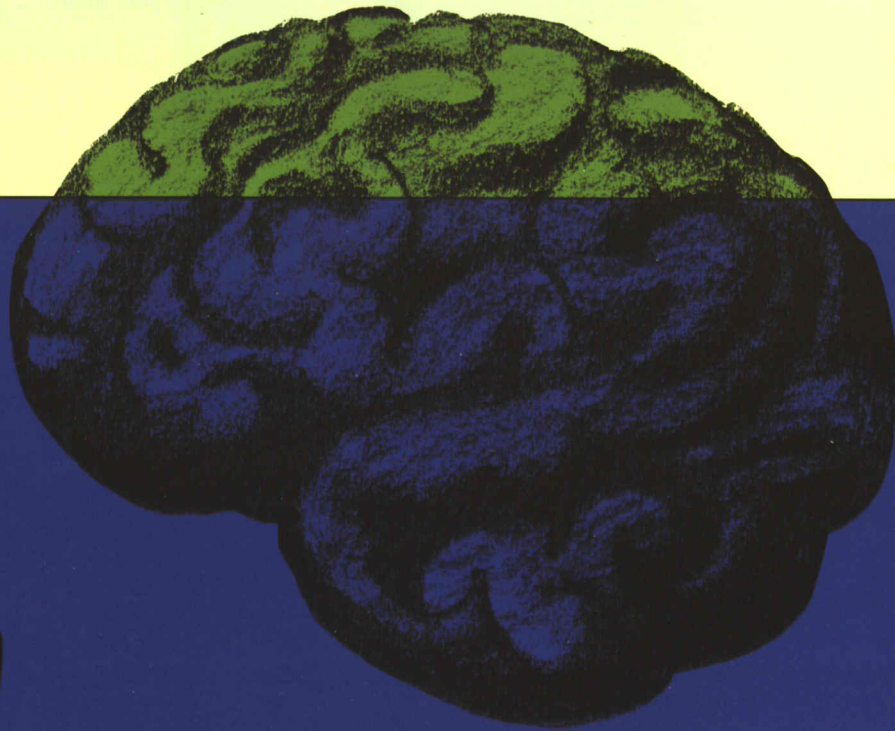


THE BROOK



Aha!

Exploring the Brain in Four Parts



From President Shirley Strum Kenny

In this major election year, Stony Brook University has emerged as a landslide winner. We were recently ranked in the top 1 percent of more than 12,000 universities worldwide by the London *Times Higher Education Supplement*. More students have applied to Stony Brook than any other SUNY campus. We received more applications than Stanford, Harvard, or Yale, among others. Since 1996 our freshman class has increased from 1,700 to 2,800 students. Even more extraordinary, the 36 percent enrollment increase was accompanied by a dramatic 128 point rise in SAT scores.

Appropriately, in this issue about the human brain, I am proud to boast that our students are among the brainiest in the nation. Serving them is a great privilege, and it is vitally important, especially in these turbulent economic times, that New York State provide these extraordinary young men and women with a rational tuition policy that allows them to plan for their educational costs.

New York gets incredible value at Stony Brook. Our brain-power is crucially important to the State, fueling its well-being at every level. It is time—past time—for New York to fund and support its State universities to be competitive with other States. It is time to think of them as the bedrock of New York success.

Will the United States let itself fall behind on its most important strength, intellectual capital? Will New York? Look what is happening around the world among countries determined to take world dominance away from the United States. China's university enrollments have soared from 3.6 million in 1998 to 25 million in 2006; in 1995 they set a goal of 100 new universities in the 21st century. India is building 16 new research universities. Singapore has determined to have one of the best ten universities in the world within ten years—and I have no doubt they will.

No one faces greater challenges or greater opportunities than our public institutions. But we must have the support to carry out what I consider the most important agenda in American education—public higher education. That has been America's great strength; we must not abandon it now. And New York, with the huge economic problems upon us, must not shortchange this fundamental building block of a strong economy.

Those we teach are our hope for tomorrow. The research we do is the key to health and prosperity in the future. But the fertile brains we are nurturing here must have the funding necessary to thrive and grow. We must give our all—but the State that depends on us must support us in doing so.



CONTENTS

What's New On Campus 3

Jim and Marilyn Simons present a historic gift to Stony Brook University.

Research Roundup 4

A guide to horror movie locations, the potency of the flu vaccine, and what your kitchen says about the balance of power in your home.

Aha! Exploring the Brain in Four Parts 6

Pop Thinking 7

What actually happens in the brain when an idea suddenly "pops up"? Jerome Swartz, Symbol Technologies founder and Stony Brook Foundation Trustee, is subjecting the phenomenon to serious research.

By Carol Richards

Brain Work 11

Understanding the brain takes a multidisciplinary approach, which is why Stony Brook is well positioned to unravel this enormously complex "black box."

By Robert Cooke

The Woman Who Can't Forget 12

An excerpt from the extraordinary story of living with the most remarkable memory known to science, plus an interview with author and SB alum Bart Davis.

By Jill Price with Bart Davis

Neurosurgery and the Art of Minimalism 14

For Dr. Henry Woo, getting inside someone's head is more than just an expression. This highly skilled neurosurgeon believes that when it comes to treating certain types of cerebrovascular incidents, less is more.

By Margaret Jaworski

Taking Athletics to the Next Level 16

The Stony Brook Seawolves are on the move—to new homes, new conferences, and new heights.

Events Calendar 17

Class Notes 18

Brookmarks 22

Recent books by Stony Brook alumni, faculty, and staff.

Flashback 23

The Department of Chemistry celebrates 50 years of stellar contributions to science and Stony Brook.

Written by Toby Speed

What's New On Campus

Simonses Donate \$60 Million for Center for Geometry and Physics

Financier and mathematician Jim Simons, who as chair built Stony Brook University's Department of Mathematics into one of the top-ranked in the nation, and his wife, Marilyn, who holds a B.A. and Ph.D. in economics as well as an honorary doctorate from the University, have donated \$60 million to Stony Brook. It is the largest gift in the University's history and the largest ever given to any one of the 64 institutions in the State University of New York system.

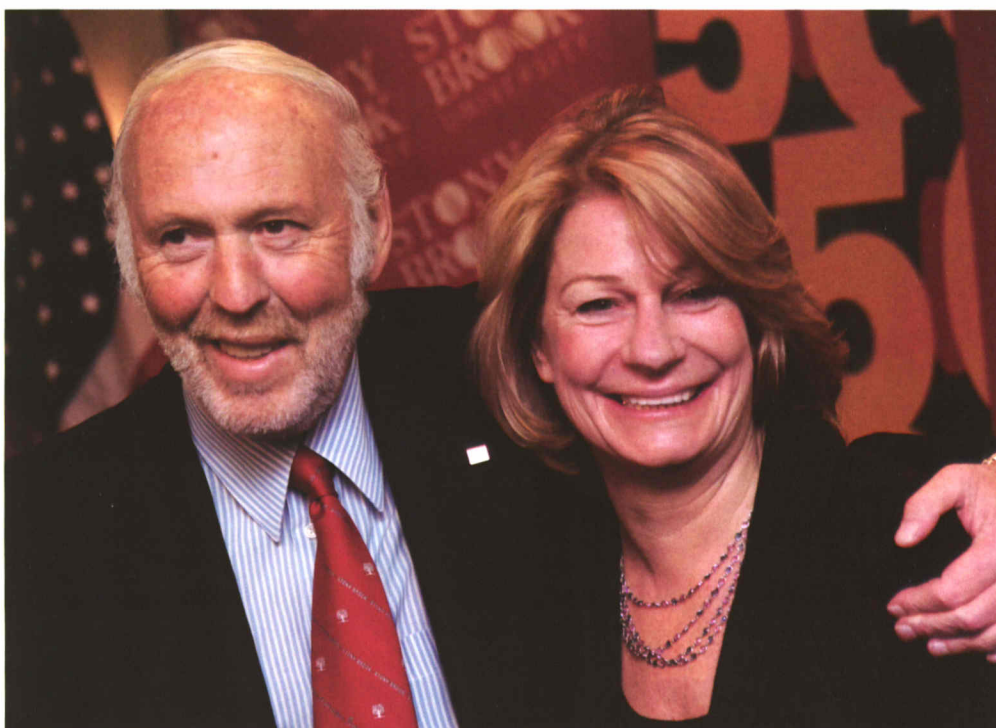
The gift will be used to build and endow the Simons Center for Geometry and Physics on Stony Brook's main campus. In addition to funding construction, the gift will help recruit and retain the highest-quality faculty, enhance training for graduate students, support research, secure visiting scholars, and sponsor workshops and conferences.

The Center has already recruited internationally renowned string theorist Michael R. Douglas from Rutgers University. Douglas, who was instrumental in the development of the first solvable models of string theory and its relationship to particle physics and mathematics, is the son of Ronald G. Douglas, a longtime member of the University's mathematics faculty who also served as dean of physical sciences and mathematics.

"Jim and Marilyn Simons are people of remarkable vision," said Stony Brook President Shirley Strum Kenny. "The Simons Center will further our tradition of excellence, and ensure that Stony Brook stands as a world center for research in math and physics."

"Marilyn and I are delighted to make this gift to the University," said Jim Simons. "From Archimedes to Newton to Einstein, much of the most profound work in physics has been deeply intertwined with the geometric side of mathematics. Since then, in particular with the advent of such areas as quantum field theory and string theory, developments in geometry and physics have become, if anything, more interrelated.

"The new Center will give many of the world's best mathematicians and physicists the opportunity to work and interact in an environment and an architecture carefully designed to enhance progress," Simons



Jim and Marilyn Simons announce their historic gift.

"The new Center will give many of the world's best mathematicians and physicists the opportunity to work and interact in an environment and an architecture carefully designed to enhance progress."

—Jim Simons

continued. "We believe there is a chance that work accomplished at the Center will significantly change and deepen our understanding of the physical universe and of its basic mathematical structure."

Simons was the chair of Stony Brook's Department of Mathematics from 1968 to 1976, and led its development as one of the best departments of its kind in the nation. He and C.N. Yang led a historic series of interdisciplinary seminars that created an unprecedented synergy between physics and mathematics. Yang is the Albert Einstein Professor of Physics at Stony Brook (Emeritus) and winner of the 1957 Nobel Prize in Physics.

Simons is president of Renaissance Technologies LLC, a private investment firm.

Marilyn Simons has served since 1994 as president of the Simons Foundation, a charitable organization supporting researchers who conduct advanced work in the basic sciences and mathematics, with an emphasis on autism.

At Stony Brook, the Simons family and Foundation have provided more than \$85 million in contributions to support initiatives including summer institutes on string theory, workshops, and a lecture series.

"Jim and Marilyn Simons have been a driving force in Stony Brook's success for many decades," said Richard L. Gelfond, chair of the Stony Brook Foundation Board. "Their extraordinarily generous gift will help Stony Brook continue its climb in the ranks of the elite institutions of the world." ■

Research Roundup

Each year the Graduate School honors the achievements of its students. Here are examples of what determined minds can accomplish when encouraged to pursue their passions.



Lindquist's research revisits traditional roles in modern kitchens and households.

Changing Kitchen Dynamics

Carol S. Lindquist was sitting in her kitchen, thinking about what she was going to study as she pursued her Ph.D. in sociology.

"Surrounded by hundreds of cookbooks, it hit me. I know about food. Food is social. Why not study food?" she recalls. "One of the great things about our Department of Sociology is that students come up with their own study for their Ph.D. They don't take a piece of a professor's research. They design their project, provide the impetus, find the funding, and do all the work. It's a long process, but through it, our department's grad students become consummate professionals."

Lindquist presented part of her research, "A Look at Kitchens: Revealing the Heart of the Household," at the annual meeting of the American Sociological Association and two other conferences, and is using it as one of the chapters in her dissertation—and eventual book—titled "The Household Meals Project: Feeding Power."

"What made me want to study this topic was the idea of the balance of responsibility in household work. If you look at time-use diaries over the past 25 to 30 years, you can see how the balance has shifted. As women have poured into the workplace, men have taken on more of the household work; women have given up some of it, men have taken a bit, and the rest goes undone. This holds true in child care, cleaning, and laundry, but not necessarily in food," Lindquist notes. "We still see a huge amount of food work being done by women. Why? Why are women not giving it up, and why are men not taking it?" Lindquist then designed her study to probe these questions, conducting 14 in-depth interviews and gathering information from 219 other American households and photographing their kitchens.

Lindquist's study showed that when there is "affection" between the household heads (such as spouses or mother/daughter, etc.), there tend to be unspoken expectations and assumptions about who does

what that complicate the kitchen dynamics. In contrast, people who live together as roommates try to be more fair with each other in terms of household responsibility. "But things are slowly changing. As young people grow up with two working parents and less acute reliance on the separation of spheres (such as work is the man's realm, the woman's is the home), then they see that household chores are done by anyone."

