Carnegie Mellon hosts state science program

By April Smith, copy editor, FOCUS

If you take a look around most college campuses between June and August, you’re likely to see little more than tumbleweed rolling over the quad. Carnegie Mellon, however, was filled with students eager to learn and professors eager to teach—for five weeks anyway—on account of the annual Pennsylvania Governor’s School for the Sciences (PGSS).

If anyone is less interested in summer school than undergrads, it’s high schools. But not these high schoolers, who make up 100% of the state’s best and brightest. Chosen from hundreds of applicants, these students participate in a prestigious residential program funded by the Pennsylvania Department of Education, supported by the Mellon College of Science, and hosted at Carnegie Mellon.

“These students are doing this program because they really, really love science,” says Dr. Harry Luokkala, who directs the program and teaching professor in the Physics Department. “I mean, why else would you give up five weeks of your summer to study science when you could be having fun?”

Since its inception in 1982, nearly 2000 state residents have taken part in PGSS at Carnegie Mellon. Competition to attend is fierce. Carnegie Mellon faculty and state education officials grant admission to high school seniors based on academic rank, standardized tests, personal essays, extracurriculars, and letters of recommendation.

Besides the five core courses—physics, math, biology, chemistry, and computer science—students enroll in a lab as well as carry out a team research project for publication and presentation at a scientific symposium.

“No matter how hard you work them, they’re still thrilled at the end,” says Rich Holman, who’s been teaching the physics core course since 1993. “You need a crowbar to get them out of here at the end of the program.”

The students aren’t the only ones enjoying themselves. Serving as director for the last five years, Luokkala’s involvement stretches back to 1986, when he started teaching in PGSS and leading team research projects.

“I just love the enthusiasm of the students,” Luokkala replies when asked what’s kept him in the mix so long. “The thrill and interest that they have—you get to learn. It’s really so much fun to work with them.”

“These kids, they’re interested,” Holman explains. “They don’t just want to know a little bit—they want everything. You can’t buy that. After that, I was hooked.”

Excitement and interest are two factors sometimes missing with the grads and undergrads, according to Holman, a theoretical physicist.

“Ve’seen [college] students basically not care about what they were doing,” he says. “They were in physics, but they didn’t know why they were in physics. They did’nt know if they should have been in physics. Some of them weren’t that good and shouldn’t have been in physics.

“Then we see these [PGSS] kids, and they’re like little dry sponges just waiting to absorb.”

A teacher’s time commitment in the program can vary depending on course load. According to Luokkala, faculty involvement ranges from teaching a single elective to teaching a core and a lab, which takes up 10 hours a week.

“People who really love to teach—that’s what we have for the most part. You know what’s we have because I can’t afford to pay them very much,” Luokkala jokes. “They have to love what they’re doing or they wouldn’t bother.”

And he appreciates the dedicated staff and faculty of the program. Smack dab in the middle of the summer, PGSS conflicts with the time many faculty members rush to conduct individual projects and to publish work. A tax on limited spare time is a factor the director faces.

“It’s kind of understandable,” Luokkala says. “The faculty need to do research and publish...those who might be interested in participating don’t have the time.”

Though he inherited a good faculty roster, Luokkala says recruiting professors starts well in advance. In fact, most aspects of directing the program go on year-round, even making room reservations for next year’s session before the present one has even ended.

Luokkala stagers his director role with a regular load during the traditional academic year, teaching courses like Experimental Physics and Science and Science Fiction. Though he instructed PGSS courses in the past, his directing duties demanded his full attention eventually.

“As did all the directors before me, I quickly realized that you can’t direct the program and teach a course in the program,” he says. “It’s too much—you’re losing your sanity.”

Similarly, Holman agrees wearing so many hats can get “pretty intense.”

“I’m also doing the pre-college program, so my days are stacked pretty thoroughly,” he says.

---Editors
Will there be underground parking? Yes, a limited amount in the Gates building, and possibly more in the future, although this would be expensive.

Will there be an increase in cost for health-care benefits? We hope to avoid a double-digit increase, but health-care is in the planning stages now and we can’t say for sure.

Are there plans for a parking shuttle or Port Authority Park & Ride? We’re working on that. Transit planning takes a long time. PAT’s new director seems good, and PAT has been very cooperative with Carnegie Mellon.

Isn’t it a conflict of interest for the EEO manager to also be the University Ombudsman?

Someone with a grievance can always claim the system or the process is wrong. Everett Tedeny has been doing the same job all along; he was promoted from Director of Equal Opportunity Services to Assistant Vice President.

Does the University have plans to diversify the higher level job grades?

We’ve made progress in many areas. In some respects, though, there has been no progress in the upper ranks. This is our number one priority for the coming year.

What is your vision of Staff Council’s changes?

Staff Council has grown and matured during my 9 years with Carnegie Mellon. Some activities such as Kennedywood Day and the Food Drive are well-established, but you have also worked towards playing a bigger representative role in policy-making. I think Staff Council is important to Carnegie Mellon, and I want it to continue to be important.

In August, Staff Council began our new term with 13 re-elected and 18 new representatives, so welcome and welcome back to all of them! If you haven’t already, you may want to check out our updated website http://www.cmu.edu/staff-council/ to find the reps from your department. Those of you who participated in the voting process learned a bit more about the representatives from our new web-based voting system complete with pictures and biographical statements. (Thanks to the Communication Committee and the Election Committee for these helpful features!) Yours truly was on vacation in Deckville, PA in mid-August, but my sources tell me the new representatives had good questions and sharp observations at their first meeting. I’m remembering a year ago when I was a newbie, and I’m looking forward to the fresh energy they will bring. My advice, if anyone wants it, is to keep on asking questions and speaking your mind. And take news back to your co-workers after each meeting; they’ll appreciate it.

