<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Georgia Tech Impacts Atlanta</td>
</tr>
<tr>
<td></td>
<td>Four Points of the Compass</td>
</tr>
<tr>
<td></td>
<td>In every direction Georgia Tech has left its imprint on Atlanta. Alumni and members of the Tech community have played a definitive role in the city’s economic life as business managers, entrepreneurs, volunteers and civic leaders.</td>
</tr>
<tr>
<td>24</td>
<td>Advancing Technology</td>
</tr>
<tr>
<td></td>
<td>Georgia Tech’s Advanced Technology Development Center, one of the nation’s top incubators, nurtures fledgling companies and entrepreneurs, connecting member companies to people and resources they need to succeed.</td>
</tr>
<tr>
<td>26</td>
<td>Trains, Planes and Automobiles</td>
</tr>
<tr>
<td></td>
<td>Georgia Tech has been a partner in Atlanta’s growth and development and is working to find solutions to one of its biggest problems — transportation.</td>
</tr>
<tr>
<td>32</td>
<td>Architecture in Atlanta</td>
</tr>
<tr>
<td></td>
<td>Atlanta is the showroom of Georgia Tech architects — from the Classicism of Philip Shutze to the sky-reaching symbols and landmarks of the New South — heralding the city’s history and its future.</td>
</tr>
<tr>
<td>44</td>
<td>Arts &amp; Leisure</td>
</tr>
<tr>
<td></td>
<td>Whether it’s off to grab a bite to eat, catch a play, see a championship horse show, visit the zoo or redesign your home or business, you may be experiencing the work of a Georgia Tech alum.</td>
</tr>
<tr>
<td>54</td>
<td>Biotechnology Breakthroughs</td>
</tr>
<tr>
<td></td>
<td>Tech’s thrust into biotechnology, bioengineering and biomedicine looms as a huge, strategic asset in Atlanta’s future.</td>
</tr>
</tbody>
</table>

**Cover:** Georgia Tech was founded to prepare its students to advance technology and enable the state to flex its economic muscle. The impact on Atlanta has been dramatic, helping it become the major city of the New South. 

— Photo by Billy Howard
Departments

7 Feedback
John Boyd’s Legacy
Boyd Not Global Strategist
First Women’s Dorm
Wrong Choices
Pill Sends Wrong Message
Sharing Buffett
No Parrot Head
Pointing the Way
Back in Spirit
Legacy Admissions

13 Tech Notes
Creninis Takes Court
Academic Gold
Busy Site: gtalumni.org
Let the Fun Begin
Sen. Dole Speaks at Graduation
Nano Devices

62 Faculty Profile
Eva Lee: Cancer Fighter

64 Photo Finish
Ho-hum

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Preferential Admissions

In the press, the subject of college admissions of legacy students has received a bit of scrutiny. This follows on the heels of critical assessments of admissions programs at the University of Michigan and other major schools that use race as one criterion (of many) for admission—the goal being enhanced diversity.

Those who criticize acceptance of legacy students do so on several bases, but their primary argument is that it’s discriminatory. As an alumnus of this Institute, I want you to understand my position on the subject.

Let’s first define “legacy” for our purposes. We consider a student to be a legacy if that person has an immediate family member who is an alumnus of Georgia Tech. All other things being equal, should a potential student with a legacy connection to Tech be given preference over a non-legacy student? To me, it’s a simple answer. Yes. An analogous question is: Should a publicly funded university give preference to in-state students? The obvious answer here is yes, because people in the state support the college through their taxes. Alumni support their institutions financially at far greater levels than non-alumni.

In these days of declining state support, the only way to continue to provide the high quality of the educational experience at Tech is to count on those individuals and other entities willing to support the Institute privately. It’s simply known as “serving your customers.”

Alumni comprise the most dependable resource available to a university whether it’s volunteer service, advice, student recruitment or advocacy. Great alumni make great universities and vice versa. Through promoting robust connections with Georgia Tech alumni through the Association, the Institute will be advanced on many fronts.

Joseph P. Irwin
Vice President and Executive Director
Boyd Not Global Strategist

I feel compelled to add some information for readers to better gauge the contributions my colleague and fellow alumnus John Boyd made to the fighter aircraft state of art during his illustrious Air Force career.

John was a controversial character in life and must be smiling over the exchange between author Robert Coram and Col. Morton T. Eldridge debating his aeronautical talents. John did make significant contributions to the science of air combat that did impact the design of the two Air Force lightweight aircraft (General Dynamics YF-16 and Northrop YF-17) in the 1968-76 time period.

I was project engineer for the lightweight fighter prototype program at Wright-Patterson Air Force Base, Ohio, where the two prototypes were developed. The YF-16 ultimately was selected for production as the F-16 Fighting Falcon. I am proud to have been selected by the Air Force to have been the first chief system engineer of the F-16 fighter.

John helped write the maneuvering performance requirements in the original proposal and derived those requirements from the Energy-Maneuverability Method he developed. The requirements caused the F-16 and F/A-18 aircraft to be developed as exemplary air-to-air combat aircraft. John expressed disappointment and objected loudly to the additional avionics equipment that had to be integrated into both aircraft to make them truly great air-to-ground weapons systems.

While working on a very close basis with John, he found out we were both alumni of Georgia Tech. We spent many hours together analyzing his see-through overlays to detect where one aircraft could outmaneuver another. We were doing nothing more than a very practical application of the laws of motion and the laws of conservation of energy, which were drilled into both of us in physics courses at Georgia Tech.

John lived his life in the aggressive manner recognized as a personality trait that fighter pilots must possess. It was not uncommon to hear him rant in his booming voice, while chewing his ever present cigar stub, about flying at high-g levels and hosing the enemy (his terminology).

I never heard the famous “Patterns of Conflict” briefing John reportedly delivered. If that briefing portrayed John as capable of strategic thinking “far beyond that of Napoleon or MacArthur,” it certainly seems out of character with the John Boyd I knew. He was not the “architect of modern air warfare” as we have developed it to be, and as Mr. Coram attributes John to be. Modern weapon systems depend on stealth capability to substitute for much of the highly maneuvering air-to-air capability Boyd championed.

John had many of the traits (including eccentricity) of a tactical genius, but he was not a brilliant global warfare strategist. John would be most uncomfortable being compared to Napoleon. I think he would be more content with being compared with the likes of Billy Mitchell, George Patton and Curtis LeMay, and he truly deserves that recognition — even if only for developing the EM Method, which greatly improved air combat tactics at a time when high aircraft maneuverability was truly needed. That is the legacy of John Boyd.

Herbert A. Hutchinson, AE 53, MS AE 59 Westlake Village, Calif.

Wrong Choices

I was dismayed to see the pulpit you allotted to Carl Djerassi under the heading of dispelling “misconceptions about sex and reproduction.”

Djerassi correctly points out that the choices we made over the last 40 years logically lead to other, less popular choices today and tomorrow. Rather than accept that our first choices necessitate following them to their logical conclusions, however, we now have an opportunity to re-examine the assumption that our first choices were ever wise.

Djerassi’s discourse illustrates that:
1. The elimination of reproduction from sex does logically lead to the elimination of sex from reproduction.
2. Artificially creating children does lead to custom designing them based
on gender, organ-transplantation potential, sexual orientation.

3. Destruction of fetuses with traits perceived as strongly undesirable (e.g. Down syndrome) does lead to destruction of embryos for any reason (gender, disability, sexual orientation). Peter Singer, the DeCamp professor in the University Center for Human Values at Princeton, advocates the next logical step in this progression: destruction of “defective” born children through the first 30 days postpartum.

Djerassi dangerously misses the inevitable results of continuing on our current path, rather than acknowledging we’ve been wrong. Believing that we have the right to determine who lives or dies leads to exercising that right in less socially acceptable ways.

The three points above illustrate how human dignity is abused when we violate natural law. We lose sight of the infinite value that all people have, even the weakest among us — the sick, disabled, very young, very old. Separating sex and reproduction leads to seeing a woman as an object for one’s pleasure and viewing children as possessions to be acquired at one’s convenience (and ordered to spec) rather than gifts.

As Djerassi said, the pill “had a tremendous impact on sexual behavior.” Indeed, the increased promiscuity, adultery and objectifying of women have led to dramatic increases in incurable STDs, divorce, illegitimacy, single parenthood, poverty, crime, behavioral problems, abortion on demand, feminine cancers, an out-of-control pornography industry and the heartache of billions.

Djerassi asks the question, “Is an embryo alive?” He seems to say that the answer can’t be yes because there are thousands stored. This reminds me of World War II German scientists arguing, “There are millions of nonhumans (Jews) wasting away; might as well use them for research and advance some science.”

The embryo is neither dead nor inanimate; therefore it is alive. It is not bovine, canine, feline; it is human and can never become anything but a human being. Scientifically, there is no question that the embryo is a human life.

**Sharing Buffett**

I really enjoyed the article covering Warren Buffett’s question-and-answer session with Georgia Tech students in the Spring 2003 Georgia Tech ALUMNI MAGAZINE. It was interesting, informative and entertaining and answered questions I presume many college students have on their minds. I plan to share it with my daughter, who is a student at the University of Georgia.

Peter J. Petrecca, AE 66
Dunwoody, Ga.

**No Parrot Head**

I really enjoyed the Warren Buffett interview. You did a nice job of capturing the essence and the detail of his unique view on investing and life. I once read that singer Jimmy Buffett is a distant cousin of Warren’s. Obviously, they took very different paths to success. While Warren studied the stock market, Jimmy, by his own account, studied music and girls at the University of Southern Mississippi.

After moving recently from Atlanta to Oregon, I rely on the ALUMNI MAGAZINE for news about Tech folks and for insight on a variety of topics. Please include my e-mail address with this letter so that friends and classmates can get in touch.

Keep up the good work.

Wayne Parker, Mgt 74
Eugene, Ore.
parker@sapelo.com

**Pill Sends Wrong Message**

“The day will come when sex and reproduction are separate” is the opening quote of the article about Carl Djerassi, “Father of the Pill,” who lectured at Georgia Tech (Winter ALUMNI MAGAZINE). He has done his part to see that sex and reproduction are becoming separate. Has that been a good thing for our culture?

In separating sex and reproduction, the act that was meant to be a loving expression to bring new lives to a married couple is redefined. Many will argue
that contraceptives help marriages, but the evidence insists that it has encouraged sex outside of marriage, and the divorce rate has significantly increased since the introduction of “the pill.” A compelling correlation exists between the separation of sex and reproduction and the breakdown of marriage.

As a co-ed at Tech in the 1970s, I used to marvel that many men couldn’t see past the act to the emotional bonding, the possibility of conception and to the upheaval that would mean to a woman’s life. Contraception sends a cultural message to women: I want you for sex, but I don’t want your fertility.

I still marvel at Tech men who don’t look past the lucrative technology of the pill to see what it has done to our culture. Divorce rates near 50 percent and 40 million abortions have been performed legally in this country because people bought into the idea that sex and reproduction can be separated.

My daughter is now attending a university. There is a poster in her sorority warning women about the things that can be put into their drinks to render them incapable of refusing sex. A bartender in her college town has been convicted of this crime. First we had pills to get rid of that annoying fertility; now we have pills to get rid of that annoying refusal.

Methods exist to postpone conception through monitoring fertility and abstaining during fertile times. These methods maintain the vital link between sex and reproduction. They are inexpensive, drug-free and device-free. They improve marriage communication. Fertility is seen as a thing of beauty and not something requiring medication.

If my Roll Call money is going to fund more talks by the Father of the Pill, and they improve marriage communication, I can see happiness and not something requiring medication. If my Roll Call money is going to fund more talks by the Father of the Pill, please take me off your list.

Kathleen Riker Rogers, ChE 73
Tulsa, Okla.

Carl Djerassi visited Tech as the presenter of the 2002 Karlovitz Lecture, named in honor of Les Karlovitz, the former director of Tech’s School of Mathematics and dean of the College of Sciences and Liberal Studies, and funded by his widow.

