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On the Cusp of a Crisis – Connecting the Dots

By Marvin J. Dainoff, HFES President

The sense of crisis was palpable almost as soon as I entered the conference room.

I was attending my first meeting of the Council of Scientific Society Presidents (CSSP) in Washington, D.C. One of the hand-outs was a copy of an article in the December *Reader's Digest*, which, by coincidence, was one of the amenities provided by the management of our hotel. The article, "America's Brain Drain Crisis – Why Our Best Scientists Are Disappearing and What's at Stake," effectively summarized a major theme of the CSSP meeting: A combination of funding cuts in basic research, lack of students entering university training in science and engineering, and poor primary and secondary school preparation in mathematics and sciences is causing the United States to rapidly lose its science and technology base. It is projected that by 2010, 90% of the world's scientists and engineers will be living in Asia.

As HFES approaches its 50th anniversary year, part of my job as president is not only to look back and celebrate our past but also to look forward and contemplate the next 50 years. Our future as a profession and a professional society is going to be very much affected and determined by these issues.

As it happens, a major source of the *Reader's Digest* article was a recent report by the National Academy of Sciences (NAS) co-authored by a distinguished panel of Nobel laureates, university presidents, and CEOs of major corporations. The report is entitled "Rising Above the Gathering Storm" and can be read at <http://books.nap.edu/catalog/11463.html>.

We were briefed on the report by NAS President Ralph Cicerone. Other people on the list of distinguished speakers we heard and met included Arden Bement, director of the National Science Foundation; Harvey Fineberg, president of the National Institute of Medicine; George Gray, Environmental Protection Agency administrator for research and development; Paula Dobriansky, Undersecretary of State; and George Frei, past president of Resources for the Future.

Here are some specific "worrisome indicators" quoted from the report:

- Fewer than one-third of U.S. fourth- and eighth-grade students performed at or above a level called "proficient" in mathematics.
- Low-wage employers, such as Wal-Mart (now the nation's

largest employer) and McDonald's, created 44% of the new jobs, whereas high-wage employers created only 29% of the new jobs.

- In 2003, only three American companies ranked among the top 10 recipients of patents granted by the U.S. Patent and Trademark Office.
- Chemical companies closed 70 facilities in the United States in 2004 and have tagged 40 more for shutdown. Of 120 chemical plants being built around the world with price tags of \$1 billion or more, one is in the United States and 50 are in China.
- In China, 59% of undergraduates receive their degrees in science and engineering; in Japan, 66% do. In the United States, the corresponding figure is 32%.
- The number of visas set aside for "highly qualified foreign workers" dropped to 65,000 a year from its 195,000 peak.
- In 2004, China graduated more than 600,000 engineers; India, 350,000; and America, about 70,000.
- In 2001 (the most recent year for which data are available), U.S. industry spent more on tort litigation than on research and development.

Thus, we see less investment in basic research, many fewer native-born Americans entering the science/technology career pipeline, but, since 9/11, a decrease in immigrants who in the past have been more likely to populate our graduate programs in science and technology. We also see a decrease in the level of technological innovation that results in economic growth. (The *Reader's Digest* article stated bluntly: "Scientist and engineers make up less than 5% of our population but create up to 50% of the GDP.")

For me, the urgency associated with these data was brought home particularly well in a talk by John Holdern of Harvard University. (Holdern accepted the Nobel Peace Prize in 1995 on behalf of the Pugwash Conference on Science and World Affairs, of which he was chair of the Executive Committee.) He laid out the interrelationships among energy, terrorism, and global warming.

With regard to energy, it is becoming increasingly clear that the days of cheap, easily accessible petroleum are about to end. The oil that is available from now on will simply become more and more expensive to extract and produce. At the same time, if the Chinese economy were to continue to grow at its current rate, in 20 years it would require the *entire* world oil supply. In the short term, given

On the Cusp of a Crisis...