Next spring, our elections will be changing even more, to ensure a more equal representation across the different departments of Carnegie Mellon. Watch this space for more details! Also, if you are interested in learning more about elections, representation, or any other issue Staff Council is working on, please join us at our meeting on Sept. 21, 2006 in Baker Hall A53 at noon.

In national news, we marked the one-year anniversary of Hurricane Katrina on August 29. Staff Council members Lindie Droulia and Genie Beckom led a few stalwart volunteers in the University Center and in various offices across campus in a revival of the “Hands for Tulane” fundraiser. We took in more than $1,100 to send directly to displaced and laid-off staff at Tulane University in the form of gift cards to Wal-Mart, Target, and Home Depot. Many thanks to everyone who contributed so generously!

And finally, mark your calendar now for these upcoming events:
Oct. 5 – Health Benefits Forum with Barbara Smith
Oct. 9, 4:00 p.m. – Conversation with the President
Oct. 19 – Andy Awards Presentation

Contributors note:
Next FOCUS deadline
October 15
Emailed text in Word works
Or even hard copy
Send us your thoughts.

FOCUS – in seven issues a year – is a publication of the faculty and staff of Carnegie Mellon University. Many of the thoughts in FOCUS express the opinions of individual members of the Carnegie Mellon community; unless so indicated, they should not be construed as reflecting university policy. In the spirit of the fairness doctrine, FOCUS seeks a variety of opinions.

Website: http://www.cmu.edu/foocus

Editor: Lynn Berard
Associate Editor: Alan Kennedy
Copy Editor: Apurima Smith
Intern Advisor: Karen Schunakenberg
Layout & Design: James Soracco
Student Writer: Alex Beck
Founding Editor: David Denuarte (English)
FOCUS Management Committee: John C. “Jay” Marin, Jr. (Staff Council); Jay Kadane (Statistics); Dan Nagai (Heinz School); Teddy Schneider (Philosophy); Susanne Slivick (ART)
New art on campus inspires others

If imitation is the sincerest form of flattery, then Jonathan Borofsky ought to feel pretty pleased. In addition to creating a bit of controversy, the installation of his “Walking to the Sky” seems to have awakened the muses of several other artists at Carnegie Mellon.

“Walking to the Ceiling” by Brooke Hyatt, Language Technologies Institute, SCS. Sculpture with natural wood and Lego people.

“Walking to the Sky with Diamonds
Photo: John Fudrow, Science Libraries

“Walking to the Mall” by Catharine Fichtner, Carnegie Mellon senior. Sculpture featuring processed wood and Bratts dolls.

“Resonating with Our Historical Roots
Photo: Steve Spear, Tepper School of Business

Your Title Goes Here
Photo: Lynn Berard, FOCUS

Painting to the Sky in Dublin: 400 feet north
Alan Kennedy, FOCUS

Son: Dada?
Father: Don’t ask me! I don’t get Postmodern art at all!
Photo: John Fudrow, Science Libraries
The Hunt Institute continues to acquire watercolors, drawings and prints for our collection of over 30,000 artworks depicting plants on paper and vellum. This selection of 80 recently acquired artworks, ranging from the 17th century through the present, provides an overview of what we collect in the Hunt Institute Art Department.

Many of these are scientific drawings of plants and cross-sections; some are horticultural watercolors and prints of flowers, fruits and vegetables; and others depict landscapes or plants in their habitats. These artworks have been used to illustrate floras, monographs, scientific or horticultural journals, or have been prepared for exhibitions. Some of these artists have depicted cultivated, native and endangered plants while others have shown the relationship between plants and their pollinators. There is a selection of intriguing images of slime molds and seaweed that resemble otherworldly plants.

Whether working alongside botanists or preparing artworks for collectors, galleries or commercial use, artists throughout the centuries have added their own special perspectives to portraiture of plants. These artworks came to us via many channels, but—fortunately—for us—as gifts. Some donations included every illustration for a specific publication while others included additional artworks from artists who have participated in our triennial "International Exhibitions of Botanical Art and Illustration." Sometimes we were given or bequeathed works from earlier centuries or given funds to add to our limited acquisitions budget.

This exhibition includes a selection of botanical artworks that we have acquired in recent years but have not had an opportunity to share with the public. Please join us in discovering these important contributions to the record of our natural world.

The artists working before 1900 include Basili Besler (1561-1629); Sydenham Edwards (1769?-1819), Will Kilburn (1745-1818), and James Sowerby (1757-1840); Alice Blanche Ellis and Edward Bull (dates unknown); Giorgio Liberale (ca. mid-17th century) and Wolfgang Meyerpeck (dates unknown); Joseph Prestele (1796-1867), Wilhelm Heinrich (William Henry) Prestele (1838-1895); Pierre-Joseph Redouté (1759-1840); and Pierre Jean François Turpin (1775-1840). The contemporary artists featured include Beverly Allen, Dorothy Osiedge (Mrs. Paul) Allen, Oliver Anderson, Gary Alan Bukovnik, Elizabeth Cadman, Richard Carroll, Celia Crampton, Sally Crosswaite, Etienne Demonte, Anne Ophelia Todd Dowden, Patricia M. Eckel, Jean L. Emmans, Diana Everett, Stephen Fisher, Stephen A. Frederick, (Mrs.) R. E. Gamble, Janice Glimm-Lacy, Job Kuijt, Stanley Malitzman, Jesse Markman, Suzanne Olive, Dorothy Kate Hughes Popescu (ntr. ntr), Jagg Prasad, Wilfred A. Readio, Ann Robertson, Judith Scheidig, Harry Schwab, Suresh Chand Sharma, Yvonne Skargon, Isaac Sprague, Catherine J. Hanforth Steiner, Henry Stempna, Maria Rita Stirpe, Kazuto Takahashi, Alice Ruth Tangerini, Brian Van de Graaff, Monika E. de Vries Godike, Anita Wansam Sachs, and Carol Woodin.