Back in Spirit

Your — I should say our — publication not only gets better each time, it is one of the best of its kind. I did some browsing on the Internet to make this statement. For those alumni who live far away, receiving news so well written and put together about our alma mater is to be back in spirit with some of the best, if not the best, times of our lives.

I do have a suggestion. Let us know well in advance when the Homecoming festivities are going to be and arrange through the Georgia Tech Alumni Association an attractive travel package for foreign alumni.

Enrique A. Cubillos, IE 65, TE 67
Bogata, Colombia

Legacy Admissions

In a recent policy forum at the University of Maryland (Chronicle of Higher Education, Nov. 22, 2002), I was struck by Sen. John Edwards’ opposition to so-called legacy admissions, in which universities give credit to applicants with relatives who are alumni of a university.

I am a first generation college graduate. I serve on the board of trustees of the Foundation of my alma mater, Georgia Tech, and I just finished reading “John Adams” by David McCollough. All of these cause me to support the concept of legacy admissions.

The most striking quote from Sen. Edwards’ speech was that legacy admissions are “a birthright out of 18th-century British aristocracy, not 21st-century American democracy.” This sort of populist sloganeering makes for great theater and rallying cries, but really does not hold water as I see it.

Tradition and connectivity to the institution are important characteristics of higher education in America. Loyalty and alumni pride are generally very positive components of the university culture, except when an overemphasis on athletics skews perspective.

Families with multiple generations of alumni are generally more engaged in university life after graduation as donors, referral sources of new students, advisory board volunteers and participants in continuing education and cultural events at the university.

American society in the 21st century is so mobile and rootless that anything that gives us connection and a sense of belonging has to be positive.

The tagline of the Georgia Tech Alumni Association is “Your Lifelong Connection to Georgia Tech.” I believe it is more likely that alumni will continue to be engaged in the life of the university if those experiences are also a part of the family life. And that is a positive and healthy result.

William J. Todd, IM 71
Atlanta
Cremins Takes the Court Again

Georgia Gov. Sonny Perdue proclaimed March 7 “Bobby Cremins Day” and Alexander Memorial Coliseum’s court was named “Cremins Court” following the Yellow Jackets’ final home basketball game of the season against Clemson.

Several former players, including Mark Price, Dennis Scott, Tom Hammonds, Kenny Anderson and Craig Neal, joined Cremins at the ceremony. Many fans in attendance at the game dressed in what was Cremins’ signature garb of blue blazer and yellow tie and some even donned white mop-top wigs in his honor.

Head basketball coach Paul Hewitt was instrumental in organizing the tribute.

Tech’s winningest basketball coach and the third winningest coach in Atlantic Coast Conference history, Cremins compiled a record of 354-237 in his 19 seasons, highlighted by three ACC titles, 10 NCAA berths and a trip to the Final Four in 1990. Cremins brought Georgia Tech basketball into the national spotlight with a long line of great players, including six All-Americans, eight ACC Rookie of the Year honorees and 12 NBA first-round draft picks.

Cremins retired from coaching following the 1999-2000 season with a career record of 454-307 and is now a television analyst.
Academic Gold

Tech’s global reputation rising

Georgia Tech is becoming more widely recognized on a national and global scale as a producer of top-quality graduates and research, according to a market study on the Institute’s standing in the academic marketplace.

“The only real currency an academic institution has is its reputation, and it is our goal, every five years, to go out into the marketplace and ask people we care about, ‘What do you think of Georgia Tech?’” says Robert Harty, executive director of Institute Communications and Public Affairs.

The Georgia Tech Brand Image Study analyzes perceptions about Tech among internal and external audiences — including Tech faculty, staff, students and alumni, as well as prospective students, parents of prospective students, high school teachers and government, corporate and peer institution representatives.

The study says Tech’s image as a top engineering-focused regional university is climbing on a national and global scale. Tech is now perceived as technology-focused with a national reputation that places it among the top five engineering institutes in the country.

Across the board, survey respondents ranked Tech in the same league with such institutions as MIT, Stanford and Harvard.

Tech also got high marks in prestige, recruitment of a culturally diverse student body and in value for a top-quality education.

Tech President Wayne Clough is highly ranked and was commended for presenting a consistent message about the Institute and its goals.

Harty cautions that Tech must not be complacent.

“People see Tech as an up-and-coming player,” but there is a wait-and-see attitude regarding Tech’s ability to maintain quality and to make an impact with its research, Harty says.

Busy Site

Association’s gtalumni.org attracts thousands of online visitors

When alumni are surveyed about how many users visit the Georgia Tech Alumni Association Web site, they guess in the thousands — as many as 5,000 sessions a month.

Not even close. That’s about 75,000 sessions shy.

The Alumni Association Web site in January attracted 80,000 user sessions — and that’s only counting outside users, not Association staff checking information on its own site. That’s a 38 percent increase over last year.

“We’re not counting how many hits our site gets,” says Rena Moyers, Alumni Association associate executive director for marketing services. “We’re counting how many times someone comes to the Web site and actually navigates through the site.”

Moyers knows which pages get the most traffic and how long visitors stay at various Alumni Association locations (gtalumni.org).

While the campus map attracts a lot of traffic — visitors like to see what’s what and what’s where on campus — most visits are driven by alumni events (www.gtalumni.org/GetInvolved/events/).

The Alumni Career Conference attracted several thousand visits, the Pi Mile Road Race is increasing its share of traffic, alumni travel is a hot spot (www.gtalumni.org/GetInvolved/travel/) and alumni online publications (www.gtalumni.org/-StayInformed/) and Georgia Tech Clubs (www.gtalumni.org/GetInvolved/clubs/) are both popular locations.

The Living History Web site (www.library.gatech.edu/alumni/) had 520 user sessions in January, a 55 percent increase over the previous year, according to Moyers.
Let the Fun Begin

R. Kirk Landon, IM 50, experiences the fine art of hand painting at the new child care facility named for him. The R. Kirk Landon Learning Center provides care for the children of Georgia Tech faculty, staff and students and residents of the Home Park community. The child care center is a partnership between Georgia Tech, the Home Park Community Improvement Association and the city of Atlanta, which owns the property. The center, managed by Bright Horizons Family Solutions, was made possible in part through the generosity of Landon, the Georgia Early Learning Initiative, the family of Roger H. Brown, CE 52, and Carolyn Brown and Tech.

Elizabeth Dole to Speak at Graduation

Sen. Elizabeth Dole, R-N.C., will deliver the commencement address at Georgia Tech’s 211th spring graduation exercises on May 3.

Elizabeth Dole, who sought the Republican presidential nomination in 2000, is married to former senator and presidential candidate Bob Dole. She graduated with distinction from Duke University in 1958 and earned a degree from Harvard Law School in 1965. She also holds a master’s degree in education and government from Harvard. She was elected to the U.S. Senate in 2002.

Her government service began in 1969, when she was named deputy assistant for consumer affairs to President Richard Nixon. A member of the Federal Trade Commission from 1973 to 1979, Dole served as public liaison for President Ronald Reagan from 1981 to 1983, when she was appointed secretary of Transportation — the first woman to hold the cabinet position. In January 1989, she was sworn in as the nation’s 20th secretary of Labor. Dole served as president of the American Red Cross from 1991 to 1999.

75 Years Ago

Paramount Pictures news photographers filmed Georgia Tech’s Naval ROTC units going through maneuvers in April 1928 for newsreels released in theaters across the country. The movie newsreels captured Tech’s Naval unit being inspected by Georgia Gov. Lamartine G. Hardman and then performing signal, gun and navigation drills.

50 Years Ago

Jobs were plentiful in the spring of 1953 and interest in hiring engineers was running 75 percent ahead of the previous year, according to Fred Ajax, Georgia Tech’s placement director. In the May-June edition of the alumni magazine, Ajax said he had arranged for 25,000 job interviews between companies and graduating seniors. The average salary offering for beginning engineers, he announced, was a “cool $350 a month.”

25 Years Ago

Georgia Tech joined the Atlantic Coast Conference on April 3, 1978. The vote to accept Tech was unanimous on the part of the ACC executive committee and the member schools. “It is a terrific move for Georgia Tech to be in the ACC,” said then head football coach Pepper Rogers.
Researchers bring computing down to molecular scale

By John Toon

Georgia Tech researchers have demonstrated a new type of nanometer-scale optoelectronic device that performs complex logic operations, is simple to fabricate and produces optical output that can be read without electrical contacts.

Based on arrays of individual electroluminescent silver nanoclusters, the quantum devices could provide a foundation for new forms of specialized molecular-scale computing. The research, sponsored by the National Science Foundation, was reported in the March 18 issue of the journal *Proceedings of the National Academy of Sciences*.

“In effect, we are demonstrating optoelectronic transistor behavior,” says Robert Dickson, a professor in Tech’s School of Chemistry and Biochemistry. “Instead of measuring current output as in standard electronic transistors, we measure electroluminescent output for a given voltage input. Our devices act in a way that is analogous to a transistor with light as the output instead of electrical current.”

Because the nanoclusters possess different energy levels, they can be addressed individually by varying the voltage injected into the array of clusters with a simple two-terminal system. Avoiding the need for isolated electrical connections to each nanocluster makes the system far easier to fabricate at the nanometer scale than electronic devices of traditional design.

Key to the new devices developed by Dickson and collaborator Tae-Hee Lee is the specific voltages at which the clusters — which contain between two and eight silver atoms — emit light when electrically excited.

To operate, the devices require at least two separate electrical pulses, which can be varied in amplitude. Electroluminescence occurs only after the second pulse, which activates nanoclusters within the array depending on the voltage level to which each one responds. Because each nanocluster only responds to very specific voltages, the combined current delivered by the pulses activates only specific clusters, which are observed optically.

“By reading the emission output of two correlated molecules, we can add pulses together and perform a very simple but very important basic addition operation,” Dickson says. “The response is relatively narrow. Only when you have exactly the right voltage do you get a response. We see really clean on-off behaviors with this system.”

Increasing the number of clusters operating together could permit formation of large optoelectronic arrays able to perform complex operations. As long as each cluster could be separated enough to be resolved by a camera, arrays could contain thousands of clusters.

“Because of the inherent parallel nature of the system and the discrete energy levels of the clusters, there may be many applications here,” he says. “There is inherent beauty in this device being so simple and yet able to perform these interesting calculations. There are a lot of opportunities and challenges.”

Dickson hopes the new devices will also encourage a different way of thinking about computing on the nanometer scale.

“Many people are trying to shrink electronics down to the nanometer scale and take advantage of the interesting properties that arise when you make things very small, but often they are using standard architectures to create logic circuits,” Dickson says. “We are using a novel architecture to do the same thing, but with individual molecules with on-off behavior instead of a three-terminal device made very small. I hope that this will encourage people to think about different ways to do these operations.” 

Robert Dickson, a professor in Tech’s School of Chemistry and Biochemistry, left, and collaborator Tae-Hee Lee research a new type of nanometer-scale optoelectronic device. Such devices could provide a foundation for new forms of molecular-scale computing.

GT
The Tech Tower’s quiet presence is felt among Atlanta’s skyscrapers.
Wayne Clough wants to turn Atlanta into a college town. Georgia Tech has undeniably left an imprint on its hometown over the past 115 years, and not only with its growing prestige as an institution of higher learning.

Tech alumni play a definitive role in the metro area’s economic life as business managers, entrepreneurs and civic leaders. Georgia Tech as an institution is an important economic asset in its own right, with resources, budgets and number of employees the equivalent of a major corporation. Over the years, the Institute has also cast itself in the role of urban developer, expanding from the original nine-acre campus to its present 400 acres.

As Atlanta has grown, so has Georgia Tech. And yet their relationship has at times been characterized by a kind of aloof tension that tends to isolate a university from its surroundings.

But that’s changing.