The Schlesinger Library at Harvard University is interested in acquiring Lindquist's collection of kitchen photographs. The library's extensive culinary collection includes 15,000 titles as well as papers from cooking stars such as Julia Child, but it has no collection of photos of contemporary American kitchens. When Lindquist completes her degree, she will become another Stony Brook University triple alum, having earned her bachelor's and master's degrees here, along with her Ph.D.

A New Approach to an Age-Old Illness

Each October many people deliberate about whether they or their children should receive an influenza (flu) vaccine. There are so many strains of flu, can one vaccine possibly provide full protection from this potentially life threatening illness? The answer is yes—if the vaccine is reformulated and the health industry changes its vaccination strategies, according to Ian Brett, a graduate student entering his fifth year in Stony Brook's M.D./Ph.D. Medical Scientist Training Program. Brett has been studying the effect of immunization on influenza and recently published a paper in the journal *Vaccine* titled "Changing Perspective on Immunization Against Influenza."

Brett's paper suggests that current vaccination strategies against influenza rely on decades-old technology and that to better protect us from different varieties of flu, recombinant protein-based influenza vaccines—a system of vaccine production that allows for varied combinations of dose amounts of antigens and rapid vaccine reformulation—should be considered.

"Influenza is interesting in its ability to evade many of our defenses against it. As a scientist, studying influenza encourages understanding of the ways that viruses exist or coexist with the species that they infect. These studies often lead to novel treatments," Brett notes. "As a clinician, influenza is interesting because it kills roughly 40,000 people in the United States in a normal year, and many, many more in a pandemic year. I am constantly amazed by its ability to persist, despite everything we throw at it—and it only has ten genes!"

Brett began his research on influenza in the lab of world-renowned virologist Dr. Edwin D. Kilbourne before starting his studies at Stony Brook. Brett's Ph.D. research focuses on using nuclear magnetic resonance to probe the structure of membrane proteins, specifically,



Rethinking how flu vaccines are formulated may help keep the illness at bay.

the cytokine receptors for the hormones erythropoietin (which makes red blood cells) and thrombopoietin (which makes platelets). These proteins are important to study for several reasons. For example, patients with kidney disease fail to make erythropoietin and can become anemic, requiring therapeutic activation of the pathway. Understanding how structure impacts function will increase our knowledge of these signaling mechanisms and lead to improved drug design.

After he graduates, Brett says, he wants to become a pediatric intensivist (working in the pediatric intensive care unit). He also plans to continue his research career, perhaps using structural biology to probe more of the mysteries surrounding influenza.

The Scholarly Side of Horror

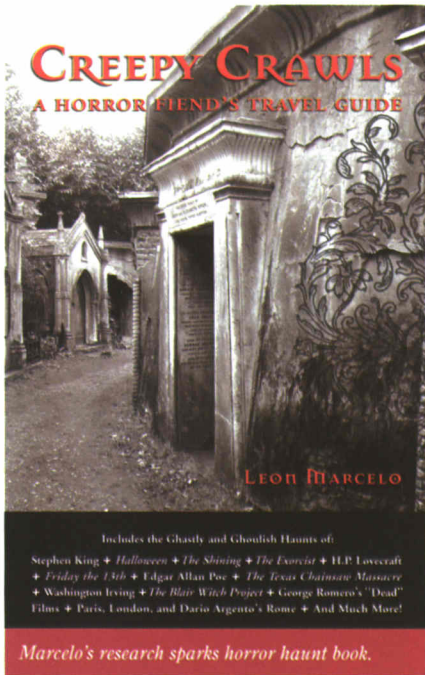
Leon Marcelo used the skills he learned as a self-defined “compositionist” Ph.D. student in the Department of English to help craft his first non-fiction book, *Creepy Crawls: A Horror Fiend’s Travel Guide*. It features detailed information for travelers on such grim locations in Europe as Jack the Ripper’s London, and in the United States, Edgar Allen Poe’s Baltimore and Stephen King’s Maine.

Marcelo became a self-proclaimed “horror fiend” at a very early age, thanks to Poe’s “The Tell-Tale Heart,” and has been writing and publishing horror-themed travelogues since 1998. He began his Ph.D. studies at Stony Brook in 2002 and is now working on his dissertation with Professor Pat Belanoff. “The focus of my studies is actually in composition and rhetoric, not horror—although I would have to admit that to be known as a ‘doctor of horror’ would be fantastic!” Marcelo says.

“While I was working on *Creepy Crawls*, what I found most interesting was how well my academic training had prepared me to produce this very non-academic book: to digest and negotiate various sources and to locate literature and films within particular social and cultural milieu. After the book was published, I was very happy to flip through the pages and see that it was very scholarly for a non-scholarly publication.”

Through two independent study courses at Stony Brook, Marcelo was able to explore his love of horror in a truly scholarly manner with Professor Bente Videbaek’s course “Depictions of Monstrosity and the Grotesque” in early British literature and Professor Joaquin Pizarro’s course “Gothic and Post-Gothic Horror.” “Professor Pizarro introduced me to some of the most remarkable works of horror in literature that I had never even heard of before, such as Matthew Lewis’ *The Monk* and Charles Maturin’s *Melmoth the Wanderer*. During this time, something I already knew was confirmed: That horror, although it exists outside the canon of literature (with the exception of Poe), is indeed a thing very worthy of scholarly or academic study.”

After Marcelo earns his Ph.D., he’ll seek a tenure-track professorship at a small to medium-sized liberal arts university. “I’d like to read, watch, study, and teach horror, and continue to write things like *Creepy Crawls*,” he reports. For more on Marcelo’s work, visit exdementia.net/creepycrawls/ ■



Marcelo's research sparks horror haunt book.

Includes the Ghostly and Ghoulish Haunts of:
Stephen King + *Halloween* + *The Shining* + *The Exorcist* + H.P. Lovecraft
+ *Friday the 13th* + Edgar Allan Poe + *The Texas Chainsaw Massacre*
+ Washington Irving + *The Blair Witch Project* + George Romero's "Dead"
Films + Paris, London, and Dario Argento's Rome + And Much More!

On the Horizon

First-year medical student Aryeh Keehn was selected by the American Association for Thoracic Surgery (AATS) to receive the 2008 Summer Intern Scholarship in Cardiothoracic Surgery. The program introduces the field of cardiothoracic surgery to first- and second-year medical students. Keehn will work under the direction of Todd K. Rosengart, professor and chief, Division of Cardiothoracic Surgery at Stony Brook University Medical Center, during the scholarship period. Keehn will work on a research project based on understanding the inflammatory response to open-heart surgery.



Keehn with Dr. Rosengart

Stony Brook University has been awarded a one-year \$871,000 development grant for stem cell research. The grant will “help to bring in essential instrumentation, the development of a common stem cell research facility, and provides us with the opportunity to create an infrastructure that we expect will lead to additional funding,” reports Peter Brink, principal investigator and chair of the Department of Physiology and Biophysics. A portion of the seed grant will be used to fund a confocal microscope, a key device allowing stem cell researchers to perform live imaging studies.



Peter Brink

Fred Friedberg, research assistant professor and clinical psychologist in the Department of Psychiatry at Stony Brook University Medical Center, received a \$920,000 grant from the National Institutes of Health to test a behavioral self-management program for people with chronic fatigue and chronic fatigue syndrome (CFS). There are no effective medical treatments for these illnesses. “Cognitive-behavioral treatment, a type of stress management training combined with low-level exercise, has shown promise to help people with CFS cope better and lessen illness severity,” says Friedberg. “This new study will test a shortened version of cognitive-behavioral treatment that is based on a self-help model of illness management.”



Fred Friedberg

School of Medicine students Laura Cheney and Mark O'Hara received awards from the American Medical Association (AMA) Foundation's Seed Grant Research Program to help them further their respective research in HIV/AIDS. Cheney, an M.D./Ph.D. student working on her Ph.D. in Molecular and Cellular Pharmacology, received \$2,500 for a project titled “Interactions between HIV-1 and Epstein-Barr Virus: Mechanisms of Abnormal Immune Activation and Implications for Antiretroviral Therapy.” Cheney says the study may lead to the development of new therapeutic strategies or an effective HIV vaccine. O'Hara, a fourth-year medical student, received \$2,500 for a project titled “The Role of HIV Nef in Metabolic Abnormalities.” The goal of his project is to elucidate the mechanism by which HIV Nef (a virally produced non-structural HIV protein) may contribute to glucose intolerance in HIV patients.



O'Hara and Cheney

The Brain

A Look Under the Hood in Four Parts

POP THINKING

Questions for Jerome Swartz

By Carol Richards

Almost everybody at one time or another has found it difficult to remember a name or word only to have that elusive set of syllables pop into his or her head hours later. That “pop” is something that Stony Brook Foundation Trustee Jerome Swartz is subjecting to serious research. Given that he is co-founder of Symbol Technologies Inc., the bar-code laser-scanning giant, and that he holds 200 patents, Swartz knows a thing or two about how that pop happens.

Swartz says that most of the time our brains are busy buzzing along at work on things of which we're totally unaware. Writer Carol Richards recently met with Swartz and asked him about the practical applications of his research and for tips on how to harness nonconscious brainpower. He told her, “Got a problem? Sleep on it,” before explaining all the unexpected ways the human brain works. It seems, Swartz says, that our brains have a lot more going on “under the hood” than we realize in ordinary conscious living.

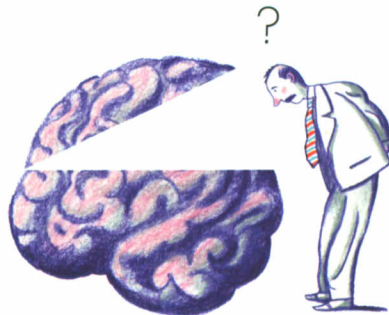
Q. Brain researcher Patricia Churchland said that our brains start actively working long before a person makes a conscious choice. You are researching what goes on during that unconscious prep time. Can you tell us more about the nonconscious brain?

A. We are going to be doing some experiments in camouflage imaging. A camouflage image is one that has been enlarged so massively that you can't tell what it is—there aren't enough pixels of contrast. Subjects are then shown a less-obscure version of the same image, and they may be able to discern that it's some kind of animal or something, but still it's not clear. By the third less-enlarged iteration, it looks like a big cat. By the fourth image, maybe the subject can say, “That's a cougar!” Something makes us see that.

We think there's a mathematical model and reasons for that. There may be fragments in the nonconscious or the unconscious that are kind of clustering or coming together, and they reach some critical mass, some point at which you can get an “Aha! moment,” a pop, a sudden insight. It happens when we're awake and asleep. And it equally affects easy problems and complicated problems.

Q. Does the unconscious always give you the correct answer?

A. Conventional wisdom says instinct and intuition is what you



should follow. On the other hand, it can lead you wrong. Like a lot of things in life, there is a balance. But it is certainly true there is so much processing going on in the brain that sometimes you can make very quick gut decisions, and they are absolutely the right decisions, and it's been proven that if you take longer, you tend not to make the right decision. And that speaks to the issue of realizing there is so much more that you're thinking about, trying to solve in your brain, when you're asleep than when you're awake and doing other things.

Plenty of times, when you're working with colleagues, an answer happens much quicker. I believe it is because while the conscious *you* is talking to the conscious *me*, for example, it is also dipping into my non-conscious as I am dipping into yours. Information is leaping up because so much is going on “under the hood.”

Q. What do you mean by “there's so much going on under the hood”?

A. There's so much going on in the brain that you'd go nuts if you were multitasking, balancing all these things *consciously*. Gimme a break! It can't happen! What's happening [is] under the hood. Consciousness is maybe the TV screen compared to the electronics inside the TV. It is just a tiny fraction of the real deep thought and analysis going on all the time.

You know, the “sleep on it” comment is really true and being proven. Consolidation of memory [occurs in sleep]. Let's face it: Look at all the sensory spam that goes away when you sleep. It turns out that you don't hear when you're sleeping. The noise, or information spam, goes way down, which is why many of us wake up at night and write notes on index cards. And you know if you don't, you are going to forget the thing you need to do or the little insight to the problem, etc. I wake up in the middle of the night and write on index cards. Of my 200 patents, I wouldn't care to tell you how many happened that way. Plenty of them!

Q. Is this a new way of thinking about the unconscious?

A. Freud, with all his wonderful work, really related the unconscious too closely to repression. That [gave the unconscious] a negative connotation. And [that concept] lay in the hands of psychologists for probably 50 years, led by Freud's thoughts on it.

An article by Patricia Churchland, from the University of California, San Diego, whose research focuses on the interface between neuroscience and philosophy, some years back that asserted, "Guess what, there's a lot more than just consciousness," got me interested. I read everything and [researched this] five or six years ago, and I could find nothing on the unconscious—no theory, no explanation. There was no model. There weren't enough experiments. There still aren't. That's why we set out to develop a good model and try to understand it. I think it will lead to terrific things, both medically and clinically.

