

## IN THE WORKS



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# GEM program invaluable for minority grad students

By Carol C. Bradley

Michele Lezama is on the move, both in her work life and in her office location. As executive director of the National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc., known as the GEM program, she travels the country three days a week recruiting students and seeking program support. Her office on Eddy St. will soon be torn down for redevelopment, and in early summer the program will relocate into new on-campus quarters in Brownson Hall.

The GEM program, which celebrates its 30th anniversary this year, enables minority students including African-Americans, Hispanics, Native Americans, Mexican Americans and Puerto Ricans to pursue master's degrees in engineering, as well as doctorates in engineering and the natural and physical sciences.

The origins of the program are well documented. It began with a call from Ted Habarth of the Johns Hopkins Applied Physics Laboratory to his friend and colleague Rev. Theodore M. Hesburgh, C.S.C., who happened to be in a restaurant in Peru at the time.

Universities, Habarth thought, needed to be making a contribution to the U.S. workforce by providing access to graduate education for minorities, given the increasing need for research and innovation in technology. Father Hesburgh agreed, and offered his support. Within a year, GEM was born.

"It was before the dot-com era, before the iPod," Lezama says. "But it was a time when people



Michele Lezama, executive director of the National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (GEM), is preparing for the program's 30th anniversary, and a move from Eddy Street to campus. *Photo by Carol C. Bradley.*

like Father Ted knew that there was talent in the country that was not being tapped."

The message the GEM program wants to get out, Lezama says, is that a graduate degree is achievable and accessible for minority students.

"The program exists today because of Father Ted's vision and commitment," Lezama adds.

The program is housed at Notre Dame, but the consortium includes 94 institutions, including the Georgia Institute of Technology, Princeton and Yale. GEM fellows receive a tuition remission from the university they attend, as well as a stipend provided by corporate funding. The lengthy list of corporate employers and sponsors includes Abbott Laboratories, Apple Computer, Los Alamos National Laboratory and Raytheon. The program also includes a summer internship, which raises the total award package to \$20,000 to \$60,000 at the master's level, or \$60,000 to \$100,000 at the Ph.D. level.

Since it was founded in 1976, the program has graduated more than 2,500 students from many of the top universities in the country. Lezama, who holds a master's degree in engineering and business administration from Columbia, is one of those graduates.

"I received that degree because the director of the Notre Dame program personally recruited me," she recalls. "He met with my mother

and grandmother in a restaurant in New York City, and said, 'Your child is too talented not to go to graduate school.'"

Lezama took the job of executive director late last year, she says, because of her commitment to GEM. "I really wanted to make a difference in the next generation of graduates from the program."

Currently, she commutes from her home in Alexandria, Va., spending three days a week on the road and four days at home with her two young daughters. One recent week included a trip south to give a keynote address at the University of Arkansas on the U.S. competitive disadvantage in engineering and science. Then she was off for Orlando, Fla., for a speech and two workshops at a meeting of the Society of Hispanic Professional Engineers.

Of her goals for the future of the program, Lezama says, "I really want the consortium to be involved more programmatically in communities, by being involved in science fairs or technical symposiums. We want to engage in advocacy, to influence government funding in research, and to impact math and science education reform."

By doing so, Lezama believes, the program can help ensure that our nation stays competitive in math and science, and that American children can look forward to viable careers in science and technology.

# Projects provide new housing near campus

By Carol C. Bradley

Opportunities for new home ownership near the University are increasing dramatically this year with the development of the Northeast Neighborhood Revitalization Organization (NNRO) "triangle" project.

The project area is east of Eddy St., south of the Notre Dame Woods, and runs all the way to South Bend Ave. The development project includes the area from the east side of Georgiana Ave. (the first block east of Eddy St.) to Burns Ave. and Dewey St.



This image illustrates the location, and telltale shape, of the "triangle" neighborhood that will bring new single-family dwellings to south of campus. *Image provided*

years, the area will be replatted and 70 new houses will be built.

"Right now, the plan is that 70 percent will be market-rate homes, selling for around \$200,000," Byrd says. The remainder of the homes will be earmarked for qualified low- to moderate-income families, and sell for around \$100,000 each. Qualified families, Byrd notes, are those that earn less than 80 percent of the median income for St. Joseph County, based on family size.

The triangle project is one of several recent residential projects in the Northeast Neighborhood, where a consortium including Notre Dame, Madison Center, St. Joseph Regional Medical Center, Memorial Hospital and the City of South Bend has been working to bring housing and commercial resources to the area.

While all of the programs are open to Notre Dame employees, only one is reserved exclusively for them, says Greg Hakanen, director of asset management and real estate development. That's the Notre Dame Avenue Housing Program, or NDAH for short.

Under the NDAH, the University

sells lots that it owns on or near Notre Dame Ave. to full-time faculty or staff employees. The employee then engages one of three pre-qualified builders to design and construct a freestanding, single-family home according to University guidelines that preserve the historical architectural "look" of the neighborhood. The University retains right of first refusal on the properties. Nine homes have been completed, three are currently under construction, and another three lots have been committed. (Information on the program, which is administered by Hakanen's office, is available by calling 631-7791. Information on houses in the "triangle" is available by calling Byrd at 289-1066, extension 209.)

During the first quarter of this year, Notre Dame hopes to identify a private developer for three new commercial and residential zones, Hakanen says. Plans call for a new mixed-use neighborhood at Edison and Eddy that will include some combination of retail shops and restaurants, office space, hotel rooms, and multi-family housing. New residential zones along Eddy St. and in the Notre Dame Woods will offer a variety of attached, urban-style housing such as townhouses, row houses, or "brownstones."

"We're very excited about what is being planned," Hakanen says. "It will bring new housing and commercial opportunity to the neighborhood."



**Q:** In light of recently released information about the discovery of a new planet by a team including Notre Dame's David Bennett, please help us review the basic facts. Are there still nine planets? Will we have to throw out all the grade school textbooks, and retire songs like "Fly Me to the Moon" and "The Age of Aquarius?"

**A:** Many of us went to school in the days when there were only nine planets. Those were the planets of our solar system, or planets that, like Earth, revolve around the sun.

The planet Prof. Bennett and his colleagues have recently described is extra-solar, meaning it does not revolve around the sun and it is not in our solar system. About 100 of these planets have been identified. Most of them are quite large and life could never survive there. What's significant about Prof. Bennett's discovery is that this is a relatively small planet—larger than Earth, but small enough that it might be able to sustain life. It's an interesting finding for those who wonder about whether there is intelligent life elsewhere in the universe.

However, there also are challenges to the assertion that our solar system has nine planets. Some people think we should take Pluto off the list. In fact, if you go to a planetarium recently opened in New York City, Pluto is not listed as a planet.

In the last 10 years or so, scientists have found a number of objects beyond Pluto that appear to be composed similarly to it—kind of like a giant snowball. There's a big belt of them beyond Neptune called a Kuiper belt that's similar to a belt of rocky asteroids that sits between Mars and Jupiter.

Some astronomers want to classify these big, icy entities as something other than planets, Pluto included. Others believe that if you count Pluto as a planet, you should also count the objects in the Kuiper belt. All this came out as the new Rose Planetarium in New York's American Museum was on the drawing board. As a result, its exhibit on planets identifies only eight in our solar system. Other planetariums still display nine.

The "supreme court" of astronomy is the International Astronomical Union (IAU). It plans to rule on the "planetness" of Pluto soon.