In announcing the campus strategic plan two years ago, Tech President Clough, CE 64, MS CE 65, articulated an ambitious blueprint for developing the Institute’s physical infrastructure while making a civic commitment to the surrounding city.

Atlanta’s university campuses serve to soften the urban landscape, says Clough, and enhance the city’s quality of life. Furthering that role at Tech, as outlined in the strategic plan, means creating a campus with more green space and a “walking feel” that invites visitors.

“The Ferst theater and the new baseball stadium are two examples where the public already has an opportunity to come to campus and interact with Georgia Tech. There will be more as time goes on. As a university, we want to create an environment that exudes the power of technology in a purposeful way, but where it’s inviting to come and walk around as a tourist too,” Clough says.

Underlying the improvements is a new philosophical direction that Clough calls the “four points of the compass,” standing for the four sides of campus where Tech is already working or plans to work to smooth the transition from cityscape to campus. In effect, Clough envisions a new urban environment for Tech that resembles in look and ambience a college town, or the distinctive college-dominated areas of large cities.

“Some of our previous development reflected an inward focus that emphasized a separation from the city,” he explains. “Now we want an outward focus. We want to create porous boundaries around campus where neighborhoods flow in and out.”

To the south, the needle of Clough’s compass points to Centennial Place School, where Tech students serve as volunteer mentors and tutors for the children enrolled there and provide technical support for the teachers. Centennial students are often invited to attend performances at the Ferst
Center, and the school holds graduation exercises every year on campus, Clough says.

Centennial already boasts “some of the highest test scores in the city,” he adds.

Tech enjoys similar relationships with Inman Middle and Grady High schools, the next two stops for Centennial graduates.

“We want students from that loop to come to Georgia Tech,” Clough says. “Helping develop the academic potential of these young men and women will be good for us, for the city of Atlanta and for the neighborhoods.”

The north point of the compass includes Georgia Tech’s relationship with Home Park, where Tech has constructed a child care facility it shares with the neighborhood. Pointing to a growing need for affordable, quality child care, Clough notes that simply by recognizing the need suggested a natural interaction between Tech and Home Park, and resulted in a commercially viable facility.

Tech is also rebuilding some of its family housing in the area, which Clough hopes will revitalize the area into an attractive alternative to suburban living for Tech staff, faculty and students.

“We already have a number of students and faculty who live there,” he says, “but we’d like more to live close to campus to help create a true academic community. A number of faculty are moving into Midtown as well, so we’re working very closely with the Midtown Alliance to locate more housing there too.”

To the west, the North Avenue Research Area is a work in progress that is turning decrepit property on either side of the railroad tracks into a technology park for both campus research activities and private companies. With a combination of renovation, expansion and new construction, the complex is expected to be a major force in Atlanta’s future economic development, according to Clough.

“We’re cooperating with the Antioch Baptist Church and the folks who live in that neighborhood as they improve the appearance and infrastructure of their community too. The residents of this community have high aspirations for the future and we want to shape our developments there to fit a joint vision.”

The fourth and most dramatic compass point is the

Sundiata Jangha, left, a doctoral student in mechanical engineering at Georgia Tech, talks with Cedar Grove High School student Tamira Cousetz about her science fair project. Jangha teaches at the school as part of STEP — Student and Teacher Enhancement Partnership, a National Science Foundation program. As a STEP fellow, Jangha spends at least 10 hours a week teaching general chemistry and accelerated physics. He is one of 11 other fellows who has spent the past year working with teachers in one of six metro Atlanta high schools. Getting students on a college and career path is vital to their success, Jangha says.

Nicole Cappello
‘Immense Undertaking’

Campus construction boosts local economy

Georgia Tech is experiencing an explosion of construction projects that are pumping $390 million into the local and state economy while creating a renaissance in Midtown Atlanta.

The massive construction campaign dots the campus and hurdles Interstate 75/85, expanding the campus across eight acres of Midtown real estate known as Technology Square — a multibuilding complex that includes facilities for the DuPree College of Management and Global Learning Center. The $180 million Technology Square is scheduled for completion this summer.

On the main campus, the $23 million U.A. Whitaker Biomedical Engineering Building is also scheduled for completion this summer and construction starts this spring on the $62 million Christopher W. Klaus Advanced Computing and Technology Building. Klaus, Cls 96, founder of Internet Security Systems, made a $15 million contribution toward construction of the building, which will be a hallmark structure for computing and computer engineering on campus.

“For too long there has been a disconnect between Georgia Tech’s vision and its infrastructure,” Tech President Wayne Clough says. “A campus and its buildings speak volumes about what it stands for and what it seeks to be. All of us know when we walk onto a campus of a university that is serious about its goals. It is obvious to the eyes and the senses. Such a campus impresses you not only because of its architecture and landscaping, but also because it expresses a purpose.

“Our alumni, faculty and students have high aspirations as captured by our stated intent to define the technological university of the 21st century,” he says.

“Our building program of today attempts to not only serve near-term educational and research goals, but also to create a campus that 100 years from now will say that our generation understood its obligation to the Georgia Tech of the next century. We are building a Georgia Tech that will stand among the world’s best universities long into the future,” Clough says.

New facilities under construction at Technology Square also include the Economic Development Institute, Georgia Tech Hotel and Conference Center, Barnes & Noble Georgia Tech Bookstore, retail shops, restaurants and a parking deck. Across the street will be the Technology Square Research Building and Advanced Technology Development Center building.

Technology Square is a concept to promote a pedestrian-friendly extension of the campus and encourage interaction with Midtown’s growing high-tech business community.

In addition to the Whitaker building, other campus construction projects to be completed in 2003 include the $4.6 million Research Administration Building, $6.5 million Food Processing Technology Research Building, $6.8 million Joseph B. Whitehead Health Center and $62.5 million Bobby Dodd Stadium renovation. The first phase of the new $45 million Campus Recreation Center is also scheduled for completion in 2003.

Robert Thompson, senior vice president for administration and finance, says the construction projects are “an immense undertaking and one that will benefit Georgia Tech for years to come.”

“This series of capital projects will lay the physical foundation for intellectual pursuits throughout the course of this century,” Thompson says. “It’s an ambitious, exciting and nerve-racking challenge. The public/private partnership bringing these projects to reality will be a model for universities around the world.”
much-heralded “leap across the expressway” of Technology Square, which will open this summer. The $170 million, eight-acre complex will house units of Georgia Tech as well as office space and retail stores. But a key part of its importance is symbolic.

“Georgia Tech has influenced Atlanta economically with the number of high-tech businesses it has attracted,” says Clough. “And we want and expect more to come. But you need a geographic center, a highly visible entity that stands for Atlanta’s high-tech corridor, and that entity is Technology Square. The millions of people who travel down the I-75/85 highway will see and identify this area as the technological heartbeat of Atlanta.”

The project’s ripple effect on its Midtown surroundings will “create a vibrancy that’s missing now,” he explains, while bringing Atlanta and Georgia Tech closer together.

“We want people to use our bookstore, come to our Starbucks for coffee and eat at our restaurants along with our students. But we also want places for people to work, not only housing and retail — otherwise you’re just a suburb.

“It’s the research park concept, but in an urban setting,” he continues. “We’re providing facilities for companies that are coming up with new ideas and building new products, and that want to work with Georgia Tech. At the same time, we’re pursuing community outreach efforts to help them grow in ways to better link with Georgia Tech. The impact on the city will be wonderful.”

Atlanta rose to prominence as a railroad hub after the Civil War. The construction and subsequent expansion of Hartsfield International Airport coincided with the decline of railroads, maintaining the city’s status as a commercial center.

Twenty years from now, people may look back on Technology Square and Georgia Tech’s “four points of the compass” philosophy as benchmarks of yet another identity for the city — as a crossroads for ideas, innovation and new technology.

Clough thinks it will. Already, almost 20 percent of the area’s economy is tied to high tech, while 30 years ago the number was probably near zero, he says.

And while a share of that growth is due to the ubiquity of technology in the overall economy, the impact of Georgia Tech alumni and faculty has been a major factor.

According to Wayne Hodges, associate vice president for Economic Development and Technology Ventures, which includes responsibility for the Economic Development Institute, “Until about 25 years ago, a large number of Tech graduates used to leave town as soon as they got their diplomas. There weren’t enough technology-type career paths to keep them here.”

The growth of technology-based jobs has added an important measure of diversity to Atlanta’s economic base, and contributed to the 20 percent portion of the area’s economic pie that Clough mentioned.

“Georgia Tech helped make a lot of those changes happen,” Hodges continues, crediting the Institute’s emergence as a nationally prominent research university — and the resulting economic benefit to Atlanta — with the administration of Joseph H. Pettit, a former dean of engineering at Stanford who served as Tech president from 1972 until 1986.

“When microelectronics and what we call ‘high technology’ started to grow in the early 1970s, Dr. Pettit made sure Georgia Tech created a place for itself on the map. He took what was regarded by many as an excellent regional institution and set us on the path toward becoming an excellent national and international institution,” Hodges says. At the same time, Atlanta was harboring its own ambition for recognition as a business and commercial center not just in the South, but for the entire country.

One factor in that economic growth directly related to Georgia Tech is the Advanced Technology Development Center, a start-up company incubator that opened in 1981.

The desire of alumni to remain in metro Atlanta pushed development of ATDC. John Hayes, IE 70, chaired the Committee of 20, an Alumni Association group comprised of two representatives from each of the 10 most recent graduating classes.

“John and the Committee of 20 were interested in building infrastructure for the entrepreneur community that would lead to more opportunities,” Hodges says. “Since then, many more alumni stay here to work and even open their own companies.”

Although ATDC can’t take all the credit, it illustrates the changes that have occurred over the past few decades, Hodges adds.

While ATDC is its primary venue for creating technology jobs and businesses, EDI also supports the Atlanta economy
Urban Planner

Alumnus Ivan Allen Jr. developed Atlanta’s template for progress

Atlanta and Georgia Tech have enjoyed a mutually supportive relationship since 1888, when the city pledged $70,000 in start-up funds and $2,000 per year for 20 years to establish what was then called the Georgia School of Technology.

Perhaps the most significant event in their shared history, at least in terms of its long-term impact, was the mayoral election of 1961.

“Ivan Allen Jr. was a great mayor who really pointed Atlanta in a new direction,” says Georgia Tech President Wayne Clough.

An alumnus of Georgia Tech’s class of 1933, Allen is often credited with the creation of modern Atlanta. And while Georgia Tech can’t claim credit for his election, Allen’s forward-thinking leadership of the city cut a path for the Institute to follow as well.

“He made Atlanta a major-league town,” says Clough, referring to Allen’s audacious construction of Atlanta-Fulton County Stadium before the city even owned a team franchise.

During his two terms as mayor from 1961 to 1970, Hartsfield Airport was expanded, interstate highways constructed, groundwork was laid for MARTA and the Civic Center and Atlanta Arts Center complex were built.

More importantly, he applied a progressive philosophy to the defining issue of the day: civil rights. Allen was the only white Southern mayor to take a courageous step of testifying in favor of proposed civil rights legislation.

“We cannot dodge this issue,” Allen told a Senate committee in 1963. “We cannot ... turn the clock back to the 1860s.”

Allen championed an aggressive, anything-is-possible attitude that remains a part of Atlanta’s character to this day. Not coincidentally, it’s a perspective that describes the modern Georgia Tech as well.

—Ivan Allen Jr., Com 33, poses in his office in 1990.

by working with the state Department of Industry, Trade and Tourism and local chambers of commerce to bring new com-

R&D investments in advanced communications, biotechnology and environmental technologies. Georgia Tech is a charter member of the alliance.

“It’s unusual that a university has such a focus on economic development, commercialization and technology transfer,” Hodges notes. “These are all important to Georgia Tech and receive a lot of support from the highest levels of the Institute.”

It’s also unusual for a university to make such a substantial commitment of time and money to bringing itself and its hometown together for their mutual benefit.

“We’d like to see companies that have an interest in Georgia Tech — because of its research, for recruiting or other reasons — locate next to or near campus,” he says. “Moving past our traditional boundaries — literally and philosophically — allows this to happen.