Q. In addition to being a co-founder of Symbol Technologies, you are a mathematician and an electrical engineer. What moved you to start the Swartz Foundation, which sponsors the study of brain science?

A. I am not a neuroscientist. The history of the Foundation, [dating] back to 1993 and its founding in 1994, is as much personal as anything else. The research we sponsor... across the 11 institutions we support, is the main activity. But [there is] my own research—so the Foundation's business of supporting research into brain science is not a coincidence.

Someone like me who enjoys the science, enjoys the math, enjoys the venture [also enjoys] computational neuroscience. It is computational, therefore theoretical. Whether it's the systems aspect of it or the computational aspect of it, they kind of go hand-in-hand. That kind of stuff really excites me. It meshes with my background.

Q. What about the Swartz Organization?

A. I'm chairman of the Swartz Foundation and the Swartz Organization, which is an umbrella group for several entrepreneurial things in the private sector. You might have imagined that you've got to be a little bit nutty to start a business.

Q. I don't think it's nutty to be interested in the practical and potentially profit-making aspects of basic research. I'm assuming you came up with the whole Symbol Technologies stuff out of basic research?

A. Right. Except there is a personal, psychological basis as well: I think entrepreneurs have certain things in common. It's a certain perseverance... maybe it's even a perverse nature of trying to achieve and make something happen, and I don't think that most entrepreneurs, even at the beginning, count their money or even think of what they can make or how large the rocket can be. You get a passion for an idea. For example, at the beginning of bar codes and lasers—I got my Ph.D. in lasers—they were used [only] for surveying instruments and for light shows! There were no compact disc players or DVD players, etc. There weren't even laser pointers. They were all big and made out of glass tubes, filled with helium and neon.

Q. So what is it that makes you see lasers and think "bar codes"?

A. The bottom line is, from an entrepreneurial perspective, you get an idea in your head. I used to be in denial about the word "vision." I don't like it. But there is something to it. Entrepreneurs seem to have a picture thing. It isn't magic. It's not mysterious. It comes from a confluence of things, in your background and your education. What you know and think you know. And, yes, you do look ahead. Entrepreneurs tend to be good with integrative things. And then they really bore in, laser-like in focus, no pun intended.

Bar coding was [neither] a new technology nor a new product—it was a new industry. People weren't about to adopt it so easily. In 1980 I used to say in our prospectuses, used in raising capital for the company, that the number of supermarkets [using scanners] was doubling, and it was literally true. It

started May 1, 1973, with two stores: one in Ohio and one in Quebec, Canada. It doubled to four. It took eight years to get to 1,000 stores out of 35,000 in the United States before it started taking off. We went through seven or eight or nine years of perhaps one-quarter profitability. It's a combination that Edison cited—perspiration and inspiration. There are so many bright people with ideas, and my best advice is to stick with it. People fail or don't make it largely not because of the idea but because of failing to stay with it.

Q. Given your ability to imagine a world that works differently, what vision do you have for the practical use of brain research? Where does the notion of preconscious thought lead? Do you see an application?

A. For the nonconscious processing? I definitely think there are things that will become relevant. As for neurotechnology, in the med-tech and clinical areas it's kind of obvious that breakthroughs in understanding the brain hopefully will help the whole spectrum of degenerative diseases, such as Alzheimer's, and Parkinson's, and schizophrenia. There's a lot happening with that. The surprises may very well come not only in those areas but also surgically and pharmaceutically, and also in next-generation computers. I am aware of 15 to 20 companies that have already spun off from the area of neuroscience with breakthroughs.

Q. What triggers the nonconscious to start solving problems?

A. I remember once looking out at my garden a number of years ago and it was the beginning of May. I spotted a rosebud, and that rosebud is what triggered me [to remember] that it was Mother's Day. "Tip of tongue, top of mind." We all have tons of examples of things that went from tip of tongue to top of mind. I will be trying to model just how that happens, and we think we understand that from the mathematics and the differential equations and the much more complex things backing into how those thought fragments cluster and coalesce.

We are [conducting] phrase completion experiments where we give you three letters out of three words, then we give you six letters out of the three words, and then we do an EEG on your brain to find the frequencies and the time and the dynamics at which this rise to threshold [when you begin to grasp the whole phrase], this rise to conscious action threshold—we call it CAT—is active. That's what we're doing in the research.

Q. Are there any practical applications of what we're learning about the nonconscious brain?

A. Specifically, in nonconscious processing you've heard of things like speed dating and other commercial things based on that [concept]. There are papers about people's shopping patterns. There are all kinds of things that, on the nonconscious end, when we understand it better we will do things differently. [Some of those things may be] relaxation and biofeedback, which, for years, have not fulfilled what some of us might have hoped.

The more we understand about the brain, the more we're going to be successful in terms of our relationships, our day-to-day living, how we go about doing and planning things—right out to the clinical end of things. I think if you do not understand the brain [there will be a] drug developed, and we'll wind up with all sorts of adverse reactions that go with it. You'll win on one point and lose on the other. [There will be] surgery, but without understanding the brain, you'll fix one thing and screw up something else.

Q. Is this a terribly expensive form of science?

A. No, it's not. The theoretical end of things is computers and books and modeling, and it's not the same as the equipment you need to do experiments and so on. But you know what? There's no question that unless you validate things experimentally in the real world, people aren't going to let you fool around with the brain. There is not a lot of work done on humans.

A plausible conclusion is that organized activity can occur without attention or awareness, and may be a generator of task-specific or problem-solving circuit activity. The implication is that the brain can self-stimulate to accomplish goals independent of awareness.

Consciousness may get all the focus, but consciousness is a small part of what the brain does, and it's a slave to everything that works beneath it.

...the clearest defining characteristic of insight problem solving is the subjective "Aha!" or "Eureka!" experience that follows insight solutions...

There may be fragments in the nonconscious or the unconscious that are kind of clustering or coming together, and they reach some critical mass, some point at which you can get an "Aha! moment," a pop, a sudden insight.

...many non-linear dynamical systems with self-amplification are characterized by the presence of discontinuous transitions in internal state...

Oh!

Eureka!

A [good] working definition [of the unconscious] is mental processes that are inaccessible to consciousness but that influence judgments, feelings, or behavior.

Aha!

...most of these [Aha!] insights are rather minor events.... However, there are many anecdotes...about insights involved in the solution of far more complex and important problems.

One of the reasons this [field] is starting to explode is that the experimental end of things is coming into its own. Take another field that makes it completely obvious. Where would astronomy be without the telescope and optical and radial telescopes? You really would be nowhere.

Q. Are you talking about new tools, such as the functional MRI?

A. Yes, thank you very much, but because the fMRI is secondary, it's not direct, the EEG—electroencephalography—is coming back. The EEG was one of the earliest technologies, but now we are going to higher resolutions. We work with 256 electrodes; it'll go up to 500 and 1,000. Why? Because instead of big patches of wet electrodes, like those used on an EKG, we're going to go to mobile and wireless integrated circuits. You can put in two, three times as many dry electrodes, and at the same time you can put them under a baseball cap. So mobile wireless EEG will have even more applications, [such as a] drowsiness monitor for alertness for drivers. The applications, I believe, will be huge.

Q. Was your interest in this field sparked because brain activity is mathematically quantifiable? Because of the electrical measurements?

A. Aspects of it are. Whether you can do a reduction that takes everything into account, we'll see—again, it's the journey, not the destination. We're trying to model [brain activity]. People are coming up with whole brain models of how it works by computer simulation. By understanding parts of the brain and simulating the pieces together, what happens when you then try to simulate something in that whole brain model?

Q. Do you think Stony Brook is among the leaders in the field of brain research? It appears to me that California is ahead of us.

A. You are right about the West Coast's strengths at the beginnings of this era, but now there are universities all over the country—you can't possibly name enough of them. We see it as a wonderful confluence, a wonderful convergence. It's interdisciplinary; it's cross-functional; it's extreme.

That's why I've felt over the years that Stony Brook was a perfect seedbed. Of course, it always had neurobiology. We have a med school with neurologists, so they're on the clinical end, and imaging people are there. Stony Brook works with Cold Spring Harbor Lab [and] Brookhaven National Laboratory, which has fantastic imaging capability, etc. Stony Brook has a world-class physics department that has been superb for so many decades. We've got fantastic applied math that's going on—computer science, electrical engineering. And Yacov Shamash [Vice President for Economic Development and Dean of the College of Engineering] and [his people], they understand these things. We have so many pieces of the puzzle. We've got pieces in the technology end; we've got many pieces in many places that can fit together to create something. Not every university has all those pieces. So it bodes well for what we want to do in these areas.

One great opportunity for Stony Brook comes because Shirley [Strum Kenny] has led us in education. She's not trained in science, but she gets it! It's very exciting intellectually.

Q. Getting back to the practical end, what are some of the devices that grow out of an understanding of the brain?

A. There are all these fantastic devices happening. Going forward, a set of devices for understanding the brain, called independent component analysis [ICA], solves what's called the "cocktail party problem."

What's the cocktail party problem? It's the fact that if you're talking to someone and your wife or husband is in another part of the room, you will hear [your spouse]. No computer can do that if you have a conversation going on locally. If someone is about to have surgery and [if there is] something medical you're headed to, amazingly, somehow, you wind up over-hearing a conversation about that. And it's frequency domain and time domain—all this is going on at the same time, this chatter—the frequencies are all the same, it's all voice, so how are you going to filter it out? What you do is try to filter it in information space. ...SoftMax, which recently was sold to Qualcomm, is an example of the success of what's going on in neurotechnology spinoffs. If you understand the brain, then you can go do

things clinically or medically, or on the high-tech or computer end of it.

Q. Are you saying SoftMax has found some way to solve the cocktail party problem and apply it in some practical fashion?

A. Definitely. Basically, it is algorithmic in nature, software that winds up doing independent component analysis. It separates out through some complex mathematics. Think of pickup sticks we played as kids: It somehow teases apart those information vectors, or pickup sticks, into individual pieces. [In a demonstration, the developer] played five pieces of music and had them recorded on a computer—it was some hard rock music, two people arguing, the James Bond theme from *The Spy Who Loved Me*, and people typing at a computer. He then scrambled them all together, and I can tell you, you couldn't understand a thing. He then put it through a filter that represented the algorithm, and all five pieces came out clear as a bell, although not precisely as they were put in. ...It does just what your ear and your brain wind up doing [at a cocktail party]. That in a cell phone is wonderful! Or in a handheld computer in a warehouse, because the noise that is coming in from the outside is such that you can't hear the conversation.

Q. Let's talk about your transition from Symbol Technologies to brain researcher.

A. When I started the company...it grew from a few people to 6,000 people, up to \$1.5 billion by the time I retired. [There were a few people at the beginning of the Foundation who were instrumental in launching it:] Paul Adams, in the department of neurobiology and behavior at Stony Brook, was a mentor. There was also Tim Tully, [a research biologist] over at Cold Spring Harbor Lab, whom I met, and Jim Watson [co-discoverer of the structure of DNA and former director of Cold Spring Harbor Laboratory (CSHL)], and Bruce Stillman, [president of CSHL], through him.

Actually, James Watson always says to me, "Jerry, DNA is a bar code."

Q. Really? Jim Watson says DNA is a bar code?

A. Yes, he always relates it analogously to bar coding, to the encoding and the decoding of how it works. Is it a bar code literally? No. But is it conceptually very much like a bar code? Yes.

I always used to call bar-code laser scanning "eyes for the computer." Nowadays, there's also molecular sniffing, olfactory, that's a nose for the computer. Then ears for the computer are obviously microphone, speakers...you can use all kinds of speech recognition techniques. So the intelligence is really anthropomorphic, almost. Computers are becoming mobile and wireless with essential features of the brain—not close by any means but at least conceptually. And the more we have brain science done, the better job we'll do at that.

And coming from things in technology that I thought and mathematics that I had learned and bar-code vision patterns...these kinds of things, as I got to know people, got me more comfortable [about brain science], and at one point I got overly comfortable. I was saying, "Wow! Circuits, networks!" I know what circuits and networks are. ...Ultimately, when I learned more, I realized I didn't know what I was talking about. But then as I learned even more, I found how it is applied and how to use it. Naturally, you need to learn the biology; otherwise you are playing games and guessing. But the truth is, mine were very applicable skill sets.

Being at Stony Brook, going to labs, looking at some of the things Paul Adams was doing, chatting with people late at night on memory work going over there, being very excited about what they did, pumping out a little bit on [what] one of the guys [was] doing...spectroscopy and helping other people with noise problems, I started learning more, and then when I left Symbol—in the past five years the freedom has been wonderful for me. I love Symbol. I loved what I was doing. But you don't have freedom [as a corporate executive]. You don't realize what you don't have.

Q. What, in a nutshell, does Stony Brook have?

A. There's a great future for Stony Brook in these areas. ■

Carol Richards is editor-at-large for The Brook.