(continued from page 1)

the concentration of oil in the Middle East, it is predicted that any major interruption in oil supply caused by terrorist activity could lead to major disruptions in the world economy. Imagine what even a relatively brief period of high gasoline prices would do to our own service economy, which is dependent both on customers driving to the mall and trucks providing just-in-time supplies.

Disruptions and instability are also to be expected as a consequence of global warming. The empirical data are no longer in doubt. The polar ice caps are melting and ocean temperatures are increasing, and the latter is highly correlated with the severity of hurricanes. Hence we should expect more Category 4 and 5 hurricanes like Katrina. There are many other scenarios associated with global warming, but instability seems to be a common core.

There is obviously an urgent need to develop alternative energy sources that are robust with respect to projected climatic instability. The question is: Can this high level of scientific and technological effort still occur in the United States, with its depleted scientific capital?

A political reaction is already occurring. In a CSSP session, we were briefed by staff of the House of Representatives Science Committee on new bipartisan legislation, the National Innovation Act of 2005. This act seeks to increase research investment, increase science and technology talent, and develop an innovation infrastructure. It remains to be seen how much funding will actually be allocated.

What can *we* do? The implications for HFES, in both the short and long term, are profound. Our own history is built on reactions to technological crises (e.g., military aircraft in World War II, Three Mile Island). There are many places our expertise can be useful, if not essential, as we face these challenges. As individuals, members who are concerned should consider writing to their elected representatives to ask them to support measures that allocate funding to this problem.

As an organization, HFES will be looking for ways to add its voice to those of the National Academy and other science and engineering societies. One immediate opportunity for action as HF/E professionals builds on what we are now doing within National Ergonomics Month in bringing science projects to primary and secondary schools. We have a lot to contribute by allying

ourselves with science and mathematics teachers to devise creative ways to motivate and teach students about problems that both have scientific content and are relevant to everyday life. How about, for example, using Fitts' law to have students test their favorite game controllers? I'm sure there are dozens more such examples.

This is a call to action. I urge all of us to think about our future and where we fit in the coming crisis. 

ANNUAL MEETING

HFES 50th Annual Meeting Submission Information

By Barrett S. Caldwell, Chair, Technical Program Committee

At this time of year, many of us are looking at the weather report for the next major winter storm and asking, "What will I submit to HFES this year?" Well, I can't answer questions about rain or snow, but I can shed some light on the opportunities for submissions to the HFES 50th Annual Meeting, to be held in San Francisco, October 16–20, 2006. Submissions are due March 1, 2006, through the MiraSMART electronic submission system, which is noted in the Call for Proposals (now online at <http://www.hfes.org/web/HFESMeetings/06callforproposals.html>).

There are several important and new elements for the 2006 Annual Meeting. I strongly encourage everyone to read the Call for Proposals carefully and soon, so that we can minimize last-minute questions, confusions, or misunderstandings. Here are the main changes that everyone should be aware of as they consider their submissions.

Submission types and instructions have been expanded and clarified for the range of presentation types. Numerous requests for improving the information shared with authors and technical groups have led to a substantial rewriting of the submission guidelines. We have specifically explained the HFES interest in practitioner, research, and theoretical submissions, and several submission types have been redefined. New options include direct submissions to technical groups (TGs) for material previously directed to Special Sessions and a keyword list for all submissions. In recognition of the desire for special 50th anniversary highlight materials, "invited lectures" can be requested by TG program chairs. Symposium and panel options have been further distinguished and clarified for the benefit of authors, program chairs, and reviewers.

Look for a flowchart of submission options in this year's Call for Proposals. There are new instructions for both authors and program chairs to help improve the quality of submissions and ensure that submissions are directed quickly to the correct TG.

Demonstration and alternative format proposals should be submitted to the technical groups. In the past, we have seen confusion regarding which submissions should go to Special Sessions. In order to further improve communication and awareness within and among the TGs, we are directing all submissions, in both traditional and alternative formats, to the TGs (or to General Sessions if the subject matter does not fit within a single TG focus).