“Helping Atlanta become a better city will make it easier for us to attract students, recruit companies and keep companies close to the Institute,” Hodges adds.

“I think we realize that Atlanta is just as important to us as Georgia Tech is to Atlanta.”

— Gary Goettling

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Georgia Tech is a strong selling point, says Hodges.

GTE Power Systems, AT&T and Lucent are some of the familiar names that established a presence in Atlanta at one time or another expressly to avail themselves of Georgia Tech’s faculty, students and resources.

“At Georgia Tech you’ll find more connections with industry, government and agencies than at any other university,” says Hodges. “It has evolved that way, and not just with EDI and ATDC, but across the institution.”

Another avenue where Georgia Tech contributes to the metro economy is through the Georgia Research Alliance. Founded in 1990 at the urging of prominent Atlanta businessmen, the alliance supports university-based research activity as the foundation of a high-tech economic and jobs sector in the state.

Based on the concept of North Carolina’s Research Triangle Park, the alliance is a private-public partnership that leverages state funding with private money to fund strategic
Incubator nurtures start-up companies

By John Toon

Microscopic surface imperfections in the bearings used by ships, helicopters and turbine power plants can lead to premature failure, crippling these multimillion dollar systems.

With funding from the U.S. Navy, Steve Danyluk spent nearly seven years developing a noncontact sensor able to detect the tiny faults before they lead to big trouble.

From a fourth floor office in the Georgia Centers for Advanced Telecommunications Technology just off the Tech campus, a small start-up company known as Qcept Technologies has begun delivering a commercial version of the sensor system to its customers. The company recently raised $2.1 million to fund its future growth.

Qcept and the sensor appear well on their way to success, a triumph for Danyluk — who directs Georgia Tech’s Manufacturing Research Center — and for the technology commercialization and business support services Tech has built over the past two decades.

Danyluk received a $50,000 grant from the former Faculty Research Commercialization program, established by the Advanced Technology Development Center, Georgia Tech’s technology incubator. With the grant, Danyluk hired a recent Tech graduate to continue the sensor’s development. He formed a company in November 2000.

Further assistance came from Georgia Tech VentureLab, which helps faculty members evaluate the commercial potential of the technologies they develop.

To head up his new company, Danyluk brought in Bret Bergman, an experienced entrepreneur and investor. Taking over as president and CEO, Bergman now leads the company’s day-to-day operations, allowing Danyluk to retain his faculty position while serving as a technical consultant to Qcept.

“We’ve gone from a lab-based technology to a full-blown product with paying customers and an ongoing company,” Bergman says.

Recognized as one of the nation’s top technology incubators, ATDC connects its member companies to the people and resources they need to succeed — investors, key service providers and business advisers. ATDC’s “venture catalyst” staff members — all of whom have start-up experience — meet regularly with company management to brainstorm business issues.

At facilities in Atlanta, Warner Robins and Savannah, ATDC creates an entrepreneurial environment in which companies help each other grow, says Tony Antoniades, ATDC’s associate director.

“Our community of entrepreneurs is an important reason companies want to be part of the ATDC experience,” Antoniades says. “Through CEO roundtables, weekly brown-bag lunches, other networking events and even informal interactions in the hallway, ATDC companies share experiences, solve common problems and learn from one another.”

More than 100 companies have emerged from ATDC since its formation in 1980. The best known is MindSpring Enterprises, now part of EarthLink, a $1.2 billion Atlanta-based company that is the nation’s third-largest Internet service provider. Other well-known Atlanta companies with direct ATDC roots include Air2Web, Knowlagent, Magnet Communications, Synchrologic and Theragenics.

Many of these companies — including EarthLink — have located in Midtown, helping build a new center for technology business around the Tech campus. In 2002, companies associated with ATDC raised more than $94 million in capital, provided 4,900 jobs and contributed $684 million in revenues to the Georgia economy.

Nearly half the 44 early-stage companies in the ATDC program have roots in Georgia Tech. In the last three years alone, 20 start-up companies licensed technology from the Institute, drawing from a growing number of patents.

“The Office of Technology Licensing, with VentureLab support, encourages the formation of start-ups,” says George Harker, Tech’s OTL director. “Licensing to start-ups generally
takes more time to yield value for Georgia Tech than does licensing to an existing company. But start-ups tend to stay in the state and create jobs here, and give Georgia Tech inventors opportunities for stock ownership and other participation."

Harker points to a rich trove of technology developed on campus, including 40 patents issued in 2002 alone.

Other ATDC member companies have no direct Tech connections and receive support as part of the Institute’s long-standing commitment to economic development in the state.

"Our community of entrepreneurs is an important reason companies want to be part of the ATDC experience. ATDC companies share experiences, solve common problems and learn from one another."

One company, enLeague Systems, delivers software that integrates intelligent XML and Web services, helping companies more easily integrate diverse databases and applications. The company is a member of ATDC located in Fizzion — a subsidiary of The Coca-Cola Co. formed to explore new technologies.

Georgia Tech alumni clearly understand what ATDC can do for them.

Ben Dyer’s business ventures have brought him to ATDC three times, twice with start-up companies and most recently to head a branch office of Cordova Intellimedia Ventures, a $42 million seed capital fund.

Comsell, Dyer’s first company, was a pioneer in interactive multimedia when it joined ATDC in 1983. He sold Comsell to Rupert Murdoch’s News Corp. four years later.

In 1989, Dyer was back with Gold Book, a collector car price guide that he was converting to an electronic form. The firm was sold to Cox Enterprises’ Manheim Auctions, which still markets the product.

Dyer says being part of an energetic community of entrepreneurs and seeing the role models of thriving firms are key success elements ATDC provides its companies.

"ATDC has been the linchpin of the technology community in Atlanta," Dyer says. "Our early software and electronics pioneers, like Management Science America and Scientific Atlanta, spawned many entrepreneurs and new ventures, but ATDC brought a focus to this process that has had lasting impact. ATDC endorsed the notion of technology entrepreneurship and gave it a home in a city that had been built mostly from real estate, finance and other traditional areas."

As an entrepreneur, investor and community leader, Chuck Johnson has watched the Atlanta technology community grow over the past 20 years. In 1983, the Duke University graduate co-founded Sales Technologies, one of ATDC’s earliest companies and its first real success. A pioneer in sales force management software, the publicly traded firm operates today as Synavant.

Johnson says ATDC’s greatest contribution in those early days was to provide a focal point for the people and organizations that wanted to help the city’s fledgling technology community.

"Probably ATDC’s greatest contribution was its positive attitude," he says. "Today in Atlanta, there is a much more sophisticated understanding of what it takes to start a business, but the importance of ATDC being a cheerleader for entrepreneurs in the early 1980s cannot be underestimated."

Now, Johnson works with entrepreneurs as a partner with Noro-Moseley, the Southeast’s largest venture capital firm — and the same company that invested in Sales Technologies back in 1983. As an investor, he sees the value ATDC adds to start-up companies.

"From an investor standpoint, it does make a difference in our willingness to review an early-stage company if that company has been accepted by the ATDC," Johnson explains. "ATDC acts as a first screen for the proposed technology and business model. We know that companies must pass a ‘sanity check’ to be accepted there."

ATDC remains vital to Atlanta and Georgia because it has adapted to changing conditions, says Wayne Hodges, associate vice president for Economic Development and Technology Ventures at Georgia Tech. Over the past two years, ATDC has launched VentureLab to spur commercialization of research, opened a new program in Savannah, expanded services to life sciences companies and leveraged a $1.7 million state seed capital fund investment into $32 million for local firms.

To house companies arising from Tech’s booming life sciences research, ATDC recently opened a 22,000-square-foot incubator in the Ford Environmental Science and Technology Building, the largest building on campus.

"Life sciences companies operate in a completely different world from the telecom and electronics industry with which Atlanta has more experience," says Lee Herron, ATDC’s associate director for biosciences. "This new facility will allow us to offer laboratory space to companies that need it, and we’re right in the middle of the biological sciences research on this campus."

This summer, ATDC moves its headquarters across the Interstate 75/85 downtown connector to the Centergy One development, part of the new Technology Square campus.

"This new facility will allow ATDC to offer an unprecedented level of services in what will be one of Atlanta’s most prestigious addresses for technology companies," says Hodges, who serves as ATDC’s director and has been there since its formation.

"ATDC companies will be part of a dynamic world-class technology community combining the best aspects of the business and university worlds. This facility will allow us to grow to a new level."
Trains, Planes a
Before there was Peachtree Street, there was Standing Peachtree, a Creek Indian village at the intersection of two major trails that bisected Georgia.

Four centuries later, Atlanta is the nation’s 11th-largest metropolitan area. Interstate highways and railroad tracks crisscross like Silly String and white contrails in the sky tell where jets used to be. As the city grew, so did the problems inherent to a regional transportation hub — traffic congestion, air quality and urban sprawl. Georgia Tech has been a partner in the city’s growth and development and is now working to help find solutions to the problems.
Trails to Rails

The railroad first made Atlanta the dominant hub of transportation in the southeastern United States. Western and Atlantic Railroad chief engineer Stephen A. Long left Chattanooga, Tenn., in 1837 and followed Indian trails through the rugged northwest Georgia mountains to designate a site where the W&A and Georgia railroads would meet. He called it the “southern terminus” and from that location modern Atlanta was born. Referring to the rowdy shantytown, Long predicted, “Terminus will be a good location for one tavern, a blacksmith shop, a grocery store and nothing else.”

By 1842, the 137-mile line to Chattanooga was under construction and the growing village was designated Marthasville by the U.S. Post Office in honor of Gov. Wilson Lumpkin’s daughter. The first regular rail service began in 1845.

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Marthasville was renamed Atlanta that same year and flourished as railroad service expanded. Macon and Western, Southern Railway, Louisville and Nashville, Atlantic Coast Line, Central of Georgia and numerous regional carriers built main lines into the city. The agriculture and textile industries used the railroads to get their products to market and, by 1860, the state had more than 1,200 miles of track, most of it intersecting Atlanta. Steam locomotives, and later diesels, moved cargo and people for the next 100 years until they were eclipsed by the airline and long-haul trucking industries.

Wings over Atlanta

Delta Airlines Flight 62 emerges through a shimmering jet-fuel mirage of wings and tail sections — stacked, waiting for takeoff — on runway 27L of Atlanta’s Hartsfield International Airport. The sleek Boeing 767 climbs quickly and veers south.

Of the 2,400 daily flights arriving and departing Hartsfield — the world’s busiest passenger airport — 1,800 are Delta’s and its regional subsidiaries. Just creating and maintaining such a schedule is a daunting task, so Delta came to Tech’s Logistics Institute for help.

“We designed SimAir, a simulation of airport and airline operations, that allows an airline to run its schedule in a simulated operational mode,” says Ellis Johnson, Coca-Cola Chair professor in the School of Industrial and Systems Engineering. “It allows airlines to evaluate the efficiency of the schedule in a simulated mode as well as test recovery procedures. For example, they could test procedures for an ice storm — whether to close down or how to reposition the planes for maximum efficiency.

“I’m sure you remember that University of Georgia foot-
ball fan who ran through security in 2001 and shut down the entire airport for hours,” Johnson says. “Since Delta’s hub is Atlanta, everything from that point on was behind schedule by several hours. They had to decide what to do the rest of the day and prepare for the next day. SimAir allowed them to try several different simulated strategies before they made a decision on how to proceed.”

Other passenger and cargo airlines now use SimAir to sort out their schedules.

Trucks Haul the Freight

The rise of the trucking industry in Atlanta in the 1960s mirrored the rise nationally,” says Chip White, ISyE chair of transportation and logistics in the School of Industrial and Systems Engineering at Tech. “Trucks account for more than 80 percent of revenue generated by the movement of freight in this country. While trucking is intrinsically important to the economy of the city and the region, it is even more important to the state and the nation.