The exhibition will be on display on the fifth floor of the Hunt Library building at Carnegie Mellon University. Hours are 9 a.m.-noon and 1 – 5 p.m. Monday-Friday and 1 to 4 p.m. Sunday (except Nov. 23 to 26 and Dec. 15).

The exhibition is open to the public free of charge. For information, contact the Hunt Institute at 412-268-2434.

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, journals, and data files and provides publications, and other modes of information service.

The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers, and the public at large, especially those concerned with any aspect of the North American Flora.

Hunt Institute was founded in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences.

By 1971 the Library’s activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography, and the Library. The current collections include approximately 29,000 books; 25,000 portraits; 30,000 watercolors, drawings and prints; and 2,000 autograph letters and manuscripts. Including artworks dating from the Renaissance, the Art Department’s collection now focuses on contemporary botanical art and illustration, where the coverage is unmatched.

---

The Teaching within the program is not a simple task. Taking material from undergraduates who are often more familiar with advanced concepts to younger students isn’t easy, even when dealing with the most driven 17- and 18-year-olds.

"High school kids are really bright," Holman says. "They’ll ask questions that actually are very hard, but you have to find a way to answer the question that they can actually get something out of.

“They don’t have the jargon yet behind them, but they have enough of it,” the physics professor continues. “They have enough inquisitiveness to know this is a question worth asking. To be able to give them an answer in a way that’s useful to them and not just saying, ‘Wait till you grow up,’ is hard work.”

Still, the calisthenics of such instruction has fueled Holman’s work with his grad and undergrad Carnegie Mellon students.

“I have to say that doing this during the offseason has really helped my teaching in the on-season,” he says. “I had to learn how to bring things out—not just what’s written, but that bunch of extraneous bullshit, but what is it that’s really going on...That’s a useful skill as a professor.”

This curriculum crossover benefits from the fact that there are no grades in PGSS, according to Luokkala, and teachers can experiment with new material without anyone’s grades depending on it. He admits using his PGSS teaching days to develop curriculum for the rest of the year.

"I don’t know how many faculty take advantage of it," he says.

Besides faculty, the program makes use of those outside the professorial pool as well, with Luokkala considering other Carnegie Mellon staff for teaching positions.

"[PGSS instructors] need to be experts in their field or at least extremely interested," he says. "While instructing may not be the area in which they are actually employed, they need to have a sufficient level of competence.”

As an example, Luokkala offers the story of a staff member from Carnegie Mellon’s Outreach Program who stepped into a leading PGSS role.

"He was an expert at computer programming, had connections with the Pittsburgh super computer, and was able to teach the students how to do parallel programming.”

In addition, the program also employs a secretary who works full time during the summer and part time throughout the year.

While the teaching is done mostly by Carnegie Mellon folks, a few professors come from local institutions of higher education like Point Park University and University of Pittsburgh at Varnitha. Area high school teachers help with labs and team research projects.

Additional PGSS workers include residential staff members who watch over the high schoolers on a day-to-day basis. The fact that a portion of the RA’s are program alumni speaks to the success of the program.

"They want to relive the experience," Luokkala says, "but they also want to give something back. They come back as counselors and teaching assistants to help a younger group.”

Such enthusiasm from PGSS alumni manifests in the number of those who choose to attend Carnegie Mellon.

"The most popular place for the Governor’s School alumni to come is here,” Luokkala attests. “Carnegie Mellon is the top choice of our alumni.”

Holman notes the influence the program and its staff have over its alumni as well.

"How many shows about physicists have you seen on TV compared to how many shows about lawyers you’ve seen on TV?” he asks. “That’s why it’s wonderful for these kids to come and actually talk to us.

"A lot of them will come up and say, ‘What do you do as a physicist? What’s that like? What does it mean?’” Holman continues, stressing the importance of Friday lunches, a forum where PGSS instructors eat with the participants to help address such concerns.

"These kids—you catch them just at that moment when they’re trying to figure out which way their whole life’s gonna go,” Holman says. “You’ve got that opportunity to tweek it just a little and change their lives. You can make a really big impact there.”

Indeed, Luokkala points to this as one of the biggest rewards of being involved. “At one of the basketball games, parents come up and thank you for transforming their son or daughter. It’s a life-changing experience for most of the students who are here.”

And it’s an experience for which students don’t shy away from sharing. "Even from day one.

Holman smiles when relaying the conclusion of his first lecture this PGSS session.

“All of a sudden, the kids start clapping,” he says. “I went, ‘Oh, come on. Don’t do that.’

"We’re going to be doing this gig four times a week for weeks. We can’t do that,” he recalls. “I never had that before.”

Students included, everyone involved seems to agree on the worthiness of the effort that goes into PGSS.

“It’s a good thing,” Holman states definitely when he finishes chucking over his shoulder: that it prompts results. "It’s good for the kids, it’s good for the school, it’s good for the country.”

Other Governor’s School across the state focus on Agricultural Sciences; the Arts; Global Entrepreneurship; Health Care; Information, Society and Technology; International Studies; and Teaching. For more information, visit < http://pgss.cis. drexel.edu/>. 
In the 2006-2007 academic year, faculty, administrators, and staff from across the university will be working hard on preparations for a March 2008 visit by a review team of administrators and faculty from peer institutions assembled by the Middle States Commission on Higher Education (MSCHE). The Commission accredits degree-granting colleges and universities in the Middle States Region, including Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania, Puerto Rico, and the U.S. Virgin Islands. Other regional accreditation organizations serve other parts of the United States. These organizations conduct their reviews with teams of evaluators drawn from the member schools, and thus they provide a “self-policing” mechanism for higher education. MSCHE accreditation, which Carnegie Mellon has worked to maintain since 1921, is required for receipt of federal funding, and for some other activities in which we participate. Evaluation visits for accreditation occur every 10 years. Carnegie Mellon was last visited in 1998.