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The “colloquium” submission type is no longer part of the technical program. In order to avoid questions about what types of informal group meetings or “group work in progress” sessions are appropriate, we have eliminated this presentation type as part of the proposal submission process. Groups can still organize and request space on an ad hoc basis, as we have always done via the “Birds of a Feather” system. HFES Executive Director Lynn Strother will be scheduling these requests in the coming months.

Reviewer feedback has been expanded... in all directions. One of the most frequent areas of concern and discussion at the Technical Program Committee meetings has been the quality, range, and development of reviewers for the 50th Annual Meeting. This year, we have revised the reviewer rating forms to allow reviewers to provide more feedback to program chairs regarding submissions. In addition, we are developing a method of capturing feedback about annual meeting reviewers to help improve the quality of present and future reviewers and reviews. This process is being undertaken in concert with a reviewer mentoring process so that we can help to develop our newer Society members into effective and productive reviewers in the years to come.

On behalf of the Technical Program Committee, I hope you will submit your work to the HFES 50th Annual Meeting and that you will find the changes to the submission process helpful. We look forward seeing you this October in San Francisco. ☒

STUDENT VIEWS

Call for Student Award Applications

The Student Affairs Committee is pleased to have an opportunity to recognize the accomplishments of our student members with the HFES Student Awards. In order to apply for these awards, students or HFES student chapters must send a completed application and supporting materials (three copies) on or before *June 15, 2006*. Award recipients will be notified by August 15, 2006, and will be recognized at the HFES 50th Annual Meeting in October.

Student Member with Honors

This designation honors students who have made an outstanding contribution to the discipline and/or HFES during their tenure as a student. Students must be HFES members and meet all of the following eligibility requirements:

- Class standing of junior or senior for an undergraduate, or any graduate student
- GPA of 3.75 or its equivalent for graduate students (as evidenced by a transcript)
- GPA of 3.50 or its equivalent for undergraduate students (as evidenced by a transcript)

- Student membership in HFES
- Successful completion of at least one human factors–related course with a grade of A or its equivalent (as evidenced by a transcript or letter from the instructor)
- Two letters of recommendation, at least one of which must be from a Full Member of HFES

In addition, at least two of the following conditions must be met:

- A human factors–related presentation at a regional, national, or international meeting (provide a photocopy from the program or a letter from an adviser)
- Evidence of design contribution (e.g., award, patent, letter from supervisor)
- Publication of human factors work in an approved journal (e.g., *Human Factors*, *Ergonomics in Design*, *Applied Ergonomics*, or any other journal approved by the awards committee)
- Significant service to HFES at the Society-wide or local chapter level (provide letter from committee chair or officer of the group)

Outstanding Student Chapter Awards

This award honors student chapters that have made an outstanding contribution to the discipline, HFES, their campus, and/or their communities in a particular year. Up to three student chapters may be honored each year.

Examples of outstanding contributions include, but are not limited to,

- Significant increase in membership or numerous chapter activities, such as colloquia and field trips
- Service to the community, such as sponsoring a design competition at a local high school or involvement in a career day
- Participating in a design competition, developing a product, or conducting a research project
- Service to HFES at the Society-wide or local chapter level
- Notable electronic presence (e.g., innovative use of a Web site)

To apply for these awards, chapters must provide supporting materials (three copies) including an application letter that outlines why the chapter is deserving of the award, two letters of recommendation, a written description of the activities of the student chapter, and other materials that will support the application, such as brochures, announcements, images from events, and videos. Any one chapter may receive the award for only three consecutive years. After that, the chapter must “sit out” for one year.

Submitting Your Application

The deadline for applications for both student honors designation and student chapter awards is *June 15, 2006*. Send three copies of the complete application to Anthony Andre, Student Affairs Chair, 6800 Redwood Retreat Rd., Gilroy, CA 95020. For information or guidance, contact him at 408/848-6014 or andre@interface-analysis.com. ☒

50th Anniversary Product Design Award

By Dianne McMullin & Stan Caplan, PDTG User-Centered Design Award Chairs

Have you designed an innovative consumer product? Do you know someone who has developed a product with outstanding usability or appearance? Do you wish to recognize the designer of a particularly good, user-centered design? Then we have the award for you!

