

The newsletter of
The Acoustical Society of America

ECHOES

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Fall 2012

ASA meets in Kansas City



Robert Coffeen (Chair) and Lily Wang (Technical Chair) at Technical Program Organizing meeting (Photo C. Schmid)



Technical Program Organizers. Front Row: Judy Cottingham, Richard Dan Costley, Lily Wang, Bob Coffeen, Robert Koch, Michael Stocker. Second Row: Siu-Kit Lau, Angelo Campanella, Tiffany Johnson, Norman Philipp, Mike Vitvitch, Albert Migliori, David Dowling, Joan Sereno. Back Row: Cheryl Siderius, Jim Cottingham, Jie Zhang, Yun Jing, R. Lee Culver, Xinmai Yang, Bob McGough, Allard Jongman (Photo by C. Schmid)

The 164th meeting of ASA will take place in Kansas City, Missouri October 22-26. This will be the first ASA meeting in this vibrant city in the heartland of our country. Sessions will take place in the Kansas City Marriott Downtown Hotel. General chair will be Bob Coffeen, and Lily Wang will chair the technical program committee.

The technical program will include 844 papers, arranged into 90 sessions. A “Hot Topics” session sponsored by the Tutorials Committee will cover the fields of Biomedical Acoustics, Speech Communication, and Structural Acoustics and Vibration. An instrument and equipment exhibit Monday-Wednesday will include computer-based instrumentation, scientific books, sound level meters, sound intensity systems, signal processing systems, devices for noise control and acoustical materials, active noise control systems and other exhibits on acoustics.

The Undergraduate Research Exposition, a special poster session sponsored by Education in Acoustics, will be a forum for undergraduate students to present their research in acoustics.

A tutorial on “The Acoustics of Pianos” will be given by Professor Antoine Chaigne of the École Nationale Supérieure de Techniques Avancées (ENSTA) ParisTech on Monday, 22

October at 7:00 p.m. Advance registration of \$15 (\$7 for students) includes a set of lecture note. A short course on Auralization and Acoustic Virtual Reality will be taught Sunday 1:00 to 5:00 and Monday 8:30-12:30 by Michael Vorländer, a professor at RWTH Aachen University in Germany. Scott D. Pfeiffer of Threshold Acoustics LLC will present a Vern Knudsen distinguished lecture titled “The Consultant’s Risk in an Invitation to Academia.”

The ASA Plenary session will be held Wednesday afternoon, 24 October, where Society awards will be presented and the new Fellows will be recognized. The plenary session will be at the historic Folly Theater (constructed in 1900 and originally called the Standard), directly across the street from the Marriott Hotel (on the northwest corner of 12th and Central). At the conclusion of the plenary session, and to provide a musical listening experience in the Folly, there will be a brief performance by a musical group from the University of Kansas School of Music.

A technical tour of the new Kauffman Center for the Performing Arts is planned for Monday afternoon, 22 October beginning at 3:15 p.m. The Kauffman Center opened in

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We hear that . . .

- **Eric Schneider, Allan Sadun, and Kevin Zhou** earned gold medals, and Jeffrey Cai and Jeffrey Yan earned silver medals at the 2012 International Physics Olympiad in Estonia. China and Taiwan tied for first with 5 gold medals, Singapore was second with 4 gold medals, the USA, Korea and Russia tied for third with 3 gold and 2 silver medals.
- The Obama Administration has announced the President's plan for the creation of a new, **national Science, Technology, Engineering and Math (STEM) Master Teacher Corps** comprised of some of the nation's finest educators in STEM subjects. The STEM Master Teacher Corps will begin with 50 exceptional STEM teachers established in 50 sites and will be expanded over 4 years to reach 10,000 Master Teachers.
- A new prize, the **William and Christine Hartmann Prize in Auditory Neuroscience**, made possible by a donation from the Hartmanns, will be awarded for the first time at the Spring 2013 ASA meeting in Montreal. The 2013 Prize includes a medal, a certificate, a stipend of \$2,500, and partial travel support to attend the Spring 2013 meeting.
- A TV clip entitled "**Parks Monitor Noise to Protect Nature, Environment,**" published online April 26 by the American Institute of Physics, can be viewed at <http://www.insidescience.org/?q=content/parks-monitor-noise-protect-nature-environment/520>.