MSCHE examines an institution as a whole, rather than specific programs, and evaluates performance based on 14 standards for accreditation. These standards, listed around the standard categories, are divided into two broad categories: institutional context, and educational effectiveness. The standards apply to both undergraduate and graduate programs, and are described in detail at the MSCHE web site: http://www.msc.he.org.

Preparation for accreditation review involves a significant self-study effort organized around the standards for accreditation. Our self-study effort is being directed by a Steering Committee, appointed by President Cohon. The current members of the Steering Committee (which is in the process of being expanded) are listed in Table 2. The committee is being co-chaired by Russ O’Lare, Director of Planning, and Gloriana St. Clair, Dean of University Libraries. Dr. St. Clair has experience as a MSCHE evaluator, as do President Cohon, Vice President Murphy, and some other Carnegie Mellon administrators and faculty. Professor Jay Kadane is the representative of the Faculty Organization on the Steering Committee. A number of working groups focused on specific programs and parts of the University have been recruited for these working groups, and membership on the working groups is still being developed.

Carnegie Mellon will not be evaluated in the same level of depth for all 14 standards. MSCHE provides an option for an institution to specify those standards for which activities and performance remain essentially the same as in the last review, and for which the activities and performance were judged to be acceptable in the last review. Under this option, the evaluation then focuses on depth only on those standards for which changes have been implemented since the last review. Carnegie Mellon has elected to follow this path for the upcoming review. MSCHE staff, and in particular Dr. Linda Suskie, have worked with the Steering Committee to identify the standards for which in-depth evaluation and self study will be conducted.

The 2008 evaluation and preparatory self-study will focus on Standards 2, 3, 7, 12, and 14 (see Table 1). The first three of these, Standards 2, 3, and 7, are in the Institutional Context category, while Standards 12 and 14 pertain to Educational Effectiveness. Standard 14, Assessment of Student Learning, is a new standard, and one of particular interest to MSCHE.

The U.S. Department of Education is pushing all of the regional accreditation organizations to motivate colleges and universities to undertake more rigorous and better documented assessment of educational effectiveness. The new Standard 14 arose in part from the growing interest in assessment on the part of the government, and because of similar increase in interest in the higher education community. In addition to the assessment criteria in Standard 14, there are new assessment elements in a number of the other standards as well.

Some educational units on campus have substantial experience with assessment pertaining to accreditation, while many others have had no need or opportunity for accreditation and thus have not been involved with comprehensive assessment. Like all other engineering schools, the Carnegie Institute of Technology undergoes accreditation review every six years by the Accreditation Board for Engineering and Technology (ABET) for its undergraduate curriculum, see: http://www.abet.org. Another example is the School of Architecture, whose undergraduate curriculum is accredited by the National Architectural Accrediting Board (NAAB).

The ABET evaluation for engineering curricula has long involved comprehensive assessment, but was transformed in 1998 from a system of prescribed elements with “bean counting” type of assessment, to one focused on institutionally defined objectives and broader assessment approaches to demonstrate achievement of those objectives. For example, if one of the educational objectives for Civil and Environmental Engineering (CEE) is to provide students with knowledge of the fundamental principles of fluid mechanics, and the ability to apply these principles to solve hydraulic engineering problems, the CEE Department must undertake to assess whether students and graduates actually have acquired these skills. For another, perhaps more complex example, consider that if one of the goals is to educate students about the importance of lifelong learning, one must seek to assess whether or not graduates are actually practicing lifelong learning after they leave the university.

Departments in the Carnegie Institute of Technology (CIT) have been working continuously on development and implementation of assessment techniques since 1998. This has involved commitment of a substantial amount of faculty and staff time and department and college resources. We in CIT have learned that comprehensive assessment is difficult and requires significant commitment of time and resources.

Assessment is new to MSCHE and the other regional accreditation organizations, and the type and extent of assessment expected of institutions will be defined over the coming years. Provost Mark Kamerl reports that Carnegie Mellon will be the first Association of American Universities (AAU) institution evaluated under the new standards. This is daunting in one respect, but also provides an opportunity for Carnegie Mellon to help define the types of assessment appropriate for an institutional-level (in contrast to specific program) review.

Preparation for the 2008 MSCHE review of Carnegie Mellon has been underway here since early in 2006, but the most intense part of the effort will take place over the 2006-2007 academic year. The working groups will begin their efforts in October with the aim of having a preliminary report in January and a final report in April 2007. The Steering Committee will then work to integrate the working group reports into a single self-study report, which will be completed in draft in July 2007 and finalized in October 2007.

The Chair of the MSCHE evaluation team will have a preliminary visit in November 2007 to review the self-study report and supporting documentation. In January 2008 the self-study report will be delivered to the entire MSCHE evaluation team, and the visit will take place in March 2008. The evaluation team will be on campus for three to four days. Members will review the self-study report and prepare a team report of their visit, which they will present in May 2008 to the full MSCHE Board.

Table 1. Middle States Commission Standards for Accreditation

<table>
<thead>
<tr>
<th>Standard No.</th>
<th>Title</th>
<th>Institutional Context</th>
<th>Educational Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mission, Goals, and Objectives</td>
<td>8</td>
<td>Student Admissions</td>
</tr>
<tr>
<td>2*</td>
<td>Planning, Resource Allocation, and Institutional Renewal</td>
<td>9</td>
<td>Student Support Services</td>
</tr>
<tr>
<td>3*</td>
<td>Institutional Resources</td>
<td>10</td>
<td>Faculty</td>
</tr>
<tr>
<td>4</td>
<td>Leadership and Governance</td>
<td>11</td>
<td>Educational Offerings</td>
</tr>
<tr>
<td>5</td>
<td>Administration</td>
<td>12* General Education</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Integrity</td>
<td>13 Related Educational Activities</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Institutional Assessment</td>
<td>14* Assessment of Student Learning</td>
<td></td>
</tr>
</tbody>
</table>


