquitted Muybridge, believing his defense of temporary insanity due to domestic trauma, this aspect of Muybridge's life haunts the work throughout the show. Here was a man who embodied the very metaphors that link the camera with the gun. It is difficult not to shake the reality that all those intricate, stop-motion photographs were taken by a murderer. And then I began to notice all the destruction that surrounded me. Most acutely true in the motion studies, there was throughout the show a deep sense that what you are looking at was in the process of becoming marginal, or insignificant, or destroyed. The horse. The vast landscapes of California, Oregon, and the Alaskan coast. The way of life for the Modocs. The economic collapse.

In his essay "Why Look at Animals?" John Berger explores how zoos frame and marginalize our experience of animals. "However you look at these animals," writes Berger, "even if the animal is up against the bars, less than a foot from you, looking outwards in the public direction, you are looking at something that has been rendered absolutely marginal; and all the concentration you can muster will never be enough to centralize it." For Berger, this distance between man and animals is embedded in the logic of imperialism and capitalism that renders animals mere products of industrialization. Muybridge's photographs are part of this history that Berger points us to. Many of his studies in the 1880s were conducted at the Philadelphia Zoo, and you can't help but be reminded of the ways the 19th-century capitalism so actively domesticated nature when looking at his motion studies. But these studies not only transformed how we look at animals, they also changed the way we looked at ourselves. If the horse was eclipsed by the train, could it be that human experience has been eclipsed by the photograph and the film?

On the Tate Museum website you can access a gallery of amateur photographs taken with the newest iPhone app called the Muybridgizer. "Create your own Muybridgized images" the promotion line reads. There is a beautiful irony that Muybridge the photographer has been turned into a machine. The application captures your movement in a short sequence of frozen, digital moments, and reproduces them with the look of the motion studies. The Muybridgizer echoes some 19th-century science fiction fantasy in which a machine transforms humans into . . . images. And perhaps this is why the motion studies can be both compelling and oddly unsettling. They remind us of the origins of our own mechanized existence. • *14 January 2011*

James Polchin lives in Paris where he teaches and writes. He is found and editor of the website writing in public.

Images courtesy of the San Francisco Museum of Modern Art.

"Horses. Running. Phryne L. Plate 40," (1879), from *The Attitudes of Animals in Motion*, 1881; albumen print; image courtesy The Board of Trustees, National Gallery of Art, Washington.

"Cockatoo; flying. Plate 759," (1887); collotype; Corcoran Gallery of Art, Washington, D.C.

"Boxing; open-hand. Plate 340," (1887); collotype; Corcoran Gallery of Art, Washington, D.C.

"Tokoya and Hunto. Valley of the Yosemite. (The Basket,) (The Watching Eye,) 3,568 feet high. No. 24," (1872); albumen print; The Society of California Pioneers.

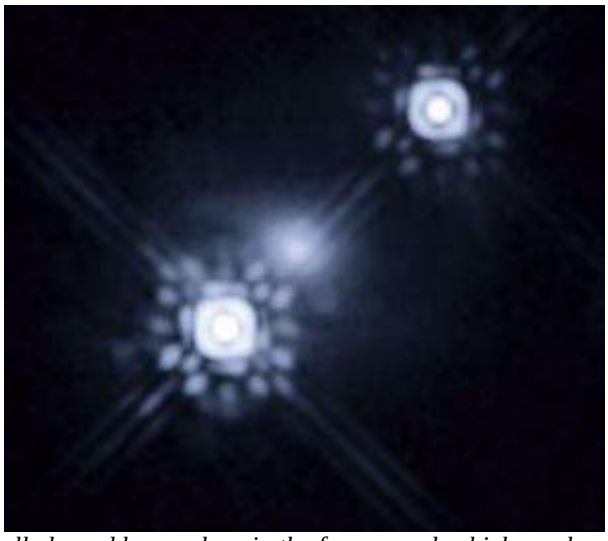
"Contemplation Rock, Glacier Point (1385)," (1872); albumen stereograph; Collection of California Historical Society.

"The Ramparts, Funnel Rock, Hole in the Wall, Pyramid, Sugar Loaf, Oil House, and Landing Cove on Fisherman's Bay, South Farallon Island (4150)," (1871); albumen print; U.S. Coast Guard Historian's Office.

"First-Order Lighthouse at Punta de los Reyes, Seacoast of California, 296 Feet Above Sea (4136)," (1871); albumen print; U.S. Coast Guard Historian's Office.

http://www.thesmartset.com/article/article01131101.aspx

Hubble Directly Observes the Disk Around a Black Hole



This picture shows a quasar that has been gravitationally lensed by a galaxy in the foreground, which can be seen as a faint shape around the two bright images of the quasar. (Credit: NASA, ESA, J.A. Muñoz (University of Valencia))

ScienceDaily (Nov. 4, 2011) — A team of scientists has used the NASA/ESA Hubble Space Telescope to observe a quasar accretion disc -- a brightly glowing disc of matter that is slowly being sucked into its galaxy's central black hole. Their study makes use of a novel technique that uses gravitational lensing to give an immense boost to the power of the telescope. The incredible precision of the method has allowed astronomers to directly measure the disc's size and plot the temperature across different parts of the disc.

An international team of astronomers has used a new technique to study the bright disc of matter surrounding a faraway black hole. Using the NASA/ESA Hubble Space Telescope, combined with the gravitational lensing effect of stars in a distant galaxy [1], the team measured the disc's size and studied the colours (and hence the temperatures) of different parts of the disc. These observations show a level of precision equivalent to spotting individual grains of sand on the surface of the Moon.

While black holes themselves are invisible, the forces they unleash cause some of the brightest phenomena in the Universe. Quasars -- short for quasi-stellar objects -- are glowing discs of matter that orbit supermassive black holes, heating up and emitting extremely bright radiation as they do so.

"A quasar accretion disc has a typical size of a few light-days, or around 100 billion kilometres across, but they lie billions of light-years away. This means their apparent size when viewed from Earth is so small that we will probably never have a telescope powerful enough to see their structure directly," explains Jose Muñoz, the lead scientist in this study.

Until now, the minute apparent size of quasars has meant that most of our knowledge of their inner structure has been based on theoretical extrapolations, rather than direct observations.

The team therefore used an innovative method to study the quasar: using the stars in an intervening galaxy as a scanning microscope to probe features in the quasar's disc that would otherwise be far too small to see. As these stars move across the light from the quasar, gravitational effects amplify the light from different parts of the quasar, giving detailed colour information for a line that crosses through the accretion disc.

The team observed a group of distant quasars that are gravitationally lensed by the chance alignment of other galaxies in the foreground, producing several images of the quasar.

They spotted subtle differences in colour between the images, and changes in colour over the time the observations were carried out. Part of these colour differences are caused by the properties of dust in the intervening galaxies: the light coming from each one of the lensed images has followed a different path through the galaxy, so that the various colours encapsulate information about the material within the galaxy. Measuring the way and extent to which the dust within the galaxies blocks light (known to astronomers as the extinction law) at such distances is itself an important result in the study.

For one of the quasars they studied, though, there were clear signs that stars in the intervening galaxy were passing through the path of the light from the quasar [2]. Just as the gravitational effect due to the whole intervening galaxy can bend and amplify the quasar's light, so can that of the stars within the intervening galaxy subtly bend and amplify the light from different parts of the accretion disc as they pass through the path of the quasar's light.