Meet Mary Guillemette

Allan Pierce



The Acoustical Society of America is pleased to announce that, after an intensive and well-publicized search, Mary Guillemette has been appointed Publications Manager for the Society. Ms. Guillemette will be heading up the recently established ASA Publications Office in West Barnstable,

Massachusetts. As Publications Manager, she will be the chief point-of-contact and coordinator for all publications activities of the ASA. Ms. Guillemette began work on August 1, and is rap-

idly becoming acquainted with many ASA people who are involved with our publications activities, and is looking forward to meeting many ASA members at the upcoming meeting in Kansas City. Mary Guillemette has held positions supporting scientific research and publishing in New York, Chicago, and New England. A liberal arts graduate of Holy Cross College, she entered the field as a Research Assistant in the Physical Oceanography division of Woods Hole Oceanographic Institution, then worked as a programmer and technical editor at IBM Corp for several years. She formally switched to publishing books and journals in 1991 and has been a managing editor, operations manager, and publications manager for the American Astronomical Society, the University of Chicago Press, and Blackwell Publishing. The search committee responsible for the recommendation of Ms Guillemette for the Publications Manager position included Christy Holland (Chair), Barbara Shinn-Cunningham (Executive Council), Susan Blaeser (ASA Standards Manager), Robert Harington (AIP), Mardi Hastings (ASA Past-President), Charles Schmid (ASA Executive Director), and Allan Pierce (Editor-in-Chief). The appointment was made by David L. Bradley (ASA President).

From The Student Council

Greetings from Hong Kong! The Acoustics 2012 Hong Kong meeting was a great meeting for students. Close to 400 students attended, including approximately 60 from the USA and 160 from Mainland China and Hong Kong. Monday evening was the student reception, which was well attended with about 50 students. Being such a diverse meeting, the reception was a great way to interact with students from various cultures and compare notes on our academic experiences.



The Student Council would like to congratulate Dr. Stephen Dance, from London South Bank University, who was presented with the ASA Student Mentoring Award during the Monday night reception. Nominations for the next award, to be presented at the Fall 2013 San Francisco meeting, are due in early spring 2013. More details can be found on the ASA Student Zone website at www.acosoc.org/student.

Looking towards the Kansas City meeting, there will be a special Student Council hosted session entitled, "Introduction to technical committee research and activities: Especially for students and first-time meeting attendees." This session will feature brief talks by representatives from each of the 13 technical committees. In addition students are encouraged to attend the students events including the new student orientation, student icebreaker and student reception. For all up to date news, especially during the meetings, subscribe to our twitter feed @ASASTudents.

Looking forward to seeing everyone in Kansas City!

Jennie Wylie



Newsletter of the Acoustical Society of America

Provided as a benefit of membership to ASA members

The Acoustical Society of America was organized in 1929 to increase and diffuse the knowledge of acoustics and to promote its practical applications.

Echoes Editor Thomas Rossing
ASA Editor-in-Chief Allan Pierce
Advisors Elaine Moran, Charles Schmid

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ASA meets in Kansas City

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September 2011. After touring these halls there will be a discussion of the Center with representatives of the Center's management, the Kansas City Symphony Orchestra, the Lyric Opera of Kansas City, BNIM—the local project architect, and Nagata Acoustics—the project acoustical consultant. Bob Coffeen will be the moderator for this discussion. The concert hall has a Casavant Frères custom-designed mechanical-action pipe organ in the French romantic tradition, and near the beginning of the tour there will be an organ recital/demonstration. The Kauffman Center is approximately 7 blocks from the Marriott south on Central Street with the walking time about 12 minutes. Bus transportation will be available for those not desiring to walk or in the event of rain. The cost to participate in the tour is \$15.00 whether or not bus transportation is used. Preregistration is requested but on-site registration will be on a space-available basis up to a maximum of 80 tour participants.