UNRAVELING THE “BLACK BOX”

Brain Work

By Robert Cooke

There's only one species on Earth that spends time and effort trying to understand itself. Us. Scientists have long struggled to discern how the human brain works, how we formulate ideas, make decisions, learn, and why we react in ways sometimes unpredictable. We've pondered, what is love? Pleasure? Aggression? How do emotions work? What is creativity?

The brain is enormously complex, a “black box” that science has been trying to understand one piece at a time. Researchers have spent years poking electrodes into neurons, dissecting brains and brain pieces, recording brain waves, and listening to people reclining on couches. There are clues aplenty, yet a clear picture of how the brain works remains elusive.

Now, however, fascinating answers are beginning to emerge from studies of the brain in action. Thanks to new imaging technology, neuroscientists can actually watch how different parts of the brain react and interact in emotional situations, or to stress, pleasure, pain, or various other stimuli.

“It's a very exciting time to be working in the laboratory,” says psychologist Turhan Canli, in Stony Brook's Department of Psychology. His colleague Arthur Aron agrees: “To see how the brain responds while people are thinking and feeling is an enormous opportunity to advance our knowledge.”

That opportunity stems from a powerful brain-imaging technique and machine called fMRI (functional Magnetic Resonance Imaging), which can track what areas in the brain are responding as a person is stimulated by a picture, sound, a name, or perhaps an odor. The machine shows where oxygenated blood is flowing in the brain, actually pinpointing where the action is and where there's demand for energy.

To explore this phenomenon, Aron says, Stony Brook won a major National Science Foundation grant to buy and install its own dedicated fMRI machine. “Only a few psychology departments have their own machines. And to be considered one of the very top research programs, we needed to have one. It's really going to put us on the map,” Aron predicts. “It will accelerate the quality and the quantity of our work.” Also, he noted, the department plans to hire a faculty member with strong fMRI experience.

Some new leadership has already come on-board. Lorna Role, Ph.D., was recruited from Columbia University to head the Department of Neurobiology and Behavior. She comes to Stony Brook with vast experience in brain science, studying synaptic transmission—the flow of messages from one neuron to another—seeking to understand motivation and reward. She has focused on how nicotine alters the flow of messages among nerve cells and how the brain adapts to maintain the pleasurable feeling from the nicotine, motivating a person to smoke even more. This research may offer clues to the riddle of addiction. It may also open the

door to understanding schizophrenia. “Ninety percent of schizophrenics are smokers,” she states. “This made me wonder if there was a connection between the electrical effects of nicotine and the electrical circuits disrupted in schizophrenia.” Role, David Talmage, associate professor of pharmacological sciences, and her colleagues are conducting studies on mice to explore how mutations in the gene *neuregulin1*—which is abnormal in schizophrenics—fail to manage the transmission of information between neurons and how nicotine helps “slow the flow” to create a calming effect.

“Knowing the molecular mechanisms may offer some hope for the development of new treatments that specifically target these receptors,” explains Role.

Although the Department of Psychology's new fMRI machine isn't up and running yet, researchers are using the one at Stony Brook University Medical Center to explore human personality. Canli and his colleagues, for example, are studying how and why various people react differently to stress. “We see common things from one person to the next,” he added, “but we also see there are some huge differences between individuals. Some people are highly reactive to stress, and some people are not.”

The question is why, and that raises the longstanding fundamental issue known as nature vs. nurture. Are human behaviors governed by nature, the genes we're born with? Or by nurture, the experiences that shape us from birth? “The consensus now is that it's both,” Canli says. “So the big question is how they

[interface] with each other. How do experiences alter what the genes do, and how do the genes control the impact of experience? It's already clear, Canli explained, that “there are individual differences in the genes” from one person to another, differences called polymorphisms. These alterations allow the gene to function but may alter how much of a given protein it makes, how active the protein is, when it is made, and how long it lasts.

An example of polymorphism, he says, are differences in a gene that makes a structure called the serotonin transporter, which controls how much of this messenger molecule, serotonin, exists outside brain cells. And, “depending on which gene variation you have, it determines the amount of serotonin that is there,” Canli says. “There is a short version and a long version of the gene. Persons with one or two copies of the short version tend to be more anxious; they have higher neuroticism,” Canli explained. By using fMRI, he adds, “we showed that there are neural correlates—brain regions where we see differences between people. But we need more genetic information, and we need to understand what pressures they're under. Yet these do have an impact at the brain level, and we can measure it.” ■

Robert Cooke is a Massachusetts-based freelance science writer and editor.

What is love? Pleasure? Aggression? How do emotions work?

LIVING WITH TOTAL RECALL

The Woman Who Can't Forget

By Jill Price with Bart Davis

The memory is sometimes so retentive, so serviceable, so obedient; at others, so bewildered and so weak; and at others again, so tyrannical, so beyond control! —Fanny Price, in Jane Austen's *Mansfield Park*

I know very well how tyrannical the memory can be. I have the first diagnosed case of a memory condition that the scientists who have studied me termed hyperthymestic syndrome—the continuous, automatic autobiographical recall of every day of my life from when I was age fourteen on. My memory started to become shockingly complete in 1974, when I was eight years old. From 1980 on, it is near perfect. Give me a date from that year forward and I can instantly tell you what day of the week it was, what I did on that day, and any major event that took place—or even minor events—as long as I heard about them on that day. My memories are like scenes from home movies of every day of my life, constantly playing in my head, flashing forward and backward through the years relentlessly, taking me to any given moment, entirely of their own volition. Imagine if someone had made videos of you from the time you were a child, following you around all day, day by day, and then combined them all onto one DVD, and you sat in a room and watched that DVD on a machine set to shuffle randomly through all the tracks. There you are as a ten-year-old in your family room watching “The Brady Bunch”; then you’re whisked off to a scene of you at seventeen driving around town with your best friends; and before long you’re on the beach during a family vacation when you were three. That’s how I experience my memories. I never know what I might remember next, and my recall is so vivid and true to life that it’s as though I’m actually reliving the days, for good and for bad.

As I grew up and more and more memories were stored in my brain, more and more of them flashed through my mind in this endless barrage, and I became a prisoner to my memory. The emotional stress of the rush of memories was compounded by the fact that because my memory worked so differently from the norm, it was incredibly difficult to explain to anyone else what was going on in my mind. I had a condition that had never before been diagnosed, and as much as I would try to explain how my memories assaulted me, my parents couldn’t really grasp the nature of what was happening. ...

Nobody could understand, including me, and in time I was so frustrated by trying to describe the experience that I simply gave up and began keeping it almost entirely to myself.

I have struggled through many difficult episodes of being emotionally overwhelmed by my memory through the course of my life. Then finally I decided I had to reach out and try to discover whatever I could about what was going on in my head and why. By a stroke of what now seems to me divine providence, I went online and did a search for “memory,” and to my great good fortune, the first entry that came up was to Dr.

James McGaugh, a leading memory researcher affiliated with the University of California at Irvine (UCI).

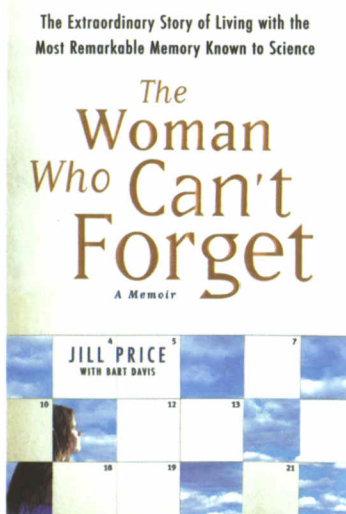
[Dr. McGaugh] is one of the foremost memory experts in the world and the author of over 500 scientific papers on human memory. ...I can’t say that I understood much of what I read about his work—the titles of the papers alone were daunting—but as soon as I found him, I thought, “This is the man who’s going to tell me what’s going on.” ...

The work I’ve done with Dr. McGaugh and his team has already

helped me to see not only my own life in new terms, but also the lives of others and how memory plays such a powerful role in everyone’s life. I’ve realized with more clarity, as I’ve reflected on my life in the process of writing this book and been exposed to findings in a broad range of memory science, just how profoundly our memories assist in constructing our sense of who we are and of the meaning of our lives. Whereas people generally create narratives of their lives that are fashioned by a process of selective remembering and an enormous amount of forgetting, and continually recraft that narrative through the course of life, I have not been able to do so. I came to realize in a flash of insight one day that whereas memory generally contributes to the construction of our sense of self, in my case, in so many ways my memory is my sense of self. I do have a storehouse of memories that are more important to me than others and that I travel to often in my mind for comfort and as a refuge, but I have all the other days there too, impressing

themselves on me all the time. It’s as though I have all of my prior selves still inside me, the self I was on every day of my life, like her or not, nested as in a Russian doll—inside today’s Jill are complete replicas of yesterday’s Jill and the Jills for all the days stretching so far back in time. In that sense, I don’t so much have a story of myself as I have a remarkably detailed memory of myself. ...

My greatest hope is that eventually scientists will discover something about my brain that will help solve the riddles of the tragic disorders of memory loss. The scientists have already determined from the scans of my brain that there are pronounced structural differences that probably account for why my memory is so complete and so relentless. I’ve learned from them how many mysteries about memory they’re still grappling with, and it does seem that what they’ve learned about my brain and memory will lead to fruitful research. For now, I hope that my story is illuminating and thought provoking for readers, and helps explain the role of memory in all of our lives—as well as that of forgetting—and how our memories to such a significant degree make us who we are. ■



From *The Woman Who Can't Forget* by Jill Price with Bart Davis. Copyright © 2008 by Jill Price. Reprinted by permission of Free Press, a Division of Simon & Schuster, Inc.



INTERVIEW WITH AUTHOR BART DAVIS

It is ironic that the man who admits he can never remember where he put his keys should be co-authoring a book with a woman who has *never* forgotten her keys—or anything else for that matter. Stony Brook alum Bart Davis, author of *Closure: The Untold Story of the Ground Zero Recovery Mission*, was introduced to Jill Price through his agent, Robert Gottlieb, and was immediately intrigued by Price's total recall. "I found it fascinating and wanted to explore the importance of memory in the formation of personality. The amount of editing we do, the ability to 'forget' or edit our life's history is essential in the creation of self-image," explains Davis. Price, however, remembered everything—good, bad, significant, irrelevant—with the same weight and

Inside today's
Jill are complete
replicas of yes-
terday's Jill and
the Jills for all
the days stretch-
ing so far back
in time...

clarity. "And she did this without anybody, outside her immediate family, knowing about it," says Davis. "She is a courageous woman," he continues. "This 'ability' could have been crippling."

When Price finally received validation from scientists that her memory was, indeed, "extraordinary," she decided to go public in the hope that others with similar experiences might come forward to contribute to the understanding of how memory works. Davis remembers in his initial meeting with Price how difficult it was for her to open up. They developed a rapport that brought all of his education and experience to the forefront.

Davis received his bachelor's degree in English from Stony Brook in 1971, and his master's in social work in 1976. Both disciplines, he feels, have helped him become the writer he is today. "I received good therapist training at the School of Social Welfare," he says. "That's where I learned to

be an active listener." And, although he entered Stony Brook with the intent of becoming a doctor, he switched his major to English after taking Professor Kofi Awoonor's poetry class—"The most remarkable man I've ever met," says Davis. "He taught me most of what I know about writing."

A serendipitous walk past the Education Office, which advertised 15 credits for student teaching, put him on the instruction path for the next 10 years. Davis taught at R.C. Murphy Junior High School in Stony Brook, where he started a program for difficult and disruptive students. "Part of the program included a lot of physical activity with the kids," explains Davis. One memorable softball game launched Davis' current career as a writer. "It was a classic scenario. Frank, the biggest boy in the class and a bit of a bully, hits a fly ball to Billy, the smallest kid and the one that always got picked on. The entire outcome of the game hung on that one fly ball, and to everyone's amazement, Billy caught it and his team won," says Davis. "Billy was mainstreamed out of my class shortly after." Davis wrote and sold the story, "At This Moment, the Universe Stood Still," to *Newsday* for \$50. He's been writing ever since. "Because of that one game, Billy's perception of himself changed from 'loser' to 'winner,'" explains Davis. Thus began Davis' interest in memory and personality formation.

Jill Price doesn't have the ability to edit her memories and reform her perception of herself, but through her work with memory scientists and the publication of her book, she is on a journey of self-discovery. Bart Davis feels privileged to be along for part of the ride. ■

Bart Davis lives on Long Island and is married to his Stony Brook college sweetheart, Sharon Casey Davis. They have two grown children.

GETTING INSIDE SOMEONE'S HEAD

Neurosurgery and the Art of Minimalism

By Margaret Jaworski

It was a close encounter with an aneurysm clip, a miniature metal clothespin of a device that determined the direction of Dr. Henry Woo's medical career. "When I saw my first clip, I was completely taken with the idea that you can open up a person's head, repair a vascular abnormality, close up the cranium, and then that person can end up being totally fine," he says. "I couldn't believe that as a doctor you could actually do these kinds of things."