*Submitted by Peter Garnavich, associate professor of astrophysics and cosmology and member of the Notre Dame Center for Astrophysics.*

## Career Fair interest hits new heights

### ND Works staff writer

Representatives of more than 160 employers are descending on campus this week for the annual Winter Career and Internship Fair and Diversity Reception. Be aware: Some of them may need to invade your space.

The fair begins Wednesday, Feb. 1 and continues Thursday, Feb. 2, when employers buckle down to conduct interviews with individual students. Normally, interview rooms in Flanner Hall's Career Center are sufficient to handle employers' requests for interview space.

This year, more than 55 employers have requested interview rooms. They're being booked in the Center for Social Concerns, the Main Building and LaFortune Student Center, says Anita Rees, who oversees the fair's coordination.

"If you see someone who looks a little lost, ask if you can help," says Rees. The two-day event begins with the Diversity Reception, a networking event designed to allow students to learn how employers address issues of diversity internally and with clients. Far from welcoming only minority students, "All students are invited," Rees says.

This year, to her amazement, more than 270

recruiters plan to attend the reception, compared to about 150 last year.

The reception, from noon to 2:30 p.m., will be followed by the actual job fair in the Joyce Center Field House. This year more employers are choosing to send representatives in person rather than providing just a "resume drop." Only seven are collecting resumes from a distance; in past years, 25 to 30 employers would use the resume drop option, Rees says.

"I think they realize the face time is so important with Notre Dame students," Rees says. "And I think there is more competition among companies to get top students."

Students will find a spokesman for almost every career imaginable, including representatives of electronic game design companies such as Midway Amusement Games, and cutting-edge multimedia communications firms. First-timers include recruiters for Microsoft. The fair is also generating increased representation among non-profits and governmental agencies.

And for those who worry about the employability of English, theology or philosophy majors: Rees says that of the estimated 340 opportunities on the table, more than 230 of them are open to students in Arts and Letters.

## Tax Assistance Program provides relief in a cruel season

By Michael O. Garvey

As a disgruntled community endures tax season, with its avalanche of arcane regulations, camouflaged deductions and illegible forms, it is consoling to remember Albert Einstein's observation that "the hardest thing in the world to understand is the income tax." Nevertheless, the near incomprehensibility of tax law, so often a staple of middle-class comedy, can be an intolerable burden for beleaguered citizens with low incomes.

An awareness of that burden and a determination to lighten it are the principal earmarks of the Vivian Harrington Gray Notre Dame-Saint Mary's College Tax Assistance Program (TAP), now in its 35th year.

The program, in which volunteer tax preparers provide assistance with state and local tax returns to taxpayers whose incomes are below \$35,000, helped file 3,462 tax returns last year. There is no charge for the service, which is funded by the Mendoza College of Business and supplied by the IRS and the Indiana Department of Revenue. A few program volunteers are certified public accountants from national, regional, and local firms as well as accountancy faculty members from Notre Dame and Saint Mary's, but most are undergraduate accountancy students.

It seems as agreeable an arrangement as can be made in such an unpleasant season. "A win-win-win situation is a rarity," says Ken Milani, ND professor of accountancy and TAP director. "However, the TAP provides this outcome. Low-income Michiana-area taxpayers are the primary beneficiaries of the TAP since they receive free income tax preparation service, but students also benefit from the program since it provides them with practical experience. A third group, involved faculty members, complements classroom activities by working with students on an interesting and challenging project."

The TAP's initial goal in 1972 was to help strapped Indiana taxpayers file for a temporary Indiana state tax credit. With the expiration of that credit a few years later, the program evolved to include assistance with federal tax returns and, for the student volunteers, academic instruction in tax return preparation. In subsequent years, it has become an important and memorable lesson for Notre Dame business students entering public accounting and tax practice, joining the variety of other service/learning opportunities that distinguish the undergraduate education on which the University prides itself.

In the early 1990s, the ranks of Notre Dame's international students, researchers, visiting scholars, and faculty began to expand, and the TAP expanded and adjusted accordingly.

"International people have to deal with visas, immigration rules, and tax treaties," says Tom Bullock, international tax services coordinator for the TAP. "Many people come from countries where the tax system is simply a bill from the government: No discussion, just pay it. Our system, in which employers act as tax collecting agents for the government, seems strange to them. Different types of taxes, such as income, retirement and health, are confusing for many. For American citizens, these things are just another part of the scenery. Graduate students and visiting scholars coming to Notre Dame from other universities often speak of the load off their minds that the TAP provides." Last year, more than 800 such people were served by the program and more than 1,400 tax returns were prepared.

In 1999, Notre Dame received a generous donation in memory of Vivian Harrington Gray to help endow the TAP. A schoolteacher in northwestern Wisconsin, Mrs. Gray had helped support two sons and a grandson while they studied accounting at Notre Dame, and after her retirement, she, too, had volunteered to assist low-income individuals prepare their tax returns.


### When and where

*The Tax Assistance Program provides service in 11 area locations including the Center for Social Concerns and ND Downtown. The International TAP meets in LaFortune Student Center and the Mendoza College of Business. Notre Dame employees are welcome at all centers.*

*Domestic service begins Saturday, Feb. 11 and ends Thursday, April 13. International service begins Monday, Feb. 13 and ends April 13.*

*Service in the Center for Social Concerns will take place from 2:30 to 5 p.m. Wednesdays. Service in ND Downtown also is planned for Wednesdays, from 5:30 to 8 p.m. International tax assistance will be offered in LaFortune Student Center Mondays through Thursdays and on Fridays in the Mendoza College of Business.*

*A complete schedule of times and locations is available at <http://www.nd.edu/~taptax> or 631-7863. Various University events such as spring break will interrupt service.*



ND Works is published for the faculty and staff of the University of Notre Dame. It is produced by the Office of Public Affairs and Communication in conjunction with the offices of Human Resources and Business Operations and the Provost's Office. ND Works is produced semimonthly during the fall and spring semesters when classes are in session and once during summer session. Spring semester publication dates: Jan. 19; Feb. 2; Feb. 16; March 2, March 23; April 6, April 20; May 8, May 25; June 14.

**EDITOR IN CHIEF**  
Gail Hinchion Mancini  
**ASSOCIATE EDITOR**  
Carol C. Bradley  
**LAYOUT EDITOR**  
Wai Mun Llew-Spilger

Comments should be forwarded to:  
[ndworks@nd.edu](mailto:ndworks@nd.edu) or to NDWorks, 538 Grace Hall, Notre Dame, IN 46556.

# From Home to the Dome: Home-schoolers fitting in just fine

By Julie Flory

Go on, admit it. You've got a couple preconceived notions about home-schoolers. Über-brainy and family-oriented, they *always* win the spelling bee and, okay, maybe they're just a *teeny* bit shy and awkward on the social scene.



Home-schoolers are like regular freshmen, says Angie Chamblee

Well, forget what you think you know. Today's home-schoolers represent a contingent of bright, popular potential college students. And a steady number are choosing Notre Dame as, for some of them, their first experience in a traditional school setting.

"I've found everyone has been pretty accepting and a lot of kids will think it's cool or ask questions about it because they're curious," says sophomore Christina Emilian, a Fort Wayne native.

She is one of about a dozen home-schooled students who enroll at Notre

Dame each year. The University receives some 50 applications from home-schoolers annually, with an acceptance rate of about 30 percent, roughly the same as their traditionally-schooled counterparts.

They're making the transition remarkably well, according to Angie Chamblee, associate dean of Notre Dame's First Year of Studies (FYS) Program, who likens the home schooling trend to a return to pioneer days.