This meeting will be especially attractive for lovers of pipe organs. In addition to a special session on organ acoustics on Monday, there will be concerts on pipe organs in the Kauffman Center for Performing Arts (Monday) and at the Community of Christ auditorium in Independence (Wednesday). Both organ concerts will be played by Dr. Jan Kraybill, principal organist at the Community of Christ Temple and Auditorium A special session on Thursday honoring the work of Neville Fletcher will also include papers on pipe organ acoustics.

The speaker at the Society Luncheon on Thursday will be John Gaunt, Professor and Dean of the University of Kansas School of Architecture, Design and Planning. This luncheon, sponsored by the College of Fellows, is open to all attendees and their guests (\$30). The Women in Acoustics luncheon will be held on Wednesday, 24 October. The fee is \$20 (students \$10) for preregistration by 1 October and \$25 (students \$10) at the meeting.



Kansas City Marriott

Buffet socials with cash bar will be held on Tuesday and Thursday.

A student transportation fund provides limited funds to students to partially defray transportation expenses to meetings. Students presenting papers who propose to travel in groups using economical ground transportation will be given first priority to receive subsidies, although these conditions are not mandatory. No reimbursement is intended for the cost of food or housing. The amount granted each student depends on the number of requests received. To apply for a subsidy, submit a proposal by e-mail to be received by 24 September 2012 to: Jolene Ehl, jehl@aip.org. The proposal should include your status as a student;

whether you have submitted an abstract; whether you are a member of ASA; method of travel.

With a full program of interesting papers and events, there won't be much time for sightseeing, but visitors who come early or remain a few days after the meeting will find interesting attractions in Kansas City. Kansas City boasts more fountains than any other city in the United States. The Kauffman Center is home to the Kansas City Symphony, the Kansas City Ballet, and the Lyric Opera of Kansas City. The Kansas City Museum at Corinthian Hall (on the former urban estate of lumber baron and civic leader Robert Long) presents local and regional history. Union Station, once the second-largest railroad station in the United States is now home to Science City, an interactive science center, the H&R Block Stage Theater, the Reginer Extreme Screen, and several restaurants.

The Nelson-Atkins Museum of Art, with a collection of more than 33,000 objects, is free to visitors.



Kauffman Center



Folly Theater

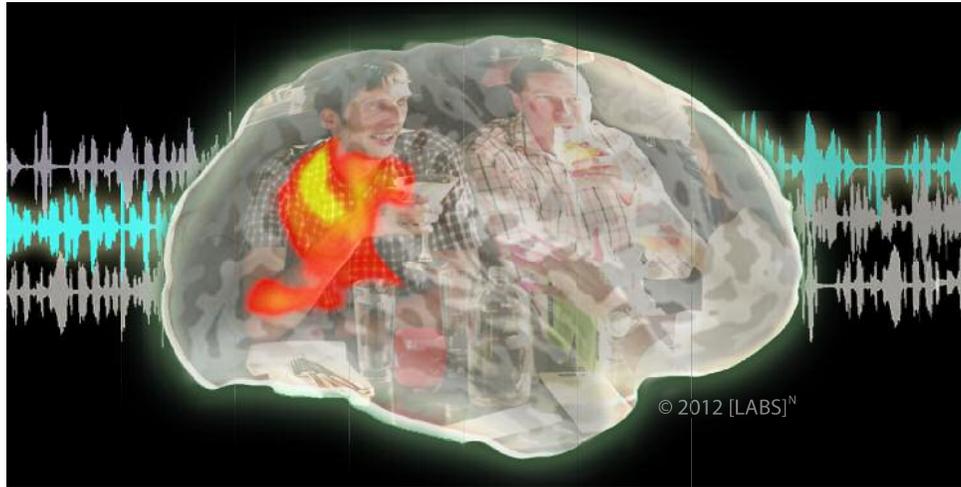


Nelson-Atkins Museum

Echoes from Hong Kong

Brain attending a cocktail party: A special session discussing cortical neuroimaging techniques