By recording the variation in colour, the team were able to reconstruct the colour profile across the accretion disc. This is important because the temperature of an accretion disc increases the closer it is to the black hole, and the colours emitted by the hot matter get bluer the hotter they are. This allowed the team to measure the diameter of the disc of hot matter, and plot how hot it is at different distances from the centre.

They found that the disc is between four and eleven light-days across (approximately 100 to 300 billion kilometres). While this measurement shows large uncertainties, it is still a remarkably accurate measurement for a small object at such a great distance, and the method holds great potential for increased accuracy in the future.

"This result is very relevant because it implies we are now able to obtain observational data on the structure of these systems, rather than relying on theory alone," says Muñoz. "Quasars' physical properties are not yet well understood. This new ability to obtain observational measurements is therefore opening a new window to help understand the nature of these objects."

Notes:

1] Gravity bends the structure of spacetime, and hence deflects beams of light. When the alignment is right, with one object directly behind another, the foreground object's gravity 'bends' the light like a lens, a process called gravitational lensing. Gravitational lenses typically produce multiple, distorted images of the distant object.

The most dramatic effects from gravitational lensing are the amplification and distortion of light from distant galaxies as it passes through massive galaxy clusters.

This effect also takes place on smaller scales, with galaxies at an intermediate distance lensing the light of distant quasars, producing multiple images of them that are visible through the lens galaxy.

Individual stars can also lens light, although this effect, called gravitational microlensing, is much more subtle and can only be detected by measuring how the lensing effect increases the source's brightness.

This study makes use of gravitational microlensing by stars in a foreground galaxy to study the accretion disc of a quasar in the background. It also uses the interplay of quasar light and gravitational lensing to probe the gas and dust content of intermediate galaxies.

[2] The lens galaxy in which this phenomenon was observed is called [WKK93] G; the lensed quasar is called HE 1104-1805.

Story Source:

The above story is reprinted from materials provided by **ESA/Hubble Information Centre**.

Note: Materials may be edited for content and length. For further information, please contact the source cited above.

Journal Reference:

1. J.A. Mun˜oz, E. Mediavilla, C.S. Kochanek, E.E. Falco and A.M. Mosquera. **A Study of Gravitational Lens Chromaticity with the Hubble Space Telescope**. *Astrophysical Journal*, December 1, 2011

http://www.sciencedaily.com/releases/2011/11/111104091652.htm

Henri and Me
Taking criticism of the artist a little too personally.
By Jason Wilson

"Juvisy, France" (1938)

I've been trying to write about the Museum of Modern Art's retrospective of photographer Henri Cartier-Bresson for more than two months, but I've failed time and again.

- **"Henri Cartier-Bresson: The Modern Century" Through June 28. Museum of Modern Art, New York (traveling to the Art Institute of Chicago, the San Francisco Museum of Modern Art, and the High Museum of Art, Atlanta).**

At first, I thought I'd been swayed by a number of esteemed art critics, most of whom seemed disappointed by the exhibition. The show was deemed "almost unenduringly majestic" by *The New Yorker*'s Peter Schjeldahl who gave this stern assessment of what he called Cartier-Bresson's "platitudinous" work: "richly satisfies the eye and the mind, while numbing the heart." This was seconded by the *Times*' Holland Cotter, who claimed that Cartier-Bresson's "ideas and emotions are diffuse" and that "surprisingly little tension builds" in the exhibition. Both critics also trotted out tired old comparisons to the work of Robert Frank, a detractor of Cartier-Bresson's who once unjustly said of the older photographer: "He traveled all over the world, and you never felt he was moved by something that was happening other than the beauty of it, or just the composition."

Soon enough, I started to feel angry about the general critical appraisal of the show, especially a certain loaded, snobbish question I'd seen raised numerous times: Should we consider Cartier-Bresson's photography "art" or it is just (and here I imagine a critic crinkling his nose as if holding a dirty diaper) "journalism"? This stuffy and frankly out-of-touch notion was most clearly expressed by Cotter: "Are we talking about an impassable line that separates photojournalism (Cartier-Bresson) from art (Frank)?" (To Cotter's credit, he answers "no".)

But I was still confused, still unable to write about Cartier-Bresson, still unable to articulate why I was so frustrated by this supposed "impassable line" between journalism and art. I returned to MoMA for a second viewing, and then it hit me: I was taking everything about Cartier-Bresson — the articles, even the exhibition itself — way too personally.

It hit me as I approached the mural-sized world maps that greet museum-goers at the show's entrance, with dotted lines tracing Cartier-Bresson's famous journeys over several decades. Ringing in my ears was Schjeldahl's snarky take: "This suggests a novel measurement of artistic worth: mileage. It seems relevant only to the glamour quotient — a cult, practically — of Cartier-Bresson's persona, pointing up what seems to me most resistible in his work."

Ouch, I thought. But mainly because I was flashing on my own career as a travel writer, one that began 15 years ago when I gave up writing a novel. I've always harbored my own deep fears that I passed, miles ago, over that "impassable" line from art to journalism, never to return.

But that, of course, is about me. And compared to Cartier-Bresson, I am a very tiny talent — a hack really, just like all the critics who write about him, as well as most artists who try to emulate him. Cartier-Bresson is a giant. And clearly he never worried at all about whether he was making art, photojournalism, or something else entirely. And this is why I love him.

I can't remember a time when Cartier-Bresson's images did not exist in my mind, suggesting an older, more authentic, more beautiful world. I knew those fishermen mending nets in Nazare, Portugal before I'd ever seen them myself (and snapped my own inferior version of the same photo). I'd met those old men picnicking in Sardinia before I ever traveled to Sardinia myself and tried in vain to similarly capture them in words. The French boar hunters I followed into the forest had already somehow existed, in my imagination, because of Cartier-Bresson. As a teenager growing up in an average American suburb, Cartier-Bresson's photo provided a particular vision of Old Europe that is permanently etched in my mind, even if it doesn't exist in the world anymore.

Yes, I know it seems almost quaint these days. "Many of Cartier-Bresson's pictures could have been made centuries ago, if he and photography had existed then," reads the gallery text. The curators, seeming to anticipate the critical response, note that "his keen attention to particulars redeems the strain of romantic nostalgia in his work."

Pico Iyer recently, aptly, described the travel writer as both photographer and philosopher: "A travel writer is, to some degree, Cartier-Bresson roaming around the global or local neighborhood with a book of theology in his hand." When I was young and beginning my own wanderings, that book of theology was, for me, written by lyrical correspondents like Iyer himself. In his classic essay "Why We Travel," Iyer lays out a sort of traveler's catechism: He travels in search of "subtler beauties"; he seeks "innocent eye that can return me to a more innocent self"; he calls all the great travel books "love stories" and says "all good trips are, like love, about being carried out of yourself and deposited in the midst of terror and wonder." When Iyer writes, "Travel is the best way we have of rescuing the humanity of places, and saving them from abstraction and ideology," he may as well be describing the work of Cartier-Bresson.

"Hyères, France" (1932)

With his tendency toward lyricism, Iyer has faced complaints similar to those made against Cartier-Bresson, such as this dismissive judgment from the *Times* Book Review about his book *Sun After Dark*: "Iyer too often relies on overblown figures of speech and pretty pastiches in lieu of solid observation or reporting."

This is no surprise. As soon as artists (or is it journalists?) start talking about things like "the humanity of places" is when critics uncomfortably reach for adjectives like "platitudinous" and "melodramatic." Likewise, whenever an artist (or is it a journalist?) nakedly sets out to capture beauty in this way, what always comes forth is that nagging question — Frank's question of Cartier-Bresson — of whether beauty is enough, or whether something *other than the beauty of it* also needs to be happening.

