RELIEF FOR ANXIOUS PARENTS
Features

Words of Wisdom
Highlights from the college’s 222nd Commencement.

Red Flags or Red Herrings?
Williams developmental psychologist Susan Engel offers an antidote to the anxiety that seems to pervade parenting.

In Their Own Words
How 9/11 changed the life paths of psychiatrist Kevin Kelly ’72, teacher Erin Peaslee ’08 and poli sci professor James McAllister.

One More Huddle
Friends of football star Mike Reily ’64, who died of Hodgkin’s disease just weeks after graduation, will honor his memory at Homecoming.
A highlight of my week in the summer involves each Tuesday at noon heading over to the Science Quad. There a couple hundred students and faculty partake of that well-known stimulant to intellectual thought—pizza—before piling into Wege Auditorium for a research talk by a science faculty member.

Few events say more about Williams.

The room crackles: first with good humor (“The math department [students] hereby challenge the physics department to croquet Thursday at 6 on Chapin Lawn!”) and then with intellect, as that week’s faculty member conveys the essence of his or her research, usually followed by insightful student questions.

The students are participants in a variety of programs that engage them in faculty scholarship, especially in the summer. This happens in all three of the academic divisions. You’d be equally impressed catching a performance of the Summer Theatre Lab.

This summer held an added pleasure. On two consecutive Monday evenings, we hosted a series of faculty talks from which we actually had to turn people away. Fortunately neither they, nor you, need to miss them.

These were the first installments of Williams Thinking, a new project designed to capture on video short presentations by our faculty, based loosely on the popular TED talk series and focusing on big questions or ideas in their areas of scholarship. You can see the first offerings at www.williams.edu/williamsthinking.

If this is the level of intellectual vitality here in the summer, you can imagine what it’s like the rest of the year.

Our students are fortunate in so many ways—with an abundance of cultural, athletic and social opportunities—but in no way more than in the intellectual stimulation that’s available to them inside and outside the classroom.

This is true primarily because our faculty are so involved in scholarship. I’m surprised when some commentators set teaching and scholarship as mutually exclusive domains that make rival claims on faculty time. The implication is that the hours spent on scholarship come at the cost of students. I can’t speak for all of higher education—maybe there’s an institution somewhere that has this out of balance—but I know that at Williams the hours devoted to scholarship result in benefits for students.

If education were simply a matter of filling students’ brains with material, then, yes, scholarship reduces the time available to do that. But Williams has long understood that education involves instead the sparking of minds, and this can only be done by another mind that’s fully charged—that is itself curious, eager to learn and ready to engage new ideas and methods.

Conversely, every Williams faculty member can tell you how much they’ve learned from their students through a form of mutual inquiry that is education at its most effective.

This point is both told and shown in the first of the Williams Thinking talks that you can now watch online. Psychologist Susan Engel describes it in her investigation of how best to encourage the natural curiosity of children. (See the article about her work on p. 12 of this issue.) Others exhibit it in the tributes they give to specific contributions students have made to their scholarly understanding.

So it’s not teaching or scholarship but teaching and scholarship. And I’m convinced that no place does this better than Williams.
Kudos to Williams President Adam Falk for articulating the efforts to build community at Williams (“The Community We Aspire to Be,” June 2011). Too often the idea of diversity has betrayed itself. Instead of focusing on a true diversity of ideas, background and culture, institutions have settled for superficial diversity based on sex and race that masks a stifling intellectual groupthink. Why assemble a group of people who may look different but all think similarly? President Falk is correct to point out that diversity can backfire if certain groups of students remain separated on campus or fail to thrive.

Difference is a welcome starting point, but only if it fosters the central goals of education: to study, think and speak well, interact with others respectfully and pursue the truth, which in some cases is very hard on “diversity.”

—Jay Haug ’73, Ponte Vedra Beach, Fla.

President Falk’s editorial points out some of the many dimensions of diversity too often left out in public discourse. Notably absent is disability.

According to the World Health Organization’s first-ever report on disability, roughly a billion people worldwide (15 percent) qualify. Yet this group has largely been relegated to the margins of society, first through de jure segregation in institutions and later through de facto discrimination in access to educational and employment opportunities.

Here in the U.S., little progress has been made on the employment front since the passage of the Americans with Disabilities Act in 1990. I believe the overwhelming reason is a lack of a “true celebration of difference” that President Falk aspires to at Williams. Only when American companies and organizations incorporate and embrace the many dimensions of disability in their talent management initiatives will our country move closer to the lofty ideals established by our founders over two centuries ago.

—Adam Kaplan ’95, founder, Big Tent Jobs, Southfield, Mich.

One minor correction to the article “Eph Cappella” (June 2011): The house octet contest did not “take a hiatus” in the early ’50s, though the flood tide of rock and roll was building. I led the Beta house octet from 1951 to 1955, and we won the award twice in those years. We also expanded the repertoire beyond pop and show tunes to include the occasional Elizabethan madrigal or Purcell part song. The competitions were not quite all inter-fraternity, either. We got beat by eight excellent freshmen in 1953 or 1954, the first year that rushing was deferred till sophomore year.

Rummaging through the Beta house musical stash, I once found a fine arrangement of “You Were Meant For Me” by Warren Hunke ’42, and we won with it. Many years later I met him at a concert on campus and was glad to thank him.

Music was one of the glories of my years at Williams. I’ve led my own a cappella group ever since graduation, largely staffed by faculty colleagues at three different colleges. If the great Elizabethan composer William Byrd had known the delights of Soprano Alto Tenor Bass singing, he’d have changed the charming little doggerel in his book’s introduction to: “Since singing is so good a thing/ I wish all folk would learn to sing.”

—Mac Nelson ’55, Brocton, N.Y.

I read with interest “Eph Cappella.” The Overweight Eight, which produced a record circa 1957 with help from my late husband Peter D. Pelham ’55, was led by Dave Paresky ’60. Shortly after the dedication of the Paresky Center, I sent the record to Dave, noting it should be part of the history of that magnificent building. I kept a silver bowl with the inscription: “To Pete Pelham, in grateful appreciation of your encouragement and support. The Overweight Eight.”

—Isobel Pelham, San Clemente, Calif.
BICENTENNIAL MEDALISTS HONORED

The college has selected five alumni to receive 2011 Bicentennial Medals for distinguished achievement in any field of endeavor. The medals were to be presented during Convocation on Sept. 10.

Michael F. Roizen '67, chief wellness officer at the Cleveland Clinic and a distinguished anesthesiologist and internist, was to give the principal convocation address on behalf of his fellow medalists. Also being honored were: Navjeet K. Bal '84, the first ethnic minority and second woman ever to serve as commissioner of revenue for the Commonwealth of Massachusetts; Wilfred Chabrier '77, general manager of tunnels and bridges for the Port Authority of New York and New Jersey, recognized for his influential support of minority-owned businesses; Bethany McLean '92, financial writer and Vanity Fair contributing editor who, while at Fortune magazine, was the first journalist to question how Enron made its money (see the Review profile of her on p. 26); and Frederick Rudolph '42, one of the most celebrated historians of American undergraduate education.

Check out http://alumni-awards.williams.edu for video, citations and more from the Bicentennial Medals ceremony.