For the past four years, the Product Design Technical Group (PDTG) has sponsored successful competitions for the User-Centered Product Design Award, which emphasizes both product design and the methods used to specify and achieve the design. The PDTG's 5th Annual User-Centered Product Design Award competition specifically recognizes the HFES 50th anniversary by drawing judges from the entire Society rather than just PDTG. As in previous competitions, emphasis is placed on innovative and user-centered approaches to human factors and industrial design. Consideration is limited to products, software, or systems that are purchased for use in the home, in the workplace, or while mobile. They include consumer, commercial, and medical products but exclude military equipment and systems. The product or system being nominated must be operational and capable of being marketed with no more than minimal changes. Products already on the market for more than three years are not eligible.

Nominations are invited from individuals nominating others or themselves. Award candidates must be members of HFES but do not have to be members of PDTG. Detailed instructions for submitting nominations for the award may be found on the PDTG Web site, <http://cptg.hfes.org/>.

Judging Criteria

A panel of judges with product design knowledge will be drawn from the human factors discipline and will evaluate entries based on the following criteria:

- Functional obviousness: Upon first impression, does the design speak to the user in a way that makes the product appealing and apparently easy to use?
- Ease of operation: How easy is it to learn and actually do tasks in various applicable usage modes that occur during ownership such as setup, normal usage, failure recovery, maintainability, portability, or storability?
- Creativity/innovation: How is this product unique compared with similar products? How do usability and styling take advantage of product technology?
- Concept development: How was new user input created or past user data applied to influence the product or system concept?
- Design: How were user data generated or used for specifying design parameters or making design decisions?
- Evaluation: What was done to assess usability of the product design and the need for improvement? This could include iterative assessments made during the design process or feed-

back obtained in the market that could be used for subsequent versions of the product. Be specific concerning testing methodology.

The submission should not be treated as a marketing tool. Statements about a product's quality should be substantiated by documenting results or clear rationale that explain the how and why.

Nominations for the 5th Annual User-Centered Product Design Award must be received by *May 19, 2006*. The winner(s) will be announced in July. If none of the submissions is found to be of sufficiently high quality, no winner will be announced. Judges may award multiple winners or a combination of winners and honorable mentions.

The winning product or system will be recognized at the 2006 HFES Annual Meeting in San Francisco, and the awardees will be asked to present a talk on the product and methodology. They will also be expected to submit a paper to *Ergonomics in Design* within two months of the meeting.

For more information or to volunteer for the selection committee, contact Dianne McMullin at dianne.l.mcmullin@boeing.com or Stan Caplan at scaplan@usabilityassociates.com.

4th Annual User-Centered Product Design Award Winners

In 2005, the HFES Product Design Technical Group (PDTG) conducted its annual product design competition for innovative and user-centered approaches to human factors and industrial design and presented the awards at the HFES 49th Annual Meeting in Orlando. Purposes of the award are to recognize user-centered and innovative product designs as well as research and design methods and raise visibility of the PDTG and promote new membership.

An award committee consisting of Dianne L. McMullin and Stanley H. Caplan received 11 nominations that represented a broad diversity of product types. A panel of seven judges selected two winning products based on their design (functional obviousness, ease of operation, and creativity) and user research methodology during concept development and the design process, as well as use of the evaluation methods. Awards were presented to

- Eastman Kodak Company for the EasyShare One camera
- Insight Product Development for the EXPO Dry Erase System made by Sanford Corporation.

Steve Belz (Kodak) and Ed Geiselhart (Insight) accepted the awards for their companies, and each presented a paper about the winning product and its development at a well-attended special PDTG session. Immediately following the session, a reception was held at the PDTG business meeting to honor the recipients.