So I guess this is why I have failed, and will continue to fail, to write about Cartier-Bresson. The couple on the train in Romania. The young boys gathered in a sunny square in Madrid. The family having a picnic on the riverbank. I can't imagine my life without images such as these. For me, the beauty simply has to be enough. • *21 June 2010*

Jason Wilson is editor of The Smart Set. *He also edits* The Best American Travel Writing *series (Houghton Mifflin) and writes the Spirits column for the* Washington Post.

Photographs: "Juvisy, France" (1938); Gelatin silver print, printed 1947, 9 1/8 x 13 11/16" (23.3 x 34.8 cm); The Museum of Modern Art, New York. Gift of the photographer; © 2010 Henri Cartier-Bresson / Magnum

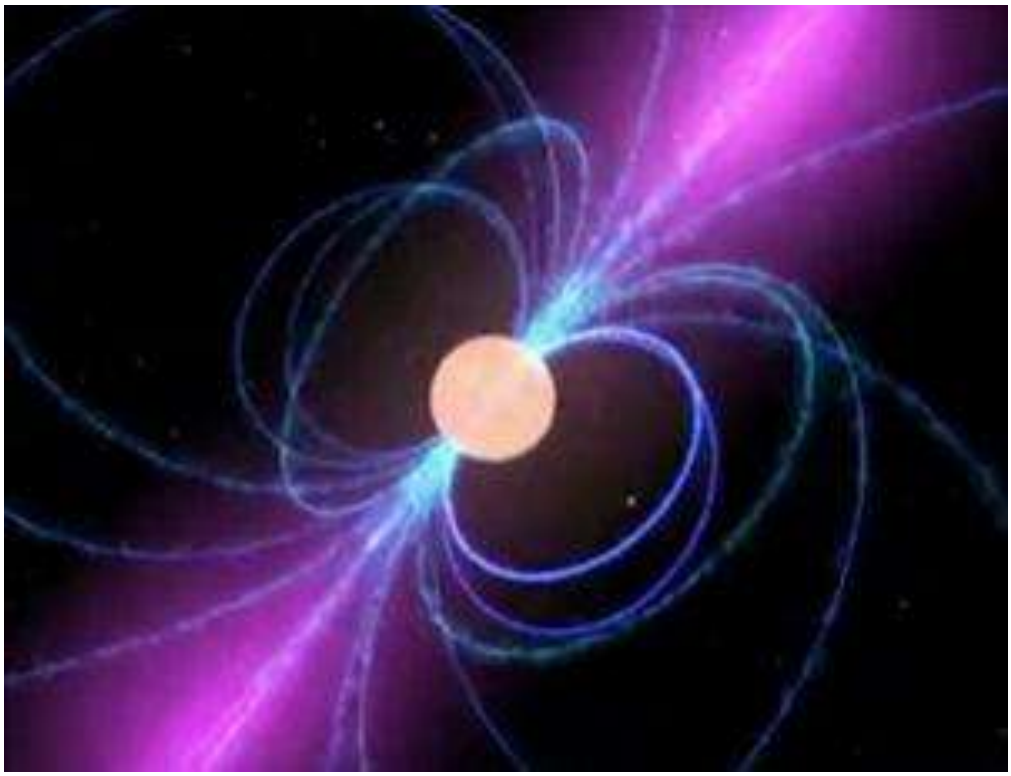
Photos, courtesy Fondation Henri Cartier-Bresso.

"Hyères, France" (1932); Gelatin silver print, 7 11/16 x 11 7/16" (19.6 x 29.1 cm); The Museum of Modern Art, New York. Purchase; © 2010 Henri Cartier-Bresson / Magnum Photos, courtesy Fondation Henri Cartier-Bresson

http://www.thesmartset.com/article/article06111001.aspx

Gamma rays reveal youngest stellar dervish

- 21:26 03 November 2011 by **David Shiga**



Fast spinner (Image: NASA)

A flood of gamma rays has revealed what may be the youngest ultrafast-spinning star known. Turning up more newborn dervishes could shed light on what sets the stars spinning so fast in the first place.

Millisecond pulsars are dense stellar remannts of supernovae that spin extremely quickly, making hundreds of rotations per second. It is not clear if they are ever simply born spinning that fast or if they always take some time to ramp up to these speeds after stealing matter from a companion star, "spinning up" like a skater who pulls her arms closer to her body.

Most of the millisecond pulsars observed so far are about a billion years old, but now NASA's Fermi space telescope has confirmed that a previously identified millisecond pulsar is a mere 25 million years old – putting it in the running for the youngest known.

Called J1823−3021A, it spins 185 times per second and is located in a star cluster 28,000 light years from Earth. The star is spinning fast but rapidly decelerating, suggesting it is very young, since otherwise its spin would have slowed to a crawl already.

To pulse or not to pulse

Pulsars slow down by converting rotational energy into radiation, and the copious gamma-rays that Fermi detected from this pulsar confirm that it is rapidly losing rotational energy, reports a team led by Paulo Friere of the Max Planck Institute for Radio Astronomy in Bonn, Germany.

"It's amazing that all of the gamma rays we see from this cluster are coming from a single object," Friere said in a statement. "It must have formed recently based on how rapidly it's emitting energy."

Only one other pulsar has an age in this ballpark, and it is not clear which is the youngest. "It's certainly one of the youngest, which makes this a very interesting system to study," says Craig Heinke of the University of Alberta in Edmonton, Canada.

It might lead to a better understanding of how millisecond pulsars form, he says. Pulsars are neutron stars that act like lighthouses, emitting beams of radiation that regularly sweep over Earth and appear to us as periodic flashes. Slow-spinning neutron stars do not emit radiation pulses, however, and the details of when and how the pulses turn on as a neutron star spins up are still not clear.

Journal reference: *Science*, DOI: 10.1126/science.1207141

http://www.newscientist.com/article/dn21126-gamma-rays-reveal-youngest-stellar-dervish.html?full=true&print=true

A Question of Timing
The resonance of destruction past, manufactured, and yet-to-come.

By Morgan Meis

Everybody is talking about ruins these days. That could be a bad sign. Detroit, in particular, seems to have captured the fancy of the ruin enthusiast. Detroit has experienced a 25 percent reduction in population over the last 10 years or so. Whole ar
eas of the city have been abandoned. You can see entire neighborhoods in ruin, skyscrapers in ruin, a vastly depopulated downtown area. Camilo José Vergara, a photographer specializing in urban decay, once suggested in the mid-1990s that large sections of downtown Detroit be turned into a "skyscraper ruins park." It would be a testimonial to a lost age, preserved in stone and metal and glass. Today, people sometimes travel to places like Detroit and other Rust Belt locations for the sole reason of gazing upon the ruins.

There have been the dissenters, too, the people who do not take or do not want to take aesthetic pleasure in industrial and urban ruins. The phrase "ruin porn" has made its way into popular parlance. Noreen Malone wrote a piece for *The New Republic* this year about our love of pictures of the abandoned streets and buildings of Detroit. She argued:

These indelible pictures present an un-nuanced and static vision of Detroit. They might serve to "raise awareness" of the Rust Belt's blight, but raising awareness is only useful if it provokes a next step, a move toward trying to fix a problem. By presenting Detroit, and other hurting cities like it, as places beyond repair, they in fact quash any such instinct.