"It's not a new phenomenon, it's just recurring," she says. "Education is cyclical. Rather than looking at these students as anomalies, it's just one of many options we have now. And with the Internet and other technologies at our fingertips, we're going to see more of these things."

Outgoing and stylish, Emilian breaks pretty much every stereotype on the books about home-schoolers, and has heard as much on numerous occasions.

"There have been some people who would say, 'You were home-schooled?' I never would think you would have been home-schooled," recalls the theology major.

"You wear normal clothes, you wear pants, you wear makeup, you like boys. You're normal!"

"Normal" is a word that comes up a lot in discussions about home-schoolers at Notre Dame.

"You couldn't pick the home-schooled kids out of a line-up of students," says Ken DeBoer, assistant dean of FYS.

DeBoer half-jokingly points out that home-schoolers are all "valedictorians of their graduating class" and tend to be very self-sufficient. His colleague, FYS academic advisor Laura Flynn, agrees on that point and adds that if a student does happen to need a little help making friends or finding things to do, it's a fairly easy fix. "If they're not social, we try to set them up with activities, but we do that for everyone," she said.

Notre Dame does treat home-schoolers differently in one area—the admissions process. They are required to take two extra SAT subject exams, but the University will make "common sense adjustments" and wouldn't require say, a student who received numerous awards in Latin to take the Latin test, for example. Some parents and students have complained the additional requirements are unfair, but all seem willing to comply.

In the relatively short history of home-schoolers at Notre Dame, there have been instances of students who excel and those who struggle. "We know from the outset that they're coming in a little different and it may require something special, or it may not," says DeBoer.

And many of these students bring something special to the table

themselves. DeBoer recalls one home-schooled student who studied Russian on her own and went on to become the first and, thusfar, only student in Notre Dame history to test into second-year Russian.

And then there's Notre Dame's most famous home-schooler to date, freshman Emerson Spartz, the mastermind behind one MuggleNet, one of the most successful Harry Potter sites on the Web. Spartz describes himself as "self-taught," meaning he completed his curriculum more or less on his own (yes, Calculus too) while at home. He believes this independent approach may actually have given him an edge among his peers.

"I think the transition to college may have even been easier for me than others because I was already used to the extra responsibilities," Spartz said.

Working independently also came naturally to Bodie Solomon, a freshman from Sierra Madre, Calif., who was home-schooled through high school. "From about age 12 onward I was teaching myself out of textbooks," he recalls.

Solomon, however, says adjusting to college life was a bit of a challenge. "The biggest difference coming here was I was around people 24/7," he recalls. "I think a large part of it was I wasn't sure who I was as much as maybe some other kids from high school, especially since I'm an only child. But at the same time, looking back, I don't think my experience hasn't been that much different from a lot of my peers here."

Changing his academic focus from engineering to business helped his academic adjustment, as did settling into a social circle where he feels comfortable.

And doesn't that sound like a typical freshman-year story?



Freshman Bodie Solomon checks in with his advisor, Laura Flynn, in the First Year of Studies office. Solomon, one of more than a dozen home-schooled students in his class, says having people around him 24/7 was an adjustment. **Photos by Julie Flory.**

## Freshman Web reality star surfs through his first semester

By Shannon Chapla

As hundreds of Notre Dame freshmen enjoy the milestone of finishing their first semester, one young man's journey will, for a few more months, remain out there for anyone in the world to see.

Conor Kelly was accompanied all first semester by a video camera. He recorded his every move (well, almost) for a first-ever Web reality series that aired every few weeks on America Online's teen Web site RED. All eight episodes featuring the Bedford, N.H., freshman remain accessible for AOL subscribers at <http://aolsvc.aolr.aol.com/pfreshman.adp>.

Along with Kelly, Project Freshman chronicled the adventures of five other universities around the country. All six students shot their own video using a digital video camera provided by AOL, posted a blog on RED, through which they were able to chat online with young people between the ages of 12 and 18. Each was paid \$200 a week for their efforts.

The idea was to give high schoolers a glimpse of college life, through the trials, tribulations and confessionals of the six first year students.

"It gave me the opportunity to learn a lot about myself, to express myself and to grow," says Kelly, who found his camera to be a great conversation starter. "Part of college is maturing and developing as a person, and the work I did with AOL helped me do that."

"One of my goals for the semester was to become more outgoing, because, although I would prefer not to be, I am an intrinsically shy person. So, my camera was kind of my constant reminder of that goal, as well as my tool for achieving it. Some people write in journals or take walks to reflect, but last semester I was able to set everything out in front of me on tape."

And he did just that. Kelly shared his juggling and fencing skills;

apprehensions over leaving home, making new friends and good grades; pride in Morrissey Hall and interhall soccer; his long-distance girlfriend; the exhilaration of his first home football game and pep rally; an Honors Program trip to Canada, and his successful campaign to become part of student government.

Notre Dame took a variety of precautions before approving the project.

The Office of News and Information, which received the original request to participate in the series, first obtained approval from Rev. John I. Jenkins, C.S.C., the University's president, and the Offices of Public Affairs and Communication and Student Affairs.

The undergraduate admissions office then supplied the names of two dozen incoming students it felt would represent the University well. About half were interested; AOL picked Kelly. He signed a lengthy "code of conduct" designed to ensure that content for the series was appropriate for RED's 5 million teen members. Notre Dame's Office of General Counsel helped draft a contract between the University and AOL. The entire process took several months, but Kelly didn't disappoint.

"I think we were very fortunate that Conor volunteered for this gig, because he has been terrific," says Matthew Storin, who, as associate vice president for news and information, helped initiate the project. "His enthusiasm for Notre Dame carried through in every episode I saw, and I think he made a good effort to show a cross section of student life, especially with that fresh eye that a freshman brings to it all. I think he'll be a late night TV talk show host at some point in his life."

Until then, Kelly is enjoying his first taste of anonymity on campus.

"I'm looking forward to watching a football game next year without worrying about how much film I'm shooting."



Freshman Conor Kelly no longer has a video camera for a conversation opener. But he finds his unicycle serves the same purpose. Kelly videotaped his first semester for an American Online teen Web site called RED. **Photo by Darren Eichhorn, 2C Media.**

# Faculty, administrators invest in revitalizing U.S. Catholic schools

*The nation's primary and secondary Catholic school system is in need of an update. Many of Notre Dame's best minds have been charged with helping determine those changes should entail.*

## Task force puts ND on front line in fight for Catholic education

By Gail Hinchion Mancini

It's a sure bet that if President Rev. John I. Jenkins, C.S.C., asks for help, faculty and staff are going to respond. Also said to be irresistible: the winning smile and persuasive manner of Rev. Timothy Scully, C.S.C., director of the Institute for Educational Initiatives (IEI) and the inventor of the Alliance for Catholic Education (ACE).

Their call for help from faculty, staff and friends led to the assembly, late last month, of a cadre not normally present at the same table. There was Scott Malpass, chief investment officer, sitting across from Rick Garnett, a law professor whose interests include school choice; seated down from economist Viva Bartkus, associate professor of management, and marketing professor Joe Urbany. John Staud, ACE director of pastoral formation and administration, sat around the table from Tom Guinan of the controller's office, and Erin Hoffmann Harding, assistant vice president for strategic planning.

Meeting as members of the four-month-old Notre Dame Task Force on Catholic Schools, their conversation was aided by input from representatives of national Catholic and private schools associations, several venture capitalists with ties to the University, and the Archbishop of Cincinnati, the Most Rev. Daniel Pilarczyk. Almost 50 members comprise the task force, which is chaired by Father Scully and coordinated by Tom Bambrick, an alumnus of the ACE experience.