“Tech has two major programs — The Logistics Institute and the Trucking Industry Program — that study logistics broadly and trucking specifically and how that industry is evolving. We are focusing on the logistics function of global supply chains involving trucking, seaports and freight airports rather than local or regional chains,” White says.

“Productivity is, and always has been, a big issue. Anytime you have a truck that can’t predictably get to a destination, then that truck has to build in buffer time, which is a form of waste.”

World instability since the Sept. 11 terrorist attack has amplified the problem.

“We’re working with Savannah, the port of Singapore, the port of Rotterdam and Atlanta’s Hartsfield International Airport to try to understand the productivity implications of the new U.S. security initiatives,” White says. “We’re almost exclusively focusing on container shipping right now, and that means we have to confront the potential horror stories that could occur from a group using a container as a weapon of mass destruction.

“We’re seeing increased congestion for trucks coming in
Larry Frank, a professor in the College of Architecture, is studying Atlanta’s regional transportation problems.
and out of ports due to security inspections and that decreases productivity of the fleet, the port and eventually the entire supply chain.

“The attacks on September 11 were focused on two targets — the way we govern ourselves and our economic system,” White says. “The best thing you can do to disrupt the supply chain is to add uncertainty — not knowing when that container will clear the port or when that truck will arrive. Added security directly adds to variability. If you wanted to be as disruptive as possible, you would have done exactly what occurred on September 11.”

Not all problems involve terror, but they do threaten Atlanta’s economic future.

Data, Data Everywhere

A stopwatch hanging from the rearview mirror of Mike Meyer’s 7-year-old Toyota records the daily commute time from his Alpharetta, Ga., home to his office at Tech. It’s the researcher in him, he says. The state Department of Transportation says metro Atlanta rush hour traffic averages 50 miles per hour — something he has a hard time believing — so he faithfully times each commute. So far, the average speed has hovered around 18.5 miles per hour.

“They averaged it over a four-hour period,” he explains with a slight grin. “I time the actual trip.”

Meyer, a civil engineering professor sometimes referred to as the “transportation guru,” came to Tech in 1988 after serving as director of transportation planning in Massachusetts. His book, “Urban Transportation Planning: A Decision Oriented Approach,” is required reading for future urban planners and engineers.

“Georgia Tech has a wide-ranging research portfolio relating to Atlanta and transportation,” Meyer says. “The basis for most planning and analysis is data, and we gather data on everything from bridge surfaces to geotechnical engineering to traffic dynamics, then project computer models for state, regional and local planning agencies.

“Imagine a video game played on a screen covering 70 miles in diameter,” he says. “Players add or subtract variables like traffic density, declining infrastructure and suburban sprawl while trying to navigate around more than several hundred thousand obstacles at any given time. That’s what a model looks like.

“We’re working with the Georgia Department of Transportation regarding safety issues,” he continues, “analyzing the effectiveness of geometric design on roads and intersections. We’ve worked extensively with the Georgia Regional Transportation Authority on reducing truck emissions, and we’re working closely with the DOT on developing traffic management centers, coordinating traffic signalization and variable message signage for motorists.”

Meyer says Tech excels at equipping vehicles with specialized instruments to gather data. “We install computers, global positioning systems and sensors so we know all about that particular car and driver. We then develop models from that information to try to predict future travel behavior and determine the impact it will have.”

A Smarter Tomorrow

Much of the instrumentation data is analyzed for use in Strategies for Metropolitan Atlanta’s Regional Transportation and Air Quality, or SMARTAQ, a study initiated in 1998 by Larry Frank, a professor in the College of Architecture. The study, later assumed by the Georgia Tech Research Institute, assesses land use and transportation policies that have the greatest potential for reducing auto dependence in the Atlanta metropolitan area while sustaining the region’s economic vitality and environmental health.

“We’re in the best part of the study,” Frank says. “The exciting thing is that the results are beginning to come out, and they are very compelling so far. Early results conclude that significant proportions of households located in auto-dependent areas would prefer to be in a less auto-dependent environment and they will make location choices based on proximity to shops and services and pedestrian ‘walkability.’

“These results are also among the first to confirm a significant link between built environment and physical wellbeing. We confirmed there is a significant reduction in body mass index, implying that people who live in these walk-friendly environments are less likely to be overweight, thus less likely to develop a chronic disease. These findings have far-reaching implications for future public policy,” he says.

Atlanta’s future may also depend on the implementation of SMARTAQ’s findings, Frank says. The Atlanta Regional Commission predicts the metropolitan-area population will increase by another million people in the next 15 years and put as many as 675,000 more cars on an already failing freeway system.

“These findings are a warning beacon. Given current traffic and air-quality conditions in the Atlanta region, there is a critical need to actively engage the public, elected officials and the development community in this effort,” Frank says. “We have to design environments to accommodate growth in a way that reduces the need to drive. Growth can be a good thing if it’s done right.

“We have to empower Atlanta by outlining specific regional transportation planning and growth management strategies so we can effectively address the future economic and physical health of area residents.”
Architecture of Atlanta

Georgia Tech Architects Showcase, Shape the Atlanta Skyline

Photography by Billy Howard
Atlanta is the showroom of Georgia Tech architects — from the Classicism of Philip Shutze to the sky-reaching symbols and landmarks of the New South — heralding the city’s history and its future. Here is a sampling of the architecture by alumni that gives Atlanta form and substance.

The 24-story Georgia Power Corporate Headquarters (left) was hailed as perhaps the most energy-efficient high-rise in the country in 1981 and was featured in Time magazine and on BBC television. Heery International, founded by George T. Heery, Arch 51, generated energy with its architectural and engineering design. The building’s 67,000-square-foot roof was designed as a solar collector field, providing 15 percent of the building’s total energy.
The excitement of a city — its strength, its personality, its character, comes from its people, says John Portman, Arch 50. Atlanta has a “tradition of being very progressive” and the city has stamped its impressions on him as dramatically as he has stamped his architectural fingerprint on Atlanta.

The Hyatt Regency opened in 1967, the first of Portman’s trend-setting skyscrapers, with a 22-story atrium, glass-enclosed elevator cars and an excitement that inspired a revitalization of downtown Atlanta (above). The Hyatt and the Polaris Lounge that turns slowly around at its summit are reflected in the glass of a neighboring building (opposite).

Portman also was the architect and developer of Peachtree Center (left), a truly mixed-use complex of office towers, hotels, trade marts, an athletic club, stores and restaurants.
The Georgia Dome (above and at right), home of the Atlanta Falcons professional football team, houses the state’s largest indoor space. It was a joint venture between Thompson, Ventulett & Stainback, Heery International and Rosser Fabrap architects. CNN Center (opposite) opened in 1975 and, in combination with the Omni and the World Congress Center, was a success story for architects Thompson, Ventulett & Stainback. Tom Ventulett, BS 57, Arch 58, is principal and director of design at the firm. CNN Center functions as both a working office and a tourist attraction.
The New Horizon Sanctuary of Ebenezer Baptist Church, the church where the Rev. Martin Luther King Jr. shared the pulpit with his father, was designed by the architectural firm Stanley Love-Stanley and completed in 1999. William J. Stanley III, Arch 72, was the first African American to graduate from Tech’s College of Architecture and his wife, Ivenue Love-Stanley, Arch 77, was the first African American woman to do so. He was the youngest African American to become a registered architect in Georgia and Love-Stanley was the first African American woman to be registered.

The Ebenezer sanctuary’s central axis passes through King’s crypt and was designed around the concept of an African meeting house. The base of each interior column bears the design of an African cross — two are Coptic Christian, one a design from the original church reminiscent of an African weaving pattern and another a cruciform with a globe.

The roof’s hut-shaped arches are reminiscent of a sculptured mound outside, while inside the ridges step down toward the pulpit. Copper roof seams suggest thatched roofs commonly found on African dwellings.
Architecture, wrote the late historian Sir Banister Fletcher, "provides a key to the habits, thoughts and aspirations of the people."
The Carter Presidential Center is a set of interlocking round pavilions designed by Jova Daniels Busby Architects to accommodate conferences, offices, a visitors center and the presidential library of Jimmy Carter. Stanley L. Daniels, Arch 60, says, “Our objective was to create a series of buildings that portray a period of history and a person.” Beautifully landscaped, the Carter Center draws traveling historical exhibits and houses documents from Carter’s presidency.

A state treasure, the Swan House, now part of the Atlanta Historical Society complex, was designed by Philip Shutze, Arch 12, as a classical interpretation of an Italian villa. Shutze created powerful expressions out of the elements of Classicism, and the Swan house conveys both elegance and beauty.

The D. Abbott Turner Center (opposite) at the Chandler School of Theology on the Emory campus was designed by Scogin, Elam & Bray and built in 1990. The building’s tilted walls, scooping roof lines and metal and glass enclosures challenge conventional forms and preconceptions about structures of higher learning. B. Mack Scogin Jr., Arch 67, and his wife Merrill Elam, Arch 71, are founders of the firm.
Atlanta’s modern skyline bears the signatures of many Georgia Tech architects. The Atlanta Business Chronicle reports in its 2002 “Book of Lists” that 19 of the top 25 architectural firms in the city — including all of the top five — have Tech ties. Those 19 firms were responsible for $5.8 billion in metro Atlanta construction projects done by the top 25 firms in 2001. The ranks, firms and Tech connections are:

1. Thompson, Ventulett, Stainback & Associates, managing principal Thomas W. Ventulett III, BS 57, Arch 58
2. Heery International, founded by George Heery, Arch 51
4. Niles Bolton Associates, managing principal Niles Bolton, Arch 68
5. Cooper Carry, managing principal Jerome M. Cooper, Arch 52
6. Greenberg Farrow Architecture, managing principal Hughes Thompson, Arch 72
7. Wakefield Beasley & Associates Architects, founder John B. Beasley Jr., Arch 68
8. Lord, Aeck & Sargent, managing principal Larry Lord, Arch 65
9. CUH2A, managing principal Jon Crane, Arch 77
10. CDH Partners, managing principal Jefferson H. Fincher, Arch 83
11. Stevens & Wilkinson of Georgia, managing principal Thomas O. Ramsey, Arch 67
13. Robertson/Loia/Roof, founder Michael Loia, Arch 71
14. Leo A. Daly, managing principal Richard A. Standard, Arch 77
15. MSTSD, managing principal W. Grant Moseley Jr., Arch 75
16. THW Design, managing principals Mark Tilden, Arch 77, MS Arch 79, and Jim Hudgins, Arch 82, MS Arch 83
17. Macgregor Associates, managing principal Bruce Macgregor, Text 67, MS CP 76
18. Surber Barber Choate & Hertlein Architects, managing principals Eugene L. Surber, Arch 61; James R. Barber, Arch 67; and James E. Choate III, Arch 83, MS Arch 85
19. Randall-Paulson Architects, managing principals Michael B. Randall, Arch 76, and Alex S. Paulson, Arch 80. GT
Bill Johnson has designed some of Atlanta’s most beautiful and dramatic restaurants.

Johnson and his staff of 16 architects and designers at The Johnson Studio have a client list that reads like a “Who’s Who” of Atlanta’s hip places to eat — BluePointe, Pano’s and Paul’s, Kyma, Aria, Joel, Seeger’s, Nava, Canoe — each with a unique style and atmosphere. His designs are now showing in buzzed-about restaurants in Chicago, Las Vegas, Charleston and Houston.

“What I like about restaurants is that generally they are a little more intense, from a design standpoint, than other environments. People will only be there for a little bit of time and it can be bolder and more dramatic,” says Johnson, BC 77. “If it is too subtle, people don’t notice, but you have to know where to stop. A chef friend told me it reminds him of salt — it is an ingredient that makes things taste really great, up until it ruins them. It has to be comfortable. People coming in have to feel delighted and they have to feel good.”

Johnson launched his independent career in 1980 and set to work on his first two projects — a house and a restaurant. Anno, a bistro on Pharr Road, was short-lived but well received. His first taste of real restaurant success came in 1983 with the design of Peachtree Cafe, which quickly became the hot spot in Buckhead.