Henry Heesang Woo had found his calling. "At that moment I knew I wanted to be a neurosurgeon," he says. "It's like when you find someone you know you're going to marry," he adds. "You just know."

Born in Korea and raised in New York City, Henry Woo also knew that he was destined to be a physician like his father, an anesthesiologist who practices in Manhattan. While an undergraduate at Williams College, the Division I squash player and crew team member settled on orthopedic surgery. "Being an athlete," he wisecracks, "it seemed like a natural choice."

But soon after he entered New York University Medical School in 1991, he realized that what had seemed like a natural choice didn't quite suit his nature. "I hope this doesn't sound pejorative," he says, weighing the propriety of continuing, "but to me, ortho seemed like carpentry and I wanted something more cerebral," he says, grinning at the unintended pun.

In the world of Dr. Woo, "getting into someone's head" isn't an expression, it's a reality. "On a regular basis we have patients who [without intervention] are potentially on the precipice of either dying or having a really bad outcome. And we can intercede and make a difference. That's pretty remarkable," he says.

It's also a rush, something like the "high you get from running or another athletic activity," says Dr. Woo. And like most things in life, the first time is the most memorable. "I'll never forget the first time an aneurysm ruptured during surgery," he says, sounding almost wistful. "I can remember the exact configuration of the aneurysm in every detail." He was operating on a patient through a surgical microscope with a plus-20 magnification when, literally, in the blink of an eye, his field of vision filled with blood. It was the cerebral equivalent of a flash flood. "And when that happens, the patient's life is literally at stake," he says. With his patient's brain function in jeopardy, Dr. Woo's brain went into action, processing information and making a million decisions in milliseconds. Game on.

Dr. Woo never lost his focus. He stayed calm. "In surgery you plan for every contingency," he says. He got the bleeding under control and then clipped off the aneurysm. The patient recovered.

Heady Stuff

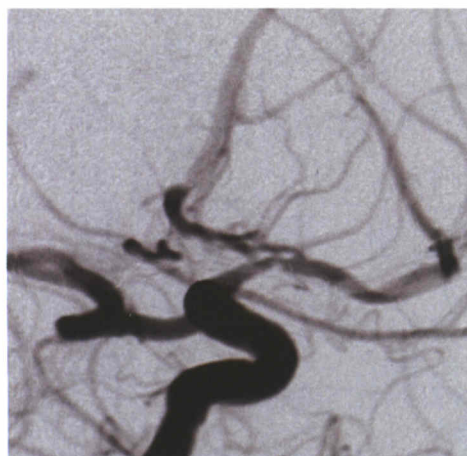
While a resident, Dr. Woo recognized that traditional open neurosurgery—accessing the brain via a burr hole or through the cranium—was only "one part of the big picture," he says. "I realized even then that endovascular interventional neuroradiology was going to be a significant

part of what I would need to do in the future." This subspecialty of radiology relies on imaging and minimally invasive procedures, much like cardiologists use angioplasty and other techniques to treat stroke and other vascular problems. When interventional neuroradiology started in the late 1970s, it was considered a fringe specialty that many "traditional neurosurgeons dismissed as a passing fad," says Dr. Woo. By 1991, when Dr. Woo entered medical school, this fringe field had gained a toehold but was still suspect in some quarters. Dr. Woo was resolute. He completed a fellowship in interventional neuroradiology. "I knew that without that training, I would quickly become a dinosaur," he states.

Dr. Woo is no relic of a bygone era, but he is something of a rarity. He belongs to an elite group of surgeons who are trained in both traditional and noninvasive techniques. According to the American Academy of Neurological Surgery, as of July 2008, there are 3,573 practicing board-certified neurosurgeons in the United States and only 41 of those have reported completing a fellowship in interventional neuroradiology. Dr. Woo estimates that in the U.S. there are only about 450

neurointerventionists. Because the fields are so highly specialized and require different skill sets—tactile vs. high-tech—"there's always criticism from those who believe you can't do both well," says Dr. Woo. "But I don't think that's the case. I think the fields are more complementary than mutually exclusive. Because I can perform both types of surgery, when I evaluate a patient, I will always recommend the procedure that I feel is right for that person rather than the procedure that I can do," he says.

Dr. Woo's dual skill set has altered the medical landscape of Suffolk County. Before he was appointed director of Stony Brook University Medical Center's new Cerebrovascular Center, Suffolk had no neurointerventionist capable of performing the complex procedures for which Dr. Woo, 39, has gained international acclaim. Since his arrival at Stony



A stroke waiting to happen. That's what this image of a middle cerebral artery shows—the artery is 95 percent blocked.

Brook from the Cleveland Clinic in August 2007, Dr. Woo has already performed numerous innovative procedures that have raised Stony Brook's profile as a groundbreaking institution. In addition, he's been outfitting the Center with state-of-the-art equipment. Among his purchases is the Siemens biplane Artis zee. This multimillion-dollar machine is "the first one on the East Coast and the only one in the New York City area," he points out. The Artis zee's massive robotic arm, which looks like the docking arm of the International Space Station, allows physicians to rotate the patient 180 degrees and to see catheter placement and fluoroscopy in 3-D. He's also stocked the surgical and angiographic suites with the most advanced stents, coils, aneurysm clips, and liquid embolics, used to block blood flow on malformed blood vessels in the brain, on the market today along with two Leica operating microscopes.

By comparison, his office on the 12th floor of the Health Sciences Center is a humble abode. Six computer screens form a semicircle around his desk. A bookcase jammed with medical tomes and journals fills one wall. In a corner, a box overflows with a collection of plastic tubing, mainly catheters with an oddly shaped end piece that look like miniature mesh scaffolds—pieces of a prototype for a device developed by Dr. Woo and a colleague from the Cleveland Clinic. This device, he explains, will be used in acute stroke treatment to "bypass the clot by immediately reestablishing blood flow and allowing the body's own clot busters as well as whatever thrombolytics were administered intravenously to then take effect on the clot itself. He hopes the device will come to market by early next year.

Dr. Woo's surgical talents seem to be matched by his personal charm. "Everybody loves Dr. Woo," says one of the department secretaries. An administrator echoes the sentiment. When asked about his un-neurosurgeon-like demeanor, Dr. Woo seems embarrassed. "I love what I do," he admits. "I guess that comes through."

It's one of those perverse ironies of medical treatment: The very procedure that an interventionist uses to remove a blood clot or stanch intracranial bleeding can also create the same problem it's designed to fix. While all surgical procedures carry a risk, operating on the brain is especially dodgy. "The brain is inherently a hemorrhagic organ," says Dr. Woo, "and the fear of intracranial hemorrhage is astronomically higher with acute stroke than it is with acute MI [myocardial infarction]. The margin for error is much lower. And the most feared complications of what inter-

ventional radiologists do is stroke or hemorrhage caused by our catheters or wires perforating any of the blood vessels," he explains. "To a large extent the advantage of having the head open is that you have a way to back out, because if someone starts bleeding you can just evacuate the blood clot. If you run into a hemorrhagic complication from an endovascular procedure, very rarely is there time to rush the patient to the OR, so you don't have as much of a safety net."

Humility, Hubris, and Faith

To be a great neurosurgeon requires dexterity, technique, talent, and "something more," says Dr. Woo. It's a combination of humility and measured hubris. "Sometimes things do not go our way. Even when you do a procedure perfectly, there will be times when a patient does poorly. Despite that failure you need to be able to say, 'OK, I'm willing to go back and do it again because I have fundamental faith that what I'm doing I can do as well as anybody else.'"

Just then, a voice crackles through an unseen speaker. "We're ready for you, Dr. Woo." Dr. Woo is being summoned back to the surgical suite where his fundamental faith will be put to the test yet again. He's performing a follow-up arteriogram on a young woman with a glomus tumor, a type of malignant tumor that affects the arteries, primarily the carotid artery.

Early that morning, before the neurosurgeons began dissecting the tumor, Dr. Woo had performed an embolization procedure to cut off the tumor's blood supply. "This type of tumor is known to be hypervascular, and without embolization they bleed like crazy," he says.

"You have to understand which arteries are supplying just the tumor and which ones are supplying the tumor and other blood vessels going to the brain or cranial nerves and then figure out which blood vessels are safe to embolize. You want to make sure you're only cutting off the tumor's blood supply and not the blood supply to cranial nerves or other areas of the brain that would cause neurological deficits or a stroke," he adds.

"How do you make sure?" he's asked.

"How do you make sure? That's the whole magilla," he says, flashing a smile as he heads out the door. "That's the art of it." ■



Unblocked. Dr. Woo implanted a Wingspan® Stent System with the Gateway™ PTA Balloon Catheter. It was the first such procedure on Long Island.

Margaret Jaworski is a New York-based freelance writer and contributor to The Brook.

Taking Athletics To The Next Level

The Seawolves are on the move—to new homes, new conferences, and new heights.

By Howard Gimple



Baseball All-Star Joe Nathan delivers with a big gift toward a new ball field, Seawolves football steps up to the Big South Conference, and SB athletes shine academically.

In 1992 a gangly freshman named Joe Nathan arrived on campus to play short-stop for the NCAA Division III Stony Brook Patriots. By the time he left, four years later, Nathan was a two-time academic All-American drafted by the San Francisco Giants, Stony Brook's team name had changed to the Seawolves, and Stony Brook athletics was preparing to make the leap all the way to Division I under the stewardship of its new president, Shirley Strum Kenny. President Kenny, a graduate of the University of Texas at Austin—a perennial NCAA powerhouse as well as a *U.S. News & World Report* Top 50 school—knew that superior scholarship and outstanding athletics can not only coexist but boost each other to greater heights.

It took several years of triumphs and disappointments for Nathan to evolve into one of Major League Baseball's most dominant closers, just as it has taken time for the little-known Seawolves to establish Division I credentials. The opening of the state-of-the-art, 8,300-seat Kenneth P. LaValle Stadium in 2002 went a long way toward putting Seawolves athletics on the NCAA map. The baseball team, led by coach Matt Senk, has played on the same field that Senk's prize recruit, Nathan, played on more than 15 years ago—until now.

Announcing Joe Nathan Field

The dominant Minnesota Twins closer has just closed a deal to make a \$500,000 lead gift to the Department of Athletics in support of the construction of a new baseball field. In

recognition of the gift from the Joe Nathan Charitable Foundation (www.joenathan.com), the State University of New York has approved that the new field be named Joe Nathan Field. It will become the home of a Stony Brook team that competes as one of the toughest programs in the America East Conference. Coach Senk's Seawolves have won the America East title and represented the conference in the NCAA Tournament twice in the past five years, including the 2008 season. What's more, the squad's 34-26 record in 2008 was the fifth time in nine seasons in Division I that the team has had 30 wins in a season.

Southern Exposure for Football Team

After the Seawolves competed as an Independent in 2007, football coach Chuck Priore made a major upgrade in the quality of their competition for the 2008 season. Seawolves football is now a member of the Big South Conference, and although it may be a stretch geographically (unless you consider South Setauket part of the New South), the conference is a perfect fit for Stony Brook in every other way. As a member of the Big South Conference, Coach Priore's gridiron gang will, for the first time in team history, compete for an automatic bid for an NCAA post-season playoff berth.

The Seawolves' non-conference opponents will include some of the nation's most prestigious programs. In 2010 the Seawolves will travel to Tampa to play Big East member

University of South Florida in the Seawolves' first-ever game against a Division I Football Bowl Subdivision (FBS) opponent. In addition to facing off against South Florida, the Seawolves will play two more contests against FBS institutions, Buffalo in 2011 and Army in 2012.

Playing Smart

After excelling at slamming home runs, making jump shots, and scoring goals, the Seawolves also excelled at hitting the books. Eighty-three Seawolves were named to the America East Academic Honor Roll, each student-athlete having earned at least a 3.0 GPA to qualify for this honor, representing 71 percent of all Stony Brook student-athletes. In addition, 40 Seawolves earned a spot on the Commissioner's Honor Roll, which required a 3.5 GPA for recognition. A total of 14 student-athletes posted a perfect 4.0 GPA in the fall 2007 semester, and 16 of Stony Brook's athletic programs earned a team GPA above 3.0, with the average GPA of all 425 SB student-athletes hitting an all-time high of 3.06 at the end of last year.