Malone is right about one thing: Vergara's photographs do not suggest a next step. Photographs by Yves Marchand and Romain Meffre (who took pictures of Detroit for a traveling exhibition entitled "The Ruins of Detroit") portray an inexorable process of decline. Marchand and Meffre's photograph of an interior of the Woodward Avenue Presbyterian Church, for instance, suggests something post-apocalyptic. Books are strewn across the top of a wobbly piano. Bits of mortar and dust cover what was, not so long ago, finely polished woodwork. It seems as if people left this place suddenly and amidst some catastrophe, never to return. These photos, and the plethora of amateur ruin documentation to be found on the Internet, are not created so much out of the need to raise consciousness as out of the need to stand before these ruins in awe. It isn't clear what you do next, after awe. The only thing that is clear from these photos is that the way forward is not clear. From the perspective of the ruin, the future always lacks clarity for the simple reason that ruins look mostly backward.

Having spent some time in Northern Europe last year, I can say that this problem is not isolated to the American Rust Belt. A swath of ruined cities and landscapes stretches from the Ruhr valley in Germany, across Holland and Northern Belgium, up through cities such Manchester in England, and then, skipping over the pond, renewing its rusty march across America's Northeast before reaching a terminus somewhere in western Illinois.

Another way to put this would be to say that a large geographical portion of Western Civilization currently lies in ruin. Industry, as we all know, has moved elsewhere, to the global south, mostly to China. Industrial civilization as the West has known it from the beginning of the Industrial Revolution sometime in the late 18th century until sometime a few decades ago, is no more. We have been aware of this for some time. We've talked about it frequently. People have written books and articles. Studies have been commissioned. Politicians have made speeches. Some would like to reverse the trend. Others see it as a foregone conclusion. But the basic facts have been known and understood for many years now.

And yet, the ruins are still surprising. They are shocking and terrifying and beautiful and sad. It is one thing to read a paper or to attend a conference in which learned studies about post-industrial society are learnedly discussed. It is another thing to drive around the outskirts of Charleroi, in Northwest Belgium, where one brick factory after another fades away into the forest greenery like a medieval castle going to pot in one of the less traveled corridors of the Loire Valley. As you stand near a pool of fetid water outside one of these crumbling factories, you realize that the era of the Industrial Revolution (at least in this part of the world) is truly dead, never to be recovered. It is thus possible to visit the Rust Belt with the same mood one would have when visiting the chateaus of France or the medieval cities of Spain. You are looking at the remains of a civilization that has passed away. We are not ready, perhaps, to think about visiting Detroit in the same way that we would visit the Palais des Papes in Avignon. But what, really, is the difference?

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The contemporary artist most associated with ruins is probably Anselm Kiefer. He was born into a ruin, after all. That's to say, he was born in Germany in 1945. He was born into a place that had just been bombed to smithereens from the air and then smashed apart at the ground by the Allied advance on one side and the Red Army advance on the other. Kiefer's paintings and sculptures reflect a sensibility that was forged during the breaking and smashing of things, and then further shaped in an environment where one wandered through the wreckage.

Kiefer works with dirt and broken glass. He likes rusty metal. He paints in streaks of black and grey and in clumps of color that go on the canvas to rot. In a scene near the beginning of Sophie Fiennes' recent movie about Anselm Kiefer — *Over Your Cities Grass Will Grow* — we find the artist throwing dust and dirt over a large grey painting depicting forlorn tree trunks in a forest nearby. The entire painting, which must be somewhere in the range of 10' x 20', is covered and then shaken with the help of crane and forklift. It is, literally, unearthed from the rubble.

The rest of Fiennes' film is a lingering meditation on the spaces of Kiefer's longtime studio complex in Barjac, France, which he has recently abandoned for another site. During his many years there, Kiefer dug underground tunnels, deposited paintings and sculptures in rooms left over from the dilapidated silk factory that once existed there, burned things, forged giant books with blank lead pages, and otherwise constructed a landscape of ruin from his own imaginings.

The movie's last scenes show Kiefer in the midst of directing the building of a series of concrete towers, many of them multiple stories in height. They are constructed in the haphazard manner in which you might build a tower out of playing cards, except with giant blocks of concrete. The towers totter and veer in all directions, some propped up with the giant lead books that Kiefer has been making for years. The result is a mini city of ruins. It is a city not of this time, or of any recent time. In fact, though the teetering towers are made of concrete and lead, they seem to have been brought onto the Earth from olden times, maybe the oldest times.

Kiefer himself relates the towers not to anything in our contemporary experience but to biblical stories. That is where the title of the film comes in. "Over your cities, grass will grow," is something, Kiefer tells us, said by the biblical character Lilith. In fact, Lilith does not appear in the Bible, but there are Talmudic and other stories about Lilith as a first wife of Adam, before Eve, who quarrels with Adam and leaves him to become a kind of witch or demon who plagues mankind. In many of the tales, Lilith kills children. Sometimes she seduces men in order to have their children and then kill those same children. She is a figure of devastation and barrenness. As the flip side to the story of growth and fecundity (be fruitful and multiply), Lilith gives personification to the sense of futility embedded in all human affairs.

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We don't talk about it very much, but the unspoken assumption about contemporary civilization is that it will never go completely to ruin. We acknowledge that many past civilizations met exactly such a fate, that over their cities, grass did grow. But things are different now. Certainly we have worried, in decades past, about nuclear annihilation and the devastation it would bring. Today we worry about environmental sustainability and global warming. Haunting thoughts of the apocalypse linger in the social imagination. But the dominant thought is one of an endless moving forward through time that is always the same.

That is why Kiefer's structures are so strange and alluring. Where do they come from? What do they point to? How are they able to step outside of the structure of time and the experiences of daily life that the rest of us inhabit?

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Much merriment was recently had throughout contemporary civilization when Mr. Harold Camping of Family Radio proclaimed that the end of the world would come on May 21, 2011. The day came and went. Time churned on exactly as it had before. Everyone's expectations about the world's continuity, except those of Mr. Camping's followers, were confirmed. There was now an opportunity to wag fingers, draw moral lessons about the dangers of fundamentalist thinking, and have a laugh or two.

But was there something else to all the laughter? The obsession with Camping seemed out of all proportion. Why did his proclamation so easily catch our attention? It was almost as if we were all using the opportunity of Camping's crazy prediction in order to experience our own interruption from the usual cycle of time. Talking about how some crazy person had predicted the end of time became an exciting event in itself. Living through the experience of the world not ending had its own exhilaration. We all piggy-backed, you might say, on the bold insanity of Camping and his followers in order to indulge some impulse that lurks deep within, some half-understood intuition that there may be a different ordering of time, or that there could be, or that there should be some radical break.

