A Start to Life-Long Learning
Grads Honored at GW’s 2004 Commencement Celebration on the Ellipse
BY THOMAS KHOOUT

A s if on cue as the fanfare signaled the start of GW’s 180th Commencement, early morning showers gave way to a brilliant sunny day as the University conferred 5,500 degrees during the May 16 ceremony on the Ellipse. The crowd of roughly 20,000 graduates, friends and family listened attentively as noted oncologist Dr. Luther W. Brady, Director of the Folger Shakespeare Library Giel Parkes, Nobel Prize winning physicist Leon Lederman, and the former Chair of the Joint Chiefs of Staff retired COMMENCEMENT continued on page 7

To Win Gold, US Swimmers Must Go with the Flow
GW Flow Dynamics Researchers Work with USA Swimming to Improve Future Olympic Team Performances
BY MATT LINDSAY

T he guns sound and lean, muscular figures plunge into the water. They vanish beneath the surface, locking their legs in unison and moving swiftly underwater with an ease that belies the furious effort exerted. The crowd roars, but for the figures below all is silent. Precious seconds pass, and finally heads begin to break the surface. One head emerges in front of the rest. This margin is perhaps in the hundredths of a second — but in Olympic swimming that is often enough to turn silver into gold.

GW engineering professors are using their expertise in computational fluid dynamics (CFD) and computer animation and visualization to ensure that US athletes use the most efficient swimming techniques to help bring home the gold from the 2008 Olympics in Beijing. CFD Flow Simulations and Analysis Group (PASAG) is researching water flow past a swimmer and the effectiveness of typical swimming strokes. The goal is to help find the perfect stroke that maximises thrust and minimizes drag, giving the US a competitive advantage and improving the medal count for US swimmers in future Olympics.

"For the first time, we are really trying to introduce a big component of cutting-edge science into competitive swimming," said Rajat Mittal, associate professor of engineering and applied science in the Department of Mechanical and Aerospace Engineering, who leads the project along with James Hahn, professor of engineering.

GW Launches Innovative Arabic Studies Program

In response to the increasing need for fluent Arabic speakers in both public and private circles, the GW Classics Department and the University Honors Program have launched an innovative summer Arabic studies program for honors students. The Margaret and Edward Gehm Summer Honors Program in Arabic Language Studies provides a full-tuition summer grant.

Strategic Comparison

GW Sets Baseline To Evaluate Strategic Initiative
BY THOMAS KHOOUT

This summer, a team of representatives from all reaches of the University will work to gather information on the 90 performance measures cited in the Strategic Plan for Academic Excellence. The plan, which was approved by the Board of Trustees last year, established six goals for the University: move solidly into the ranks of first-tier institutions through quality undergraduate education and selected, top-ranked graduate programs; enhance graduate education; move into the top-echelon of research institutions; continue strategic initiatives.

Strategic Metrics continued on page 16
FLOW continued from page 1

and applied science in the Department of Computer Science, from the Institute for Computer Graphics. Interestingly enough, the genius of the collaboration between USA Swimming and GW’s FSAG stems from previous research into how fish, not humans, maneuver through the water.

More than a year ago Mittal began work with researchers from Harvard University and MIT on a project for the Office of Naval Research (ONR). The goal of that research is to design mechanical pectoral fins, much like those of a fish, and attach them to autonomous underwater vehicles (AUVs) to provide the vehicles with greater maneuverability and stealth characteristics. The Navy uses AUVs during reconnaissance missions, such as mine sensing. A Harvard zoologist is working with the actual fish and GW is building and testing computer models of the pectoral fins to analyze their fluid dynamics.

After conducting their portion of the research, GW and Harvard will provide the ideal size and dimensions of the pectoral fin to MIT, who will build a working prototype of the fin.

The ONR work got Mittal to thinking. “I asked myself, is there something else we can use this research for that will not only be interesting but will capture the imagination of our undergraduates?” Mittal recalled. Given the fact that fluid dynamics of fish swimming has many commonalities with the fluid dynamics of human swimming, he decided to see if USA Swimming had any interest in pursuing such research. As it turns out, Mittal’s timing could not have been more perfect.