NEW TRUSTEES JOIN WILLIAMS BOARD

The Williams College Board of Trustees welcomed three new members in July: term trustees O. Andreas Halvorsen '86 and Elizabeth Beshel Robinson '90 and alumni-elected trustee Gregory H. Woods '91. Halvorsen '86 is co-founder and CEO

"Americans see function. They do not see shape. Our culture does not tell us about shape. Our culture does not give us enough words to express fully the sensory realm. And there's a reason for that. ... For 200 years, the primary aesthetic experience in America was verbal, not visual. ... American culture is historically Puritan. ... Our mood, culturally, begins in the relentlessly Puritan space of the Puritan Meeting House ... a vessel for the spoken word." —Michael Lewis, the Faison-Pierson-Stoddard Professor of Art at Williams, speaking about “Visual Images in a Verbal Culture” during the first-ever Williams Thinking, a public lecture series launched over the summer. (See President Adam Falk’s “Teaching and Scholarship” on p. 4 for more on Williams Thinking.)
of Viking Global Investors, an investment management firm with offices in Greenwich, Conn., New York, Hong Kong, London and Tokyo. He previously held senior positions at Tiger Management Corp., was an associate in the mergers and acquisitions department at Morgan Stanley and served as an officer on the SEAL Team in the Royal Norwegian Navy. He received an MBA from Stanford University Graduate School of Business in 1990. In addition to serving on various subcommittees of the Williams College Investment Committee and as co-chairman of its Marketable Assets Advisory Committee, he is a trustee of the Clark Art Institute. He is a past member of the Business School Advisory Council at Stanford and was a trustee of Greenwich Academy.

Elizabeth Beshel Robinson ’90 is global treasurer of Goldman Sachs, where she is co-chair of both the finance and diverse business engagement committees and a member of the capital, firmwide risk, principal investments and public policy committees and the regulatory reform steering committee. She joined the firm in 1990 in the Financial Institutions Group within the Investment Banking Division and transferred to the Corporate Treasury Department in 1993. She was named managing director in 2000 and partner in 2006. She received an MBA from Columbia University’s Executive MBA Program in 1998. She is a member of the Board of Advisors of Doctors Without Borders/Médecins Sans Frontières USA and a trustee of MASS MoCA.

Woods is deputy general counsel of the U.S. Department of Transportation. He previously was a partner at Debevoise & Plimpton in New York, N.Y., where he was ranked as a leading lawyer in banking and finance by Chambers USA, and was a trial attorney in the civil division of the U.S. Department of Justice in Washington, D.C. He graduated from Yale Law School in 1995, was essays editor of the Yale Law Journal and received prizes for best brief and best oral argument in the school’s moot court competition. He was a Williams Tyng Bequest administrator from 2004 to 2007. He is a board member of the Union Settlement Association, which provides social services in East Harlem, and of Practicing Attorneys for Law Students, which supports minorities in the legal profession.

Williams trustees David C. Bowen ’83, Valda Clark Christian ’92 and Michael B. Keating ’62 stepped down from the board when their terms ended in June.

GRANT LAUNCHES ONLINE PRENDERGAST ARCHIVE AND STUDY CENTER

The Institute of Museum and Library Services has awarded the Williams College Museum of Art a $150,000 Museums for America

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Cyclists JJ Augebraun, Antonio Lorenzo and Christopher Fox, all Class of 2011, stopped in Williamstown Aug. 11-13 during the final leg of the Tour de Ephs, their 62-day, 4,200-mile ride from Seattle, Wash., to Provincetown, Mass. The goals of the tour: to meet alumni, see the country and raise money for the North Adams, Mass.-based Berkshire Food Project, founded by Williams students 20 years ago.
grant to support the museum’s efforts to raise the profile of and provide visibility for the Prendergast artworks and archives.

The college museum is home to the world’s largest repository of works by the Prendergast brothers, artists Maurice (1858-1924) and Charles (1863-1948). The collection of more than 450 works and the family archives were a gift from Charles’ widow, Eugénie Prendergast, for research and educational purposes.

The three-year project will fully integrate the Prendergast archives into the museum’s permanent collection, including digitally photographing the entire Prendergast collection of paintings, works on paper, hand-carved frames, sketchbooks, decorative arts, letters, documents, ephemera and carving tools. The digital images will be made available to the public via the museum’s website and a virtual research center, the Prendergast Archive and Study Center.

Museums for America is the Institute of Museum and Library Services’ largest grant program for museums, supporting projects and ongoing activities that build their capacity to serve their communities.

WILLIAMS WINS 15TH DIRECTORS’ CUP

For the 13th year in a row and the 15th in the 16 years it’s been awarded, Williams has won the Directors’ Cup, given annually by the National Association of Collegiate Directors of Athletics to the best all-around athletics program for team performance in 18 sports.

The Ephs claimed victory with nine teams placing in the top five in the nation and 11 teams placing in the top 10. Women’s crew and tennis again finished in first place in Div. III, while men’s basketball and women’s swimming & diving placed third. Twelve Ephs won individual NCAA championship titles.

The Ephs trailed Middlebury by 14 points heading into the final NCAA championships. But Williams’ women’s crew again capped off the spring with both boats in the grand final, winning a record sixth consecutive NCAA title and bringing the Ephs’ final points total to 1,147. Williams took the lead over Middlebury by 83.83 points. For more details, visit http://ow.ly/60QCD.

EPH LIBRARY ONLINE

Looking for books, CDs and DVDs by Williams alumni and faculty? Visit http://ephsbookshelf.williams.edu. To have your recent work listed, please send information and cover images to alumni.review@williams.edu or mail a copy to the Alumni Review, P.O. Box 676, Williamstown, MA 01267-0676.
It’s not the circumstances you encounter. It is who you are. Will you manifest your truth? And this is the real challenge. I’m here to tell you now that life is not about the big fights, the big battle, your great destination. Life is about the small moments every single day—those acts of kindness and decency and love that will define you, that in their aggregate add up to a lifetime of profound contribution. This is life. It doesn’t start next year. It doesn’t start when you finish graduate school. It doesn’t start when you get a job. Today is the day you have to tell your truth, to manifest your essence, to declare the state of your soul.”

Newark, N.J., Mayor Cory A. Booker
(Watch video of Booker’s commencement speech at http://tinyurl.com/bookervideo)
In a lively commencement address, Newark, N.J., Mayor Cory A. Booker shared lessons from a host of teachers in his life, from Langston Hughes and Frederick Douglass to his own grandfather, who, Booker said, urged him to “never forget I can learn as much from a woman on the fifth floor of the projects as I could from one of these fancy professors.”

“You must stand,” Booker told those gathered for the college’s 222nd Commencement on June 5. “Stand with all of your heart, all of your idealism, all of your passion, all of your caring and the understanding that the biggest thing you can do any day is a small act of kindness, of decency and love.” More words of wisdom from Commencement Weekend follow.

Expeditions are a little of what you know and a lot more about what you don’t.

Ann Bancroft, Arctic and Antarctic explorer, baccalaureate speaker

Whatever communities we find ourselves a part of in the future, what we bring to the table are not merely the quantitative expectations of a Williams College graduate but the qualitative, empathetic warmth of people who have spent four fantastic years of their lives in the Purple Valley.