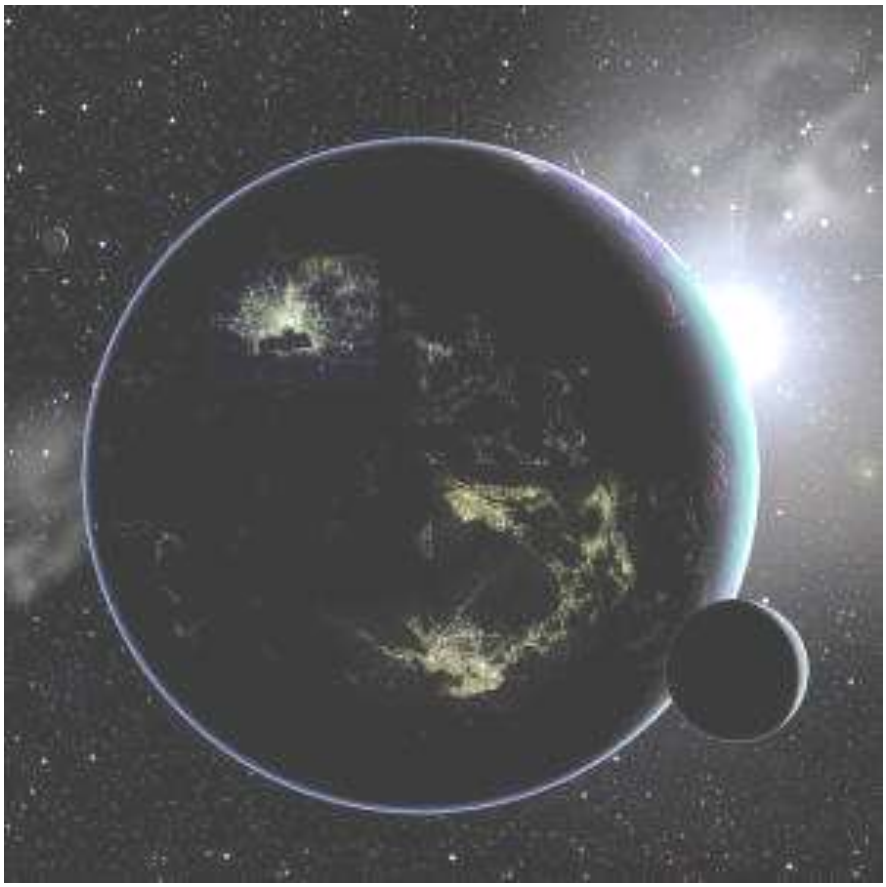
It was simultaneously troubling and amusing to hear how Camping's followers had liquidated their assets and gotten rid of all material possessions in order to prepare for the Rapture. Countless news stories focused on the utter absurdity and self-destruction of such actions. Was there also, though, a fascination with such actions? To ridicule others for getting rid of their material possessions is to admit, at the same time, that one's own life is defined and determined by those same possessions. These people were, after all, in their foolish actions, proving that it is possible for something to matter more than material comfort, income, possessions, and dry goods. These people believed, genuinely believed, that the world was going to end and that they were going to be judged. Many of them, in the face of such judgment, gave everything away. The last thing they wanted to be tainted by, in the Great Judgment To Come, were all the shiny new things that define so much of our daily activity.

On the final day, they were all left standing among the ruins of the lives they had led. They were left with scraps. They had become unworldly, like the lonely tunnels and broken ruins of Anselm Kiefer's compound in Barjac. They had been visited by Lilith, given a glimpse of a different order of time. Those people are living ruins now, a strange testimonial to an alternate logic. Ripped out of the temporal continuum, they are here, but they are not here. Many of them will surely find their way back to the world that the rest of us know. Some, perhaps, will not. Our time will not be able to hold them anymore. The grass is growing upon them. • *7 September 2011*

Morgan Meis is a founding member of Flux Factory, an arts collective in New York. He has written for The Believer, Harper's, *and* The Virginia Quarterly Review. *Morgan is also an editor at* 3 Quarks Daily, *and a winner of a Creative Capital | Warhol Foundation Arts Writers grant. He can be reached at morganmeis@gmail.com.*

http://www.thesmartset.com/article/article09071101.aspx

City Lights Could Reveal E.T. Civilization



If an alien civilization builds brightly-lit cities like those shown in this artist's conception, future generations of telescopes might allow us to detect them. This would offer a new method of searching for extraterrestrial intelligence elsewhere in our Galaxy. (Credit: David A. Aguilar (CfA))

ScienceDaily (Nov. 3, 2011) — In the search for extraterrestrial intelligence, astronomers have hunted for radio signals and ultra-short laser pulses. In a new paper, Avi Loeb (Harvard-Smithsonian Center for Astrophysics) and Edwin Turner (Princeton University) suggest a new technique for finding aliens: look for their city lights. "Looking for alien cities would be a long shot, but wouldn't require extra resources. And if we succeed, it would change our perception of our place in the universe," said Loeb.

As with other SETI methods, they rely on the assumption that aliens would use Earth-like technologies. This is reasonable because any intelligent life that evolved in the light from its nearest star is likely to have artificial illumination that switches on during the hours of darkness.

How easy would it be to spot a city on a distant planet? Clearly, this light will have to be distinguished from the glare from the parent star. Loeb and Turner suggest looking at the change in light from an exoplanet as it moves around its star.

As the planet orbits, it goes through phases similar to those of the Moon. When it's in a dark phase, more artificial light from the night side would be visible from Earth than reflected light from the day side. So the total flux from a planet with city lighting will vary in a way that is measurably different from a planet that has no artificial lights.

Spotting this tiny signal would require future generations of telescopes. However, the technique could be tested closer to home, using objects at the edge of our solar system.

Loeb and Turner calculate that today's best telescopes ought to be able to see the light generated by a Tokyo-sized metropolis at the distance of the Kuiper Belt -- the region occupied by Pluto, Eris, and thousands of smaller icy bodies. So if there are any cities out there, we ought to be able to see them now. By looking, astronomers can hone the technique and be ready to apply it when the first Earth-sized worlds are found around distant stars in our galaxy.

"It's very unlikely that there are alien cities on the edge of our solar system, but the principle of science is to find a method to check," Turner said. "Before Galileo, it was conventional wisdom that heavier objects fall faster than light objects, but he tested the belief and found they actually fall at the same rate."

As our technology has moved from radio and TV broadcasts to cable and fiber optics, we have become less detectable to aliens. If the same is true of extraterrestrial civilizations, then artificial lights might be the best way to spot them from afar.

Loeb and Turner's work has been submitted to the journal *Astrobiology.*

Story Source:

The above story is reprinted from materials provided by **Harvard-Smithsonian Center for Astrophysics**.

Note: Materials may be edited for content and length. For further information, please contact the source cited above.

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The Power of Ruins

Nuclear power plants are an uncanny presence in the built environment.
By Morgan Meis

"Will it make a beautiful ruin?" That was the question Basil Spence asked about the nuclear power station he was designing in Trawsfynydd, Wales. This was back in the 1960s, but it was forward looking. Spence, an architect (he designed the famous Coventry Cathedral in England), was aware of one simple fact: Nuclear power plants are functional for a relatively short period of time before they are put out of commission and replaced by newer, safer designs and technology. The abandoned plant is filled with radioactivity that makes it unusable for anything for a long time. A cathedral is designed with the idea that it should stand, and function, for a very long time — perhaps beyond time. A nuclear power plant is designed with the knowledge that it must become a ruin, and rather quickly. It is born to die, and then to sit as a corpse, a testimony to the strange and unsettling function it once had.

The human comfort level with nuclear energy has, arguably, increased in the last few decades. But radiation will always be scary. Perhaps our fear is in inverse proportion to our ability to feel or understand the effects of radiation with any immediacy. It is the silence of radiation that is troubling, the invisibility. It is disturbing to think that you could have received a lethal dose of radiation and never know until it is too late, until the body has been corrupted from the inside out. The fear in Japan right now, as the crisis at the Fukushima Daiichi nuclear plant continues, is one driven by not-knowing, by the impossibility of knowing exactly what is going on. This ignorance mingles with the realization that silent powers are reshaping the landscape. A nuclear ruin

is being born.