Table 2. Carnegie Mellon Steering Committee for Institutional Self-Study

<table>
<thead>
<tr>
<th>Member</th>
<th>Title/Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catherine Davidson</td>
<td>University Advancement (self-study Editor)</td>
</tr>
<tr>
<td>Joseph (Jay) Kadane</td>
<td>Leonard J. Savage University Professor, Department of Statistics</td>
</tr>
<tr>
<td>Stacey Lopez</td>
<td>Director of Institutional Advancement</td>
</tr>
<tr>
<td>Michael Murphy</td>
<td>Associate Vice President</td>
</tr>
<tr>
<td>Indira Nair</td>
<td>Vice Provost for Education</td>
</tr>
<tr>
<td>Russ O’Lare</td>
<td>Professor, Engineering and Public Policy</td>
</tr>
<tr>
<td>Gloriana St. Clair</td>
<td>Dean, University Libraries (Co-Chair)</td>
</tr>
</tbody>
</table>

From the Faculty Senate Chair
Preparing for Middle States Accreditation Review
David Dendrok, Professor, Civil and Environmental Engineering and Chair, Faculty Organization

continued on page 6
Robots Institute honors Nikola Tesla

Retired teacher, school children raise funds to commemorate overlooked scientist

By April Smith, copy editor, FOCUS

The latest creation on display at Carnegie Mellon’s Robotics Institute inspires and delights, a valuable donation that owes its existence to the cumulative sweat and toil of several 20th century scientists and the discoveries of those who preceded them. The newest face in the second floor lobby isn’t a robot or any other technological wonder of artificial intelligence. In fact, unlike the most of the institute’s other showpieces, this one can’t even move without human assistance—which isn’t likely to come considering it’s cast of bronze and weighs 225 lbs.

Carnegie Mellon gave credit where credit was due. In 1898 by bringing a bust of Serbian-American engineer and physicist Nikola Tesla, the man who holds the patent for the first devise responding wireless remote control–a radio-controlled boat Tesla exhibited in 1898 and the invention to called the literal birth of robotics.

The bust was born from the efforts of retired Michigan elementary school teacher John W. Wagner, who has been working with his students since the 80s to bring attention to Tesla’s frequently ignored scientific achievements in engineering, electricity and radio communication, among others. Though Carnegie Mellon is the 18th institute of higher learning to receive one of Wagner’s Tesla busts, it is the first of its kind created within a robotics department.

“It is especially fitting for us to have this bust,” Director Matthew T. Mason stated in a press release.

Not only is the bust fitting for its robotics connection, but also because Tesla and Carnegie Mellon share a connection in a famous PR Hoffman industrial. George Westinghouse funded some of Tesla’s research and bought several of his patents; his Westinghouse Electric Corp. offered the grant for the robotics bust.

After Mason and Wagner unveiled the bust in the institute’s Newell-Simon lobby, the commemoration continued with a special presentation by Tesla enthusiast and fellow engineer Jeffrey Schiller, who currently serves as division manager of the Western Engineer and Research Corp.

“Tesla’s discoveries may have had a more profound effect on the modern world than … Edison, if not Einstein,” Selton said.

During the ceremony, Wagner and Selton told of Tesla’s accomplishments, focusing on overlooked contributions that not only inspired a classroom of third- and fourth-graders but also brought this bronze bust to Carnegie Mellon.

Born July 10, 1856 in Smiljan, Croatia, Tesla studied engineering at the Polytechnic Institute in Graz. During his studies, he imagined a way to transmit electricity other than the popular method of using direct current.

According to Selton, direct current was inefficient. “It couldn’t be transmitted long distances,” he said.

Tesla became obsessed with finding an alternative.

“For two years, all he could think about was how to make alternating current,” Wagner said.

Even after he came up with a design for his method, Tesla’s professors and European investors were not interested.

“He knew in an instant he had solved the world’s energy problems, but nobody in Europe would listen to him,” Wagner said.

According to Selton, a 28-year-old Tesla came to America, working for Thomas Edison and improving the latter’s use of direct current. However, like everyone else, Edison was not interested in Tesla’s desire to experiment with alternating current. A disagreement about money added to Tesla’s frustration, and he resigned.

“For two years, he dug ditches because he’d rather do that than work for Edison,” Wagner said.

Tesla eventually began working on his alternating current for Westinghouse Electric and was hired to power the 1893 Chicago’s World Fair. Success there helped Westinghouse win its next bid—to build the power station at Niagara Falls.

Tesla had dreamed of harnessing this natural wonder since his childhood years, Selton said. He even built a powered water wheel at the age of five. Through his work with Westinghouse, Tesla had the opportunity to realize this dream, even if he received little individual credit.

“The first power lines depended on Niagara. Ultimately, these power lines found their way around the world,” Selton said.

Thus, Tesla’s alternating current proved better than Edison’s method of direct current.

“Today, every electric utility in the world uses the alternating current of Tesla,” Selton said.

The world, however, seemed to have yet to take notice of Tesla’s victory.

“When you walk into the Niagara Falls Power Station today, there’s a bust of Thomas Edison,” Selton said.

This type of oversight enraged Wagner when he learned about Tesla. He picked up a book about the scientist while visiting his daughter’s college in 1983 and decided to use the scientist as a subject for his third- and fourth-graders’ compositions. This soon turned into students practicing handwriting in letters to senators and leaders to correct instances in which Tesla was ignored.

One of the class’s first victories took place in Madison, WI. Wagner learned the town had named several streets after noted scientists. While Tesla was included, his named was misspelled—“T.L.S.-A.” Though their efforts were at first met with resistance from city council, the students’ letter-writing campaign got media attention, and the sign was corrected within six months.

The plight to re-introduce Tesla to the world grew with the students’ efforts. When a former student and her father approached Wagner about creating a bronze bust of the inventor, he was quick to sign on. Valued at $6000, sculptor Ronald Farrington Sharp offered to produce the bust for the cost of materials only.