Thanks go to PDTG members Dave Aurelio, Rich Buttiglieri, Harv Ebel, Bonnie Hautamaki, Philip Hove, Mary Follette Story, and Bill Vigilante, who diligently evaluated all the nominations for both the design and the methods used to achieve the design.

In the selection of these two winners, it is apparent that design

TECHNICAL GROUPS, cont.

and usability can be successfully applied to both high-tech and low-tech products. Articles about each of these products will appear in a future issue of *Ergonomics in Design*. ☒

CHAPTERS

Third Annual NEC Student Research Conference

By Niall O'Brien, NEC Secretary

The HFES New England Chapter (NEC) hosted its third annual Student Research Conference on November 4, 2005. Tufts University was our host again this year, and the conference drew student presenters from many of the surrounding universities, including Tufts University, Northeastern University, Massachusetts Institute of Technology, and Bentley College. The conference was made possible through the generous sponsorship of Aptima, Inc.; Charles River Analytics, Inc.; Deltabalance, Inc.; Northrop Grumman Corp.; and Raytheon, Inc.; which allowed us to keep the conference free for students.

The conference was multifaceted and consisted of the following features: 11 research presentations made by human factors/ergonomics (HF/E) students from the aforementioned universities, two student awards for best presentation and best methodology, an inspiring keynote address by past HFES President Barry H. Beith, short talks by our sponsors on applications of HF/E research to their companies, a lively panel discussion led by Ronald G. Shapiro concerning how students can prepare for a career in HF/E, exhibits and kiosks presented by the sponsors to demonstrate the impact and use of HF/E at their companies, recruitment of students for two employment positions, and a catered breakfast and lunch to maximize the time for students and professional attendees to meet and network.

Many thanks are due to the volunteers who helped make the conference possible, including the members of the HFES Tufts University Student Chapter, the presenters, the board of the NEC, and especially its president, David Aurelio. The conference was a big undertaking for the volunteers, but we think it provides a great forum and meeting place for HF/E students and professionals in the region. We are already starting to plan for the 2006 conference. ☒

INTERORGANIZATIONAL

SIGCHI and HFES Building Bridges

By Arnie Lund, HFES Liaison to CHI

HFES has been working with the Association for Computing

Machinery's (ACM) Special Interest Group on Computer-Human Interaction (SIGCHI) on ideas about building a stronger partnership between the two societies. Many HFES members have been active in SIGCHI over the years, and HFES formally cosponsored the first SIGCHI conference, CHI '83, after ACM made SIGCHI an official special interest group. Julie Jacko and Mary Czerwinski have been representing SIGCHI, and I am the liaison for HFES.

A proposal for mutual cooperation was presented to the SIGCHI executive council and accepted on October 1, 2005. The first part of the proposal, to be pursued in the near future, includes sharing our calendars of events and working out how to share mailing lists in order to keep each other's members informed of events of mutual interest. An extensive list of other potential opportunities has been created and continues to grow as new ideas arrive. As some of these ideas are explored and the mechanics are worked out, it is hoped that this relationship can be a model for future interactions between HFES and other related professional societies and organizations such as UXnet.

If you have an idea about how to further collaboration between HFES and other societies whose interests overlap with ours, please send comments to me at arnie.lund@microsoft.com.

Applied Ergonomics Conference

Plan to attend the Institute of Industrial Engineers' 8th Applied Ergonomics Conference, to be held March 6-9, 2006, at the Buena Vista Palace in Orlando, Florida. For more information about the conference, go to <http://www.appliedergo.org/conference/>. HFES Members planning to attend and interested in staffing the HFES table should contact Nancy Larson at nllarson2@mmm.com. ☒

MEMBERSHIP

Why HFES Sends You E-Mail

Periodically, the Society sends informational e-mail messages to members whose e-mail addresses are listed in the database. Such messages could contain reminders of upcoming deadlines, requests to participate in surveys or to provide feedback on HFES initiatives, and late-breaking news or other items that can't wait for publication in the next issue of the *HFES Bulletin*. The additional benefit of using e-mail for member communication is that it is very economical compared with postal mailings and supplemental publications.