Adrian KC Lee



In our laboratory at the University of Washington, we combine MEG and EEG measurements with anatomical information measured using magnetic resonance imaging to capture brain dynamics associated with different auditory perceptual and cognitive tasks. In this illustration, a spatiotemporal cortical activation cluster corresponding to the right temporoparietal junction (RTPJ) is shown to highlight its participation in aiding us to switch auditory attention in a cocktail party environment. In our recent neuroimaging studies, we found that brain activity in the RTPJ cluster was significantly stronger when subjects were instructed to switch spatial attention than when they had to maintain attention on one sound stream in the presence of another competing stream. Furthermore, we observed a significant correlation between differential RTPJ activation and behavioral performance in switch versus maintain attention trials. [Artwork provided by Michelle Drews].

I remember using this very title for a term paper a few years ago. At that time, I was studying psychoacoustics under the mentorship of Prof. Barbara Shinn-Cunningham while being trained as a graduate student in the Speech and Hearing Bioscience and Technology program (then part of the Harvard-MIT Division of Health Sciences and Technology). I was fascinated by how we can selectively “tune in” to a sound of interest and “tune out” everything else in a crowded environment—just like how one can focus in a conversation at a cocktail party (this effect was first coined by E. Colin Cherry in 1953). However, above all, how our brain can so seamlessly pull this off captures my imagination, and to the end of better understanding this process, I invited some of the world’s experts in brain imaging to discuss this topic in a special psychological and physiological acoustics session at the Acoustics 2012 Hong Kong meeting (and in return introduced them to some of the most crowded and noisy restaurants from my birthplace).

There are many neuroimaging tools that allow us to take snapshots of our brain performing this amazing feat; each technique offers a different, unique window into how our cortex participates in auditory tasks. Many people are familiar with a technique known as functional magnetic resonance imaging (fMRI), wherein brain activity is measured by detecting the associated changes in blood flow (using blood-oxygen-level-dependent, a.k.a. BOLD, contrast). This brain imaging tool provides very good spatial resolution (~1 mm), but trades off precise temporal information (~1 s). In the special P&P ses-

sion, Prof. Chris Stecker (University of Washington) presented how his laboratory uses this technique to probe the coding of interaural differences of level and time—important binaural cues that we rely on to segregate sounds in a noisy mixture—in the human auditory cortex. fMRI can also be used to investigate how the brain processes other auditory features by incorporating advanced statistical approaches, and Dr. Annika Linke (University of Western Ontario) showed us how multivariate pattern analysis methods can uncover distributed neural networks associated with auditory perception and attention.

While a shortcoming of the fMRI technique is its coarse temporal resolution—a lot of acoustical variations can happen in one second—other brain imaging techniques, such as electroencephalography (EEG) or magnetoencephalography (MEG), can detect neuroelectric activities with millisecond precision while trading off some spatial resolution (~1 cm). Prof. Lin Chen (University of Science and Technology of China) shared how his laboratory uses EEG to investigate how humans process pitch information in the cortex. It has long been hypothesized that our left hemisphere is specialized for speech whereas the right for music, but it remains elusive whether the division of labor between the two hemispheres is determined by function or by acoustic properties of stimuli. This is apropos of the meeting’s Hong Kong setting because the local dialect (Cantonese) and its lingua franca (Mandarin) are both examples of tonal languages, whereby pitch is used to

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Echoes from Hong Kong

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convey lexical or grammatical meaning. Pitch is also an important cue to help us selectively attend to one voice amongst others (whether the cocktail party is held in China or in Australia), and thus using tonal language to disentangle how we use pitch information is an especially fascinating approach.

Another advantage of using a neuroimaging technique with high temporal resolution is that the sampling rate is fast enough to resolve high frequency neural oscillations. Prof. Barbara Shinn-Cunningham (Boston University) and her colleagues used combined MEG and EEG to show that the brain activities more faithfully follow an attended stream in the presence of a competing sound stream (revealed by amplitude-modulating each of the auditory streams at different frequencies). Interestingly, the attended-stream modulation frequency drives phase-locked responses in left, but not right Frontal Eye Fields—a cortical region associated with control over eye gaze and spatial attention. This left the audience wondering: are there key regions in the brain outside of the auditory cortical areas that are involved in auditory attention which are not actively discussed within our community? Finally, Priv.-Doz. Alexander Gutschalk (Heidelberg University Hospital) discussed the benefits and limitations of combining MEG and fMRI to study correlates of perception in the auditory cortex. This talk provided the session participants great discussion points on how to combine information from these state-of-the-art imaging tools while reconciling differences that are commonly reported in the literature.