Other restaurant owners craving the same kind of success started seeking out Johnson to design their eateries.

“Everyone knew about it,” says Johnson, who was working on a variety of projects from residential renovation to retail space design. “People who knew about the Peachtree Cafe obviously thought I knew something about restaurants because I had done one project that was successful.

“Actually, for a while I was not thrilled that all I was getting were restaurants, but if I had to pick a niche, I couldn’t have picked a better one. It was an accident, but it was kind of a happy accident.”

To create a concept for a restaurant, Johnson talks to restaurateurs and chefs about the kind of environment they want and familiarizes himself with the cuisine.

“Different clients have different moods they want to create.

Is the concept upscale, is it mid-scale or is it casual? Is it fun or serious? The most important thing to me is that it has to make people feel good when they come in,” Johnson says.

Rather than simple architecture or interior design, Johnson describes his work as “interior architecture.”

“It involves all of the trades and disciplines. We are dealing with volume and space. We do everything. We design not only the building, but the fabric, the carpet, the lighting, the furniture,” he says.

“Restaurants are like theater. You want to transport people and that can be very simple or very complex.”

John Kessler, dining critic for the Atlanta Journal-Constitution, describes BluePointe as a blockbuster that “can still take your breath away every time you walk through its sliding glass doors and take in the soaring, colorful space that pulsates with style and energy. It’s a sizzling vision of big-city glamour.”

Of the recently completed One Midtown Kitchen, Kessler says, “One is quite the looker, a once-plain box of concrete floors and brick walls set into motion. The great, undulating bend of the kitchen, the constellation of overhead lights on spindly strands and the use of a wheat grass hedge to divide the room all contribute to a warm and witty visual energy. Groovy touches include stocky bar lamps cast from white wax and an unfinished cinder block front on the otherwise highly finished bar.”

Johnson attributes some of his success to the change in attitude regarding restaurant design that began in the 1980s.

“The decor aspect of restaurants started to become more important and that corresponded with the whole upsurge in the restaurant business in Atlanta,” he says. “All of a sudden there were more restaurants and they were becoming competitive and part of that competitive edge became decor.

“It has evolved to the point that people go to a restaurant now for the decor as well as the food. Aesthetics and ambience have become very important.

“Restaurants are like theater. You want to transport people and that can be very simple or very complex. If someone has had a bad day or it is a special occasion, they want to be in a terrific place that is stimulating and where they are served great food. A restaurant is a place where they go to get recharged or to have a good time.”

— Maria M. Lameiras
Designer Yip Isn’t Trading Atlanta Space

Before he came to Georgia Tech, Vern Yip had never been to Atlanta, but now he’s one of the city’s most-recognizable designers.

Yip’s fame is due to both his design expertise and his “star” role on “Trading Spaces,” a popular home design show on The Learning Channel. Yip’s personable nature and clean, minimalist style have made him a favorite among the show’s viewers and a media darling. The audience went wild when he made an appearance on “Oprah” and he has been featured in articles in newspapers from Atlanta to San Francisco and everywhere in between, as well as in national magazines such as Style at Home and Woman’s Day.

While earning master’s degrees in management and architecture at Tech, which he completed in 1994 and 1995, Yip began working as an architectural draftsman with Thompson, Ventulett, Stainback & Associates. He later joined Atlanta design firm Cooper Carry and began a side business importing and selling Chinese antiques. That venture reaped media attention and Yip was hired to design Fusebox, a glamorous Asian fusion restaurant in Midtown that captured the favor of critics and diners.

In 1999, he opened Vern Yip Designs in Atlanta. In 2000, he was awarded the prestigious Southeastern Designer of the Year Award and came to the attention of “Trading Spaces.”

Yip also has his own Web site to provide advice on interior design and continues to do design work in Atlanta for commercial and residential clients.

“There is a real energy around Atlanta,” Yip says. “It’s a wonderful place to call home.”

Ferst Center Puts Arts First

Since the stage lights first shone in 1992, the Robert Ferst Center for the Arts at Georgia Tech has been attracting audiences as varied as the entertainment booked.

Students and alumni, city dwellers and suburbanites fill the house for opera and jazz, ballet and tap dancing, comedy and drama. It’s a strategy that has worked since that inaugural season, when the Ferst featured a lineup that included both screechy-voiced comedian Bobcat Goldthwait and violin virtuoso Itzhak Perlman.

The concept for the Georgia Tech Theatre for the Arts became a reality when the Callaway Foundation agreed to donate $3.75 million of the $7.5 million needed for the project and successfully challenged the state of Georgia to match the monetary gift. The theater broke ground in December 1989 and officially opened in April 1992 with a performance by pianist Andre Watts.

The theater later was renamed for Robert Ferst, ME 38, Georgia Tech Foundation treasurer for nearly 30 years. After his death in 1991, his widow gave $500,000 to the theater in honor of the man who had served as an Alumni Association trustee, a Georgia Tech Research Institute trustee and co-chairman of the Georgia Tech Endowment Council, established the Robert H. Ferst Scholarship Fund and received the Joseph M. Pettit Alumni Distinguished Service Award.
Longest Run

DramaTech is Atlanta’s oldest theater company

Georgia Tech’s student government allocated $30 in 1947 to start a dramatics club, and DramaTech began its run as Atlanta’s oldest operating theater company.

Two years after its start, Mary Nell Santacroce, who was known as “coach” to hundreds of students, became DramaTech’s first professional director. Santacroce, who died in 1999, coached the acting troupe through 47 productions over a 17-year period.

Greg Abbott, a member of the School of Literature, Communication and Culture faculty, has been directing DramaTech since 1984 and now reigns as the troupe’s longest-running director.

“The general perception from outside Georgia Tech is that it would not be a terribly creative group,” Abott says. “They would be totally wrong. Georgia Tech students are extremely smart, enthusiastic and creative.”

Abbott says DramaTech gets “wonderful support” from the Ivan Allen College, student government and through the Georgia Tech Foundation, which includes an endowment from the Class of 1947.
Scattering, Smothering, Covering America

Waffle House is more than a Southern icon or an American phenomenon — it’s an Atlanta original. Better, then bigger, has been a business philosophy driving Waffle House since the first restaurant opened on Labor Day 1955 in Avondale Estates, an Atlanta suburb. It was founded by neighbors Joe Rogers Sr., a former Toddle House executive, and Tom Forkner, an Atlanta Realtor.

Waffle House chairman Joe Rogers Jr., who directed the restaurant chain's growth as a Southern landmark, is now engineering Waffle House's expansion nationwide. It is the second-largest 24-hour restaurant chain in the country.

When Rogers, IM 68, became president in 1973, he recruited a cadre of former Georgia Tech classmates and friends to form a management team. Bert Thornton, IM 68, executive vice president of operations, had joined the Waffle House team two years earlier.

“What Tech people have always had in common is a willingness to work — and a very good, sensible approach to things,” Rogers says.

Thornton was with Waffle House in Dallas when he decided the restaurant needed to serve real Texas chili.

After a year of experimenting with assorted concoctions, Thornton perfected the popular Bert’s Chili recipe for the Waffle House menu. Walt Ehmer, IE 89, chief financial officer, created Walt’s Soup.

What makes Waffle House distinct is something more than fulfilling its pledge to serve “good food fast” with friendly service, Thornton says.

“Occasionally a company comes along that redefines service,” Thornton says. “Wal-Mart did that. Home Depot has done it in their segment of the industry. Our customers tell us this is a different culture of service than anywhere else in America — anywhere else in the world. The Waffle House experience is just that.

“It’s an experience; it’s not just a meal.”

Happy Family
Engineer returns to wok to run Formosa Cafe

David Wen prepared for a career as an engineer, but after receiving his electrical engineering degree from Georgia Tech in 1992, it was the family restaurant business and its sizzling cuisine that won his heart.

Wen runs his family’s Formosa Chinese Cafe in Fayetteville, Ga., a restaurant where the patrons are so faithful Wen knows most of them by name.

His parents — Chiu-Chi Wen and Hsiu-Lien Wen — prepare the Chinese cuisine, which may be ordered from a menu or self-served from a bountiful buffet.

The Wen family came from Taiwan to settle on the south side of Atlanta when David was 14, and his father continued working in the restaurant trade.

After graduating from high school in College Park, Wen chose Tech because he was strong in math and science and that’s where his teachers advised him to go.

The oldest of five children, Wen was the first member of his family to graduate from college. Two sisters followed him to Tech — Pei Ru Wen, Mgt 93, and Pei Wen Wen, IE 95, who married Tech alumnus, David Simon, Biol 95. Two siblings graduated from other colleges.

“After I graduated, I realized I’ve always wanted to be in the restaurant business,” Wen says. “I’m my own boss — and in the daytime, I can play golf.”
Taste of Italy

Restaurateur seasons Atlanta neighborhood with authentic cuisine

Riccardo Ullio has brought authentic Italian cuisine and the intimate environment of an urban gathering spot to Atlanta’s Inman Park.

Ullio, CE 90, MS EnvE 93, is chef and chief at Sotto Sotto, a cozy trattoria he and his wife, MaDora, opened on Highland Avenue in February 1999. With Sotto Sotto’s resounding success, the couple opened an upscale Italian pizzeria, Fritti, right next door in August 2000. Both Sotto Sotto and Fritti have reaped enthusiastic reviews from restaurant critics and the public alike.

Atlanta Journal-Constitution restaurant critic John Kessler says the block of former retail stores Ullio refashioned into his little empire “should now be dubbed Hip Little Italy.”

While he studied engineering at Tech, Ullio also was learning the restaurant business, working his way through school by cooking at an Atlanta eatery.

When he graduated, Ullio delved straight into his passion, opening the restaurant Pasta da Pulcinella in Atlanta with a partner. The partnership ended and Ullio went on to work at Princi and Coco Pazzo, polishing his self-taught cooking skills.

Like all good Tech graduates, Ullio was meticulous about planning his business and culinary strategies, spending a year formulating a business plan and taking a three-month culinary research tour of his native Italy to devise a menu that would reflect authentic cuisine. Then he designed and built his restaurant himself.

Within two months of opening Sotto Sotto, the restaurant was inundated with hungry patrons drawn by good reviews and wildfire-quick word-of-mouth endorsement.

“We were very pleasantly surprised by the success,” Ullio says. The sensation the restaurant caused spurred Ullio to open the slightly more casual, but equally authentic Neapolitan pizzeria next door, Fritti, which takes its name from a class of fried appetizers popular in Italy.

Fritti proved as attractive to Atlanta foodies as its sister.

Ullio attributes his accomplishments in the city’s competitive restaurant marketplace to providing something he feels was lacking before.

“We want people to eat real Italian food,” Ullio says. “Much of what is served as Italian food in restaurants has very little to do with Italy, except for maybe a few mis-spelled names.

“Our roots are in home-cooked Italian food.”

— Maria M. Lameiras

Mellow Mushroom

Many a college student has survived on pizza. Two Georgia Tech roomies thrived on the stuff.

Rocky Reeves’ and Mike Nicholson’s business has mushroomed into one of the top 100 pizza companies in the country.

They both helped pay their way through Tech by working at pizza joints. At some point Reeves and Nicholson decided they could deliver a better product. They opened the first “hole in the wall” on Spring Street in 1974. They called the place Mellow Mushroom. Hey, it was the ’70s, man.

Reeves, IM 79, and Nicholson, CIs 74, obviously had the ingredients to succeed. Their business expanded into more than 50 franchises in eight states — Alabama, Florida, Louisiana, North Carolina, South Carolina, Tennessee, Virginia and, of course, Georgia. Gross sales in 2001 reportedly topped $30 million. That’s a lot of dough.

Maybe that’s why the dough-twirling mushroom character that serves as the pizza company’s logo is smiling.