Nevertheless, HFES recognizes members' desire to control incoming e-mail. If you prefer not to receive future messages, please send a request to Member Services (membership@hfes.org). Otherwise, please be sure to notify us whenever you add or change your e-mail address. In addition, please be sure that spam filters do not block HFES messages, which always have "HFES" in the subject line. Also, please check with your Internet provider or IT department to make sure that e-mails from HFES are being delivered to your account. ☒

Charles Owen Hopkins

Charles Owen Hopkins, 80, passed away in his sleep in December 2005. He was born and raised in Paducah, Kentucky. At age 18, he fought as an infantryman in the Battle of the Bulge, for which he received two Purple Hearts. After World War II, he attended the University of Kentucky and earned his B.A. in psychology in 1948, then went on to the University of Illinois, where he earned his Ph.D. in experimental psychology and immediately joined Tulane University as an assistant professor. In 1955, he took a summer job in the cockpit research group at Hughes Aircraft Company in California. After being offered a permanent position at the company, he resigned from Tulane and embarked on a career in aviation human factors.

At Hughes Aircraft, Hopkins collaborated with Alex Williams, Stan Roscoe, Charles Simon, Jerry Slocum, and Don Bauerschmidt on experiments and design projects including control-display direction-of-motion relations in air-to-air attack steering (1955), altimetry displays that included vertical flight path prediction (1956), long-range all-weather interceptor display systems (1957), analysis and modeling of pilot decision making (1958), display and control requirements for manned space flight—the first human factors contract in America’s manned space program (1959–1960), display and control systems for the Apollo spacecraft (1961), and mission analysis for both airborne and orbital flight (1962–1963).

With an attractive offer from the McDonnell-Douglas Corporation, Hopkins resigned from Hughes and moved to St. Louis until 1969, when I returned to the University of Illinois and invited him to help develop a new Aviation Research Laboratory (ARL) at the Institute of Aviation. As associate head initially and later as head of the ARL “flying circus,” he focused on administration, report writing, and mentoring the flood of graduate students in engineering psychology, aeronautical and astronautical engineering, electrical engineering, and computer science. In 1977, he transferred his primary academic affiliation from the Institute of Aviation to the Psychology Department.

In addition to his aerospace and academic careers, Hopkins played a pioneering role in the emergence of the Human Factors Society of America into what is now the international Human Factors and Ergonomics Society. During 1959–1960 he coauthored the Society’s original Constitution and Bylaws. Hopkins also served as secretary-treasurer, chair of the Sustaining Membership Committee, president, chair of the Nominations and Elections Committee, and editor of the Society’s journal, *Human Factors*.

– Stanley N. Roscoe

Sherman Tyler was recently hired to direct Aptima’s Human-Systems Integration Division. Tyler may be reached at Aptima, Inc., 12 Gill St., Ste. 1400, Woburn, MA 01801, 781/496-2475, styler@aptima.com.

O. Edmund “Ace” Martin

Ed Martin, 78, died of leukemia on July 16, 2005. As a human performance engineer with Lockheed Aeronautical Systems Corporation (now Lockheed-Martin), Ed helped design the cockpits and other systems for the C-5 Galaxy, the C-141 Starlifter, and the C-130 Hercules. Ed also taught engineering and general psychology as an adjunct professor in the Psychology Department at Georgia Institute of Technology.

Ed started working at Lockheed in 1952 after completing a degree at Auburn University. He was one of the primary leaders who wrote the human performance and crew accommodations portions of the proposal in response to the U.S. Air Force RFP for the C-5A Galaxy aircraft. Lockheed won this lucrative contract, which included an extensive list of human factors requirements.

Ed’s human factors work spanned an extraordinarily active period in the history of this profession. He worked on the early confinement studies in support of the space program and the landing of a human on the moon. His research investigated long-term confinement of flight personnel in austere, cramped, close quarters similar to those astronauts would experience. Later, as the C-5A program design matured, Ed continued to research human factors issues by measuring stressors that might affect air crew performance.