This has happened to us before. Chernobyl is a strangely beautiful place now, 25 years after its nuclear disaster. It is a horrible beauty. Pripyat, the town that housed the workers for the nuclear reactor, has a lyrical quality. It was abandoned quickly and with the haste that makes for uncanny scenes of seeming occupation with no one there. Nature has crept back into the empty spaces. Discarded objects of daily life take on the quality of archeological artifacts. Dolls dropped and left at the local kindergarten look as if they have been there for a thousand years, or were just dropped yesterday. That is exactly what is compelling about all true ruins. They are present and absent at the same time. And yet, the era that gave the ruins context and meaning has faded away. Ruins give a fleeting sense of tangibility to what is lost forever: the time that is utterly irretrievable.

Amongst ruins, there is a mood. Wordsworth captured an aspect of that mood in his poem "Tintern Abbey":
And even the motion of our human blood
Almost suspended, we are laid asleep
In body, and become a living soul:
While with an eye made quiet by the power
Of harmony, and the deep power of joy,
We see into the life of things.

What is it that we understand about life, about the world, when we see it through our ruins? It isn't simply the fleetingness and mortality of all things. It isn't just the inevitable decay that pulls down all, no matter how great. It isn't mere nostalgia. The 18th- and 19th- century Romantics did, of course, hit all of these notes in their fascination with ruins. But these feelings of lament do not capture the positive aspect of ruins, the way that ruins seem to add beauty to the world. It is a melancholy beauty, no doubt, but the pleasure that can be derived from that melancholy beauty is undeniable. Maybe the beauty of ruins cannot be analyzed any further. These mysterious places out of time, within time, are able to hold their mystery. That very fact is wonderful enough. Why, then, wouldn't ruins express themselves in beauty? It seems they always have. The ancient Greeks were troubled and fascinated by the ruins of the Mycenaean civilization that had left its ruins to them. As long as we have had civilization, we have mused upon its ruins.

It is appropriate to the nuclear age that radiation unintentionally gave us a way to create instant ruins. The German Romantic philosopher Friedrich Schlegel already made the point 200 years ago that "[m]any works of the ancients have become fragments. Many works of the moderns are fragments at the time of their origin." Radiation has the power to grab portions of the world and make them give off the same aura it normally takes generations to create. We are watching something like that happen right now. A "zone of alienation" — as the Soviets dubbed the area around Chernobyl — is being created in Japan around Fukushima as we speak. A portion of the planet is being cordoned off and removed from the space-time continuum the rest of us inhabit. In a few months it will be a ruin, too, as old as the oldest places we know, lonely and uncanny in its suspended state, preserved as a living relic to the present we are still making. • *22 March 2011*

Morgan Meis is a founding member of Flux Factory, an arts collective in New York. He has written for The Believer, Harper's, *and* The Virginia Quarterly Review. *Morgan is also an editor at* 3 Quarks Daily, *and a winner of a Creative Capital | Warhol Foundation Arts Writers grant. He can be reached at morganmeis@gmail.com.*

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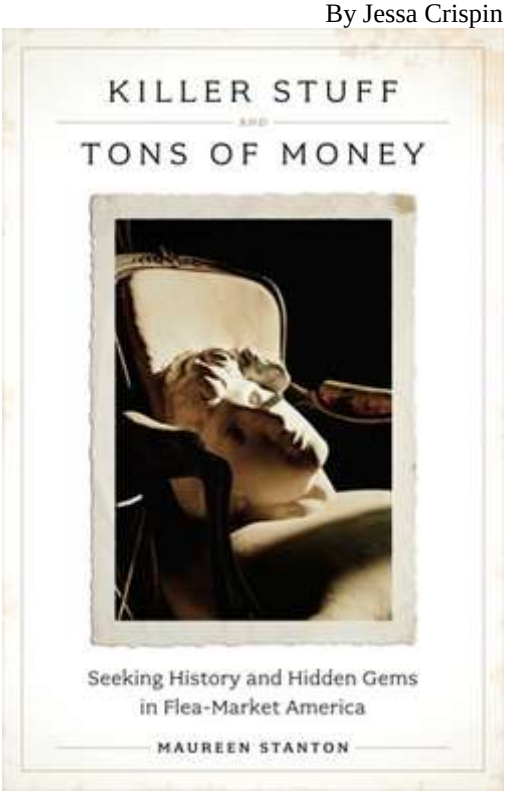
http://www.thesmartset.com/article/article03221101.aspx

Taking up a Collection

From Beanie Babies to my father's pill bottles, our species loves to gather things together.

By Jessa Crispin



Collecting always seems to start with rocks. My pack-rat father was explaining to me that his first collection was a box of strangely colored stones from the roadside near his home in Tecumseh, Kansas. He remembered one particularly exciting day in his collecting history. "I remember finding a pile of small clear crystals in the ditch along a driveway when I was probably in the 2nd or 3rd grade," he told me. "I was immediately convinced they were diamonds and filled my pockets. But then I remembered a family gathering where we churned ice cream and the look of the salt that was added to the freezer. I finally put one to my tongue and confirmed it was salt. I was a very disappointed boy that day."

- ***Killer Stuff and Tons of Money: Seeking History and Hidden Gems in Flea-Market America*** **by Maureen Stanton. 336 pages. The Penguin Press HC. $26.95.**

As my faux-gemstone collecting father, so with early man. Maureen Stanton reports in *Killer Stuff and Tons of Money: Seeking History and Hidden Gems in Flea-Market America* that the first evidence of collecting by *Homo sapiens* was discovered in a cave. Someone had selected pretty stones with no evident mechanical purpose, gathered them together, and arranged them. My conversation with my father started because of Stanton's book. I had turned to the book for information on this strange collecting habit we humans have.

What made that long ago human pick up these particular, useless rocks and keep them in his dwelling? What made my father overstuff our basement with cardboard boxes, bubble wrap, and what looked to me like a collection of indistinguishable glass bottles but what he swore was actually important historical pharmaceutical relics? I was hoping *Killer Stuff* would provide some answers.

Maureen Stanton gives an anthropological explanation for why we feel the need to beautify our homes with personal objects. She follows around a flea market merchant who specializes in early American housewares and furniture. She tries to explain the economics behind sudden rises and falls in the value of certain eras, certain objects, and certain manufacturers. She gives a brief history of *Antiques Roadshow*. She tosses off a personal narrative of her first dabbling in antique collecting. She speculates on how eBay changed the antiques market. She attempts to philosophize on fakery and frauds. And by the end of it, I was even more confused by the subject than I had been at age 8, when I was dragged against my will from flea market to antique store to roadside yard sale to look for more glass bottles.

Killer Stuff suffers from Stanton's magpie attention span. When she should dig in, she scatters. When she should strive for a little distance, she butts in. And by focusing almost exclusively on the vendors and the shopkeepers, she neglects the other half of flea-market America: the buyers and the collectors. If they show up at all in the book, it is because they are particularly famous (John Malkovich) or particularly foolish, being duped by inflated prices or outright forgeries.