The national task force, the first established by Father Jenkins since he took office last year, is a response to a call to action from the U.S. Conference of Catholic Bishops. In June 2005, the bishops released "Renewing Our Commitment to Catholic Elementary and Secondary Schools in the Third Millennium."

The bishops' letter affirms the responsibility of the entire Catholic community "to continue to strive towards the goal of making our Catholic

elementary and secondary schools available, accessible, and affordable to all Catholic parents and their children, including those who are poor and middle class as well as those of other faith traditions who want to choose Catholic schools."

Father Jenkins took note that the letter paid particular attention to the financial challenges facing Catholic schools. Fundamentally, it urged Catholics to identify innovative ways to maintain existing schools and help finance new ones where needed. He has assembled the task force to develop a strategic plan for ameliorating some of the financial difficulties plaguing our elementary and secondary schools.

The bishops' letter led to a discussion that IEI and ACE leadership had been anxious to take on, says Father Scully. "We were looking for an invitation to get more involved in the conversation. We had been wanting to encourage a systematic assessment and thoughtful planning for some time," he says. "There have been 230 dioceses trying to plan and think of these issues on their own. But focused, sustained attention and talent had not been put to work at the systemic level."

The task force, impaneled through summer, has two goals: to draft a White Paper addressed to the bishop's conference, and to outline the unique role Notre Dame can play in advancing change and improvements.

Meeting Jan. 19-20 in the Hesburgh Center, the group engaged in a phase of exchange Father Scully refers to as "the earth-tilling phase." Subcommittees reported the state of schools and the forces and market demands that may be changing the landscape, such as a growing Hispanic population and shifts between urban and suburban areas. Reports illuminated the issues of governance facing parishes and

archdioceses, the current financial landscape of Catholic schools, creative funding alternatives and the potential for public funding options.

By its next meeting in April, the subcommittees are to have moved toward forging recommendations. During the summer, the core committee will draft its report and the White Paper for the bishops.

The exercise, while daunting, is a satisfying one for Father Scully, who can see a broadened role for IEI as one outcome.

"Catholic higher education has not been as proactive as we might have been in the service of this issue," he says.



Maureen Hallinan and Warren Kubitschek review data they have collected in the *Five Year Analysis of Best Practices in U.S. Public and Private Elementary and Secondary Schools*. Dr. Kubitschek, professor of Sociology, is editor of a forthcoming book that describes how Catholic and other private schools often stronger, student outcomes than public schools. **ND Works staff photo.**



Notre Dame's relationship with Catholic schools has varied from providing teacher in-service programs to the annual All-Catholic Schools Mass in the Joyce Center fieldhouse. Above, Bishop John D'Arcy distributes Communion in last year's Mass, which traditionally coincides with the late January Catholic Schools Week celebration. This year's Mass is delayed until March 8 to accommodate the 50th anniversary of the bishop's ordination. **Photo provided by the Diocese of Fort Wayne.**



Scott Malpass, Notre Dame chief investment officer, and Viva Bartkus, associate professor of management, share a light moment during a meeting last month of the Notre Dame Task Force on Catholic Schools. Both are contributing analysis and insight on how to solve the troubled finances of Catholic schools. **ND Works staff photo**

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## Hallinan makes the case for Catholic schools

By Gail Hinchion Mancini

Maureen Hallinan, one of the nation's preeminent researchers on education quality, knows probably better than anyone else exactly what Catholic schools do well.

Now five years into a study called "Comparative Analysis of Best Practices in U.S. Public and Private Elementary and Secondary Schools," she and her colleague Warren Kubitschek and a team of researchers are making a rigorous comparison of the achievement of children in Chicago's public schools with that of children in the Chicago archdiocese's schools, both urban and suburban.

The data sets are still being analyzed, so final reports of the groundbreaking study are not yet available. The focus on Chicago Catholic schools, which comprise the largest Catholic school system in the country, should suggest strategies for Catholic school advocates attempting to stem the tide of Catholic school closings. The focus on Chicago's public schools, where the school reform movement has been one of the most comprehensive in the country, should provide insight on how to effectively improve urban public schools.

And they promise to confirm the 1980s findings of Hallinan's University of Chicago mentor James Coleman, that Catholic schoolchildren achieve better academically than public schoolchildren.

The final report notwithstanding, the years of investigation have provided many conclusions about student outcomes in public and private schools that can be revealed. Hallinan, White Professor of Sociology, has consolidated those findings in a book to be released in May called "School Sector and Student Outcomes" (Notre Dame Press). The findings

should be of use to those debating the merits of school choice and educational vouchers.

One chapter written by Hallinan compares how students are placed in low, regular and advanced classes. Catholic schools don't usually have a low track, so children at that level are placed in the more challenging regular class. Her research found that "slow learners are stretched by being put in a more rigorous program. And what happens? They grow."

The Catholic school curriculum tends to be more demanding than the public school curriculum at every ability group level, her findings show.

"Catholic schools understand challenge. Catholic schools provide challenge. Catholic schools seem to make two assumptions. One is that all kids can learn. The other is that they believe the greater the challenge, the more students will learn. That seems simplistic, but not everyone does that."

Academic achievement is not the only advantage of a religious school, another of the studies concludes. For adolescents, being religious improves

psychological well-being and altruistic behavior. "The greater a student's religiosity, the higher his or her self-esteem, sense of self-efficacy, and involvement in community service," notes the study. Catholic schools, the research finds, have the strongest effects on student altruistic behavior compared to both private schools that are non-religious and to other religious schools. Public schools have the weakest effects on adolescent psychological well-being.

Families play a broader role in shaping a child's achievement than previously thought, the volume indicates. Schools make use of family involvement with varying degrees of success. Among the book's findings, public schools offer significantly more opportunities for parental involvement than private schools. Yet "School Sector" findings also show that parents of children in private schools are more involved in their children's schooling, and feel more comfortable being involved, than parents of children in public schools.

Hallinan is a self-described proponent of Catholic schools, but her affection is not wholly forged by her research.

"I'm a Catholic school proponent because I think the whole country is advantaged by having a diverse school system," says Hallinan. "Catholic schools are a strong and enduring tradition, so supporting their existence is the easiest way to guarantee that variety."

Her experience as a former Catholic school mathematics teacher comes to the forefront as she adds: "The dedication of Catholic school faculty to the total well-being of children, coupled with the small size of Catholic schools relative to public schools, gives a kid a happy experience."

Finally, adds Hallinan, this time sounding like a dyed-in-the-wool Catholic, "It thrills my heart that Catholic schools are so concerned about social justice issues. They have a possibly powerful voice to address that."

## Developing new views on Catholic education

By Gail Hinchion Mancini

Working through the "earth-tilling" stage, as Rev. Timothy Scully, C.S.C., calls it, the Notre Dame Task Force on Catholic Schools has unearthed a lot of information and a fair number of fresh ideas. While concrete recommendations will be forged in the coming months, some of the nuggets of information presented at the January task force meeting are noteworthy in themselves, as are some of the members' research methods.

**Financial challenges:** There's no single spreadsheet that describes the degree of financial challenge that American Catholic schools face. To arrive at a working figure, task force members analyzed financial data of four large urban dioceses, then extrapolated. The conclusion: There may be a very large financial challenge ahead.

One way to get a quick handle on the breadth of financial challenges is to ask those in the trenches. Members of the subcommittee on Catholic schools' financial health invited chief financial officers from 15 U.S. dioceses to campus in December, and also asked them to respond to a broad-based survey. The conversation revealed that there is little excess expense to be trimmed; new revenues are needed.