— Gary Meek
The Whole Enchilada
Norberto Sanchez’s empire stretches from restaurants to suppliers

Norberto Sanchez took to heart the two things his father told him were most important in life — education and entrepreneurship.

Sanchez, MS ME 81, MS IE 84, is now chairman and CEO of Norsan Group, operator of 14 restaurants, three specialty supermarkets, a meat processing company and a food distribution company in metro Atlanta.

Sanchez has opened 10 Frontera Mex-Mex Grill locations, three Don Taco taquerias and Pampas, an Argentinean-style steakhouse in Alpharetta, Ga. He has also opened three La Mexicana supermarkets, specializing in Hispanic food items, and owns a small consolidation company in Mexico for importation of items for his stores and restaurants. He also started Prime Meats and Norsan Foods, a meat processing company and a food service distributorship that supply many restaurants and grocery stores in metro Atlanta.

“We are always trying to be on the edge of new things in our industry and in management. As a group we are committed to the goals of the company and to being the best in what we do,” he says.

In 2000, Hispanic Business magazine ranked Norsan 129th among the 500 largest Hispanic-owned businesses in the country and, in 2002, The Atlanta Business Chronicle put the company on its list of the top 25 minority-owned firms in the city.

Sanchez arrived in Atlanta from Monterrey, Mexico, in 1980 with a mechanical engineering degree from Monterrey Tech and a two-year graduate scholarship from the Mexican government. A group of friends from Monterrey Tech were attending Georgia Tech and he joined them. His friends were studying industrial engineering and Sanchez says it was “contagious.”

“I became very interested in industrial engineering and decided to use the second year of my scholarship to study IE courses,” he says.

Sanchez frequented a Mexican restaurant near campus, became friends with the owner and believed the restaurant business would be a successful enterprise.

After graduation, he went to work for Trinity Industries, a propane company in Cedartown, Ga., and was soon transferred to Dallas, Texas, as manager of engineering of the company’s liquefied petroleum division.

“I had always had it in my mind during that time that I wanted to open a restaurant. When I decided to do it, I went to the vice president of engineering and told him I was going to quit. He asked if I was going to work for the competition and I told him I was going to open a restaurant,” Sanchez recalls. “He said, ‘Are you crazy? You’re an engineer.’”

Sanchez returned to Norcross, Ga., where he, fellow Monterrey Tech graduate Luis Carlos Rodriguez and a third partner opened La Cazuela Mexican restaurant in 1987.

“We all wanted to own our own businesses, so we put our resources together,” says Sanchez. Two years later, only Sanchez and Rodriguez remained in the partnership and the men opened a second La Cazuela in Lilburn, Ga. In 1990, the men split the business, Sanchez keeping the Norcross location and Rodriguez taking the Lilburn store. Sanchez opened a third La Cazuela in Snellville later that year.

As his business grew, necessity led to a new endeavor.

“I was having problems with the quality of the meats and the pricing and delivery, so I decided to do the research on opening a small processing facility to supply the restaurants,” he says.

Sanchez started Prime Meats in 1992 and soon other restaurateurs began seeking out his services. He expanded the facility, becoming a USDA-inspected plant and supplying other businesses.

“Now it’s the largest business we have,” he says, figuring Prime Meats is responsible for $20 million of the approximately $50 million in business Norsan Group does annually.

By 1995, Sanchez had opened two quick-service Don Taco restaurants and changed the name of his four La Cazuela restaurants to Frontera Mex-Mex Grill to avoid confusion with Rodriguez’s restaurants.

— Maria M. Lameiras
The Legendary ‘V’

Landmark. Tourist destination. Hot dog mecca. The Varsity represents many things to many people, but it is an Atlanta icon that is known near and far.

The original Varsity was opened in Atlanta in 1928 by former Georgia Tech student Frank Gordy, who knew hungry students needed a good, cheap place to gather and eat. Gordy died in 1983 and the business is now run by his daughter, Nancy Simms.

Touted as the world’s largest drive-in, The Varsity sits on more than two acres adjacent to the Tech campus and, in addition to the dozen or so stalls for those who want the true drive-in experience, has parking for 600 cars and seats more than 800 people inside. On football game days, about 30,000 diners visit the Varsity.

The original location sells millions of its famous hot dogs, hamburgers, onion rings, fries, fried pies and Frosted Oranges per year, including more Coca-Cola than any other single outlet in Georgia.

In addition to the original location on North Avenue, The Varsity has locations at Lindbergh Drive and Cheshire Bridge Road in Atlanta and in Norcross, Kennesaw and Athens, Ga.

In 2000, the Varsity updated its familiar signpost overlooking the Interstate 75/85 connector with a slick new “V” designed by Tech graduate Bill Johnson.

Pi Mile Is Technically Distinctive

It’s not the Peachtree Road Race, but the George Griffin Pi Mile Road Race has a faithful following and many use it as preparation for the Atlanta spectacle.

The first George Griffin Road Race was run in 1973 as part of the SAC Week activities planned to help raise money for a new SAC facility.

Now the annual event draws hundreds of runners to campus each spring, many of them repeat racers who run the Pi every year.

The race, named for Griffin because of his longtime service as cross country coach and his stature as a beloved dean of students, started out as a three-mile course. As the race endured and gained popularity, the Pi Mile was added to make it distinctive and an additional .14 miles was added. In 2002, race organizers at the Georgia Tech Alumni Association added a second finish line at the 3.106-mile mark for runners who want to document a 5K run before finishing their last of their Pi.

Varsity carhops Leon Woods, left, and Bobby Evans serve hot dogs and Frosted Oranges under the big “V.”

Spring 2003 • GEORGIA TECH 51
Williams’ Force

Virgil Williams, the chairman and CEO of Williams Group International, has won success in engineering, banking, publishing, politics — and now arena football. Williams, IE 66, is being applauded for injecting an economic shot in the arm to the metropolitan Atlanta region and bringing professional sports to the suburbs.

Williams Service Group is an Atlanta-based engineering company with offices around the country. Williams branched out and introduced banking in Kroger grocery stores in Georgia and became a leading stockholder of Bank South. He chaired Zell Miller’s election campaign, then served as the Georgia governor’s chief of staff and headed his Commission on Effectiveness and Economy in Government. Williams later decided to get into publishing and bought Georgia Trend magazine.

The arrival of the Georgia Force, Williams’ arena football team, at the newly built Gwinnett Center in Duluth, Ga., was heralded with a filled-to-capacity crowd for the February home opener. Georgia Gov. Sonny Perdue was among the spectators on hand for the Force’s first game at the 11,200-seat arena.

Williams quarterbacked a group of investors that bought the Nashville Kats for a reported $12 million in 2001, then renamed the team and moved it to Atlanta, where it played last season in Philips Arena.

“I saw arena football as an opportunity. It was a new challenge,” Williams says. “The league had just signed a long-term contract with NBC to televise nationwide, so I saw arena football on the cusp of really growing in popularity.”

Williams says the move to Atlanta’s suburbs does not come at the expense of the city.

“I don’t think it affects Atlanta at all whether we’re playing downtown or we’re playing in the suburbs. The same benefit is there. We’re getting Georgia and Atlanta recognition across the nation as we play on NBC television,” he says.

Williams is pleased with the reception the team has received from the community. He also is happy with the team itself. The Force is powered by quarterback Donnie Davis, Cls 96, who recorded one of the Yellow Jackets’ best seasons for a first-year starter in 1993.

While he is pleased to have a Tech alumnus taking the snap, Williams says the quarterback’s alma mater wasn’t a factor in his selection.

“I don’t consider myself enough of an expert in player acquisition and selection and coaching. I’m just on the very fringes of that,” he says. “But I was very delighted by that choice.”

Williams says fans are delighted with the team. The Force is powered by quarterback Donnie Davis, Cls 96, who recorded one of the Yellow Jackets’ best seasons for a first-year starter in 1993.

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**Animal Attraction**

One of the worst wildlife facilities in the nation 20 years ago, Zoo Atlanta is now one of the top tourist draws in the city, thanks in large part to the work of Terry Maple.

The Georgia Tech professor took control as the zoo’s director in 1984. In December Maple announced he was leaving the zoo to return to Tech full time to establish the Center for Conservation and Behavior.

Maple worked to increase the pay at the zoo and attract top talent. He negotiated a deal with the Yerkes Primate Center at Emory University to acquire gorillas and orangutans and build a world-renowned habitat.

He scored a major coup in 1999, when Zoo Atlanta drew world attention and thousands of visitors as two pandas from China arrived at their new multimillion dollar home, one of only three such exhibits in the country.

“We’re still not considered to be a big zoo. But we have a big league operating budget. We have a highly talented staff, one of the most talented in the industry,” Maple says.

“The things that we do — like science and education, and the exhibits for which we’re really well known, like the gorilla and panda exhibits — we’re among the best in the world. Our gorilla program is the best in the world. There’s no question about that.”

Atlanta mourned with Maple when Willie B., one of the world’s most beloved gorillas, died in 2000. Eight thousand people turned out for the memorial service at the zoo, where former mayor Andrew Young delivered the eulogy.

“‘There’s wasn’t a dry eye in the house. I will never forget it. Willie B. was probably the one creature that had more influence on me than any other living thing,” Maples says.

“He was tremendously complex and interesting. He had a personality. He liked people, even though he knew in the end that he was a gorilla.

“If I could have done it, I would have given him a desk next to mine.”

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**Foxhall Cup**

Alumnus Jim Richards has taken Foxhall Farm, his family horse farm southwest of Atlanta in Douglas County, and engineered it into the Foxhall Cup, one of the top three equestrian competitions in America. In the process, he has brought to Atlanta a true Olympic legacy.

Foxhall Cup made its debut in 2000 as a National Championship of Eventing at the three-star level of international equestrian competition and the last qualifying event for the U.S. team before the Olympic Games in Sydney.

Richards, Econ 81, serves as Foxhall Cup chairman and gave the event immediate prestige, offering a prize purse of $205,000 — the largest in the world of sport “eventing.”

The Foxhall Cup takes place each spring one week after the four-star Rolex equestrian event in Lexington, Ky., and the course was designed for spectators. From the stands, viewers can thrill to more than a dozen jumps — more than any other cross-country course in the world — as horse and rider bound 28 obstacles along a compact 15-mile course.

The Foxhall Cup benefits the Shepherd Center, a private nonprofit Atlanta hospital for patients with spinal cord and acquired brain injuries and related disorders. **GT**
Biotechnology Gives Atlanta Strategic Edge

Georgia Tech's Bioengineering Complex integrates the research efforts of bioengineers and bioscientists to foster collaborative research involving every college and, in the process, making Atlanta a center for discovery.

Tech's growing strength in biotechnology looms as a huge, strategic asset in Atlanta's future. Although biotechnology is still in its infancy, its market potential is already vast and rapidly growing, according to the Biotechnology Industry Organization, which estimates that by 2010 biotechnology will be a $100 billion industry.

The final of four buildings in Tech's complex devoted to instruction and research in biotechnical, environmental and molecular disciplines is scheduled for completion next year.

- Bioengineering and Bioscience — The Parker H. Petit Institute for Bioengineering and Bioscience, dedicated in 1999, is in a 150,000-square-foot building that contains the Engineering Research Center for the Engineering of Living Tissues.
- Biomedical Engineering — The U.A. Whitaker Building houses the Wallace H. Coulter Department of Biomedical Engineering, home of the joint Georgia Tech-Emory department.
- Environmental Science and Technology — The Ford Environmental Science and Technology Building is the largest academic building on campus. It will be occupied by the College of Engineering and the College of Sciences, and will house most of the chemical engineering faculty, the School of Earth and Atmospheric Sciences and provide research space for biologists and analytical chemists.
- Molecular and Materials Science and Engineering Building — Set to open in 2004, it will house a 200,000-square-foot lab for 50 interdisciplinary faculty and their research teams.