Wagner’s students raised money for the busts by selling Tesla T-shirts and soliciting donations from companies and groups, including a band from California called “Tesla,” according to Wagner’s website. They planned to give the busts to museums and bring attention to Tesla.

According to Wagner, however, museums approached him not interested in putting Tesla in their displays. After some years of frustration, he found another outlet in higher education and began offering the busts to colleges and universities.

Busts of Tesla are now displayed in several prestigious institutions in America: Harvard, Yale, Princeton, John Hopkins and Cornell, to name a few. The University of Pennsylvania and Penn State University house busts in their physics buildings.

Carnegie Mellon is the first to acknowledge Tesla’s contribution to the field of robotics by displaying the bust in its Robotics Institute. In 1898’s Electrical Exhibition at Madison Square Garden, Tesla displayed his “teleautomaton,” a boat that ran with what he called a “borrowed mind.” According to the PBS website, the boat ran on a battery controlled by radio switches.

The invention, which is now on display at the Tesla Museum in Belgrade, was a bit ahead of its time, Selton says. Witnesses at the time could not imagine its practical application; the device was a forerunner to guided weapons, the automated factory line and robotics.

“I can’t think of a better place for this bust of Tesla than Carnegie Mellon University, which has carried on to discover the future,” Selton said.

He held more than 700 patents, including a controversial one for radio, produced the first x-ray and the first conception for vertical-takeoff and landing aircraft like helicopters.

Despite these accomplishments, Selton feels most of Tesla’s work is not fully recognized. Tesla died alone at the age of 83 in New York. He never gained money or fame from his discoveries.

“There are many people including scientists and engineers who have never heard of Tesla,” he said.

This fact leaves Wagner stumped.

“He started the second industrial revolution,” Wagner said. “He was a pivotal man.”

And so the former educator, though retired, continues to work to bring attention to Tesla’s contributions in the chronology of scientific discovery. It seems to be working.

“Because of these school children raising money for these busts, I don’t think Tesla will be forgotten anymore,” Selton said.
A Trip to Iran
Trustees Ghaznavi and Posner take a trip in 2005

By Henry Posner Jr.

The first time we noticed was a dark armored vehicle with a swivel-mount automatic machine gun manned by a helmeted soldier. Closer to the driver were two more soldiers, clutching automatic weapons pointed outward. They were already at speed, some 50 yards off our port wing, when we spotted them moments after our Iran Air jet touched down at Tehran airport. As the plane slowed and turned toward its gate, the vehicle maintained its position on our flank. When we stepped out of the plane into the 86° heat of a July night, we realized our military escorts were even more impressively armed than I had observed from my window seat. It was to be a recurrent memory over the next seven days.

I had accepted the invitation of John Ghaznavi, an Iranian-American friend and fellow Carnegie Mellon trustee, to join him on a trip last summer from Pittsburgh, where we both live and work, to his native village, Rahag, near the city of Kashan in central Iran. We had traveled together to Doha, Qatar the year before on a Carnegie Mellon mission, and I knew him for a lively and resourceful companion. John proved himself within minutes now. The Iranian "paperwork" for my visa had not cleared, said the uniformed customs officer in the terminal; so—at 11 p.m. Saturday night, after 30 hours on the road—I could not be permitted to enter the country. John, whose father was a tribal chief and community leader in his region many years ago, has been extraordinarily generous with his former villagers and is frequently called for consultation by Iranian government officials. Now he reached for his phone and called the Iranian Foreign Minister, rousing him from bed. Within the hour we were on our way.

Our reception at John's sister's house in Tehran could not have been more different. Mitra, a younger sister, met us at the door and led us inside. Joined by her family, we sipped aromatic tea, a sugar cube clenched (precisely in my case) between the teeth according to custom. Everyone wanted to talk—in Farsi—but although it was now well past midnight, we proceeded to a vast dinner of fruit, nuts, rice, fava beans, chizra leaf and onion salad, chicken, lamb kabobs and beef, the meats cooked long and slowly so they could be pulled apart with only a fork and spoon (knives not being used). After dinner the conversation and tea continued . . . until 3 a.m. The hour, which I took to be the consequence of our arrival, proved instead to be the pattern. Rarely did we get more than four hours of sleep.

Mitra's son, Ali, whom I guessed to be about 40, spoke excellent English. Exceptionally well informed, he was a warm and lively conversationalist who engaged me immediately. I learned later that when he was young he had been imprisoned for four years after being caught reading forbidden political material with a friend. The next day, with Ali driving, John and I left for Qom, Kashan and Rahag, and later Isfahan. To avoid the impenetrable traffic of Tehran and the 105° midday temperatures, we had risen at 5. Even at dawn a substantial proportion of Iran's 70 million people—more than France or Italy—appeared to be on the road. Since Tehran, with 18 million people, is larger than any U.S. city except maybe metropolitan New York, I should perhaps have been less surprised.

At the wheel, Ali had the disconcerting habit of looking at the passenger he was addressing, regardless of speed, traffic or seating arrangement—while simultaneously talking on his cell phone. Other drivers appeared to be doing the same. Thankfully, the highways were broad and modern, although the price of gasoline, 40 cents a gallon, seemed too encouraging. I was particularly surprised, though, to notice that signs—street signs, billboards and others—were in English as well as Farsi. That implicit embrace of western culture, I came to realize, pervades Iran in ways that are not peculiar to John's relatives or an American's presence.

It isn't just the women wear western clothes and jewelry at home, donning the chador only to go out in public. American tee shirts, American music and other western styles are manifestly popular with the people on the streets. And those people are overwhelmingly young. Despite their 4,000-year lineage from Aryan tribes pushed south by an ice age in the Siberian steppes, Iranians are a young people: two-thirds of the population is under 26. More striking than their age, though, was a readiness to distinguish between the personal and the governmental. I repeatedly got the sense that the Iranians like Americans—but not the American government.