Gea Hyun Shin ’11, valedictorian

Visit http://tinyurl.com/commencement11 for more photos, speeches and citations.
If any of you have glanced at the back of my left hand over the past four years, you may have noticed the black and blue notes scrawled on its side. ... They are the life lessons I feel impelled to remember on a given day. ... This commencement day, “Look up” is inked on my hand because it epitomizes the lessons of perspective, curiosity and compassion I have learned from the brilliant people before my eyes.

Briana Marshall ’11, Phi Beta Kappa speaker
Developmental psychologist Susan Engel offers an antidote to the anxiety that seems to pervade parenting today.

Rosie was a handful by every measure. Bossy and stormy, the 4-year-old, who soaked up adult phrases like a sponge, would thrash about the house and scream things at her mother like, “You are not the boss of me! I hate you! You don’t love me, and you never have! Don’t tell me what to do! I am the boss of myself!”

Susan Engel was a witness to that very tirade just moments after arriving for a visit with Rosie’s mother. The anguished mom looked at Engel, a developmental psychologist at Williams, and asked, “Is she going to be this way forever?”

The short answer, according to Engel’s latest book, *Red Flags or Red Herrings? Predicting Who Your Child Will Become*, is: probably. But likely not in the way Rosie’s mom feared. Over time, the little girl’s assertiveness, her intelligence and her attention to the dynamics of others’ interactions (which for Rosie resulted in an uncanny ability to push people’s buttons) would almost certainly serve her very well.

Moreover, Engel says, there’s not much Rosie’s mom—or any parent, for that matter—can do to change who a child is or who she will ultimately become.

“An awful lot of what we debate about parenting doesn’t actually matter in terms of who the child becomes,” says Engel. “It matters much more who the child is, at his or her core, and who the parents are, and the quality of the relationship that exists between the two.”

Engel’s message is reassuring for parents feeling overwhelmed by the seemingly constant flurry of advice, research and headlines telling them how to raise a perfect, and perfectly happy, child. It’s also a message grounded in 30 years of research that Engel has conducted in living rooms, in classrooms and on playgrounds across the country, often with the help of Williams students.

Since her earliest days as a researcher, Engel has preferred naturalistic fieldwork—observing how children behave in real-world settings—to tidy laboratory experiments. Much of her work, published in peer-reviewed journals such as the *Journal of Child Psychology*, *American Education Research Journal* and *Cognitive Development*, involved recording hundreds of hours of conversations among children and their families and teachers over the years. She painstakingly coded key aspects of the way those conversations unfolded and used them to identify patterns in how children process their worlds. Her early findings led to an improved understanding of the fluidity with which young children move between...
realism and fantasy—what Engel calls “what is and what if.”

Her first book, *The Stories Children Tell: Making Sense of the Narratives of Childhood* (1995), showed how children develop their senses of self through storytelling. She called on parents and schools to encourage a diverse range of narrative style and voices, even at the expense of grammatical correctness. And her research inspired others to study how children’s narratives correlated with later cognitive processes.

Four years later, she published *Context is Everything*, a meditation on the development and accuracy of memory, one of human beings’ most complex mental processes. The book, which begins with a simple conversation between mother and child, draws from empirical research, literature, history, and personal experience to show how memory itself is a creative, nonlinear and potent tool for understanding ourselves and the world.

Still, Engel, who directs the Program in Teaching at Williams, began reaching out to a wider audience by writing regular op-eds for *The New York Times*. Her essays have highlighted ways in which developmental psychology could inform responses to bullying, teacher preparation and education policy. One controversial column, “Playing to Learn,” published in February 2010, lit up the blogosphere with its recommendations to the Obama administration for how to improve K-12 education. A successful school, Engel argued, would eliminate “tedious hours learning isolated mathematical formulas or memorizing sheets of science facts that are unlikely to matter much in the long run” to give students extended time for play, storytelling, writing “things that have actual meaning to them” and sustained conversations with teachers.

She continued to present her research at academic conferences and publish in peer-reviewed journals, but she also began speaking at primary and secondary schools whenever she could. Out in the “real world,” it seemed, families were being overwhelmed by opinions and information that in her estimation were often useless and sometimes even downright harmful.

“Everyone wants to earn an A-plus in parenting,” Engel says. “But that’s not how parenting works. … People’s intuitions about child-rearing are so powerful, but they’re not always accurate.”

Like many parents, Rachel Barenblat ’96 knows these parenting pressures firsthand. A well-respected, recently ordained rabbi who leads Congregation Beth Israel in North Adams, Mass., she also has a successful writing career, publishing four chapbooks of poetry and, in January, her first book-length collection. Her blog, Velveteen Rabbi (velveteenrabbi.blogs.com), was named by *Time* as one of the top 25 in the blogosphere in 2008.

But when it came to her son Drew, now almost 2, Barenblat says she was lost. In the months after his birth, he cried a lot—far more than her friends’ babies seemed to cry. Everyone had a suggestion: He needed medication for reflux; he needed to be swaddled; he needed more attention; he needed less attention.

Barenblat recalls wondering: “Were the hours of colicky crying just about his digestion, or were they worrisome indicators of his future? Did we make the right choices about how to get him to sleep? Were we finding the right balance between holding him close and letting him discover the world on his own?”
Every decision, she recalls, seemed to hold weighty implications for her son. It was precisely for parents like Barenblat that Engel wrote Red Flags or Red Herrings, her first book with a mainstream press. Published in February by Simon & Schuster, it generated a flurry of media attention as a rebuttal to Battle Hymn of the Tiger Mother, Yale law professor Amy Chua’s best-selling memoir of her extraordinary efforts “not to raise a soft, entitled child.”

At the core of Engel’s book is a simple idea: Every child is born with a series of fairly immutable traits that remain constant over the course of his or her lifetime, regardless of home or school environment. It’s unlikely that any parent, however loving or involved, can fundamentally change whether a child is dreamy or driven, shy or gregarious, optimistic or anxious. Nor can a parent influence whether a child has a temper or calm demeanor, what captures his interest or even her basic IQ.

Focusing on what she considers to be parents’ biggest concerns—happiness, intelligence, friendships, love, success and morality—Engel blends stories of children (her own and those she’s encountered throughout her career) with solid, empirical research on child development. The selected bibliography includes 20 pages of studies, newspaper articles and books, more than 100 sources in all.

As much as the science, though, it’s the reassuring tone of Red Flags or Red Herrings—Barenblat calls it “gentle,” and George Stephanopoulos, speaking on Good Morning America, called the book “a great relief”—that resonated with clinicians, academicians and mainstream readers alike.

“It’s much easier to sell a book by scaring the daylights out of parents and...
cashing in on their all-too-easy-to-exploit vulnerability,” says acclaimed psychiatrist and author Edward Hallowell, director of the Hallowell Centers in New York City and Sudbury, Mass. “Susan does the opposite. She reports the truth, that most red flags are indeed red herrings, that most kids are indeed pretty wonderful, as are most parents, and that too many experts are more alarmists than practitioners of a healing art.”

While the bottom line of Red Flags or Red Herrings is that “there is only so much you can change about your child,” Engel is quick to add that there are attributes parents and teachers can influence in subtle but powerful ways. One of these is curiosity, the subject of her next book.