Drawing inspiration from baseball player Nathan, the Academic All-American who became a major league all-star, Stony Brook athletics has made major upgrades on the field and in the classroom—improvements that have led to greater support for Stony Brook teams in game attendance and athletic scholarships. With a total commitment to continued athletic excellence from the administration, coaches, and players, it's a sure bet the Seawolves will be howling with success for many years to come. ■

PHOTOS: (LEFT) MARC LEVIN/MLB PHOTOS VIA GETTY IMAGES; (CENTER) BOB O'ROURK; (RIGHT) GLENN TARQUINO

Events Calendar

November 2008

Saturday, November 22, 8:00 pm

Emanuel Ax and Yefim Bronfman, Duo Piano

Staller Center for the Arts Main Stage

Join us for a memorable evening with two of the most talented virtuoso pianists performing today. Tickets: \$42. For more information or to order tickets, visit www.stallercenter.com

Sunday, November 23, 3:00 pm

Les Parfaits Inconnus—Not Just for Kids

Staller Center for the Arts Main Stage

A zany medley of circus acts, comedy, and electrifying music! Tickets: \$12. For more information, visit www.stallercenter.com

Sunday, November 23, 7:00 pm

Sunday Street Acoustic Series:

Ray Bonneville

University Café

Ray Bonneville's deep-grooving blues style has won him much critical attention. Advance tickets: \$15. At the door: \$20. For more details, visit www.universitycafe.org

Sunday, November 30, 2:00 pm

Sunday Street Acoustic Series:

Blackie and The Rodeo Kings

University Café

Over the course of their five albums, Blackie and The Rodeo Kings have won acclaim as one of Canada's most loved performing groups, with a reputation for shows of high energy. Advance tickets: \$18. For more details, visit www.universitycafe.org

December 2008

Thursday, December 4, 8:00 pm

Timothy Eddy, cello, and Gilbert Kalish, piano

Staller Center for the Arts Main Stage

The evening's repertoire will include Elliot Carter's *Sonata for Cello and Piano*. Tickets: \$34. For more information or to order tickets, visit www.stallercenter.com

Friday, December 5, 5:00 pm

Winter Wonderland Windmill Lighting & Reception

Stony Brook Southampton

Join us for the annual lighting of the historic Windmill on the grounds of SB Southampton.

Sunday, December 7, 1:00 pm

Metropolitan Opera: Live in HD

Berlioz's LA Damnation De Faust

Staller Center for the Arts Main Stage

You don't have to travel into New York to go to the Metropolitan Opera! Staller will present the full 2008-2009 schedule of live HD opera from the Met via satellite. Berlioz's contemplation of good and evil is interpreted by Robert Lepage. Marcello Giordani stars in the title role opposite Susan Graham as Marguerite and John Relyea as Méphistophélès. James Levine conducts this rarely staged masterpiece. Tickets: \$22 general admission; \$20 senior citizens; \$15 students and children. For the complete schedule or to order tickets, visit www.stallercenter.com

Sunday, December 7, 2:00 pm

Sunday Street Acoustic Series: Sloan Wainwright with special guest Lucy Wainwright Roche

University Café

An outstanding and highly original singer and songwriter, Sloan is a compelling performer best known for her rich contralto voice, intense personal lyrics, and an innovative approach to song. Advance tickets: \$20. For more details, visit www.universitycafe.org

Sunday, December 14, 2:00 pm

Sunday Street Acoustic Series:

Anthony da Costa and Abbie Gardner

University Café

The Café ends 2008 with two of the brightest lights on the acoustic music scene, joining together for an afternoon of memorable music. Advance tickets: \$15. For more details or to purchase tickets, please visit www.universitycafe.org

January 2009

Saturday, January 24, 8:00 pm

Royalty of Jazz—Dame Cleo Laine and Sir John Dankworth

Staller Center for the Arts Recital Hall

The acclaimed English jazz singer and actress, Cleo Laine, along with her husband—conductor John Dankworth—bring the classics to Staller. Tickets: \$38.

Monday, January 26, 6:00 pm

Sweet Dreams, an Evening of Chocolate Indulgence to benefit the Cody Center

Watermill Caterers, Smithtown, NY

Now in its sixth year, Sweet Dreams is a chocolate extravaganza, showcasing the talents of Long Island's most prominent pastry chefs. Thanks to the Watermill, 100 percent of your contribution supports the Cody Center's mission to provide hope for families affected by autism spectrum and related disorders. For ticket information, call (631) 632-4466.

February 2009

Thursday, February 5, 8:00 pm

Emerson String Quartet

Staller Center for the Arts Recital Hall

In the second of three concerts by the Emerson as Quartet-in-Residence at SB, the program will include Mozart's *Quartet in B-flat Major, K. 589* and Beethoven's *Quartet in f minor, Op. 95*. Tickets: \$42. For more information, visit www.stallercenter.com

Saturday, February 14, 8:00 pm

The Puppini Sisters

Staller Center for the Arts Main Stage

The sensational singing musical trio from England arrives at Stony Brook's shores in time for a night out with your special Valentine. Tickets: \$34. For more information or to order tickets, visit www.stallercenter.com

SAVE THE DATES

Monday, March 30, 2009, 4:30 pm

The 13th Annual Mind Brain Lecture

Staller Center for the Arts, Main Stage

Explore the mysteries of the mind with Larry Abbott from Columbia University.

Wednesday, April 15, 2009, 6:30 pm

Stars of Stony Brook Gala

Honoring President Shirley Strum Kenny

Pier Sixty at Chelsea Piers

Wednesday, May 13, 2009

Cody Comedy Festival

Staller Center for the Arts

Seawolves Athletics Home Games

Games are held in the Sports Complex. Check the Web site, goseawolves.org, for updates.



Tuesday, November 25

Men's Basketball vs. American, 7:00 pm

Saturday, December 6

Women's Basketball vs. Northeastern, 2:00 pm

Monday, December 8

Women's Basketball vs. Yale, 6:00 pm

Wednesday, December 10

Men's Basketball vs. Hofstra, 7:00 pm

Monday, December 15

Women's Basketball vs. Manhattan, 7:00 pm

Wednesday, January 7

Women's Basketball vs. Boston, 7:00 pm

Thursday, January 8

Men's Basketball vs. Maine, 7:00 pm

Saturday, January 17

Swimming vs. Lafayette, 12:00 pm

For more information or to purchase tickets, please visit www.goseawolves.org or call (631) 632-WOLF.

A Message From Our Alumni Association President



The Alumni Association is now offering "open membership" to all alumni. We've done this to ensure that all 125,000 alumni have an unlimited connection to your Stony Brook family and to our current students.

Many alums have already discovered the rewards of donating their time, talent, and resources to the University. Alumni have returned to speak to student organizations and groups that they were once a part of, have been invited by faculty to speak to classes, and have arranged for internships at their places of employment. Sharing your experiences and stories are invaluable to our current students—they want to hear from you! We're continually developing programs with admissions to help attract the best and brightest students to consider Stony Brook, and working with career services to ensure that students have mentoring opportunities that will lead them into launching successful careers or continuing their academic pursuits.

The Alumni Association is also working hard to provide opportunities for alumni to connect and assist one another and for this we need your help. Partner with us to help plan alumni activities, arrange networking events, host functions and special events, and advocate on behalf of the University. Your voice and contributions are an integral part of Stony Brook's ongoing success. If you're at all interested in pitching in, please send an e-mail to alumni@stonybrook.edu or call us at (631) 632-6330.

Christina Vargas Law

Christina Vargas Law '90, '93

University in '76 and a Ph.D. in psychology from the University of Miami in '89. She has been married to Ted Williams for 37 years and has lived in South Florida since the 1970s. Both are practicing psychologists, and they have two children, Chad (24) and Tyla (21).

Richard Kennedy '73 (M.A.L.) finalized his war novel and had it published by *PublishAmerica.com* in 2005, following his retirement from teaching English. Since then, he has published *Modest Impressions; Sundry Short Stories; In Defense of Eve; New Fantasies;* and *Politics Then and Now.*

Ronald M. Shapiro '73 (B.A.) is a part-time adjunct real estate professor at Monmouth University.

Craig Tracy '73 (Ph.D.) was awarded the 2007 Norbert Wiener Prize in Applied Mathematics.

Denis Woychuk '74 (B.A.), playwright and lyricist of *Attorney for the Damned*, is a former lawyer who represented the rights of mental patients for more than ten years, working out of a maximum security hospital in New York. His rock musical is a symbolic treatment of his 1996 autobiographical book, *Attorney for the Damned*. For more details, visit www.AttorneyfortheDamned-rockmusical.com

Nancy Daley '75 (B.A.) is the mayor of Lake Alfred, Florida. Daley has worked extensively on creating walking trails in her area.

Mitchell Miller '76 (B.A.) is developing an art photography Web site (www.zenmirror.com) and conducts photography and computer introduction classes.

Rosetta Swinton '76 (B.S.) is off on a two-year trip to Malawi, Africa, as a missionary to 1,000 high school students. She will teach health in the classes and villages, as well as build a children's clinic. Swinton has been a nurse in South Carolina in various capacities and as a faith-community nurse responsible for over 270,000 members and more than 600 congregations.

Mary Dumas '77 (M.S.) was awarded the Elizabeth Russell Belford International Award for Excellence in Education November 2007 by Sigma Theta Tau International, Honor Society in Nursing, and the highest honor in nursing. She is president elect, National Organization of Nurse Practitioner Faculties 2006-2008 and president, National Organization of Nurse Practitioner Faculties, 2008-2010.

Randi Mallah Kling '77 (B.A.) works in commercial real estate as senior managing director of Synergy Real Estate.

Andrew Lippman '77 (B.A.) works at Marsh and McLennan Companies in NYC, the world's leading global advice and solutions providers in risk, strategy, and human capital.

Class Notes

1960s

Sidney Secular '62 (B.A.) is now director, National Capital Area Chapter, of the Council of Conservative Citizens, and was chosen as member of The Order of The Knights Templar in 2007.

Dr. Martin Meltz '63 (B.S.) retired from the University of Texas Health Science Center at San Antonio at the end of November 2007 as a professor of radiation oncology with tenure.

Celene (Kandel) Krauss '68 (B.A.) is a professor of sociology at Kean University in New Jersey where she has taught since 1989. She has published numerous articles on "Women and Toxic Waste Protests," a grass-roots mothers' environmental justice movement. Her work is used in college classes across the U.S. She lives with her daughter Minna in Park Slope, Brooklyn, New York.

Richard Feit '68 (B.A.) is assistant professor at East Tennessee State University Quillen College of Medicine. He holds faculty positions in surgery and cardiothoracic surgery; is an assistant clinical professor in medical education; and an adjunct professor, Departments of Physiology and Anatomy. He received his

M.D. degree from the Albany Medical College of Union University; his Surgical Residency and Cardiothoracic Surgery Fellowship were completed at the Medical College of Virginia. He's been married 39 years to Laurie, a librarian, and has three grown children.

1970s

Robert Raciti '70 (B.A.) is a New York State Supreme Court Judge in New York City. He was first appointed to the Criminal Court in May 1998. He received his master's degree from Hofstra University, and his law degree from the New England School of Law. Raciti served with the Suffolk County, Middlesex County, and New York County District Attorney's Office. He is married with two children and resides in Queens.

Steven Rosenzweig '70 (B.A.) recently retired after being a school psychologist in Norfolk and Wrentham, Massachusetts, for 34 years. He lives with his wife, Susan, who retired as a special education administrator, in Massachusetts. They have one son, Seth, who is a director of development at George Washington University.

Paula Williams '71 (B.A.) worked as a resident assistant supervisor for Jewish Child Care in NYC following graduation. She received a M.Ed. in special education from Northeastern

Allan Weissman '77 (B.S.) attended medical school at Albert Einstein Medical School, Bronx, New York, then did his internal medicine internship/residency at Barnes Hospital, Washington University (St. Louis, MO). Since 1984, Weissman has been a research scientist at the National Cancer Institute/NIH, where he is now a branch chief. He and his wife, Jocelyn, (nee Dunford, also Class of 1977) celebrated their 27th wedding anniversary in May.

Peter Damiano '79 (B.S.) was an R.N. in the U.S. Air Force Nurse Corp. for three years. He worked at Kaiser Permanente in Sacramento, California, for 13 years and now works as an R.N. for the California Department of Corrections and Rehabilitation. (He'd love to hear from fellow alumni at damisrn@yahoo.com)

1980s

Judith Held '80 (B.A.) has been named senior vice president for the New York office of STV Group, an engineering, architectural, and construction management firm. Held has more than 20 years' experience handling complex commercial litigation in New York.

Timothy Shizume '81 (B.S.) is working for the University of Massachusetts Memorial Medical Center and is the administrative director of the laboratories at Wing Memorial Hospital in Palmer, Massachusetts. He resides in East Haddam, Connecticut, with his wife, Bonnie. Their son, Braeden, was born in August 2006.

Jonathan Borkum '82 (B.A.) is a psychologist in rural Maine and a faculty associate in the Psychology Department of the University of Maine. His book, *Chronic Headaches: Biology, Psychology and Behavioral Treatment*, was published in April 2007 by Lawrence Erlbaum Associates.