The CFOs discussed the pricing of Catholic school tuition, and discussed paths to address the needs. They remain concerned that Catholic school teaching salaries are so much lower than public school salaries.

**The worst may be over:** This same group reported that they expect fewer school closings in the next five years than in the past five.

**The iPod effect:** Task force members took a moment to ponder reports that more than 14 million iPods sold over the holiday season for as much as \$300. Total sales could be in the billions. Raising billions to meet Catholic school needs seemed less daunting in light of the public's ability to produce billions in a short period for this one electronic device.

**We could use some help:** Diocese representatives and others identified the need for smarter, more financially savvy minds around their tables. Training could be offered for members of diocesan and parish finance councils, as well as workshops for Catholic school advisory boards.

**As for fundraising:** Catholic high schools are showing progress in establishing fundraising programs, but elementary schools remain at the mercy of small-scale fundraisers.

**Box? What box?** The creative financing committee has been reviewing several innovative fundraisers, from corporate sponsorship of schools to credit card rewards programs. One task force member—a financial investor—set the standard for creative thinking when he suggested a lottery. Las Vegas Nights and Bingo games have been time-honored fundraising concepts. But the idea was inspired by watching how states with lotteries have improved their education programs through lottery receipts.

**The federal/state outlook:** Are federal or state funding opportunities becoming more private-school friendly? Some measures are positive. A million children attend charter schools in 41 states. 2005 saw a 10 percent increase in the number of disadvantaged children eligible for a targeted school choice program. In urban areas such as Washington, D.C., and New York City, black and Hispanic parents have exerted noteworthy pressure to release their children from failing public schools. And hurricane relief programs are bypassing public school business offices and putting money directly into Catholic schools that have taken in the public school victims of Hurricane Katrina.

**It's not all about money:** Stewardship, the notion that one gives back to the church out of gratitude, will be a companion to any financial recommendation. In several dioceses across the country, leadership so effectively advances giving as an act of stewardship that all schools within the diocese are supported without any tuition.



3-year study "Comparative Schools." Hallinan, White Professor private schools foster different,



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The Notre Dame Task Force on Catholic Schools has attracted a broad cross-section of Notre Dame and non-Notre Dame experts. Reporting at the task force meeting are, seated at center, Joseph Viteretti, a professor of public policy at Hunter College in New York; Notre Dame law Prof. Rick Garnett and Michelle Doyle, an expert on how federal funds reach Catholic schools. **ND Works staff photo.**



Rev. Timothy Scully, C.S.C. chairs the Notre Dame Task Force on Catholic Education. **File photo.**

## Historian adds twist to Crusades

By Susan Guibert

Paul Cobb appreciates the power of perspective. As a historian, it's central to his discipline. As a historian of Christian/Muslim relations in a post-9/11 world, it's a teaching tool he brings to class that's as important as pen and paper.

One of the classes Cobb teaches is a University seminar titled "Getting Crusaded"—an examination of the medieval Crusades as seen through the eyes of those who were, well, "crusaded."

"The Crusades are a natural laboratory for appreciating historical perspective. In my seminar, we cover the 'traditional' story of the Crusades—from the perspective of Catholic Europe, and then, one by one, we attempt to reconstruct how Jews, Middle Eastern Christians, and Muslims will have understood those same events," explains Cobb, associate professor of history.

Clouded by controversy for centuries, the Crusades (1095-1291) have been portrayed either as "holy wars" against Islam to liberate Christian holy places, or as brutal, unprovoked attacks by paranoid, religious fanatics. So which were they? That, of course, depends on one's perspective

"The point of the course is to get freshmen—sometimes straight out of high school—to grapple with two issues central to the historical discipline: how to handle narrative and how to appreciate perspective.

"The vast majority of sources produced in the Middle Ages about the Crusades, whether by Muslims or Christians, are narratives. They are literary re-tellings of what happened, not documents as such. They reflect the attempt by an author to craft a 'story' about an event. Students are taught to pay attention to plot devices, rhetoric, character stereotypes and development, and any axes that are being ground," Cobb says.

Cobb's current book, to be published this month, is a biography of an eyewitness to the Crusades, a medieval Muslim from Syria named Usama, whose memoirs Cobb first discovered as an undergraduate in an Arabic class. After revisiting those memoirs—which were rich with details about Usama's family—he began writing a history of the clan.

"The memoirs were tough to understand, but very funny and moving. I subsequently learned that Usama, who was quite famous in his day as a poet and warrior, was from an aristocratic family

of some notoriety in medieval Syria."

Titled "Usama ibn Munqidh: Warrior-Poet of the Age of the Crusades" (Oxford: Oneworld, 2006), the book is the first biography in English of Usama. The family castle still stands in Syria, and additional research for the book took Cobb "into all sorts of fascinating texts and strange locales in Syria, Lebanon, Jordan and Egypt." (Daunting for some, but not for a scholar who speaks Arabic, Persian, Greek, Syriac, French, German and "enough Turkish and Italian to sweet-talk the archivists.")

In addition to the biography of Usama, Cobb's research has spawned other projects: the family history and a new English translation of Usama's famous memoirs for Penguin Classics called "Islam and the Crusades: Usama ibn Munqidh and Ibn Jubayr."

"I'm most energized by the ways in which my teaching informs my research and vice-versa, so on the distant, distant horizon, a book based on "Getting Crusaded" may be in the works."

## Pulitzer winner to highlight Literary Festival

Buzz Bissinger, Pulitzer Prize-winning investigative journalist and author of the best-selling novel "Friday Night Lights," will be among the distinguished presenters at the 39th annual Notre Dame Literary Festival Feb. 13-16. Bissinger will deliver a public lecture at 7 p.m. Thursday, Feb. 16 in Washington Hall.

The recipient of a Pulitzer Prize for a series of reports for the Philadelphia Inquirer on that city's court system, Bissinger also has written for such publications as Vanity Fair, the New York Times Magazine and Sports Illustrated. Published in 1990, "Friday Night Lights" was released in 2004 as a major motion picture.

Joining Bissinger on the festival line-up are novelist and short story writer James Salter; humor and mystery writer Kevin Guilfoil; novelist Tasha Alexander; slam poet Saul Williams, and poet/playwright Rane Arroyo.

A complete schedule of events is available on the Web at <http://www.nd.edu/~alcwp/activities.html>.

## Celebrating Arab music and culture

A series of Arab film presentations that ends Friday in the Browning Cinema Theatre is a visual complement to a musical performance planned Saturday in the Leighton Concert Hall.

The Arab film "Destiny" will show at 10 p.m. Thursday, Feb. 2 and at 7 p.m. Friday, Feb. 3. It is described as an action-adventure spectacular about a 12th century Spanish Arab philosopher named Averroes. Filmed on location in Syria and Lebanon, it features raging battles scenes, gypsy song and dance, and medieval architecture.



Simon Shaheen's dedication to the education and preservation of Arab music inspired John Vickers, Browning Cinema manager, to arrange an Arab film series. Shaheen performs with Qantara at 8 p.m. Saturday in the Marie P. DeBartolo Center for the Performing Arts. *Photo courtesy of the performing arts center staff.*

and the West. Shaheen devotes much of his time to education and preservation of Arab music.

"Simon Shaheen is a big supporter of the arts, and of trying to link the Arab world and the Western world through the arts," Vickers says. "We continue the series in support of his mission."

Tickets for either event are available at <http://performingarts.nd.edu> or by calling 631-2800.