Ed became an adjunct member of the faculty in the School of Psychology at Georgia Tech and was president of the local chapter of HFES. He continued teaching after retiring from Lockheed in 1982.

I fondly recall working for Ed as a teaching assistant and remember his true love of teaching, his kindness and attention to his students, and, most important, his unique ability to relate what he was teaching directly to the real-world problems that human factors research needs to address.

Ed is survived by Faye S. Martin, his four children, and his three stepchildren, 19 grandchildren, and 2 great-grandchildren.

– Frederick M. Rudolph

Carter J. Kerk, an associate professor at the South Dakota School of Mines and Technology, was awarded the Distinguished Service Award from the American Society of Safety Engineers (ASSE) Foundation during ASSE’s Professional Development Conference in June 2005. He may be reached at South Dakota School of Mines and Technology, 501 E. St. Joseph St., Rapid City, SD 57701, 605/394-6067, carter.kerk@sdsmt.edu.

The 2005 Association for Computing Machinery Special Interest Group on Computer-Human Interaction Social Impact Award for contributions to the field of human-computer interaction was given to **Gregg C. Vanderheiden**. He may be reached at the University of Wisconsin, 1550 Engineering Dr., 2107 Engineering Centers Bldg., Madison, WI 53706, 608/262-6966, fax 608/262-8848, gv@trace.wisc.edu. ☒

Announcement deadlines: 1st day of the month prior to the desired issue; for events or deadlines within the first 3 weeks of a month, send information at least 2 months in advance. Items are published according to space availability.

- ★ **APA Division 21 and HFES Potomac Chapter Annual Symposium on Applied Experimental Research**, March 2–3, 2006, Fairfax, VA. Michael D. Matthews, Dept. of Behavioral Sciences and Leadership, U.S. Military Academy, West Point, NY 10996, 845/938-3696, fax 845/938-2236, mike.matthews@usma.edu.
- ★ **6th Interdisciplinary Conference on Occupational Stress & Health**, March 2–4, 2006, Miami, FL. Wesley Baker, Conference Coordinator, American Psychological Assn., Women's Programs Office, 750 First St., NE, Washington, DC 20002-4242, 202/336-6033, fax 202/336-6117, wbaker@apa.org.
- ★ **8th Annual Applied Ergonomics Conference**, March 6–9, 2006, Orlando, FL. Institute of Industrial Engineers, 3577 Parkway Ln., Ste. 200, Norcross, GA 30092, 800/494-0460, fax 770/441-3295, aenc@iienet.org, <http://www.appliedergo.org/conference/>.
- ★ **IOSH 06**, March 13–14, 2006, London, UK. Institution of Occupational Safety and Health, enquiries@ioshconference.co.uk, <http://www.ioshconference.co.uk/2006/>.
- ★ **2006 ASA-NCOA Joint Conference**, March 16–19, 2006, Anaheim, CA. American Society on Aging and National Council on Aging Joint Conference, 833 Market St., Ste. 511, San Francisco, CA 94103-1824, <http://www.agingconference.org/agingconference/jc06/index.cfm>.
- ★ **2006 SAE World Congress**, April 3–6, 2006, Detroit, MI. Society of Automotive Engineers World Headquarters, 400 Commonwealth Dr., Warrendale, PA 15096-0001, 724/776-4841, <http://www.sae.org/congress>.
- ★ **Ergonomics Society Annual Conference 2006**, April 4–6, 2006, Cambridge, UK. Annual Conference Programme Secretary, Ergonomics Society, Devonshire House, Devonshire Square, Loughborough, Leicestershire LE11 3DW, UK, 44 0 1509 234904, fax 44 0 1509235666, ergosoc@ergonomics.org.uk, <http://www.ergonomics.org.uk/events/conferences.htm>.
- ★ **CHI 2006**, April 24–27, 2006, Montreal, Canada. <http://www.chi2006.org>.
- ★ **American Occupational Therapy Association 86th Annual Conference and Expo**, April 27–30, 2006, Charlotte, NC. AOTA, 4720 Montgomery Ln., Bethesda, MD 20814-3425, 301/652-6611 x2715, fax 301/652-3218, <http://www.aota.org/nonmembers/area28/links/link01.asp>.
- ★ **2006 International Congress of Imaging Science**, May 7–12, 2006, Rochester, NY. IS&T, 7003 Kilworth Ln., Springfield, VA 22151, 703/642-9090, fax 703/642-9094, cgiv@imaging.org, <http://www.imaging.org/conferences/icis06/index.cfm>.
- ★ **AIHce 2006**, May 13–18, 2006, Chicago, IL. AIHA, 2700 Prosperity Ave., Suite 250, Fairfax, VA 22031, 703/849-8888, fax 703/207-3561, <http://www.aiha.org/aibce06/aibce.htm>.
- ★ **2006 Annual Meeting of the Inter-Society Color Council**, May 14–15, 2006, Ottawa, ON, Canada. Robert T. Marcus, Datacolor International, 5 Princess Rd., Lawrenceville, NJ 08648, 609/895-7426, fax 609/895-7438, rmarcus@datacolor.com, <http://www.iscc.org>.
- ★ **15th Conference on Behavior Representation in Modeling and Simulation**, May 15–18, 2006, Baltimore, MD. <http://www.sisostds.org/index.php?tg=articles&idx=More&article=332&topics=4>.
- ★ **3rd Annual Workshop on Human Factors of Unmanned Aerial Vehicles**, May 24–26, 2006, Mesa, AZ. Nancy Cooke, ncooke@asu.edu.
- ★ **SID 2006**, June 4–9, 2006, San Francisco, CA. Mark Goldfarb, Society for Information Display, 610 S. 2nd St., San Jose, CA 95112, mrk@sid.org, <http://www.sid2006.org/>.
- ★ **151st Meeting of the Acoustical Society of America**, June 5–9, 2006, Providence, RI. Acoustical Society of America, Ste. 1NO1, 2