Monique Dussault '83 (B.A.) is a fourth-generation Sayville resident and local community activist. She served six years with the New York State Marine Mammals and Sea Turtle Stranding Program (1990-1996), is actively

Alumni Association Ends Relationship with Bank of America MasterCard®

The Board of Directors of the Stony Brook Alumni Association has announced its decision not to renew nor extend its long-standing relationship with the Bank of America Platinum Plus® MasterCard® credit card program. The current partnership ends November 30, 2008. Existing cardholder accounts will not be directly affected by this change and may continue to use the card. However, future use of the Stony Brook Alumni Association Bank of America MasterCard® card (i.e., purchases, advances, etc.) will no longer provide any financial benefit to support the Alumni Association or its programs. Effective December 1, the Association will offer to alumni, as well as University faculty and staff, a new Stony Brook Alumni Association Rewards VISA® provided by Partners First. Marketing of the new Partners First Rewards VISA® will begin in December. A portion of all new Partners First Rewards VISA® accounts and purchases will directly benefit the Association's programs, including student scholarships, awards, reunions, Homecoming, and more.

"The Association appreciates the support provided through the Bank of America MasterCard® program," commented Association president Christina Vargas Law. "However, after much deliberation, we decided that the cardholder product, services, and enhanced rewards offered by the Partners First Rewards VISA® would provide our alumni with a more appealing credit card while advancing the Association's mission." The Association will continue its policy not to market the card to current students. Applications for the new Partners First Rewards VISA®, prominently featuring the Association's logo and a beautiful image of the new entrance to the Stony Brook campus, will be available after December 1. "We hope all alumni will show their Stony Brook pride and support their Alumni Association by signing up for the new card," Law added.

involved with marine environmental and conservation issues, and is a board member of the Long Island Mycological Club. She is pursuing a second degree as an R.N.

Farid Qawasmeh '83 (B.E.) received an M.B.A. from Yarmouk University in Jordan and his Ph.D. in business administration from Amman Arab University, Jordan. He is a corporate strategy manager for Jordan Telecom Group.

Belina Anderson '85 (B.A.) has joined the law firm of Gilberti Stinziano Heintz and Smith, P.C. as managing attorney in their New York City office. Anderson has almost 20 years' experience in both the public and private sectors.

Diane Santangelo '85 (B.S.) returned to SB for a master's degree in adult health and now works as the founding nurse manager/nurse practitioner for the Acute Pain Service at Stony Brook University Medical Center. She has lectured nationally at the American Society of Pain Management Nurses as well as the American Society of Anesthesiologists.

Barry Loberfeld '86 (B.A.) has created an anthology of his published essays, which can be found at www.ABCDunlimited.com/ideas

Elysia Bello '87 (B.S.) is a visiting nurse for Long Island Jewish Medical Center. She and her husband are busy raising two children, Joseph (13) and Francesca (11).

Meet Maureen Lagarde, Alumni Association Executive Director



A resident of Mineola, Maureen Lagarde comes to Stony Brook from New York University, where she served as associate director of alumni relations and development and previously served as assistant director. Lagarde brings to Stony Brook her extensive experience in forging strong collaborations with alumni volunteers, faculty, and administrators. At NYU, Lagarde led the development of the university's regional alumni chapters and clubs throughout the country. In addition, she helped organize reunions and other alumni programming, supported admissions' student-recruitment efforts, and worked closely with development to increase alumni giving. Prior to NYU, Lagarde worked in alumni relations at Boston University, was director of public relations for Bloomingdale's in Garden City, and served as a development officer for the American Cancer Society. She earned a B.A. in communications from Mount Vernon College for Women in Washington, D.C. "I'm really looking forward to growing the University's already loyal base of dedicated alumni volunteers who devote their time, talents, and resources to supporting Stony Brook," said Lagarde.

Active Alumni Chapter in Washington, D.C.

Stony Brook alums in the Washington, D.C., area have had many opportunities to meet, greet, network, and have fun this year. This very active chapter has hosted several area events, including a March Happy Hour at the Brickskeller in D.C. (pictured below); a spring reception for admitted students at the Hyatt in Gaithersburg, Maryland; a family event in May at the NASA Goddard Space Flight Center, Greenbelt, Maryland; a Baltimore Orioles vs. New York Yankees game and pre-game reception at Camden Yards; and a new Stony Brook student summer send-off at the Arlington, Virginia, home of alumna Catherine Wang. If you are interested in starting a chapter in your area, contact Stephanie Tarantino at Stephanie.Tarantino@stonybrook.edu or call (631) 632-6330. Learn about more SB alumni events at www.stonybrook.edu/alumni



Pictured, left to right: Sean Conroy '03, Catherine Wang '82, Richard Reis '67, Paul K. Lee '86, Steve Friedman '75, Sean Bartlett '06, Shana A. Martin '06, Diane L. Collins '01, Kenneth W. Wagner '86.

David Bernard '88 (M.M.) led the Park Avenue Chamber Symphony in a performance of Saint Saens Symphony No. 3 at St. Bartholomew's Church earlier this year. Bernard is music director of both The Park Avenue Chamber Symphony and the Lawyer's Orchestra.

Joseph Hannan '88 (M.D.) practices primarily in Fallon Clinic's Division of Cardiology at Saint Vincent Hospital at Worcester Medical Center. His internship and residency programs were at Saint Vincent Hospital in New York. He also performed an interventional cardiology fellowship at Emory University Hospital in Atlanta.

Mary Schaper '88 (M.A.L.) worked as a supervisor of nursing staff development at Southside Hospital, Bay Shore, New York, until July 30, 2002 when she retired at age 81. Schaper became certified as a parish nurse in 2002 and continues as parish nurse at Cross of Christ Lutheran Church, Babylon, New York.

Louis Von Kuhen '88 (Ph.D.) is senior vice president for Community Development Corporation of Long Island. He graduated from the Achieving Excellence in Community Development program at Harvard University's Kennedy School of Government.

Dawn Consiglio '89 (B.S.) has been an R.N. for the past 18 years and is working as

a nurse educator for North Shore University Hospital in Plainview, New York. She has three children.

Lisa (Behrens) Morrone '89 (B.S.) had her first book, *Overcoming Back and Neck Pain*, published by Harvest House. This book was followed by a second, *Overcoming Headaches and Migraines*, in August 2008. In addition to her private practice, Morrone continues to serve as an adjunct faculty member in the Physical Therapy Doctoral Program at Touro College. Most recently, she has begun an e-commerce business through her Web site, www.RestoringYourTemple.com

1990s

Robert Abrams '90 (B.A.) is the director of purchasing and material management for the Suffolk County Department of Health Services.

Laurence Kaldor '90 (B.A.) recently saw his romantic comedy, *Redirecting Eddie*, shown as part of the last American Film Market (AFM) in Santa Monica, California.

Joseph Molinatti '90 (M.S.) earned a doctorate in higher education after graduating from Stony Brook. He is a faculty member in the Department of Nursing at the College of Mount Saint Vincent, Bronx, New York, and a review editor for a nursing publication firm.

Richard Pawelczyk '90 (B.A.) was named deputy general counsel and vice president of

legal and business affairs for NYC and Company, Inc., New York City's official tourism, licensing, and marketing agency.

Carlo Piraino '91 (B.S.) is the associate chief for patient care services at the VA Sierra Nevada Health Care System in Reno, Nevada. He obtained his M.S.N. at the University of Texas Health Science Center, San Antonio, Texas, in 2004.

Donald Sheehan '91 (M.A.L.) retired from Grumman Aerospace in 1995 and has been teaching business strategy in SB's College of Business for about 10 years.

Judith Marson '93 (B.A.) and husband, Nathan Rogers, welcomed the birth of their son, Logan Rogers, on September 13, 2007.

Ingrid Bloomfield '94 (Certificate) is working full time as a nurse practitioner at Island Cardiac Specialists in Mineola. She married in 1995 and has an 8-year-old son, Ryan Krieger.

Winthrop Rhodes '94 (Ph.D.) published a book titled *Politics, Desire, and the Hollywood Novel*. The book pays close attention to six authors who have toiled in the film industry.

Marc Weinreich '94 (B.A.) graduated from Touro Law School in 1997 and opened a law office in Corona, Queens—Weinreich and Goldstein, LLC—with Lyle Goldstein, fellow SB alum. He is married with two children.

Jean Durkin '95 (B.S.) graduated from Columbia University's Nurse Anesthesia program in 2004 and worked as a CRNA in Stony Brook's Main OR, Endoscopy Suite, and Ambulatory Surgery Center.

Matthew Moskowitz '95 (B.A.) won an Emmy as part of the production team for a Lou Dobbs' special for CNN.

Claudia Czczyk '96 (B.A.) published a novel through iUniverse titled *A Vengeful Bid* under the pseudonym Brianna Claire Olson. She is also attending Arizona State University studying criminal justice and life science.

Lorraine Tawfik '96 (M.S.) is the assistant dean in the School of Education at SUNY College at Old Westbury.

Carol Lee Cantwell '97 (M.S.) started practicing as a certified nurse midwife at Guthrie Clinic in Sayre, Pennsylvania, after graduating. She relocated to Florida in October 2005 and is now practicing midwifery at Gulf Coast Obstetrics and Gynecology Ltd. in Sarasota, Florida.

Christine Dempsey '97 (B.S.), '05 (M.A.T.) has been working in the Operating Room at Stony Brook University Medical Center since graduating and also received her CNOR certification. She married her husband, Bill, in April 2003.

Jean Murphy-Gustavson '97 (M.S.) has been working as an adult nurse practitioner at Northport Veterans Administration Medical

Center in the Department of Cardiology. She is married with four children.

Niti Peruvemba '97 (B.S.) is a D.O., board-certified internal medicine physician in private practice in California. Visit him at www.drniti.com

Scott Siegel '97 (M.D.) is a clinical assistant professor at Stony Brook University's School of Medicine and Dental Medicine, an attending physician at University Hospital and Medical Center, founder of the Long Island Center for Facial Rejuvenation, and a partner at Long Island Oral and Maxillofacial Surgery, P.C. based in Mineola and Port Washington, New York. Siegel resides in Centerport with his wife, Valery, and three children.

Kathleen McDermott '98 (B.S.) worked at New York Presbyterian Hospital on the Bone Marrow Transplant Unit after graduating, then continued her education at Columbia University, where she completed her M.S.N and is nationally board certified as an adult psychiatric mental health nurse practitioner. After working with Bronx Lebanon Hospital and Promesa, Inc., she and her husband relocated to California where she now works with Hythiam, Inc. as their executive director for medical affairs.

Kurt Smudzinski '98 (B.S.) began an ICU internship at New York University after graduating. After a year and a half, he traveled as an ICU nurse. After six years of ICU nursing, he felt the need to continue his education and has since obtained his master's degree in nurse anesthesia at Texas Christian University in Fort Worth, Texas. He now practices as a CRNA in Hawaii at Kaiser Permanente.

Barbara Callahan '99 (M.S.) obtained an ANCC certificate as both adult N.P. and geriatric clinical nurse specialist from 2001-2006. Since 2006, she's been a geriatric clinical nurse specialist at Long Island Jewish Medical Center and is employed at LJ as director of nursing education and research. Callahan also earned a leadership award for LJ in 2007.

Janice Grackin '99 (Ph.D.) has been named associate dean for assessment and program review at Nassau Community College.

2000s

Janet Difalco '00 (M.S.) worked for five years in a clinic providing primary care to children in foster care. Since 2005, she has been a pediatric nurse practitioner with the division of Pediatric Gastroenterology at Stony Brook University Medical Center.

Themistoklis Theofilaktidis '00 (M.A.) has joined a nonprofit organization working as a therapist for mental health clients.

Elizabeth Kanick '00, '01 (B.A., M.A.) and Michael Kanick were married on December 8, 2007, at Our Lady Queen of Martyrs Church, in Centerport, New York, with a reception following at Danford's in Port

Remembering Alums Warren Davies and Roger Gill

WARREN DAVIES

Warren Sean Davies died on Sunday, March 2, 2008, at the age of 35 during a tragic automobile accident that also claimed the life of his good friend, Roger Gill, a fellow alumnus of Stony Brook.

Davies, a resident of Brooklyn, was known on the Stony Brook campus as a jokester who loved good fun. He was no conformist, but in December 1992, he joined Alpha Phi Alpha Fraternity's Stony Brook chapter. Davies was proud to become a member of the first black fraternity, and it became a cornerstone of his life.

He graduated from Stony Brook in 1997 with a Bachelor of Engineering degree and worked briefly for Digital Equipment Corporation in New Jersey. In 2000, he joined Bloomberg L.P., the financial news and data firm where Davies was a senior software engineer in the research and development division. He made his home in the East Flatbush section of Brooklyn, not far from SUNY Downstate Medical Center, where he was born.

In addition to his parents, Davies is survived by his stepmother, Marlene Davies, and six siblings: Julian Davies, Jerome Davies, Nancy Davies, Donovan Davies, John Morris, and Richard Davies.