The economics of new products is driven by very familiar things. There's supply, there's demand. There's competition, there's innovation. There's the shift in manufacturing jobs to the Global South. But when it comes to the flea market world, and the antiques market, prices are mostly set by things such as desire and passion. It's a saucier version of capitalism. Prices and values rise and fall based on fad or the waxing interests of influential collectors, occasionally spiraling into the madness that was the resale market of Beanie Babies. And like the Beanie Babies, things that once would sell for fortunes at auction suddenly find themselves reduced to a bit of fabric and some artificial stuffing. Many of the vendors in *Killer Stuff* are people trying to catch the tail of someone else's passion, hoping to follow a rocketing market interest into a new stratosphere of retail. A piece of redware in Stanton's book is bought for $800, resold for $10,000, and a similar piece is later sold for $16,000. Other types of pottery used to fetch such prices, but interest has declined and no one can move the product anymore. No one has any real explanation. But I wanted to know more about what was actually driving the market. What makes someone wake up and say, oh yes, redware, thereby driving up the price of this already valuable pottery. Generally, when I feel unsatisfied by a book, I go looking for another text to fill in the blanks. I realized this time, though, that I had a different sort of source for my curiosity: my own father.

As someone who did not inherit the collecting tendencies of my parents, this obsessive hunt for the singular piece is not something I've ever understood. I was witness to it, but I "got it" about as much as I "got" Christianity from my sporadic Sunday school class attendance. I understood it as the thing that kept us from going to the water park on vacation, as there was always just one more flea market my parents had to check out. My father eventually turned his chaotic, boxed up collection of pharmaceutical goods into a functional, open-to-the-public museum, right next door to my mother's collection-turned-museum of the history of Scouting.

My father's own collection has the same specific focus as the redware buyer. "For whatever reason, I have always been drawn to the 1880 to 1920 period," my father tells me. He has a magnificent 19th-century beard, and so he speaks the truth. But even he can't quite explain it. "When I see a picture of a drug store from this period, I am drawn into it," he said. "Must be a prior life thing. Dark, small, cluttered, drawers and shelves, loaded with an explosion of different sized, shaped and colored items. The old tools. So I settled on that period, mostly. The shift from all compounding to mostly dispensing pre-made products."

Avery, a vendor interviewed in *Killer Stuff*, reports his entry into the antiques world being sparked by the discovery of a glass Franklin Spring water bottle in a dump. He was able to sell it at a bottle show for $350.

For him, the thrill is in the profit, of finding someone's junk, and then turning around to resell it for a huge amount of money. My father gets the same thrill, but from placing the item in his collection and seeing it in its new context. I remember watching my father carefully log each new purchase into a red binder. I remember him fussing over every bottle, every pill roller, every tablet tin as if each was a delicate, living creature. He willingly sacrificed his scarce resources of time and money to be able to nurture his collection.

The eBay revolution has shifted the market in a major way. Many of the vendors in *Killer Stuff* groan about the site's influence. It's now more difficult to find some sucker who inherited his parents' priceless ceramics collection and then flings it out the door for pennies on the dollar at a yard sale. These vendors have their best days when they find heirs ignorant of or too impatient to research the value of what they have. When the person with all the desire can interact directly with the owner, neither has a need for a middleman such as Avery. But it's also turned the hunt into a sedentary activity. Part of the joy was sifting through the wide expanse of the worthless and the not-interested. My father told me, "It is not quite so much fun now because it is harder to find pharmacy items in general — eBay has had a large role in that — and something I don't already have in particular." He gets excited when telling me that he found a Lilly Ipecac & Opium Powder bottle and corn remedy drops with marijuana just last week in Larned, Kansas, completely unexpected. This was more exciting than typing "corn remedy drops" into eBay and scanning the results.

When Avery and Stanton talk about the value of an antique, they measure it in dollars. I might not totally understand my father's single-minded focus, but I can empathize with it. He explains why he keeps it up, still slowly building his collection piece by piece: "Every item has a story. I may not know all of it, and with some, it may be a short story, but what fascinates me is what makes it unique, how it fits into the evolution of health care. From the bleeding Knife & Cups to the blistering iron, to the heroin-containing cough syrups (over the counter, no less), to the quack Oxypathor that did nothing, to the tools the druggist used to start with crude herbs (seeds, leaves, roots, etc.) and end up with pills, ointments, lozenges, suppositories, whatever, each item tells a story." I would rather listen to his story, of history and medicine and people and a profession, over *Killer Stuff*'s story of capitalism and the magic of a quick buck. • *14 October 2011*

Jessa Crispin is editor and founder of Bookslut.com. She currently resides in Berlin, but spent many years in Chicago.

http://www.thesmartset.com/article/article10141101.aspx

Climate Shift Could Leave Some Marine Species Homeless

The coral triangle in SE Asia may be particularly impacted by climate shifts. (Credit: Hugh Brown, SAMS)

ScienceDaily (Nov. 3, 2011) — Rising temperatures will force many species of animals and plants to move to other regions and could leave some marine species with nowhere to go, according to new research just published in the journal *Science.*

An international research team, led by Dr Mike Burrows from the Scottish Association for Marine Science, compared changing temperatures for both land and sea and from place to place over a 50 year period, from 1960 -- 2009.

The team used the data to project how quickly populations of both terrestrial and marine species would have had to relocate to keep up with the changing temperatures. They found that there was very little difference between movement rates in either environment.

Dr Burrows explains, 'When temperatures rise, plants and animals that need a cooler environment move to new regions. The land is warming about three times faster than the ocean so you might simply expect species to move three times faster on land, but that's not the case.

'If the land temperature becomes too hot for some species, they can move to higher ground where temperatures are generally cooler. That's not an option for many marine species which live at, or near, the surface of the ocean. When temperatures rise, species such as fish will be able to move into deeper water to find the cooler environments they prefer -- but other species, such as marine plants or slow-moving corals, will have to move further to find suitable habitats and could become trapped if there are no cooler places for them to go.'

Co-author Dr John Bruno, from the University of North Carolina, agrees that many marine creatures would have a hard time keeping up with climate change. He says, 'Being stuck in a warming environment can cause

reductions in the growth, reproduction and survival of ecologically and economically important ocean life such as fish, corals and sea birds.'

The study also highlights the variation in ocean surface temperatures within a very small region, which also causes species movement. Spring-time temperatures in the seas around Scotland, for example, have arrived around 5 days per decade earlier on the east coast, whereas there has been almost no shift in spring temperature on the west coast.

Dr Burrows concludes, 'The areas where species would need to relocate the fastest to stay ahead of climate changes are important biodiversity hotspots, such as the coral triangle in South-eastern Asia. Our study may help conservationists to prepare for change and protect future coral habitats.'

The research was co-funded by the UK Natural Environment Research Council (NERC) and carried out as a part of the 'Towards Understanding Marine Biological Impacts of Climate Change' Working Group supported by the National Center for Ecological Analysis and Synthesis, a Center funded by the US National Science Foundation , the University of California, Santa Barbara, and the State of California.

Story Source:

The above story is reprinted from materials provided by **Scottish Marine Institute**.

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http://www.sciencedaily.com/releases/2011/11/111103195314.htm

China launches spacecraft to test automated docking

- 18:01 01 November 2011 by **Chelsea Whyte**
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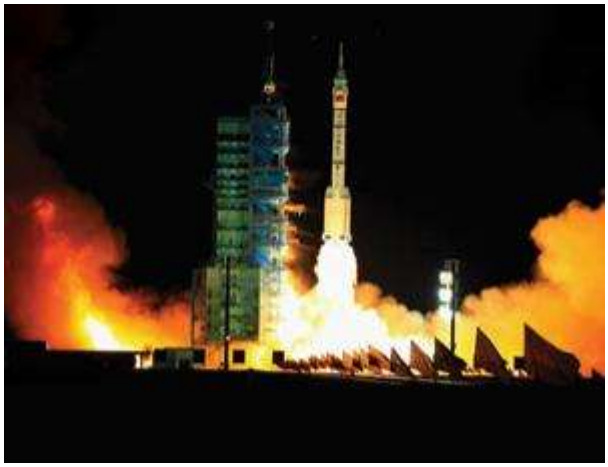


Heavenbound vessel *(Image: ChinaFotoPress/Getty)*

The launch of an uncrewed spacecraft called Vessel of the Gods brings China one step closer to its goal of building a space station within the decade.