John Vickers, cinema manager for the Marie P. DeBartolo Center for the Performing Arts, decided to book a series of Arab films as he pondered the upcoming performance of Simon Shaheen and Qantara on Saturday. Qantara (the name means arch or bridge in Arabic) fuses jazz, classical, Indian and Latin music into a unique sound linking the East

## DISTINCTIONS

The University welcomes the following employees, who have taken jobs here since December.

**Meng Wang** and **Vikas Tomar**, aerospace and mechanical engineering

**Deborah Rotman**, anthropology

**Gayle Wilson**, business operations

**Jennifer Howard** and **Rise Nelson**, Center for Social Concerns

**Charles Grundy**, College of Arts and Letters

**Nancy Cole**, **Alfred Lemmon**, **Brendan Halloran** and **Phoebe Thomassen**, College of Business

**Brandii Cook**, **Heather Hakanen** and **Michael Kenney**, development

**David Dits**, **John Lingenfelter** and **Patrick Steven**, food services

**Kathryn Lang**, Institute for Educational Initiatives

**Michael Gallagher**, International Studies Programs

**Robert Ferry**, Land of Lakes lodge

**Barbara Dugan**, human resources

**Todd Mobley**, Office of Institutional Equity

**Nicole Hackbarth**, student activities

**Diana Garrastegui** and **Scott Monroe**, psychology

**John Budnick**, Radiation Lab

**Janaki Vijayaraghavan**, registrar's office

**Christa Jenkins**, research and sponsored programs accounting

**Derek Webb**, University Libraries

## WHAT THEY WERE DOING



Notre Dame faculty and students celebrate the opening of a display of student art in the Crossroads Gallery in the ND Downtown center. The art show, organized by Maria Tomasula, Grace Professor of Art, will be on display through Feb. 17. *Photo by Matt Cashore.*

## South Korean film depicts war, sacrifice

By Carol C. Bradley

If you liked “Saving Private Ryan,” the Korean film “Tae Guk Gi: The Brotherhood of War” is the film to see, says Aaron Magnan-Park, assistant professor in the Department of Film, Television, and Theatre. The film is the featured attraction in this year’s Asian Film Festival, to take place Friday, Feb. 3 through Sunday, Feb. 5.

“Tae Guk Gi” is an epic war film about a defining moment in national history during the Korean War. “It’s also about sacrifice,” says Magnan-Park. “One person, willing to put his life on the line for someone else.”

Festival goers will also have the opportunity to meet “Tae Guk Gi” director Kang Je-gyu, known as “the Steven Spielberg of South Korea.”

The festival, an initiative supported by the Center for Asian Studies and the Department of East Asian Languages and Literatures, features films from South Korea, China, India, and a joint Vietnamese-Singaporean film.

Films made by these countries should help balance a perception of Asia in this country that is influenced by what Magnan-Park sees as “a strong American bias.” The Korean War, for example, is seen from the perspective of Americans rather than Koreans. The view of Asia that most Americans see on a daily basis—a 15-second sound bite on CNN, for example—does not address the richness, depth and history of Asian culture.

The overarching theme of the festival is “humanism before ideology,” Magnan-Park says.

“All the films look at social conflict involving hostilities,” he says. “They have a humanistic perspective that tries to create a peaceful outcome, despite the existence of war.”

The academic conference that is a companion to the festival includes presentations by film scholars and representatives of the film industry. It begins Sunday, Feb. 5 and includes opening remarks by the Hon. Wook Kim, consul general of the Republic of Korea in Chicago. His presence is a rare visit by a diplomatic representative of the Republic of Korea to Notre Dame, if not the first, Park notes. Kang Je-gyu, the director of “Tae Guk Gi” is part of a panel at 1:30 p.m. Sunday.

The conference portion of the festival is free and open to the public. Tickets to the films may be purchased through <http://performingarts.nd.edu> or by calling the box office at 631-2800. Besides “Tae Guk Gi: The Brotherhood of War,” the festival will feature “Peacock,” about a Chinese family’s adjustment at the end of the cultural revolution; “The Terrorist,” loosely based on the assassination of Mahatma Gandhi, but set in present-day India, and “Song of the Stork,” is the story of the Vietnam War from the perspective of the North Vietnamese.

Each of the films, which have English subtitles, will be presented multiple times between Friday, Feb. 3 and Sunday, Feb. 5. A complete list of show times is available on the Film, Television, and Theatre Web site, <http://www.nd.edu/~ftt>.



Image by Tim O'Connor, ND Media Group

## Faculty-inspired programs open classrooms and labs to high school educators

By Gail Hinchion Mancini

Don’t be surprised next summer if you see a familiar face amid summer school students. A growing number of programs in support of science and mathematics education in the high school grades may land one of your old teachers, or your child’s teachers, here on campus.

Applications are being received from area science and mathematics teachers for a program called Research Experience for Teachers at Notre Dame (RET@ND) that will engage them in research experiences in several engineering and science departments. RET@ND is one of the newest in a long tradition of teacher education programs, many of which are summer experiences.

The federal government is behind this growing movement, according to Alex Hahn, director of the Kaneb Center for Teaching and Learning.

“Virtually all successful responses to federal grant proposals need to make a case for ‘broader impact.’ Indeed, a number of grant initiatives call directly for the effective integration of research and education within the context of the mission of the institution,” says Hahn.

Three-dozen area high school teachers joined summer research directed by faculty from the colleges of engineering and science. Assignments varied from four to eight weeks; teachers earned stipends that allowed them to forgo summer jobs outside the teaching profession. Participants learned research techniques in Notre Dame laboratories and were encouraged to build them into their own classroom curricula. The program was made possible by internal University support and the National Science and Siemens foundations.

While RET@ND is coordinated by Kaneb Center, “The labs and the colleges of engineering and science make this happen,” Hahn says.

RET@ND builds on the success of seasoned science outreach programs, QuarkNet. Launched six years ago by physics Prof. Randall Ruchti and now directed by Beth Marchant, QuarkNet has engaged dozens of physics teachers and some of their students in two months of all-day research in high-energy physics. QuarkNet has served as model for an initiative in electrical engineering conducted by Gary Bernstein, Marya Lieberman, and Wolfgang Porod, of Notre Dame’s Center for Nano Science and Technology.

Several other Notre Dame entities facilitate summer programs, such as the Joint Institute for Nuclear and Astrophysics (JINA), which sponsors outreach programs for kindergarten through graduate-level educators. Last summer, the graduate program in the history and philosophy of science introduced summer programming for high school science and mathematics teachers to expose them to historical and philosophical issues that can be used to deepen classroom discussions.

On behalf of elementary and middle schools, physics Prof. H. Gordon Berry operates a teacher education program in conjunction with Saint Mary’s faculty. Berry’s program focuses on a technique called guided inquiry that takes advantage of a students’ natural curiosity and personal experiences to focus their learning. Already proven successful among the teacher-learners, Berry says the project will begin measuring the success of guided learning among Mishawaka students. It is funded by a three-year grant from the Indiana Department of Education.

## FYI

### HMO has new service for chronic illness, weight management

Employees insured by Advantage Health Solutions can take advantage of two new programs that offer the help of personalized nurse case managers and coaches. No-cost introductory sessions will be offered in February and repeated in April.

Review the features of Select Your Health—A Health Enhancement Program from noon to 1 p.m. Friday, Feb. 3 in 234 Grace Hall. The program focuses on managing chronic illnesses such as diabetes with the help of a nurse case manager and a patient’s personal physician. Registration at <http://iLearn.nd.edu> is required by Feb. 1.