Imitating Nature

By Elizabeth Campell and Larry Bowie

Biomedical engineers foresee the day when they will be able to grow and manufacture human tissues — and eventually whole organs. Researchers at Georgia Tech right now are developing a device that could help patients grow arterial tissue for use during heart surgery. Elsewhere on campus scientists are working on bone regeneration.

Growing Arteries

Lead scientist Ray Vito is developing a device that, when implanted in the stomach, would mechanically lengthen an existing artery in patients preparing to undergo coronary bypass surgery. When harvested and used as a graft, it has the potential to greatly improve the long-term outcomes of bypass patients.

Vito, College of Engineering associate dean, holds appointments in the Woodruff School of Mechanical Engineering and the Coulter Department of Biomedical Engineering at Tech and Emory. He and partner Jack Griffis founded Medanoia Medical in 2001 to develop, manufacture and market the device.

Coronary bypass surgery is among the most common operations performed to detour arteries clogged by a buildup of fat, plaque or cholesterol. More than half a million people undergo heart bypass surgery in the United States each year.

Traditionally bypass surgery requires opening the chest, taking blood vessels from the calf or chest, then rerouting them around clogged arteries to improve the supply of blood and oxygen to the heart. But the human body has a limited supply of arterial tissue that can be harvested without harming the patient. Often the tissue in patients is unsuitable for grafting.

Vito's device would be implanted about 30 days prior to a patient's bypass surgery and mechanically stimulate the lengthening of an artery. The engineered artery and the device would be harvested endoscopically at the time of surgery. The residual artery would then be surgically repaired. Vito calls the process “distraction angiogenesis.”

“Distraction angiogenesis is a relatively simple way of increasing the supply of autologous arterial tissue without compromising the perfusion of healthy tissue,” Vito says. “An all-arterial revascularization is cost effective and could dramatically reduce the need for further treatment.”
Tissue Engineering

At the Georgia Tech/Emory Center for the Engineering of Living Tissues, researchers are focusing on tissue regeneration and remodeling to repair, replace or enhance tissue function.

Three levels are critical to research success: cell technology for source of cells, cell function and genetic engineering; construct technology in order to organize cells into three-dimensional architecture to mimic tissue functionally and to manufacture such products; and finally, issues involved in integrating the living cell construct into the living body including immune acceptance and biocompatibility.

“These issues are paramount to tissue engineering meeting the challenge of imitating nature,” says Robert M. Nerem, professor and director of the Parker H. Petit Institute for Bioengineering and Bioscience and director of GTEC.

“Only if we meet this challenge can the existing patient demand be addressed,” Nerem says.

Bone Regeneration

Robert Guldberg, an assistant professor of mechanical engineering at Tech, is working on several strategies to enhance bone regeneration to correct skeletal defects.

“Let’s say someone is born with a leg-length discrepancy or perhaps been in an auto accident and lost several inches of a leg bone,” says Guldberg.

“Orthopedic surgeons can cut through the long bone and, using an external fixture or brace, keep the cut ends very close to each other.

“The body will start to fill in the gap with new bone cells and tissue. As the bone ends are separated a little bit every day, the body keeps adding new cells and tissue.

Through this procedure, you can actually add as much as six inches to a person’s limb length.

“So, in a sense, we have the ability to regenerate part of a limb,” Guldberg says. “Whereas some animals can do it on their own, we have to employ engineering principles to allow it to occur in humans.”

Continued on page 56

Bioscience Start-up
EmTech helps move technology from lab to market

By Larry Bowie

Entrepreneurs are known to have the creative minds, drive and vision to move an idea from concept to development. However, the resources needed to develop concepts into a company often are just out of reach.

Precious resources such as lab space, equipment and advisory services are some of the things that have drawn fledgling companies to EmTech Bio, a business incubator formed by Georgia Tech and Emory University in 2000 to help start-up bioscience companies in Atlanta and the state.

Located on Briarcliff Road near the main Emory campus, EmTech Bio is a research and development center that offers lab space and more for start-up and early-stage companies developing life science technologies. The incubator has been at maximum capacity for several months and currently houses five biotech companies.

With roughly 7,000 square feet of space, EmTech Bio is modeled after Tech’s successful Atlanta Technology Development Center, a technology incubator from which more than 100 companies have emerged. With support from the Georgia Research Alliance, EmTech Bio is poised to become the next big technology transfer center in the state.

“By providing furnished laboratory space and lab equipment, Emtech Bio facilitates the growth of life science companies and mitigates some of the risk assumed by investors in these companies,” says Lee Herron, the CEO of EmTech Bio and associate director of biosciences for business start-ups at the ATDC.

Aderans Research Institute Inc. got its start at EmTech Bio and moved to the ATDC’s new Biosciences Center in the Environmental Science and Technology Building at Tech.

The company, part of Tokyo-based Aderans, focuses on research to develop tissue regeneration techniques for commercial hair regeneration products. Thomas Barrows, a biomaterials polymer chemist with experience in the area of tissue engineering, heads the research team in Atlanta.

EmTech Bio provides resident biotech companies with a number of accommodations, chiefly lab space with flexible lease terms and a reduced rate on utilities. The incubator also provides office space, high-end equipment support, advisory services and access to university core facilities at Emory and Tech. Facilities include suites for performing tissue culture, fermentation, drug discovery and chemistry research and development.

One recent tenant, Crystalplex Corp., is testing the use of nanoparticles called quantum dots as reagents to improve clinical diagnostic tests such as those for the early detection of cancer. In this application, the tiny particles glow and act as markers on cells and genes, giving scientists the ability to rapidly analyze biopsy tissue from cancer patients so that doctors can provide the most effective therapy available.

The inventor of the technology is Shuming Nie, an associate professor in Georgia Tech and Emory University’s joint department of biomedical engineering, and director of cancer nanotechnology at Emory’s Winship Cancer Institute.

Although EmTech Bio considers all start-up companies that exhibit strong potential, companies such as Bioplex that have connections to Tech or Emory faculty receive preference. To assist its resident companies in preserving their cash, EmTech will, at the company’s option, take equity in return for a reduction in rent and utilities.

In addition to its business start-up assistance, EmTech Bio also operates a seed grant program for individual research projects.
A more sophisticated technique is being explored to help the body repair or replace particular tissues and may even offer a means for growing complex structures such as organs.

The process involves creating a biocompatible, biodegradable mesh or scaffold that is seeded by the body’s own cells, Guldberg says. The scaffolding provides an anchor for the invading cells, allows the cells to receive nourishment and provides a template for their growth pattern. The cells generate new functional tissue through the normal processes of cell division called mitosis and matrix synthesis.

Eventually the cells form their own matrix and the scaffolding degenerates, leaving fresh, viable tissue.

One approach to mimic complex biological properties uses rapid prototyping technology to manufacture the microstructure of biocompatible scaffolds layer by layer. These scaffolds might then be seeded with cells in vivo, or outside the body and then implanted.

The efficacy of the scaffold-seeding approach has been boosted in recent years by the identification of human cells with multiple potentials. Derived from bone marrow, these cells — called undifferentiated cells because they have not yet assumed a specific function — have the ability to become the cells that make new bone, cartilage or muscle.

“You can seed these multiple-potential cells into a particular site, and the local signals in that site from surrounding tissue will tell those cells to become bone-forming cells or cartilage-forming cells,” Guldberg says.

The beauty and promise of the scaffold-seeding technique is its ability to create three-dimensional structures.

Cells grown in a flat dish tend to behave as individual cells, whereas cells cultured in a three-dimensional space are more likely to assume the characteristics of a particular tissue. For example, cartilage, once grown flat, is almost impossible to shape into joints.

Cultivating three-dimensional tissue structures is the first step toward tissue engineering’s ultimate goal — bioartificial organs.
Cancer Fighter
Eva Lee uses mathematical formulas to battle disease

By Kimberly Link-Wills

The diminutive and soft-spoken Eva Lee may not look like a warrior, but she’s using her mathematical mind to battle cancer.

Preparing for college in her native Hong Kong, Lee had to choose between pursuing a career in mathematics or one in medicine. She ultimately chose mathematics, but has now found a way to pursue both passions and, as a result, could greatly improve cancer treatment and outcomes as well as patients’ quality of life. Prostate cancer patients will be the first to benefit from her work.

Her research and the collaborative relationship between universities also allows Lee to serve as an assistant professor in the School of Industrial and Systems Engineering at Georgia Tech and as an assistant professor of radiation oncology at Emory.

“You really want this to be accessible to all the patients who want it. My goal is to make sure the patients get the best treatment.”

Prostate brachytherapy, a nonsurgical treatment in which tumor pockets are attacked with radioactive “seeds,” is not new. However, Lee has developed a computerized system that enables oncologists to optimize the placement of the seeds to directly target cancer cells.

“Using this system, we pinpoint exactly the spots that have high cancer cell proliferation” and place the seeds — each only about the size of a grain of rice — in those tumorous areas, Lee says. The radioactive seeds immediately set to work destroying the cancerous cells.

Lee’s studies have shown that her computer program would increase the brachytherapy success rate from 60 percent to 95 percent.

“That’s why I say we can do this to perfection. Right now clinics treat the entire prostate as cancerous,” Lee says.

The computer application allows an individualized treatment approach. With a digitized image of the tumor and the surrounding tissue, a clinician can direct the cancer weapon exactly where it can take aim at diseased cells. The seed implantation process would take about two hours.

Patients would then go about their regular day-to-day routines without the side effects experienced by cancer patients who undergo chemotherapy. The radioactive seeds would continue attacking the cancerous cells for 30 days. The risk of impotence, which is well-documented in medical literature, is minimal in this procedure.

“This treatment does make a difference for the patient as far as quality of life,” Lee says.

She began developing the computer application after hearing a medical researcher, Marco Zaider of Memorial Sloan Kettering Cancer Center, discuss treatment problems oncologists face. Lee later called Zaider and said she wanted to know more.

He used the treatment of prostate cancer as an example. Lee set to work to solve the problem with mathematical formulas.

“It’s really fascinating. Sure, the mathematics is what I look at, but it’s also because I’m really interested in designing something for the medical application,” Lee says.

She has been at work on the prostate cancer treatment for more than six years. As she worked on her approach, her older sister was diagnosed with and died of stomach cancer in Hong Kong.

Lee did her undergraduate work at Hong Kong Baptist University and earned her PhD in computational and applied mathematics from Rice University. She taught at Columbia University for two years before accepting a Tech faculty position in 1997.

The joint appointment at Emory came about in 1999. By that time, Lee was already confident her computer application would work.

“After three years of study I was ready,” Lee says, conceding that the miles of red tape, licensing and patenting issues and the expense of medical research in order to get a new treatment into the hands of doctors is frustrating.

“Medical research in the United States is very expensive. That is something I learned. I think I was very naïve. I had a very idealistic approach,” says Lee, whose work is funded by the National Science Foundation and the Whitaker Foundation.

Still, Lee is hopeful that clinics will start using her treatment method routinely within the next few years — and not just for prostate cancer patients. The system could be adapted for use in the treatment of other forms of cancer.

In the long run, her treatment will be cheaper than other cancer weapons. “The cost actually is a big benefit. But more importantly, the result is a lot better,” Lee says.

Lee’s work has gained recognition from the National Cancer Institute and the National Science Foundation. She has been invited to organize research workshops and panel discussions involving various cancer initiatives.

“The hard work really pays off,” she says. “The fact that I really believe that it works and that my medical collaborators, especially Dr. Zaider, believe in the work and its long-term benefits really makes people excited about it.

“You have to be patient and think about the broad impact. You really want this to be accessible to all the patients who want it,” Lee says. “My goal is to make sure the patients get the best treatment.”

GT
Ho-hum

Although Georgia Tech President Wayne Clough enthusiastically joins in the activities at the dedication of the R. Kirk Landon Learning Center on campus — including a lesson in making handprints — some veterans of the child care facility were unimpressed. While Clough's hands-on involvement had the undivided attention of teacher Robin Benns and Abhinav Perumulla, 3, it drew a big yawn from 3-year-old Jisoo Park.