One of the first empirical studies of curiosity took place in 1960, when Daniel Berlyne demonstrated that subjects were better able to answer questions inherently interesting to them. As subsequent research has borne out, “We know that curiosity is the single most important characteristic that spurs learning,” Engel says. “When kids want to know the answer, they learn the material more deeply, they remember the answer longer, and they can do more with the information.”

At a very young age most children demonstrate they have many of the tools they need to study their worlds. Even an 18-month-old, Engel says, is “a one-man experimental laboratory.” But something happens to their curious minds as they get older.

Research shows that at home a preschooler will ask an average of 25 to 50 questions each hour. But several years ago, when Engel and her students recorded the day-to-day activities in area kindergarten and fifth-grade classrooms, they found a significant drop in the number of questions asked. An entire class of 22 kindergartners might ask only two per hour. By fifth grade, several hours might pass before a single question is raised.

During a talk she gave on campus in July as part of the inaugural Williams Thinking series, Engel discussed how this research and her own observations indicate that “there’s so much pressure on teachers to teach lessons that there’s no time to deviate and allow kids to follow their hunches.”

The good news, she says, is that subtle messages from adults can encourage children to wonder and experiment more. One study she conducted a few years ago with Maddie Labella ’09 that involved children studying science found that students who saw an adult deviate slightly from written instructions were more interested in the materials than those working with an adult who followed the instructions exactly.

Another study, published with Kellie Randall ’07 in the March 2009 American Educational Research Journal, found that teachers responded to subtle cues in the same way as their students. Teachers who were told the goal was to “help the student learn about science” encouraged student inquiry and exploration significantly more than teachers who were told the goal was to “help a student finish a worksheet.”

During a sabbatical from Williams last year, Engel saw these findings play out in the classrooms of a local public school district, where she was embedded as the director of teaching and learning. She returns to campus this fall “overflowing with stories” that she hopes will help her students to bridge the gap between theory and practice. The experience also renewed her commitment to working on research that has an impact on the lives of children.

“There’s no perfect experiment on child-rearing,” she says. “Parenting is confusing, and parents today are under an awful lot of pressure to get it all right. But some of what people tell them to do actually matters; some doesn’t. That’s what I’m interested in sifting through in my work.

“I hope,” she adds, “it will help parents relax a little and enjoy their children a little more.”

Ali Benjamin is a freelance writer based in Williamstown.

(You can see video of Susan Engel’s Williams Thinking presentation at www.williams.edu/williamsthinking.)
I’ve heard some astonishing stories, the details of which are too harrowing and gruesome to repeat, but more generally I can say that what the FDNY members experienced at the World Trade Center site, especially in the body-recovery work that continued for nine months after the event itself, was horrific beyond anything a civilian can imagine. I realized eventually that their reluctance to discuss these things came not only from a wish to avoid revisiting the trauma themselves, but also from a wish to protect me from the horrors they had faced. Eventually they get past that, and I’ve often had the experience of seeing a square-shouldered fireman break down in tears. Being a witness to that moment, and to the mixture of embarrassment and relief that they feel at those times, is a deeply moving privilege.

Sometime in the winter of 2002, the head of the fire department’s Counseling Services Unit called and said he appreciated what we were doing on a volunteer basis, but their needs were growing and they needed someone full time on site. I hadn’t been looking for a midlife career change, but it seemed like the right thing to do. So I joined up. I didn’t give up my private practice entirely, but I did have to cut it back significantly and add a number of hours.

In their own words

How 9/11 changed the life paths of three members of the Williams community.
—As told to Denise DiFulco

PHOTOGRAPHY BY SCOTT BARROW

>> Click here for text only
Psychiatrist Kevin Kelly ’72 changes careers and helps to change the culture of the NYC fire department

My wife is a lawyer, and after 9/11 she volunteered her services to families of victims. That brought her in contact with a lot of New York City firemen. She saw what they were going through, which was this unimaginable routine of three or four memorial services a day interspersed with digging up body parts. She came home to me and said, “You, Dr. Kelly, have a unique opportunity here to be of service, because these guys desperately need to talk to somebody. They’re not going to talk to anybody very easily, but you might have a foot in the door because of your background, so you’d better do something about that.”

At the time I was in private practice as a psychiatrist. But I found her logic inescapable, so I assembled a panel of therapists from the New York Celtic Medical Society—four or five people with Irish names—and we contacted the fire department and volunteered our services. I had no
“Nowadays it’s not uncommon for people to sit around ... the firehouse and talk about ‘what my shrink said.’”

—Psychiatrist Kevin Kelly ’72

specific expertise in working with psychic trauma in adulthood, so I had to do a lot of fast reading-up and a lot of learning from experience. Also, I had some anticipation that the fire department would be a close-knit tribe, wary of outsiders, and especially wary of someone who encouraged people to discuss feelings and admit weakness. I was right about that latter part, and the art of overcoming it has been one of the most interesting and satisfying parts of the job.

I’ve heard some astonishing stories, the details of which are too harrowing and gruesome to repeat. But more generally I can say that what the firefighters experienced at the World Trade Center site, especially in the body-recovery work that continued for nine months after the event itself, was horrific beyond anything a civilian can imagine. I realized eventually that their reluctance to discuss these things came not only from a wish to avoid revisiting the trauma themselves, but also from a wish to protect me from the horrors they had faced. Eventually they got past that, and I’ve often had the experience of seeing a square-shouldered fireman break down in tears. Being a witness to that moment, and to the mixture of embarrassment and relief that they feel at those times, is a deeply moving privilege.

Sometime in the winter of 2002, the head of the fire department’s Counseling Services Unit called and said he appreciated what we were doing on a volunteer basis, but their needs were growing, and they needed someone on site full time. I hadn’t been looking for a midlife career change, but it seemed like the right thing to do. So I joined up. I didn’t give up my private practice entirely, but I did have to cut it back significantly and add a number of hours to my total workweek. I took a cut in income as a result, but it was worth it to have this opportunity to do some good for a deserving group.

Lots of people retired from the fire department in the years right after 9/11. So at this point the people who are still on the job who were involved then are a distinct minority. There’s a whole different mentality that people who were there have over people who weren’t there. Also, the culture of the department has changed. The idea of seeking mental health treatment is much more acceptable than it used to be. Nowadays it’s not uncommon for people to sit around the kitchen of the firehouse and talk about “what my shrink said.” A decade ago, that would have been unthinkable.

I remember one guy who was injured in the collapse of the World Trade Center who told me a story about going back to work. His 5-year-old daughter was obviously worried. As he was leaving home, she said, “Daddy, is there something I can do to help?” And his first response, he told me, was: “Oh, no, sweetheart, that’s OK. The big, strong fireman can take care of everything. You don’t need to worry.” But something told him that wasn’t the right answer. So he thought for a minute and said, “Yeah, you know, there is something you can do to help. You can give me a hug, and I can take that hug down to the firehouse and pass it around to all the guys in the house, and then everybody would benefit from your hug.” That’s a mark of a change there that a guy can think of that response.

I’ve wondered about how this job has affected me. Particularly I worry about burnout—the effect of listening to horrific stories all day long. The official term is secondary traumatization, and if that’s happened, I’ve failed to notice it. I feel kind of invigorated by being lucky enough to be in a position to help. But maybe if you asked my wife, she might say, “Oh, God, yeah. He’s impossible.”