One of our stops was at a small school in Kashan for abandoned girls, one of two that John founded and continues to support. Many, though not all, of the girls were physically or mentally handicapped. John knows how harsh life in Iran can be. More than 12 years ago, he and his American wife found a sickly baby girl on a tomb at a shrine, where she had been abandoned. With great and protracted difficulty they managed to bring her to the U.S. for medical treatment. Now their healthy adopted daughter, Liti, lives with them in Pittsburgh.

It was hot when we arrived at the family farm in Rahag, but so was the welcoming tea, served by John's older sister, Fati. John's grandfather had 15 wives, so there was no shortage of relatives on hand to greet us. A widow, Fati manages the farm, which employs as many as 80 at harvest time. Once word got out that John was there, the elders from nearby villages came to pay formal respects, drink tea, and ask for favors. Such traditional rituals notwithstanding, the television was always on, as at Mitra's house, usually tuned to one of the 17 Iranian channels received from the U.S. via satellite.

The embracing receptions and the palpable enjoyment of things American was oddly out of sync with official signs and signals I had seen along our route—on billboards, in the papers—from a government that seemed perpetually angry. Police, conspicuously armed, were virtually everywhere. The walls of many city buildings bore huge portraits of the dead from the Iran-Iraq war, adding a military, funereal scrim to the public scenery. On the highways we passed TV towers and TV station buildings, all with armed guards and gun emplacements, and a nuclear facility guarded by soldiers and heavy weapons.

But those reminders of official, governmental presence seemed strangely detached from the life I encountered. Along with usual souvenirs of this harsh, beautiful and enduring land, such as pictures delicately painted on camel bone, I brought home the recollection of warm tea and eagerness for engagement.

On the road between Rahag & Kashan
Shopping mall in Isfahan

Author's note: This account of our trip is deeply indebted to John Ghaznavi's profound knowledge of Iran and patient tutelage. Any errors or misperceptions are entirely my own.

—H.P., Jr., August 2006

Henry Posner Jr. is Chairman of The Hawthorne Group
John J. Ghaznavi is Chairman and CEO of Ghaznavi Investments
The cultural Collective Checks Out Skibo

The cultural collective takes as its aims anything cultural, which seems obvious perhaps. There were no bags about airlines, with a strong recommendation that the next time you fly, you fly Lufthansa. Now, they may lose your luggage, but that is part of the idea. We have found that Lufthansa is finacially successful and terribly expensive, but worth a look anyway. Our journey began on August 10, a day on which, as it turned out, we decided it was time to arrest a bunch of folks planning to attack planes with liquids. Never you mind, we said, we’ll just get on the plane anyway (“We can’t let them... etc.”). Justifying our confidence, our flight departed Pittsburgh spot on time, without a glitch. Well it departed the terminal gate, but soon came to a spinning stop in a parking space on the Pittsburgh tarmac, for two hours. Our Aer Lingus connection also expired on time, leaving us stranded. The nice folks, however, put us on a Lufthansa flight to Frankfurt, with a connecting flight to Dublin, which we got sometime in the future to Dublin. All well, except one of our bags didn’t make it, and turned up after much distress two weeks later in Dublin. Never you mind. Reluctant as we were to visit Frankfurt, the flight was nevertheless delightful. Contrary to rumors of financial cutbacks and stinginess on airliners, my food was excellent, copious as was the wine, wonderful and free. Not only that, also free were after dinner drinks, and more wine. By the way, that nonsense about jet lag is just nonsense we refuse. Whatever you do don’t get out of your seat to stretch your legs and be sure to drink lots and lots of fluids (especially alcohol). Fly Lufthansa, even if you don’t want to go where they will take you; it will be a great flight. It would even be better if you could arrange to fly without any baggage, thus avoiding risk of loss.

We haven’t yet come to the high point, however. The high point was cutlet. Lufthansa gave us all a set of cutlet cutlery. If you have ever eaten cutlet, you know that the cutlet cutlery is the oft-repeated warnings about liquids in hand luggage: a no no. No gels, deodorants, toothpaste, nada. So it was a pretty thought, all 300 or so of us, armed with real steel knives, forks (and spoons) and not a one of us with gels, or liquids of any kind. One’s paranoid imagination was stimulated by warnings about not carrying ANY liquids on the plane. If you could put explosives in your shoes, why not put liquid explosives in your hair and explode your head? What about spit, not to mention other bodily fluids? Departing Dublin airport at a later date, the list of forbidden fluids had become more extensive, including not only water. But the long list of banned substances did specifically include holy water. Isn’t that, wouldn’t it be, blasphemy?

As in the case of Dick Armitage however it is necessary to miss all that going into this.

In the Armitage instance, that he was the inadvertent gossipy lecturer doesn’t mean Bush/Rove and co. are innocent—at least that’s what we purport of the book by David Corn and Michael Isikoff, Hubris: The Inside Story of Spin, Scandal and the Selling of the Iraq War. The real point of the fluid plane plot, however, was to face the threat of suicide plots, plotters who plan to get caught planning things, things that they have no real intention of carrying out. All you need to throw the system into a spin it seems is an intent. And intents are easier to conceal than liquids. What the hell then, might as well give them real cutlery on the plane and stop worrying them with useless advice about jetlag and encourage them to get blotto.