Shenzhou 8 blasted off from Inner Mongolia today. The craft is due to spend two days in orbit before automatically docking with Tiangong 1 (Heavenly Palace), a prototype science lab that blasted into orbit in September.

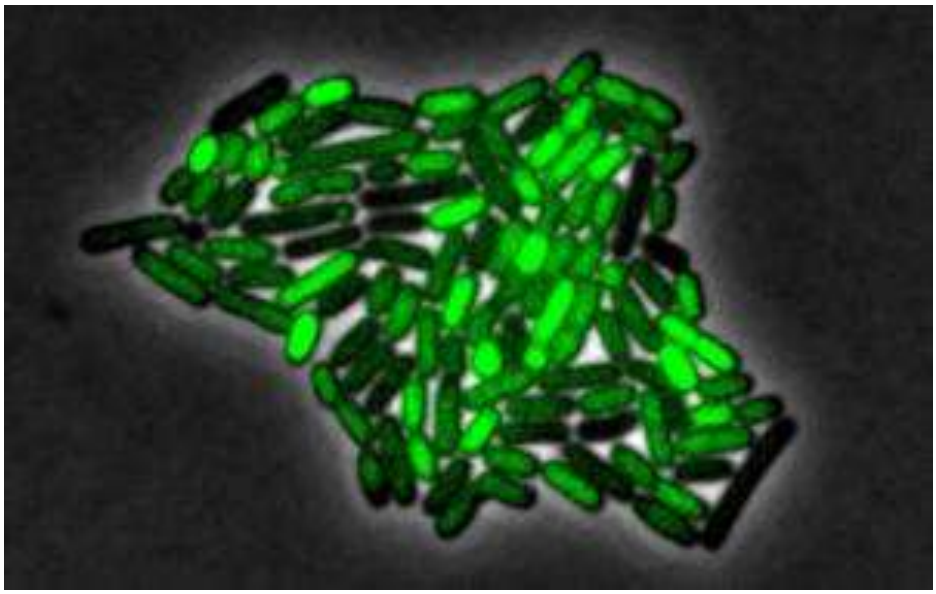
Shenzhou 8 carries a suite of 17 biological experiments called the Science in Microgravity Box that will expose their contents to the radiation and microgravity of space. One SIMBOX experiment consists of a miniature ecosystem with algae and fish that will be studied with the aim of creating a biological life-support system to provide oxygen and food for future space flights.

Another experiment will investigate the crystallisation of proteins in space, with the hopes of developing new treatments for the drug-resistant bacterium MRSA and the parasite that causes malaria.

After spending 12 days docked with Tiangong 1, Shenzhou 8 will bring its experiments back to Earth for analysis.

http://www.newscientist.com/article/dn21109-china-launches-spacecraft-to-test-automated-docking.html

Pulsating Response to Stress in Bacteria Discovered



By attaching fluorescent proteins to the genetic circuit responsible for B. subtilis's stress response, the researchers can observe the cells' pulses as green flashes. Watch a video of the flashing cells as they multiply over the course of more than 12 hours at: http://www.youtube.com/watch?v=qWkLS-u982A (Credit: Caltech/Elowitz Lab)

ScienceDaily (Nov. 3, 2011) — If the changing seasons are making it chilly inside your house, you might just turn the heater on. That's a reasonable response to a cold environment: switching to a toastier and more comfortable state until it warms up outside. And so it's no surprise that biologists have long thought cells would respond to their environment in a similar way.

But now researchers at the California Institute of Technology (Caltech) are finding that cells can respond using a new kind of pulsating mechanism, instead of just shifting from one steady state to another and staying there. The principles behind this process are surprisingly simple, the researchers say, and could drive other cellular processes, revealing more about how the cells -- and ultimately life -- work.

In their experiment, the researchers studied how a bacterial species called *B. subtilis* responds to a stressful environment -- for example, one without food. In such conditions, the single-celled organism activates a large set of genes that help it deal with hardship, by aiding cell repair for instance. Previously, biologists had thought the bacteria would handle stress by turning on the relevant genes and simply leaving them on until the stress goes away.

Instead, the researchers found that *B. subtilis* continuously flips these genes on and off. When faced with more stress, it increases the frequency of these pulses. The pulsating action is like switching your heater on full blast for a brief period every few minutes, and turning it on and off more frequently if you want the house to be warmer.

"It's a very different view of how a cell can respond to a particular stress," says James Locke, a postdoctoral scholar at Caltech. Locke and graduate student Jonathan Young are the lead authors on a paper describing this work, which was published in the Oct. 21 issue of *Science*.

To make their finding, the researchers introduced a chemical to *B. subtilis* that inhibits the production of ATP, the energy-carrying molecules of cells. The team found that the stress induced by this chemical triggers interactions within a set of genes -- collectively called a genetic circuit. This circuit, which contains a set of positive and negative feedback loops, generates sustained pulses of activity in a key regulatory protein called σ^B ("sigma B"). The researchers attached fluorescent proteins to the circuit, causing the cells to glow green when σ^B was activated. By making movies of the flashing cells, the team could then study the dynamics of the circuit.

The key to this pulsating mechanism is the variability inherent in how proteins are made, the researchers say. The number of copies of any specific protein in a given cell fluctuates over time. The bacterial gene circuit amplifies these molecular fluctuations, also called noise, to generate discrete pulses of σ^B activation. The stress also activates another key protein that modulates the pulse frequencies.

By turning a steady input (the stress) into an oscillating output (the activation of σ^B) the genetic circuit is analogous to an electrical inverter, a device that converts direct current (DC) into alternating current (AC), explains Michael Elowitz, professor of biology and bioengineering at Caltech, Howard Hughes Medical Institute investigator, and coauthor of the paper. "You might think you need some kind of elaborate circuitry to implement that, but the cell can do it with just a few proteins, and by taking advantage of noise."

This work provides a blueprint for how relatively simple genetic circuits can generate complex and dynamic behaviors in individual cells, the researchers say. "We're excited to think that similar mechanisms may occur in other cellular processes," Locke says. "It'd be interesting in the future to see which aspects of this circuit architecture also appear in more complex systems, such as mammalian cells."

"With this work and recent work in other systems, we're starting to get a glimpse of just how dynamic cellular control systems really are," Elowitz adds. "That's something that was very difficult to see in the past."

The other authors of the *Science* paper, "Stochastic pulse regulation in bacterial stress response," are research technicians Michelle Fontes and Maria Jesus Hernandez Jimenez. The research was funded by the National Institutes of Health, the National Science Foundation, the Packard Foundation, the International Human Frontier Science Organization, and the European Molecular Biology Organization.

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Journal Reference:

1. J. C. W. Locke, J. W. Young, M. Fontes, M. J. H. Jimenez, M. B. Elowitz. **Stochastic Pulse Regulation in Bacterial Stress Response**. *Science*, 2011; 334 (6054): 366 DOI: 10.1126/science.1208144

http://www.sciencedaily.com/releases/2011/11/111103120607.htm