Advantage Health Solutions is also offering a new weight management program.

Select Your Health—Weight Management. The service will be explained during a one-hour session at noon Thursday, Feb. 9 in Room 234, Grace Hall. Advantage participants can enroll in the program at no cost. Employees in other health plans may participate, but will have to pay a nominal monthly fee. Registration at <http://iLearn.nd.edu> is required by Feb. 7.

### Cholesterol screenings

The South Bend Medical Foundation will be on campus from 7:30 to 10 a.m. Wednesday, Feb. 15 in room B11 of the Law School to conduct cholesterol screenings. A 12-hour fast (no food or drink other than water) is required before the test. The screening will take about 10 minutes. There is no fee for the screening, and advance registration is not required.

### Focus on parenting

An interactive workshop, “On The Road to a Healthy Future,” will be offered at 6:30 p.m. Tuesday,

Feb. 7 in the Early Childhood Development Center. The one-hour program will review the importance of modeling healthy eating and exercise habits for children. Registration at <http://iLearn.nd.edu> is required by Feb. 6.

### Elder care locator

The LifeWorks online elder care locator is available for those needing assistance for a family member. It can be used to find assisted living options, home health care agencies, and skilled nursing facilities. Go to [www.lifeworks.com](http://www.lifeworks.com) and log on with the user name “notredame” and the password “gond.”

### Performance review course

The Office of Human Resources will offer Performance Review—A Behavioral Approach from 8:30 to 11 a.m. Wednesday, Feb. 22 in Room 234 Grace Hall. The course will help those who conduct performance reviews by showing how to emphasize strengths and provide feedback that will help employees do a better job. Register at <http://iLearn.nd.edu>.

### Jobs@ND training

Training in the new Jobs@ND system for hiring managers and others involved in the recruitment and hiring process will be from 2 to 3:30 p.m. Thursday, Feb. 23 in Room 328 of the Information Technology Center. The program will explain how to navigate the employment site, and view and manage applicant information online. Register at <http://iLearn.nd.edu>.

### Chamber players perform Mozart and Schumann

The Notre Dame Chamber

Players will present piano quintet and quartet music of Mozart and Schumann at 8 p.m. Thursday, Feb. 2 in the Leighton Concert Hall, DeBartolo Center for the Performing Arts. The faculty ensemble of John Blacklow, piano, Karen Buranskas, cello, and Carolyn Plummer, violin will be joined by guest artists Cornelia Heard, violin and Kathryn Plummer, viola, both faculty members at the Blair School of Music at Vanderbilt University. Tickets are \$8 faculty/staff, \$6 seniors and \$3 students. To order tickets, visit <http://performingarts.nd.edu> or call 631-2800.

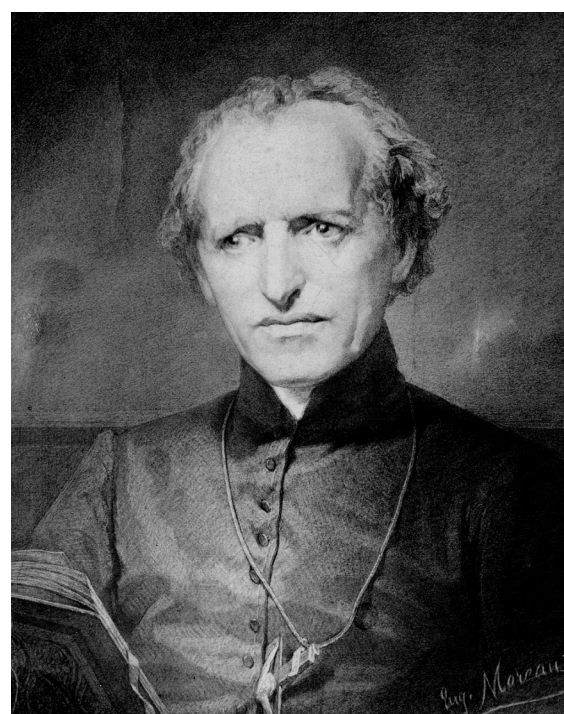
### “Hot Swing Tour” a tribute to Stephane Grapelli

Mark O’Connor’s Hot Swing Tour, a tribute to the legacy of jazz violinist Stephane Grapelli, will visit Notre Dame on Friday, Feb. 10 with an 8 p.m. appearance in the Leighton Concert Hall, DeBartolo Center for the Performing Arts. Tickets are \$31 for faculty/staff, \$31 seniors, and \$15 students. O’Connor’s distinctive fiddle style incorporates jazz and classical with country and bluegrass. To order tickets, visit <http://performingarts.nd.edu> or call 631-2800.

### Soweto Gospel Choir has distinctive South African style

The Soweto Gospel Choir will perform tribal, traditional and popular African gospel music in eight different languages in a concert on Saturday, Feb. 18 at 8 p.m. Tickets are \$31 faculty/staff, \$31 seniors and \$15 students. The South African group also features favorites such as “Amazing Grace” and music by Otis Redding. To order tickets, visit <http://performingarts.nd.edu> or call 631-2800.

## FROM THE ARCHIVES

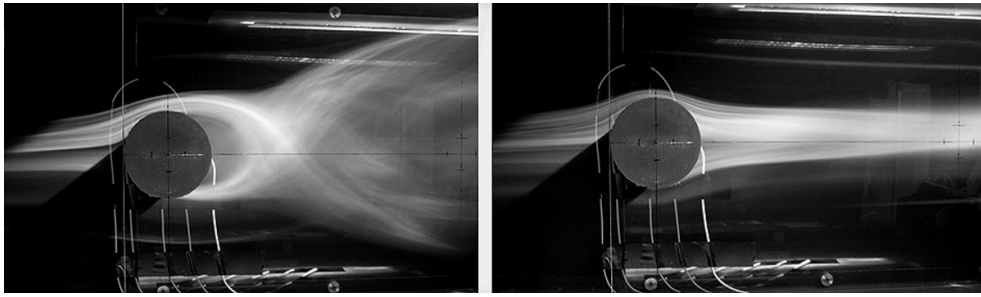
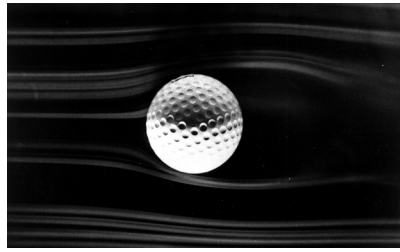


Rev. Basil Moreau, C.S.C., pictured above, founded of the Congregation of Holy Cross in 1840 with Rev. Edward Sorin, C.S.C., Notre Dame’s founder, as one of his first recruits. Father Moreau set the course of Notre Dame’s history a few years later when he sent Father Sorin to this region. Father Moreau died in 1873. Efforts have long been underway to see him declared a saint. He was declared venerable on April 12, 2003, and members of the Holy Cross Order hope that Pope Benedict XVI will approve the decree of Moreau’s beatification sometime next year, says Rev. Peter D. Rocca, C.S.C., rector of the Basilica of the Sacred Heart. Photo provided by Elizabeth Hogan, University Archives.

# BACK STORY

Taken in 1971, the stop-action photograph at right shows a golf ball undergoing a lift and drag test in a wind tunnel. Today's stop-action photography, seen below, shows wind being controlled.

Far right: Before the Hessert Center opened on the north end of campus, experiments were conducted in a considerably more primitive environment.