To practical matters then: if you go to Dublin go to a wine bar called Dunne and Crescenti for a meal, just behind Trinity College, a wonderful place not on the tourist lists and frequented by locals. And some other time get to Gallagher’s Boxty House in Temple Bar. Great Irish food there of the ‘boxty’ type; a boxty being a kind of potato pancake in which things like poached salmon get rolled. Further afield, in Tramore near Waterford, we had some of the world’s best fish and chips (the world’s most nearly perfect food) of a traditional sort, and spotted a Chinese restaurant that we wish we had tried. It had a sign on the door that announced: No Dogs. Reassuring that. In Waterford itself the factory tour is worth doing and it turns out you can actually get some decent crystal there—it’s not all that busy cross-cut stuff anymore. Closer to home, we spent part of our summer testing out new-ish restaurants. One of our field agents, Joel Tarr has been singing the merits of Cafe Roma in Bloomfield (just opposite the old Cinema) on Liberty Avenue. Joel indicated that this worthy place really deserved our support, needed help. So we packed up our condensation and decided to roll over there with our bottles of wine in hand, being very much in love with BYOB establishments. The place is unpretentious on the outside, and to our delight seemed a glorious formal array of linen and so on as we entered. Which is as far as we got. Did we have a reservation? Reservation? When we had to come to do a favor for a starving restaurant? Not likely. So we ambled down the road into Tessaro’s, and just walked right in, without a reservation. Just in time as it turned out because the crowds were right behind us. So we booked ahead at Cafe Roma, a table for 6, once again equipped with bottles of wine. And we’re glad to report that it wasn’t formal at all, very pleasant and good food. One disappointment, common with new-ish restaurants, was that you can’t count on all the menu items being available. So the beef lasagna wasn’t available, much to the disappointment of a beef-loving member of the collective. Something with sausage then—(a complaint? too many dishes featuring Italian sausage? a mild complaint). Everything else was fine, shrimp excellent and done just right. Well, we did find ourselves commenting on the cutlery, that kind of flimsy stuff that just qualifies as metal and you don’t have to be a psychic to bend. You get better on Lufthansa. Our waiters took this comment in stride and said we should have been there before they moved up to the metal stuff, started out with plastic. We got the point. A new enterprise that can do that well with the food deserves a chance. And we’ll give it another try or two. The desserts are worth the trip in themselves, and locals seemed to have been phoning in orders ahead to take out.

We’d also been heading to Ma Providence on Murray for some time and were pleased when we got there. Just the kind of French bistro you’d hope to find around the corner if you lived in New York, or Paris. The kind of place that should become your neighborhood restaurant, even if you don’t live in Squirrel Hill. There is a small range of items on the menu, which is fine because they are good. There is an excellent cheese board and a small range of good quality wines by the glass at good prices. The ambience is excellent and definitely worthy a visit. They invite comments, and we obliged, commenting on the small number of wines by the glass available, and pointing out that the berry tart dessert, while excellent in taste and texture, looked a bit dull, as if it might have been sitting out in the sun somewhere. We were pleased to get an email response from the management acknowledging our comments and indicating a plan to expand the wines by the glass offerings and passing on the pastry comment to the pastry chef. And more: offering us a free glass of champagne on our next visit. So...we expect readers to be flocking there and finding some nice ways to put constructive criticisms in order to get the bonus bubbly.

We also found ourselves in Soho once again, and enjoyed it much more than a previous visit. They did a special menu of Indonesian dishes, all of which were excellent but again, we felt no attempt to make us sit in a fake ‘family style’ setting; instead we were given our own table with our own friends. We like this kind of setting; they need not be peering carefully around to see what people at nearby tables are eating, without having to spend the same price to exist. With just a bit of effort it is often possible to pick up bits of conversations unnoticed and smile knowingly, condescendingly, to one’s friends. After all, we’re just being civilized. The Indonesian style spareribs were a treat, and if they are available again we’ll be there again.

Having predicted that the authentic taco joint on Bridge St. was going to be too last—cow brain tacos were probably never going to get past some deep bone level resistance to ideas of mad cow stuff—we have to note with no great delight that it is now closed. It will apparently soon be replaced by another Mexican restaurant which we hope to enjoy before long.

On an historical note we have to report our investigation of a pleasant rural retreat in Pittsburgh, a place known as the Skibo Estate of Skibo. In the middle of a research project into culinary developments in the Highlands of Scotland we were able to visit. The rights at Skibo at the special introductory rate for Carnegie Mellon members. Those of you new to Carnegie Mellon will perhaps not remember the building that preceded the UC on its present site, also known as Skibo after the castle owned by our glorious founder, Andrew Carnegie of (‘My heart is in the wkd.’ fame). Andrew bought Skibo in the late 19th Century and designed it as a suitable place for weddings of the likes of Madame and Rich Guy. On request we received a lovely glossy brochure that probably cost more to produce than most of the B&K’s we could afford to stay at during our research. We had thought of spending only one night to check it out but it turns out that our friends at Skibo have a two night minimum during the summer session and strangely had become the preferred hotbed for honeymoons nights really got to feel the place.

Well, it turns out that the tariff (lovely word) is 995 pounds sterling the night. For two, to be sure. Including all food and drink, including whiskey. And all the golf you want on the golf estate course. Still. Near £400.00 for a two night stay. So we opted for a B&B in the nearby town of Tain which went for a pleasant stay at £25 pounds per person per night. No golf, no scoff. But with what we saved we bought a bottle of malt scotch. We could have bought a bottle of malt scotch every hour on the hour for 4 days straight and still have been money ahead. And we played 9holes on a mom and pop links course for a mere 17 quid.

The follow up plan was to get a photo of the editor of FOCUS with his nose pushed up against the huge iron gates of Skibo. Turns out there are no iron gates to be seen, in fact we couldn’t even find the entrance anyway. We took our train up onto the moor to walk through the grounds in 5th gear, eluding backlight as well as possible. We think we finally spotted the clump of trees that hides the castle, although since our vantage point was the other side of the Dornoch Firth we can’t at all be sure. Further research will depend on finding a suitable angle and the budget of FOCUS. Stay tuned.

(for the collective in varying combinations and amounts: Barth and Cléoua Anderson, Jim Ferla, Otto Foghøs, Anna Houch, Alan Kennedy, Martin and Martha Prekop, Janet Res, Joel Tarr)