Huntington Quadrangle, Melville, NY 11747-4502, 516/576-2360, fax 516/576-2377, asa@aip.org, <http://asa.aip.org/meetings.html>.

★ Indicates new listing.



CALLS FOR PAPERS

McDonnell Foundation Grants

The James S. McDonnell Foundation announces the creation of the 21st Century Science Initiative Research Awards. These awards will recognize investigator-initiated research projects with a high probability of generating new knowledge and insights in three program areas: bridging brain, mind, and behavior; studying complex systems; and brain cancer research. Projects submitted for funding consideration should be at an early, even preliminary stage of development that intend to break new ground or to challenge commonly held assumptions. Projects submitted should be sufficiently novel, cross-disciplinary, or heterodox that they would not be strong candidates for federal funding. A maximum of \$450,000 total costs can be requested, and the funds can be expended over a minimum of three years or a maximum of six years.

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Raymond S. Nickerson

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by John D. Lee

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by Deborah A. Boehm-Davis

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Reviews of Human Factors and Ergonomics

VOLUME 1

Edited by
Raymond S. Nickerson

PUBLISHED BY THE HUMAN FACTORS AND ERGONOMICS SOCIETY

"The long-range objective of *Reviews of Human Factors and Ergonomics* is to provide a major resource for researchers, practitioners, and other potential users of human factors and ergonomics research findings. We hope that as the volumes accumulate, the series will become the first place one thinks to look for extensive reviews of the various areas of HF/E work." — *From the Preface by Raymond S. Nickerson*

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Robert C. Williges

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FLASH!

HFES Elections

Nomination ballots for the HFES elections will be mailed on March 14.

Mark Your Calendars

The HFES Executive Council Midyear Meeting will take place at the Hilton San Francisco Hotel, San Francisco, California, April 6–8, 2006. A strategic planning day will take place on April 6.

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