Teacher Erin Peaslee ’08 embodies the legacy of an alumna who perished in the Twin Towers

Sept. 11 was the first time I really understood that my dad’s job was dangerous. I was a freshman in high school, and I was terrified. Everyone thought we were going to war. My dad is a senior captain in the Pittsfield (Mass.) Fire Department, and on 9/11 he picked me up early from school. We watched everything unfold on TV, and I felt kind of helpless. My immediate fear when they were talking about firefighters going to Ground Zero was that my dad was going to have to leave us. I couldn’t say to him, “I don’t want you to go,” because I saw all these people that needed help. I was at an age where I realized he had an obligation as an emergency worker.

I always took a lot of pride in what my dad did, and that was especially true after receiving the Lindsay S. Morehouse ’00 Scholarship
at Williams. Lindsay died on Sept. 11 in the South Tower of the World Trade Center, and her family established a scholarship fund at Williams for the children of emergency first responders. To receive an award that recognized my dad’s profession as something to be respected, and also one commemorating someone who had died on 9/11, was really meaningful to me. I felt a personal connection to it. It wasn’t just money from the school.

The scholarship is what allowed me to get my Williams education. When I was in high school in Pittsfield, I visited the campus a lot. I wanted to stay close to home, so I applied to Williams early decision and got in. Sometime over the summer before my freshman year, I learned that I received the scholarship. I already was excited to attend Williams, but the scholarship also made me feel a responsibility to do as well as I could. I majored in math and psychology, and I got my master’s degree right afterward at Boston College. Now I teach sixth grade at Mystic Valley Charter School in Malden, Mass.

A mere 10 years after 9/11, I’m teaching kids who are almost the age I was when it happened. They barely have an understanding of what 9/11 was or what it meant, and I think that’s unfortunate. I try to educate them as much as I can about exactly what happened that day, what it meant for our country and how it sort of shaped us and our country since. I explain to them that it woke me up and made me realize that we’re all vulnerable, and that as Americans we’re not untouchable. America isn’t just this superpower that can never be affected by anything negative. I try to help kids understand why someone might want to do something like that and explain to them how 9/11 brought our country together.

Below: Erin Peaslee ’08 and her father, Steven.

In Memoriam
Lindsay Morehouse ’00 was an analyst for the investment bank Keefe, Bruyette & Woods, working on the 89th floor of the South Tower, when she was killed in the World Trade Center collapse. So far, four Williams students, including Erin Peaslee ’08, have been recipients of the scholarship established by her friends and family to allow children of first responders anywhere in the world to attend the college. Says Lindsay’s father Ted Morehouse, “We continue to find solace in the successes of the many young people who have benefited from the scholarship.”

The College dedicated Convocation in October 2001 to the four members of the Williams community who had so recently been lost on 9/11, celebrating the spirit and contributions of Howard K. Kestenbaum ’67 of Montclair, N.J., in whose memory gifts have been made to the Alumni Fund in the years since 2001; Brian J. Murphy ’80 of New York, N.Y., for whom friends and family established the Brian J. Murphy 1980 Scholarship; Lindsay Morehouse ’00; and the parent of a student at the time. All continue to be missed.
Williams political science professor James McAllister creates a course to reflect a new reality

On Sept. 11, 2001, I was teaching a book, Francis Fukuyama’s *The End of History and the Last Man*. The basic thesis of that book was that liberalism had triumphed in the world and things would be very peaceful from here on out—or for the most part. The course was on the future of world politics, and that day I realized I had an entire syllabus that was basically irrelevant.

That led to some real soul searching about how to design a course that would give students not only theory and history but also an ability to engage with all the issues that were on the front page of *The New York Times* every day. There weren’t any courses at Williams that dealt with the issues that emerged after 9/11—particularly the foreign policy challenges we faced—so I created one. I've been teaching PSCI 120, “America and the World After September 11th,” since fall 2002.

It’s been fascinating to watch the course evolve over the decade since 9/11. If you had told me in September 2001 that Osama bin Laden would become basically irrelevant to a course that in many ways he brought into being, I would have said that’s crazy. But that has proven to be the case. We used to spend three or four weeks looking at al Qaeda, its origins, its prospects, its organization. By 2007 we were spending two weeks on those issues. This past semester, only one week.

There are much deeper issues today than Osama bin Laden and terrorism. Ten years ago I never thought to put anything related to China on the syllabus. But now we spend an awful lot of time on China as the emerging great power of the 21st century. And that’s another big change, too. When I first taught the course, we spent a lot of time talking about America’s unprecedented position of power in the international system. Now we spend an awful lot of time talking about America’s relative decline, which was hastened by 9/11, and we’ve spent a lot more time dealing with external threats than with our own economic and domestic problems.

I’ve watched my students become more critical of American foreign policy over time. I think the sort of fear, patriotism and nationalism that was present in the first years after 9/11 became much more realist and noninterventionist. Students generally were not big fans of President Bush, and those feelings have only intensified. I don’t think our current generation of students worries as much about terrorism as the students did in the immediate aftermath of 9/11, which is healthy in one way. You don’t want a bunch of students worried about when the next attack is going to come.

I’m actually thinking about changing the title of the course from “America and the World After September 11th” to, simply, “America and the World.” Our country is entering a new period in its history that is not going to be solely defined by 9/11. And I think Osama bin Laden’s death was very important in that respect. It will help America make the transition to a world in which the most important problem we face is not terrorism. So the title of the course will reflect that change. One more year, I think.

A Course Stands the Test of Time

Here’s a comparison of final exam questions from James McAllister’s “America and the World After September 11th”:

2002: Imagine that President Bush has to make a firm choice between two policy options. On the one hand, he can wage a war against Iraq and eliminate Saddam Hussein’s regime. On the other hand, he can launch an all-out effort for the reform and democratization of Saudi Arabia and Egypt. Assume that he cannot pursue both policies simultaneously. Which course would you recommend he choose?

2011: Two issues are central to the nature of world politics in the 21st century. The first is the question of American decline. … The second … will be the rise of China. … What are the challenges America faces both at home and abroad and what are the best strategies for dealing with our own potentially declining position in the world and the challenge posed by rising Chinese power?
On a sunny June day, Mike Reily ’64 left his infirmary bed and slipped into an aisle seat alongside his classmates assembled at Field Park. The commencement speaker that day was none other than U.S. Secretary of State Dean Rusk, sharing his “prescription for peace” in Laos and Vietnam. But many of the 266 graduates were too distracted to listen.

“We sat docilely,” remembers Peter Hero ’64. “But we were worried about Mike walking across the stage.”

Just 18 months before, Reily, a two-time Associated Press Small College All-American, had been the star of a now legendary football win against a powerhouse Amherst team. But even Reily’s voluminous graduation gown couldn’t obscure how wasted he had become by Hodgkin’s disease.

As he tried in vain to muffle his hacking cough, Reily turned to his friend Joel Reingold ’64 and said, “You know, Joe, the only thing I want to do is graduate.”

His classmates watched as Reily, his gait unsteady, climbed the stairs to receive his diploma from President Jack Sawyer ’39. The following day he left campus early to return home to New Orleans, where he was soon admitted to a hospital.