Neuroimaging tools and their associated analysis techniques have come a long way in the last two decades, enabling us to map the cortical dynamics involved in auditory attention. But in addition to knowing when and where the cortex is involved in auditory perception and cognition tasks, we would like to push the envelope even further. Drs. Eric Larson, Ross Maddox and I, along with our collaborators spread across the

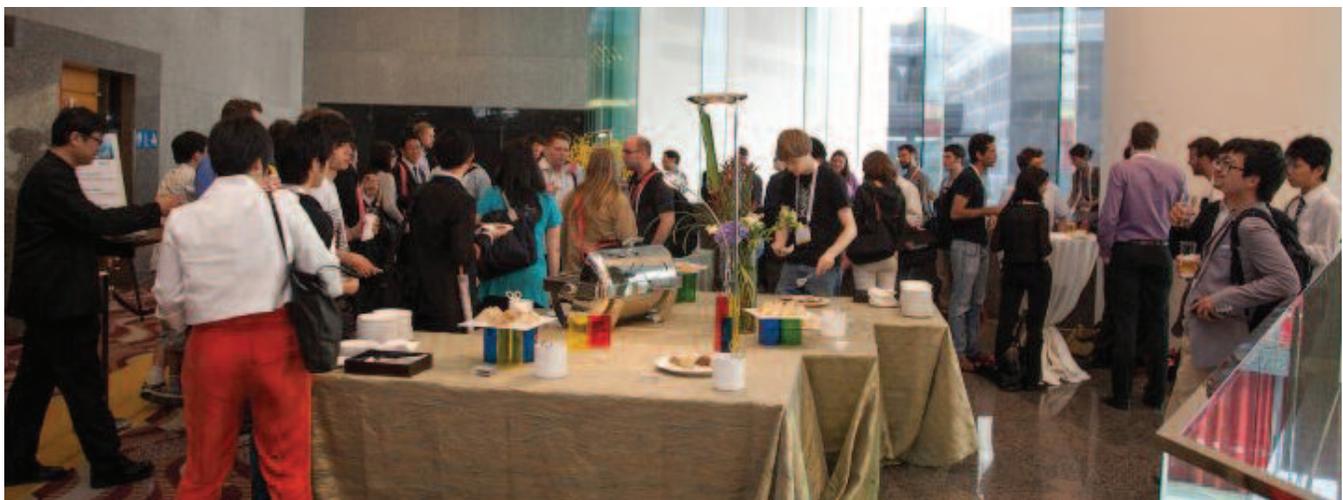
neuroimaging and signal processing communities, are now developing new analysis techniques that will eventually enable us to provide a systems neuroscience view of the auditory attentional network. We are working to describe how different brain regions coordinate top-down attention (e.g., listening to the directions provided on my smartphone) while gating salient signals in or out (e.g., noticing that my other cell phone is ringing while ignoring the baby crying in the back of my car).

Writing this article now reminds me of the feeling I had when I wrote that term paper during graduate school—there are so many neuroimaging techniques out there to learn about and so many interesting questions left to be asked, let alone answered. To paraphrase comments from one of my mentors, Nat Durlach, on the state of neuroimaging in a lab meeting, “you’re all asking questions that have fascinated us in the 60’s or even before, but I think now you have the right tools to answer these questions.” It is exciting to be a psychoacoustician and physiologist right now!

So next time when you are attending a cocktail party, spare a moment to marvel on the complicated task that your brain is doing such that you can eavesdrop on the gossiping conversation behind you while ignoring all the clinking of the cocktail glasses around you. Then give a quiet cheer for your brain!