ROGER GILL

Stony Brook University is mourning the loss of former track and field standout Roger Gill ('95). Gill is survived by his wife, Annette ('96), and their six children. He was 35.

Gill, a native of Guyana, was a standout sprinter for Stony Brook in the early 90s. He still holds the school outdoor records in the 100- and 200-meter races, as well as the marks indoors at 200 and 400 meters. Gill is also listed in the Stony Brook record books as a member of five record-holding relay teams. Gill was Stony Brook's first freshman All-American, earning All-America honors six times during his career. He was also twice selected as the Stony Brook Athlete of the Year, was a two-time ECAC-MVP, Stony Brook's Senior Athlete of the Year, and a member of a Milrose Games first-place 4x400-meter relay team.

After competing for Stony Brook, he went on to represent Guyana in the 1996 Olympics in Atlanta, running as a member of that country's 4x400-meter relay team. Gill's name is still in the record books as a member of the Guyanan team that holds that country's record in the 4x400-meter relay. He also won a bronze medal at the Central American and Caribbean Games in the 4x400.

Gill was a four-time all-state high school track athlete that became an integral part of the success of Stony Brook track and field in the early 90s, helping his team capture the ECAC track championships in 1991. Gill graduated from Stony Brook with a B.A. in human resource management and took graduate classes at Stony Brook.

Jefferson. The couple works in the United States Senate and resides in Alexandria, VA.

Kieran Suckling '01 (M.A.) is the policy director and founder of the Center for Biological Diversity, a nonprofit conservation group known for its innovative approach to the protection of endangered species and wilderness. The Center has secured protection for more than 350 endangered species and 70,000,000 acres in the U.S. Suckling acts as liaison between the Center and other environmental and public interest groups, handles negotiations with government agencies, and writes and lectures on biodiversity issues.

Salamah Adjoua '02 (B.A.) earned a master's degree in library science in spring 2006 and is now a young adult librarian at Gold Coast Public Library in Glen Head, New York.

Edith Ashamole '02 (B.A.) graduated with a degree in anthropology from Stony Brook, then earned a B.S. in nursing (2005). She

practiced as a pediatric registered nurse at the Children's Hospital of Philadelphia. Ashamole is now a graduate student at City University in London, England, working toward a degree in health management.

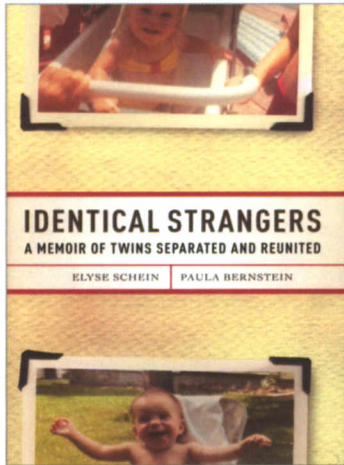
Nicole Melia '02 (B.S.) is a registered nurse in the area of neurology and neurosurgery. Within this specialty she has worked in med-surg, ICU, and in an interventional operative area. She began classes at Columbia University in September 2006 and is halfway through the Adult/Geriatric N.P. Program.

Amanda Norah '03 (M.S.W.) published an article in the *Social Welfare News Report*.

Got News?

Let us and your fellow classmates know what's new in your life. Send your Class Notes to alumni@stonybrook.edu or visit www.stonybrook.edu/alumni to submit your notes online.

Brookmarks compiled by Susan Scheck

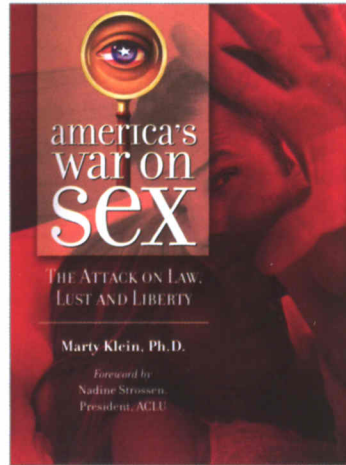


Identical Strangers: A Memoir of Twins Separated and Reunited

By Elyse Schein, B.A., 1990, and Paula Bernstein

2007, Random House

In this riveting memoir, twin sisters Schein and Bernstein tell how they were separated at birth and finally reunited after 35 years. When Schein contacted the adoption agency to see what she could learn about her biological mother, the caseworker told her she had an identical twin sister living minutes away. The twins later learned that the reason for the separation—now illegal—was a secret study on nature vs. nurture begun in the 1960s. The authors interweave studies and statistics on twin science and nature vs. nurture into their narrative, offering an unusual perspective on family and identity.

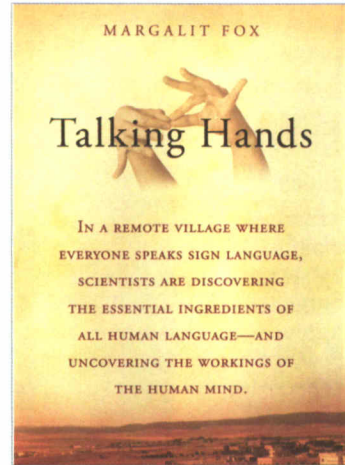


America's War on Sex: The Attack on Law, Lust and Liberty

By Marty Klein, Ph.D., 1971

2006, Praeger

Sex therapist and public policy analyst Marty Klein examines the financial and political connections between government and conservative religious groups that he contends are systematically taking away our rights regarding sexual expression. These groups, he explains, “want to replace our government with laws based on the Bible, creating a country in which ‘normal sex’ is narrowly defined and no one has the right to alternative sexual information, health care, or personal expression.” The book has received the American Association of Sex Counselors, Educators, and Therapists Book Award, with a forward written by Nadine Strossen, president of the American Civil Liberties Union.

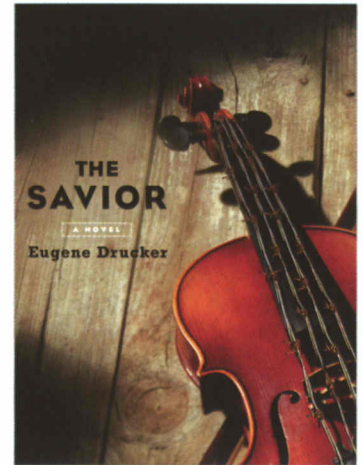


Talking Hands: What Sign Language Reveals About the Mind

By Margalit Fox, M.A., 1983

2007, Simon & Schuster

Margalit Fox, a journalist originally trained as a linguist, recounts her visit to a remote Middle Eastern village whose inhabitants “speak” their own sign language, witnessed by few outsiders and never before described. The language is a result of an unusually high level of hereditary deafness in the village, Al-Sayyid; it is an indigenous sign language that is used by deaf and hearing people alike. Fox accompanied a team of four linguists (including Stony Brook’s own Mark Aronoff, vice provost for undergraduate education, and Fox’s linguistics mentor), who went there both to decipher the language and to observe the “language instinct”—people’s inborn capacity to create language.



The Savior

By Eugene Drucker

2008, Simon & Schuster

This debut novel by violinist Eugene Drucker, a member of the Grammy Award-winning Emerson String Quartet and an artist-in-residence at Stony Brook University, is set in the last days of World War II and recounts the experiences of musician Gottfried Keller. He is summoned by the commander of a concentration camp as part of an experiment to see if music will give a select group of inmates hope. For the four days he serves as camp musician, he is forced to face his own treatment of his former girlfriend and a Jewish schoolmate, and tries to separate himself from the horror around him. Drucker describes the sublime beauty of the music Keller plays as only a musician can, and one is forced to ask the question: Is his violin an instrument of torture or of hope?

New & Noteworthy

Geriatric Rehabilitation Manual, Second Edition

By Timothy L. Kauffman, Ph.D.; John O. Barr, Ph.D.; and Michael Moran, Sc.D., Class of 1978

Paper Lovers (Novel)

By C.B. Knadle, Class of 1972

What Successful Literacy Teachers Do (novel)

By Ron Pettit, Class of 1973

A Culture of Refusal: The Lives and Literacies of Out-of-School Adolescents

By Brett Elizabeth Blake, Class of 1978

The Silence of Men (poetry)

By Richard Jeffrey Newman, Class of 1984

Where Human Rights Begin: Health, Sexuality, and Women in the New Millennium

By Wendy Chavkin, M.D., Class of 1978; Ellen Chesler

A Land Without Time: A Peace Corps Volunteer in Afghanistan

By John Sumser, Class of 1985

Haunted in the New World: Jewish American Culture from Cahan to The Goldbergs

By Donald Weber, Class of 1972

Seeking the Write Stuff

The *Brook* welcomes submissions of books recently written by alumni, faculty, and staff. Send a review copy and relevant press materials to: Susan Scheck, Editor, “Brookmarks,” Office of Communications, Room 144 Administration, Stony Brook University, Stony Brook, NY 11794-0605. E-mail: Susan.Scheck@stonybrook.edu

Please note: To purchase a copy of any of these featured titles, contact the University Bookstore at (631) 632-9747. Visit www.stonybrook.edu/bookstore for a calendar of events, including a series of faculty author readings sponsored by the Friends of the Library and the University Bookstore.

Flashback



Members of the Department of Chemistry in 1968, from left, included Paul Lauterbur, Harold Friedman, Francis Bonner, Albert Haim, Max Wolfsberg, and Ed Kosower.

50 Years of Good Chemistry

How do you create a winning formula for a fledgling chemistry department at a small “unheard of new college” with big ambitions? That was the challenge facing Francis T. Bonner when he signed on as a full professor and acting chairman of chemistry with SUCOLI, the State University College on Long Island. “I believed that nothing could be more important to shaping the future of our new department than the successful recruitment of well-qualified faculty,” Bonner writes in his memoir, *Chemistry at Stony Brook: From SUCOLI to SBU*. He did so by selling the promise and vision of what the University was eventually destined to become: “one that would stand with the finest in the country.” Sometimes the recruitment process was, well, organic. “Since the first three members—Joe [Silverman], Barry [Gordon], and I—were all physical chemists, I assigned first priority to recruitment of an organic chemist of the highest possible stature,” explains Bonner. The appointment of Fausto Ramirez, who had just departed the Columbia faculty for the Illinois Institute of Technology in Chicago, would, according to Joe Silverman, be “the making of the department.” The sudden departure of Silverman made the appointment of inorganic chemist Sei Sujishi possible. And sometimes, as with any new experiment, there were missteps. John Lee’s tenure as president was brief—just under a year. Growing pains on the new campus at Stony Brook required Bonner to resort to some subterfuge to gain much-needed faculty research space in the new chemistry building by laying claim “to spaces vaguely designated as ‘Preparation Room,’” writes Bonner. And sometimes there was perfect chemistry. In the summer of 1962, Bonner recruited Paul C. Lauterbur, who at the time was conducting research into nuclear magnetic spectroscopy (NMR) at the Mellon Institute in Pittsburgh, for an appointment as an associate professor. It was while he was at Stony Brook that Lauterbur conceived the idea of employing NMR signals to create images, and this research led to the development of the MRI. The rest, as they say, is history. Lauterbur was awarded the Nobel Prize in Medicine or Physiology for his discovery in 2003. This October the Department of Chemistry celebrated 50 years of stellar contributions to science and Stony Brook. Many of the “aboriginals,” as Bonner referred to those original faculty members, came back to campus to reminisce and revel in how far the department and University have come since those early, heady days. ■



From left: Current Department of Chemistry chair Benjamin Hsiao with President Shirley Strum Kenny, founding chair and professor emeritus Francis T. Bonner, and Provost Eric Kaler.

The Best Ideas in Medicine Start Here



PHOTO: JOHN GRIFFIN

Stony Brook University Medical Center's Major Modernization Project took a big step forward with completion of its Phase I in September 2008. The enhanced facilities help Medical Center staff provide advanced treatment, accommodate increased patient volume, and give the most compassionate patient- and family-centered care.

Greeters and concierge staff are on hand in the spacious new lobby. The inpatient surgical suite can accommodate a 30 percent increase in volume. New operating rooms are located next to the Emergency Department and Radiology areas for more integrated care. Pre- and postoperative waiting areas were combined, so families can stay in one spot while waiting for news of their loved ones.

Shorter stays and increased privacy are priorities in the new Emergency Department, which offers private triage rooms, critical and immediate care rooms, a private pediatric emergency area, a new entrance and drop-off zone, and new waiting rooms. A separate psychiatric emergency unit will be completed next year.

The new Women and Infants Center, a reflection of Stony Brook's status as a regional perinatal center, houses a 12-bed unit for high-risk obstetrical patients, a 36-bed postpartum unit, and two newborn nurseries. By 2010, new labor and delivery suites will open, and Stony Brook's Neonatal Intensive Care Unit will move to the Center.

The expansive new lobby is part of the Phase I completion of Stony Brook University Medical Center's Major Modernization Project.



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