Meanwhile, the Class of 1964 scattered. Ben Wagner ’64, Reily’s football co-captain, was wearing a Kansas City Chiefs uniform at preseason camp when he got the news. Dave Johnston ’64, Reily’s senior-year roommate, was in Paris when the call came from his friend’s father back in Louisiana. John Winfield ’64, aboard the USS United States, received a telegram. Despite surgery, nitrogen mustard therapy and radiation, Michael Meredith Reily, 21, died on July 25, 1964.

Nearly 50 years later, three football jerseys—tucked away in an unremarkable box and stowed high on a shelf in the Cole Field House equipment room—would play a key role in the plan to honor Reily’s legacy at Homecoming Weekend this November.

BY HUGH HOWARD

A fierce competitor on the football field, Mike Reily ’64 lost a courageous battle with Hodgkin’s disease just weeks after his graduation. This fall, his classmates and teammates return to campus to celebrate his legacy.
On Nov. 18, 1961, a confident Amherst team rolled into Williamstown, expecting to clinch the Lambert Cup and Little Three crown. The Lord Jeffs had overwhelmed their opponents that season by an average score of 32 to 7. By contrast, the Ephs had scored a mere 81 points in seven games.

Sixteen of head coach Len Watters’ 32 players that year were new to the squad as sophomores, but Williams had a respectable 5-2 record, thanks mainly to the “monster defense” implemented by defensive coach Frank Navarro. The performance of one sophomore in particular, number 50, attracted press attention.

In his first varsity game, Mike Reily set a school record with 15 tackles. He came into the Amherst game with 80. (The most tackles on the team the previous year had been 34.) Like most of his teammates, Reily played both ways, linebacker on defense and offensive center. As fullback Bill Chapman ’64 recalls, “Center was—prophetically, symbolically—a great place for Mike.”

A graduate of the Woodberry Forest School in Virginia, where he was valedictorian, head prefect and co-captain of three teams, Reily turned down a prestigious Morehead Fellowship to the University of North Carolina and came to Williams to play football and wrestle. He came from a family of means; his room at Williams always smelled like the chicory-flavored coffee produced by the New Orleans-based Reily Foods Company. Yet, despite such auspices, according to Gay Mayer ’64, “Mike was very humble. Likable. He was just one of the guys.”

Against Amherst that bitterly cold November day in 1961 (at kickoff, the thermometer read 28 degrees), Reily recovered a fumble in the second quarter that led to the first score, putting the home team up 6-0. A third-quarter touchdown gave Williams a 12-0 lead, and Amherst saw its hopes of an undefeated season end when Reily intercepted his second pass of the day, this one inside the Williams 10-yard line. In its account of what The Amherst Student deemed “Black Saturday” the following week, the paper called Reily “easily … the best football player seen by the Amherst team this year.”

During his junior year, Reily would make 79 tackles and receive All-America honors for the second time. He and Wagner were elected co-captains for their senior year. But a few players noticed something wasn’t quite right. After Thanksgiving break, they learned Reily was ill. He began taking regular trips to Boston for treatments; his well-muscled frame began to thin. In a matter of months, it became apparent he would be too weak to take the field his senior year. Still, he attended every practice dressed in gray sweats, carrying a clipboard. He suited up for all the games, though the closest he could come to taking part was walking to midfield for the coin toss.

Everyone noticed Reily’s dedication, including the coaches. Back then there was no precedent at Williams for retiring a player’s number—there still isn’t. But before storing the uniforms after the season, equipment managers Jimmy McArthur and Charlie Hurley asked Navarro, now head coach, what to do with the three jerseys bearing the number 50, one each for home and away games, and one for practice. “Our hearts were so heavy we had to do something,” Navarro says, recalling the conversation.

It seemed proper to set the jerseys aside, and into a box they went. Over the years it became common knowledge as coaches, equipment mangers and players came and went that number 50 was not to be issued. When new uniforms were ordered, 50 was omitted. The memory of who and what the number actually represented was lost over time, but a quiet tradition was established.

In 2009, addressing his classmates at their 45th reunion, Class President Jay Freedman ’64 made reference to those who had died over the years. “I decided to add something about Mike in particular,” he says. “He was a really gentle guy with this soft way about him that people respected.”

Freedman suggested they were running out of time to honor Reily. The class agreed, and before long Wagner and others contacted Williams sports information director Dick Quinn, asking him to add Reily to the “Eph Legends” listed on the athletics website. Quinn, who remembered as a youngster hearing the words “tackle by Reily” reverberating across Weston Field, suggested
that perhaps an award should be established in Reily’s name. 
Aaron Kelton, the recently appointed head football coach, was 
quick to endorse the idea.

When Quinn was asked by an assistant coach, “Dick, you know about retired number 50?” during a football game in October 2010, he paid a visit to Cole Field House. A beat-up, water-stained box with the familiar Wilson logo had been discovered almost out of sight, next to a couple of busted helmets. Written across the lid in thick, black marker were the words: “FOOTBALL #50 DO NOT ISSUE.” Three jerseys lay neatly folded inside, their owner unknown until the college archives unearthed some photographs of Reily wearing number 50.

The discovery of the jerseys added to the momentum behind the plan to celebrate Reily at homecoming this November—on the 50th anniversary of what’s come to be known as “The Game”—by dedicating the Michael M. Reily ’64 Award. The award, to be given each year at the football team’s season-ending banquet, will honor a player chosen by his teammates who “best exemplifies the qualities of performance, leadership and character.”

That some 200 of Reily’s classmates and teammates are expected to be on hand for the dedication and recognition dinner is noteworthy—and not just because the event had yet to be announced publicly at press time. The Class of 1964 historically hasn’t had the highest reunion participation or raised the most money. Unlike some others, as one alumnus puts it, “Our class wasn’t particularly unified or close.”

And yet “the event is bringing people back to Williams who haven’t been connected for years,” says Steve Birrell ’64, former Williams vice president of alumni relations and development.

One of those people is Hero, who last visited campus 25 years ago. Andrew Smith ’64, who says he “happened upon” Reily leaving early the morning after their graduation, stayed away even longer. Of their brief farewell in the parking lot at Alpha Delta Phi, where Reily was fraternity president, Smith recalls, “He didn’t want to have a scene. I think he was leaving early to avoid the goodbyes, and I think that’s a lot of what’s powering this November weekend.”

Mayer, now 1964’s class president, attributes the surge in engagement to Reily himself. “It’s not the Williams piece,” he says. “It’s the Mike Reily piece that has touched people.”

“It’s sort of like Mike Reily is calling us back together for one last huddle,” adds Freedman. “It’s interesting that someone who has been dead so long can have that kind of pull on people.”

Winfield agrees: “I don’t think there’s any question he’s the single most inspirational person in my life. Not for his football exploits—no, it was his bravery in the face of death. That made a huge impression.”

A frequent contributor to the Review, writer and historian Hugh Howard is author of the forthcoming Mr. and Mrs. Madison’s War (Bloomsbury Press, 2012).

To participate in the Mike Reily ’64 Recognition Weekend, contact Ben Wagner ’64 at benwagner@comcast.net.
betrayal of responsibility and a betrayal of possibility. That’s how financial journalist Bethany McLean ’92, in a 2005 C-Span interview, described her understanding of how corporate culture in America had become “corrupted by this get-rich-quick notion: Make your quarterly earnings estimates, get the stock to go higher, get your options and the money and cash out.”