Adrian KC Lee is Assistant Professor of Speech and Hearing Sciences and Institute for Learning & Brain Sciences at University of Washington, Portage Bay Building 206, Box 357988, WA 98195. This article is based, in part, on paper 3aPP1 at the Acoustics 2012 Hong Kong meeting.



Student reception at Acoustics 2012 Hong Kong

Scanning the journals

Thomas D. Rossing

- **Combining light with ultrasound** more than doubles the depth that light can be focused inside biological tissues and soon could enable doctors to perform incision-free surgery or to diagnose cancer by seeing tumors inside the body, according to a paper in the June 26 issue of *Nature Communications*. The new technique builds on a previous method researchers developed to see through a layer of biological tissue, which is opaque because it scatters light and enables the possibilities of doing incisionless surgery. Doctors could also use the technique to treat cancer with photodynamic therapy, which currently can be used only at the surface of tissue because of the way light is easily scattered.

- **Imitating the calls of mates or group members is a signal of social bonds in some animals**, according to an article in the July-August issue of *American Scientist*. Orca whales are one example. They hunt in stable groups called pods; the pods in one geographic location show similar vocalizations. Other examples include parrots, goldfinches, bats, and dolphins. Call learning requires time and effort, which could signal to companions that an individual is committed to a cooperative relationship. Studies suggest that vocal matching is related to physical fitness.

- **Scanning with ultrasound** has allowed veterinary researchers to study the unusual 22-month pregnancies of elephants according to a paper in the September 22 issue of *Proceedings of the Royal Society B*. The scientists hypothesize that the long gestation period allows for full brain development of elephants, which are born with complex cognitive skills and are immediately able to sense how to survive in their environment and interact with the herd.

- **Music evolves** as composers, performers, and consumers favor some musical variants over others. To investigate the role of consumer selection, authors of a paper in the June 19 issue of *Proceedings of the National Academy of Sciences* constructed a Darwinian music engine consisting of a population of short audio loops that sexually reproduce and mutate. This population evolved for 2,513 generations under the selective influence of 6,931 consumers who rated the loops' aesthetic qualities. The experiment shows how cultural dynamics can be explained in terms of competing evolutionary forces.

- By **stretching graphene like a drumhead**, researchers show that charge carriers can be confined within the material by straining it, according to a paper in the 22 June issue of *Science*. The graphene membrane was continuously deformed by controlling the competing interactions with a scanning tunneling microscope (STM) probe tip and the electric field from an electrode. By creating tiny structures in which graphene is stretched like a drumhead, researchers show that charge carriers can be confined within the material as in a quantum dot.

- **The physical production mechanism of elephant infrasonic vocalizations** is discussed in a paper in the 3 August issue of *Science*. High-speed video observations of an excised elephant larynx were used to demonstrate flow-induced self-sustained vocal fold vibration in the absence of

any neural signals, thus excluding the need for any active muscular contraction or “purring” mechanism, although this mechanism is not ruled out in the live elephant. The observed physical principles of voice production are thought to apply to a wide variety of mammals across a large range of frequencies and body sizes.

- **Sound can affect taste**, according to an “Outlook” feature (a collection of articles) in the 21 June issue of *Nature*. Playing a “crunching” sound while subjects bit into potato crisps (chips) caused subjects to rate them as crisper and fresher. In another study, it was found that customers at a bar ordered appreciably more to drink when the music was at 91 dB than on another occasion when it was at 75 dB.

- **Non-native English speakers face challenges when trying to publish in English**, an article in the 5 July issue of *Nature* reminds us. All English-as-a-second-language scientists confront cultural differences, language barriers, and grammatical peculiarities when trying to publish in peer-reviewed journals in English. Nevertheless there are strong incentives to publish in English. Scientists who struggle do have options, however, from university writing centers to private consultants and editing companies. Many research universities and government agencies now set aside funding specifically for language editing.