## Hessert continues one of Notre Dame's oldest research traditions

**FlowPAC's focus is defense, energy and quality of life**

By Nina Welding

This year marks the 15th anniversary of the Hessert Laboratory for Aerospace Research—a gift made possible by the generosity of 1948 graduate Thomas J. Hessert and his wife, Marilyn Hennebry Hessert. Its existence, then as now, is evidence of the tradition of excellence in fluid dynamics research at the University that dates back to 1882, with the development of one of the first hand-driven wind tunnels in the United States.

Professor Albert F. Zahm, the aeronautics pioneer who built the wind tunnel, was testing his theories of aircraft lift and drag on campus 21 years before Wilbur and Orville Wright conquered Kittyhawk. Zahm was an important influence on the College of Engineering and the field of aeronautics. Since his time, contributions to the physics of flight from the Department of Aerospace and Mechanical Engineering have continued to be recognized worldwide.

Today, the Hessert Laboratory is home to the Center for Flow Physics and Control (FlowPAC), established in 2001. "We have assembled an incredible team, one that is built upon the long heritage of aeronautical research at Notre Dame," says Center Director Thomas C. Corke, the Clark Equipment Professor of Aerospace and Mechanical Engineering. "The experience and accomplishments of the faculty within the center are international in scope. But with so many issues facing us as a society, this is not the time to sit back and relax; it is not the time to place any research on autopilot. Rather, it is the time to aggressively target new horizons in which we can apply the fundamental knowledge we have in flow physics and flow control at Notre Dame to change the way people live in tangible and very positive ways."

Faculty and students have taken Corke's vision to heart. FlowPAC scientists are working with colleagues from all branches of the Department of Defense and many NASA research centers—including Langley, Ames, Glenn, and Dryden—as well as with a growing number of industry partners, on projects that have direct bearing on national security, energy, and quality of life.

In one project, faculty are applying flow control to improve the performance of aircraft jet engines. The goal is to make the engines more efficient and lighter, so that they require fewer parts and cost less to manufacture. If applied to typical commercial aircraft, just a 1 percent improvement in fuel efficiency per aircraft per year would result in a savings of approximately 100,000 gallons of fuel, and approximately 11,000 pounds of noxious emissions such as CO<sub>2</sub>, NO<sub>x</sub>, particulates, and water vapor. If multiplied by the number of aircraft flying, the impact on the world's economy and environment would be immense.

Researchers at the center are also addressing a number of other aspects of commercial and military aircraft. Much of this research is being adapted to other applications, such as the use of flow control devices in wind turbines to improve their efficiency, and the development of ultra-efficient air filters for homes. Estimates indicate that, using flow control techniques developed at the center, the power produced by wind turbines can be improved by 30 percent. In addition, designing new systems with fixed blades that do not require pitch control would significantly reduce the complexity and initial cost of wind turbines and make them more competitive with fossil fuel-powered generation systems.

The center is nationally recognized for its research in the field of aero-optics, the study of the distortion of a coherent light source, such as a laser beam, as it passes through a turbulent flow. It applies to airborne lasers used for secure point-to-point communication systems.

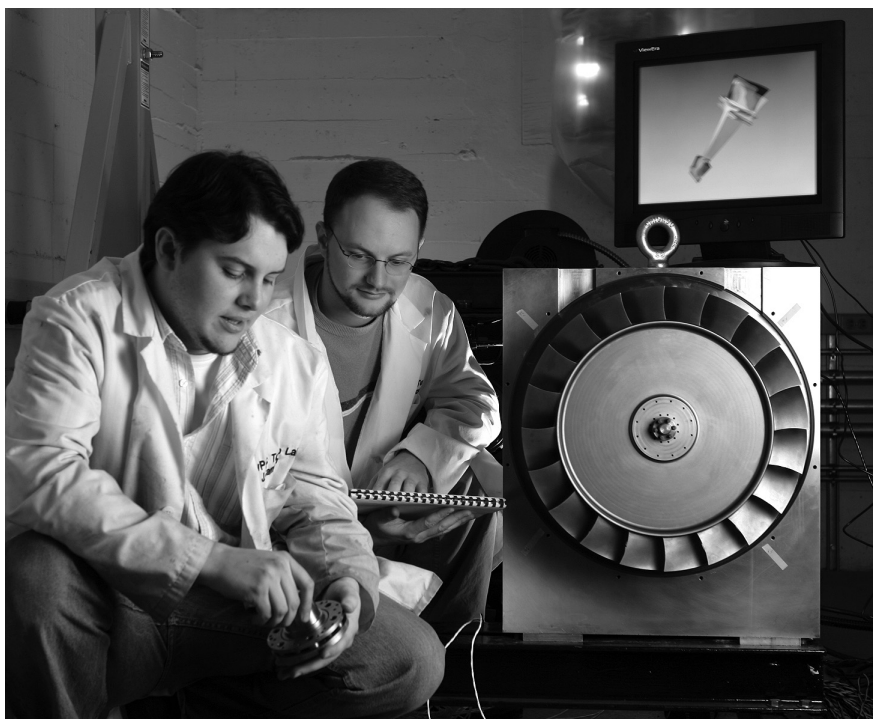
The center is also involved in reducing aircraft noise, including jet engines and "airframe noise." Flow control can be used to smooth airflow around landing gear, reducing sound produced by turbulence. Currently, restrictions on sound levels produced by commercial aircraft limit the capacity of a commercial air system.

Aerospace and civil engineering faculty working at the center are investigating the effects of wind on buildings and other structures, as well as wind "micro-climate" which affects pedestrians around buildings. Anyone who has walked a block in Chicago on a windy day understands this problem.

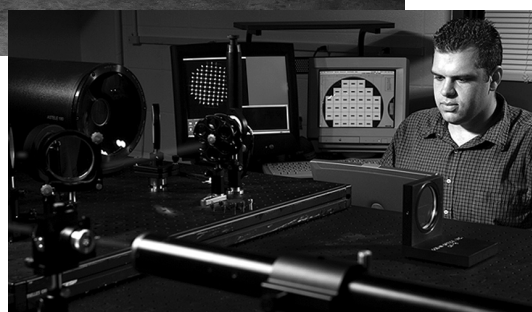
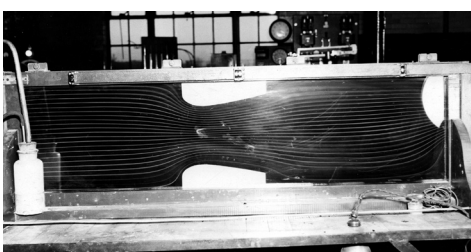
In addition to the loads placed upon the structures themselves, air movement in a cityscape also determines transport of contaminants, such as hazardous gases or dirty bombs. Research on such movement has various homeland defense applications.

For more information on FlowPAC, visit <http://www.nd.edu/~flowpac>.

Photos provided by Engineering Graphics and University Archives



Above, graduate students Joshua Cameron, left, and Matthew Bennington prepare a gas turbine engine in the new transonic laboratory. At right, Thomas Corke, Clark Professor of Aerospace and Mechanical Engineering and director of the Center for Flow Physics and Control, uses a plasma actuator he developed as a means of recording the instabilities of flow over aircraft nose cones. He has also used them on jet nozzles, pictured here, to alter the sound related to aircraft engines.



In 1951, students collected data in a flight simulator that looked every bit like a kiddie ride. A 1930s wind tunnel also seems passé compared with today's Hessert laboratories. At right is the aero-optics clean room, where students and researchers seek a better understanding, and corrections for, wavefront distortions such as the disruption that occurs when an aircraft flying at high Mach numbers projects a laser beam through the air.