Reflecting on those comments today, McLean, recipient of a 2011 Williams Bicentennial Medal, says she “wasn’t cynical enough.”

The 2008 financial crisis is absolutely about those betrayals, she argues in All the Devils Are Here: The Hidden History of the Financial Crisis, co-authored with New York Times columnist Joe Nocera and published last November. But the question she’s grappling with in what promises to be a definitive history of good intentions gone wrong is: “What does it mean that the market has failed?”

A math and English major at Williams, McLean started her career in the investment banking division of Goldman Sachs, where she says she never quite fit in. A move to New York City’s East Village, where she met filmmakers, writers and others “outside” her experience, prompted her to find a new job as a research assistant at Fortune. Though her decision wasn’t celebrated in her practical, science-loving family, it felt right immediately.
In March 2001, McLean published an article in Fortune describing the high-flying Enron as a black box that few understood. She was the first journalist to question how Enron made its money.

Nocera, then an editor at Fortune, encouraged her to write a book about Enron. But McLean, who had only written a few mid-length articles, says she lacked the confidence. So Nocera brought in investigative reporter Peter Elkind as her co-author and joined the team himself as editor. In 2004 they published The Smartest Guys in the Room: The Amazing Rise and Scandalous Fall of Enron, which was made into an Academy Award-nominated documentary. McLean went on to become a contributing editor at Vanity Fair and moved to Chicago. When Nocera proposed the concept for All the Devils Are Here, she leapt at the chance to work with him again.

To succeed, markets require perfect information—or, in the case of the securities markets, transparency. The prevalent notion on Wall Street has been that the market is efficient. That is, it moves so quickly that prices reflect the continuous flood of new information immediately. Yet McLean learned in the wake of Enron that different markets had different information from each other; thus they had differing levels of sophistication and awareness about what was going on in Enron’s business.

“The market for credit default swaps began predicting Enron’s bankruptcy while [prices] were [still] soaring in the debt and equity markets,” she says. “This was fascinating to me because it was the first proof that this efficient market wasn’t the reality. And you see this in spades in the financial crisis.”

In All the Devils Are Here, McLean and Nocera demonstrate in devastating detail that it was clear by the end of 2006 that the party was over on Main Street. By then, they report, Wall Street had begun inventing ways to make money by betting against the mortgage market. First there was the trading of the ABX, a new index based on sub-prime mortgages that listed specific tranches of mortgage-backed securities. But if this index arguably increased transparency, they write, Wall Street’s invention of synthetic collateralized debt obligations (CDOs) took it away.

The authors are not the first to complain about these complex derivatives. Since the synthetic CDOs were not collateralized in the real economy, they allowed insiders to bet against the same bad mortgages again and again—up to 75 times, by one estimate McLean and Nocera report. They point out that securities markets are not generally zero-sum games, as these were, in which one party’s gain is another party’s loss—another party who didn’t have the same insiders’ knowledge and therefore relied on the rating agencies for their AAA blessing. It was these compounding damages, not the mere losses based on irresponsible mortgages, that taxpayers ultimately subsidized.

In the final analysis, McLean says, the biggest corruption of all was “people all thinking the same way.” By that she means there was an almost cult-like belief in the market. “Everybody believed the market would not permit certain things to happen because the market is all-knowing,” she says. “It’s so steeped in the business culture, and there’s an attitude of, well, you’re stupid if you don’t realize this is the way it works.”

In the mortgage market, McLean says, somebody could package up and sell bad loans, knowing they were flawed, because the market knows best and will put a stop to it if it isn’t OK.

“Instead of having God to believe in, you have the market,” she says. “And that absolves you of any responsibility for any of your choices.”
MAXIMUM CONNECTIVITY

By Denise DiFulco

“I’VE ALWAYS BEEN MOTIVATED BY RESEARCH THAT HAS AN EVERYDAY USE IN REAL LIFE.”
—JEANNIE ALBRECHT
Dropped calls have been a nuisance for about as long as cell phones have been in existence. But with mobile devices handling increasingly complex operations—from text messaging to video chats to emails with huge attachments—network connectivity is more important than ever.

It’s an issue that computer science professor Jeannie Albrecht is working to improve. In 2009 she was awarded a $400,000 National Science Foundation Career Award (rarely given to small, liberal arts colleges like Williams), which she is using to develop computer programs that keep devices continuously connected to mobile networks—or at least trick them into believing that they are—to avoid service disruptions.

“We’re trying to mask any time you’re disconnected from the network,” she says, explaining the software she has been designing with the help of students and independently. “We’re trying to develop something that will run below your applications but above the operating system.”

Albrecht is currently studying how power loss and malfunctioning equipment—two of the many factors that can disrupt a wireless computer network—affect the University of Massachusetts Amherst’s DieselNet, a system of city buses outfitted with computers that are connected by radios. Disruptions can occur when the buses power down at night or while they are moving, accessing different wireless points along their routes.

Albrecht and her students have written software that monitors network activity for these kinds of hiccups in the system and then prevents applications from noticing similar disruptions in the future. One solution she has investigated is delay-tolerant computing. When a bus becomes disconnected for a brief period of time, for instance, a delay-tolerant computing framework will essentially act as a buffer, preventing the application from experiencing any disruption in service or connectivity.

Another critical part of her research is “partially predictable” resource scheduling. That is, it may be possible to anticipate the routes of the buses and their associated network connectivity to schedule the programs to run in a predictable way.

Albrecht says the immediate payoff of her inquiry will be for fellow researchers. She wants to set up a software layer that sits above an unreliable mobile network to handle failures and allow for more trouble-free testing and development.

Her work eventually could lead to the creation of algorithms and programs that are more broadly applied to the electronic devices that we use every day. “Even laptops move from place to place. Cell phones. iPods,” she says.

As an outgrowth of her research, Albrecht is also looking at partially predictable resource scheduling as a way to reduce peak energy usage in the home. “If we can predict how much energy the coffee pot and the toaster are going to draw in the morning, it may be possible to postpone the dehumidifier from running in the basement at the same time,” she explains. Reallocation of energy usage in that way could lighten the load on power grids and save consumers money at peak times.

Before coming to Williams in 2007, Albrecht received a master’s degree in computer science at Duke University and a Ph.D. at the University of California, San Diego. She enjoys a variety of activities that are decidedly “low-tech,” including Ultimate Frisbee, skiing, surfing and kayaking. Her inclination to the outdoors may feed into her research, as she is eyeing other types of test beds as well, including sensors deployed in river ecosystems and networks of wireless sensors used in urban settings to monitor weather and air pollutants.

Thanks to the National Science Foundation grant, Williams students are at the forefront of Albrecht’s testing and software development. A recent group of her Winter Study students created and released the HungryEph app for the iPhone, iPad and iPod to help users maximize dining-hall meal points. And she recently completed work with thesis student Danny Huang ’11 that focused on improving smart phone performance in areas where network connections are spotty—like along Route 2 through the Berkshires.