- An interesting article in the May issue of *IEEE Spectrum* discusses the **International Prototype of the Kilogram**, known colloquially as “Le Grand K” which is kept at the International Bureau of Weights and Measures in Sevres, France. Every few decades this cylinder of platinum iridium alloy is compared to copies in Paris and elsewhere in the world. In 1988 the bureau's metrologists discovered that its mass and those of its official copies had drifted apart by as much as 70 micrograms since 1878. Delegates from the bureau's 55 member countries have now agreed on a tentative plan to base the kilogram on Planck's constant, a fundamental constant of quantum mechanics. The tool of choice for measuring Planck's constant is the watt balance which weighs an object against the amount of electromagnetic force needed to keep the object in place. Three other core units—the ampere, the mole, and the kelvin—will likely change at the same time.

- At least four different **acoustic tools are being used to monitor critical parts at nuclear power stations**, according to an article in the August issue of *IEEE Spectrum*. These include acoustic emission monitoring, guided ultrasonic waves, a phased array of ultrasonic waves, and the diffused echo field from a single ultrasonic pulse. By applying these new monitoring techniques, it is hoped that nuclear power stations, originally licensed for 40 years, can be operated safely for twice that long. Major concerns include embrittlement and cracking in the reactor pressure vessel and its piping, degradation of the concrete containment, aging cables, and corrosion in buried water pipes.

- **“Is pop music evolving, or is it just getting louder?”** is a question addressed online in the July 26 issue of *Scientific Reports*. A group of researchers undertook a quantitative

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Scanning the journals

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analysis of nearly half a million songs to look for widespread changes in music's character over the years. After peaking in the 1960s, timbral variety has been in steady decline to the present day, the researchers found. That implies a homogenization of the overall timbral palette, which could point to less diversity in instrumentation and recording techniques. Similarly, the pitch content of music has shriveled somewhat.

- Using **sound for data analysis (sonification)** is catching on, according to an article in the May 2012 issue of *Physics Today*. "The best pattern recognition system that we know of is our auditory system," says one psychologist. "We know that with music, we can convey melody, tension, expectancy." An area in which sound has made strong inroads is in monitoring data acquisition over long durations. One disadvantage is that sound can be boring. People are forced to impose their own musical taste subjectively on the data. Listening can take longer than looking, although that depends on the data.

- The European Natterer's bat successfully captures flies by **tuning in on the buzzing sound they make while mating**, according to a paper in the July 24 issue of *Current Biology*. The buzzing sound is thought to come from male fluttering during copulation.

- A new open-access journal called *PeerJ* offers authors a **lifetime membership** that will allow them to publish free, peer-reviewed research papers, according to an article in the

14 June issue of *Nature*. One of the founders was until recently publisher of the world's largest journal *PloS One*, a pioneer open-access journal which now publishes more than 2000 articles a month. Whereas *PloS One* charges \$1350 per paper, *PeerJ* users pay \$299 for a lifetime fee or \$99 or \$199 per year for a limited number of papers. (On a multi-authored paper each author must be a member).

- **U.S.'s best science and mathematics teachers will get bonuses**, according to an article in the 27 July issue of *Science*. Embracing the recommendations of a presidential advisory board, the U.S. Department of Education is launching a \$100 million program to pay select science and math teachers more money to reward excellence in the classroom. It is the first step in what the Obama Administration hopes will become a 10,000-strong corps of master teachers working to improve STEM education in the nation's elementary and secondary schools.

- **Graduate students and postdocs are often best placed to turn basic research into entrepreneurial gold**, a column in the 10 May issue of *Nature* argues. Supervisors, who already have jobs and do not have the time needed to start a business, are not the best people to start companies. Early stage researchers are the ones who are developing business plans and starting companies in the United States. Last year the National Science Foundation announced its Innovation Corps, which helps those funded by the Foundation to determine the commercial potential of their research.

Acoustics in the News

- If you have a hearing aid, the world is, paradoxically, far noisier than it is for a person with normal hearing, according to an Op Ed opinion in the August 3 issue of *The New York Times*. In a noisy environment such as a restaurant, a person with normal hearing will still be able to hear his companion, but in that same environment, a hearing-impaired person will hear chairs scraping, dishes clanking, waiters shouting—an anxiety-provoking wall of noise. Noise is the second most common complaint about restaurants, according to the author, following poor service. We need to quiet things down a bit for everyone, but especially for those who are already deafened.