Mittal contacted USA Swimming and was directed to biomechanics coordinator Russell Mark. “My face lit up when Rajat called,” Mark laughed. “It was really fortunate Rajat got in touch with us because the capabilities he had were exactly what we were looking for.”

In recent years, USA Swimming has conducted some limited scientific research into fluid dynamics. With countries including Japan and Australia and companies like Speedo beginning to undertake more sophisticated scientific research, USA Swimming wanted to move forward with its own study, even though large-scale research projects are not commonly conducted in the swimming world. However, after analyzing the previous experience and research capabilities of GW’s FSAG, USA Swimming decided to move forward with the project. As Mark put it, “USA Swimming has always supported this project, knowing that it has more potential to influence the sport of swimming than any research in decades.”

Both parties agreed to focus the research on the dolphin kick, the move given to the leg motion swimmers use underwater at the start of a race, when they keep both of their feet together and kick their legs up and down. While there is a good possibility USA Swimming will eventually expand its research to study different strokes and then the whole body, the dolphin kick provides a good starting point for two reasons. First, the fluid dynamics of the dolphin kick are easier to study since this stroke occurs away from the water’s surface, which increases the chances and Rose. Yes, there are many different movements and body positions involved in swimming that remain to be studied. In order to provide USA Swimming with the best information, Mittal and Hahn are coordinating their work with researchers at Rutgers University, who are handling the experimental components of the project.

However, this research is very complex and there is much work to be done. While the dolphin kick may seem relatively simple, using computers to create a lifelike animated model and studying the fluid dynamics surrounding that model is not a simple process. The various components of this project, especially the elaborate simulations, will require thousands of hours of processing time on the FSAG’s supercomputers.

Even after several years of study and analysis, Mittal and Hahn do not expect to have all the answers for every swimmer. Intangibles such as an athlete’s psychology and motivation can impact performance in ways that computers can never hope to model or predict. “There will always be some level of individuality in terms of physiology, body type and strength, but there is more commonality among great swimmers,” said Mark.

Mittal believes that in the long-term, “a stroke should really be customized to an athlete based on body size and structure.”

USA Swimming eventually would like to see all athletes benefit from the research and knowledge about the optimal stroke techniques. In the near future the proving ground for this research will be leading up to and during the 2008 Olympics. “The only way this analysis is a success is if it’s applicable,” said Mark. “This is not just a science project; we are really trying to have an impact.”

What kind of impact this research will have will be seen on the medal podiums in Beijing.

BRIEFS continued from page 3

for Development Policy. “I think it was the realization that we were laggard and failing to reach the poverty that made the people in the UN and intergovernmentally to say, ‘Let’s do something about it. Let’s re energize our commitment to those things.’ That is where the millennium development goals came from, this was the motivation.”

The role of NGOs in meeting these goals was discussed during the two-day conference through the lenses of economics, public administration, globalization and health, among many of the breakout session discussions.

GW INGOT was founded by Jennifer Brinkerhoff, associate professor of public administration and international affairs; Stephen Smith, professor of economics and international affairs; and Hilda Tegeng, associate professor of international business. Their goals, explained Donald R. Lehman, executive vice president for academic affairs, center around a common research focus of how NGOs impact development and poverty alleviation.

“Given the complexity of the problems we find in our global society today, it is clearly essential that the intellectual capital that is available in all the relevant disciplines be involved in developing solutions,” Lehman said.

A Class-y Gift

This year, GW seniors gave back the gift of reading through the annual class fund that supported new books for the University’s library system. More than 1,000 seniors voted to choose a library endowment as the class gift and in the end, more than $27,000 was raised, $2,000 more than the goal. A book plate designed by GW Graphic Design will go into each book purchased through these funds.

“This is really a gift that is going to have a lasting impact on the University,” said Joe Benedetti, director of alumni constituency initiatives. “The students wanted to go with an endowment fund in the hopes that people will continue to contribute to it and the endowment will last in perpetuity.”

Six Selected for 2004 Bender Awards

Six faculty members will be recognized this fall for their