At a larger institution, a Career Award might partially fund one or two graduate students for the duration. But Albrecht says she will be able to fund at least one student every summer for the next five years. “It’s really quite generous for a small school,” Albrecht says. “It was a nice surprise.”
9 THINGS YOU SHOULD KNOW ABOUT OUR UNIVERSE

according to Jay Pasachoff

1. HUBBLE CHANGED EVERYTHING. As recently as 1923, it was widely assumed that the Milky Way galaxy comprised the whole universe. That year, while still in his early 30s, Edwin Hubble discovered a Cepheid variable (a star whose distance can be measured solely by its pulsation) in the large spiral nebula in the constellation Andromeda. Hubble calculated that the star was too far away to be contained within our own galaxy, offering the first definitive proof of other galaxies. The Hubble Space Telescope has used Cepheid variables in dozens of galaxies to pinpoint the age of the universe at 13.7 billion years. The telescope has also found the first direct proof of dark matter, discovered new moons of Pluto, identified "exoplanets" orbiting other stars (including one with an organic molecule, methane, in its atmosphere) and given us our deepest-ever views into the cosmos.

2. WHAT LOOKS LIKE EMPTY SKY ISN’T. For 10 days in 1995, scientists focused the Hubble on a tiny, seemingly blank patch of sky within the constellation Ursa Major. The resulting image astonished astronomers by revealing thousands of galaxies within that one dark speck. Nine years later, using newer technology, Hubble captured the deepest image ever taken of our universe, the Hubble Ultra Deep Field (HUDF), whose importance to science has been compared with the Dead Sea Scrolls and the discovery of DNA. The HUDF image shows 10,000 galaxies, some of which are 13 billion years old—placing them a mere 700 million years after the Big Bang. In addition to classic spiral and elliptical galaxies, HUDF shows galaxies that look like toothpicks, tadpoles and links on a bracelet.

3. DON’T RULE OUT LIFE ON OTHER PLANETS. Even traveling at the speed of light—670 million miles per hour—it would take 100,000 years to cross the Milky Way, which contains a trillion stars and possibly as many as half a trillion planetary systems. In the visible universe, the Milky Way is just one of billions of galaxies, most of which are just as large. Such numbers significantly change our understanding about the chances of life on other planets.
4. THE UNIVERSE JUST KEEPS GETTING BIGGER FASTER.
Until 15 years ago, researchers assumed the expansion of the universe was slowing as a result of gravitational pull from all the matter contained within it. But having discovered that some extremely distant supernovae (stellar explosions) are fainter and therefore farther away than expected, researchers now know the expansion is actually accelerating. But why? Today particle physicists, who study the unimaginably small, are working with astronomers, who study the unimaginably vast, to explain the likely culprit—“dark energy,” a force that acts like anti-gravity.

5. THE NEXT FRONTIER IS INFRARED AND VERY, VERY COLD. The Hubble Space Telescope’s successor will be a colossal telescope named the James Webb Space Telescope that, if funding continues, will orbit nearly a million miles from Earth. Through it we’ll be able to peer back in time at the most distant—and therefore oldest—objects in the universe. Light from these objects has been so stretched, or “redshifted,” by the universe’s expansion that it shows only in infrared, which is invisible without technology like that of the James Webb. To reduce infrared noise, the telescope must be kept just degrees above absolute zero, the temperature at which atoms are frozen into immobility.

6. MEANWHILE, PLUTO’S GETTING HOTTER. Pluto’s atmosphere has intrigued astronomers for years, especially since the 2002 discovery (by Williams astronomers, among others) that the planet’s atmosphere is warmer, with twice the density, than it was just 14 years before. This despite the fact that Pluto’s been moving away from the sun. In 2015, NASA’s New Horizons spacecraft will finish a nine-year, 3 billion-mile journey to Pluto before heading out farther into the Kuiper Belt. Research at Williams has helped show that the dwarf planet will likely have some atmosphere left to study when the spacecraft finally arrives.

7. ASTRONOMY’S RAREST PREDICTABLE PHENOMENON IS JUST AROUND THE CORNER. On June 5, 2012, you can watch planet Venus cross between the Earth and sun, eclipsing a tiny portion of the solar disk. So-called transits of Venus happen in pairs, eight years apart, with each pair separated by gaps of more than 100 years. The 2012 transit is the second of the current eight-year pair (the first happened in 2004). And the next one won’t take place until 2117. The event is best seen through a telescope with a special filter, but you can also see it with the naked eye. Just be sure to get a solar filter that cuts down the sun’s intensity by 100,000 times—sunglasses won’t do—to protect your eyes.

8. MERCURY WILL CROSS THE SUN IN 2016. Mercury’s transits occur irregularly but average about once every seven years. And mark your calendar for Sept. 17, 2016—yes, 2016—when Venus and Mercury will cross the sun simultaneously.

9. THIS FALL AND WINTER ARE ALSO PRIME TIMES TO SEE ASTRONOMICAL EVENTS. On Oct. 29, Jupiter will be at its closest approach to Earth and will be as big and bright as it gets in the night sky. On Nov. 8, an asteroid known as 2005 YU55, which is about 1,300 feet in diameter, will make a close approach to the Earth. (Asteroids this large pass close to the Earth only every few decades.) From Nov. 13-20, you can see the Leonids meteor shower, one of the better meteor showers for viewing. (It peaks Nov. 17 and 18.) And on Dec. 10, a total lunar eclipse will be visible from most of North America. Visit http://transitofvenus.info and www.williams.edu/astronomy/eclipse to learn more.

Reported by Ali Benjamin

Jay Pasachoff is chair of the astronomy department, director of the Hopkins Observatory and the Field Memorial Professor of Astronomy. You can download his “Astronomy 101: The Cosmos” podcasts on iTunes and see his other publications at www.solarcorona.com.
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7. **ASTRONOMY’S RAREST PREDICTABLE PHENOMENON IS JUST AROUND THE CORNER.** On June 5, 2012, you can watch planet Venus cross between the Earth and sun, eclipsing a tiny portion of the solar disk. So-called transits of Venus happen in pairs, eight years apart, with each pair separated by gaps of more than 100 years. The 2012 transit is the second of the current eight-year pair (the first happened in 2004). And the next one won’t take place until 2117. The event is best seen through a telescope with a special filter, but you can also see it with the naked eye. Just be sure to get a solar filter that cuts down the sun’s intensity by 100,000 times—sunglasses won’t do—to protect your eyes.

8. **MERCURY WILL CROSS THE SUN IN 2015.** Mercury’s transits occur irregularly but average about once every seven years. And mark your calendar for Sept. 17, 13425—yes, 13425—when Venus and Mercury will cross the sun simultaneously.

9. **THIS FALL AND WINTER ARE ALSO PRIME TIMES TO SEE ASTRONOMICAL EVENTS.** On Oct. 29, Jupiter will be at its closest approach to Earth and will be as big and bright as it gets in the night sky. On Nov. 8, an asteroid known as 2005 YU55, which is about 1,300 feet in diameter, will make a close approach to the Earth. (Asteroids this large pass close to the Earth only every few decades.) From Nov. 13-20, you can see the Leonids meteor shower, one of the better meteor showers for viewing. (It peaks Nov. 17 and 18.) And on Dec. 10, a total lunar eclipse will be visible from most of North America. Visit http://transitofvenus.info and www.williams.edu/astronomy/eclipse to learn more.

Reported by Ali Benjamin

Jay Pasachoff is chair of the astronomy department, director of the Hopkins Observatory and the Field Memorial Professor of Astronomy. You can download his “Astronomy 101: The Cosmos” podcasts on iTunes and see his other publications at www.solarcorona.com.
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