- More and more restaurants are taking steps to cut down on noise, according to a story in the June 8 issue of the *Los Angeles Times*. According to a nationwide survey, noise has become the second-biggest complaint among diners, behind poor service. However, as restaurateurs strive to attract a younger crowd, they have ditched the pile carpets, soft tablecloths, and velvet booths for crowded communal tables, clattering open kitchens and loud music. Now some restaurateurs are getting the message and looking for a middle ground between aesthetics and acoustics. One restaurant with high ceilings, marble floors, and bare walls has just finished installing sound-absorbing materials under the chairs, and waiters are being trained to pace themselves to avoid juggling armfuls of clanking plates. The music, which operators used to crank up, is now left soft.

- Scientists at the NASA Jet Propulsion Laboratory want to "put an ear to the belly of Mars," according to a news report in the 12 July issue of *Nature*. They propose to launch a probe called InSight (Interior Exploration using Seismic Investigations Geodesy and Heat Transport) which would map out the deep structure of Mars by listening to its faint visceral rumblings. InSight would land in 2016 using the same spacecraft design as the 2007 Phoenix mission. InSight would place a seismometer firmly on the planet's surface where it should be sensitive to earthquakes as small as magnitude 3.

- The July 20 issue of *The New York Times* has more than two full pages devoted to a story about noise in New York City. The *Times* measured noise levels at 37 restaurants, bars, stores, and gyms across the city and found dangerous levels at more than one-third of them. One gym averaged 100 dB(A) over 40 minutes, while levels of more than 90 dB(A) were observed in several restaurants and bars. Most owners were unaware of the high noise levels. The *Times* is to be commended for providing details on how the measurements were made (A-weighting, meters held at chest level, etc., although A-weighting is described as mimicking the ear's sensitivity at all frequencies.)

- A sidebar to the above story on noise in New York City points out that "U.S. Standards on Workplace Noise Trail Those of Other Countries." It reminds us that OSHA requires

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Acoustics in the News

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that workers exposed to 90 decibels for eight hours are required to wear hearing protectors, but many other countries have stricter rules. Opposition to stricter standards has come from the National Association of Manufacturers and the United States Chamber of Commerce.

- Whales can decrease the sensitivity of their hearing to protect their ears from loud noise, a story in the July 17 issue of *The New York Times* reports. As reported in paper 4aAB3 by Paul Nachtigall, *et al.* at Acoustics 2012 Hong Kong, whales can partially “close” their ears, cutting sensitivity to man-made noises. One scientist called the research a potential window into what sea mammals may already do on some occasions to protect their hearing. Nevertheless the discovery should not slow global efforts to reduce oceanic noise.

- An electrical stimulus helps people recover language after a stroke, according to a story in the May 5 issue of *Science News*. The electrical brain stimulus was paired with a more conventional word-training technique in which participants studied 150 cards with pictures of one-syllable words for about 60 hours over six weeks. At the end of the six weeks, the patients who received the electrical stimulation nearly doubled their scores on a picture-naming task.

- Practical seminars organized by the Golandsky Institute

teach pianists how to avoid strain, according to a story in the July 20 issue of *The New York Times*. The institute teaches the Taubman Approach, which centers on coordinate movements; proper alignment of fingers, forearm, and hand; and forearm rotations that reduce the need to twist and stretch in awkward positions.

- The earthquake of August 23, 2011 in central Virginia was felt by more people in the United States than any earthquake in history, according to a story in the August 11 issue of *EOS Transactions, American Geophysical Union*. The magnitude 5.8 quake, which damaged buildings in Washington, DC, including the Washington Monument and the National Cathedral, was felt as far west as the Mississippi River, according to reports recorded on the AGU website. A free-to-the-public copy of the article is available at <http://bit.ly/MueALF>.

- A new optical coherence tomography (OCT) device that can see difficult-to-detect bacteria behind the eardrum could help clinicians diagnose and treat chronic ear infections, according to a story in the August issue of *Photonics Spectra*. The noninvasive imaging system uses light to collect high-resolution, 3-D tissue images, scanning through the eardrum much like ultrasound imaging but using light.