Jason Hinebaugh

THE POLITICS OF TEEN CHILDBEARING

Sociology professor Frank Furstenberg was three chapters into his latest book when he became bored. For over four decades now, he's documented the lives of nearly 300 women – from their teenage years when they were poor, unwed mothers in Baltimore, through their middle-age when they were family matriarchs. He'd already published numerous papers and two previous books about these women, and he wasn't sure where else to go with the project. "I can't do this," he thought. So he threw the chapters away and shelved the project for three years.

Then it dawned on him how he could culminate the massive, longitudinal Baltimore Study that has loomed over his entire career. "I wanted to make a book about the policies that have grown out of the issue of teenage childbearing, how public policies have been bent and refracted for political reasons," Furstenberg recalled recently in his McNeil Building office.

Destinies of the Disadvantaged: The Politics of Teen Childbearing tackles welfare reform, marriage promotion and reproductive health, among other highly politicized issues. From Reagan-era stereotyping of unwed, African-American mothers as "welfare queens" through modern-day abstinence promotion, Furstenberg, the Zellerbach Family Professor of Sociology and research associate in the Population

Studies Center, writes about how politicians distort social science information for fodder in electoral politics. "We created an enormous stereotype during the Reagan years – and the Bush-one and Clinton years – that poor women get addicted to welfare," Furstenberg says. "There is a minority of these women who live up to the stereotype, there's no doubt about that, but it's a relatively small minority."

The long-term costs of teenage childbearing among the women in Furstenberg's study, 80 percent of whom are African American, have been only modest. About 20 years after giving birth, the vast majority of women had incomes above the poverty line, he reports. Fewer than one fifth remain on public assistance, and more than 75 percent hold regular jobs. Many of the women completed high school or received a GED, and about 20 percent have taken college courses.

Being a teenage mother isn't their major impediment. Their greatest obstacle is that they started poor. "If you're born poor, you don't start on the 20 yard line," Furstenberg argues. "You start well back in the end zone. You've got 120 yards to go. Most people have 80."

America has the least amount of wealth redistribution in the world, he notes, and the largest divide between wealthy and impoverished. The education system perpetuates the existing status – the tax system allows for more affluent neighborhoods to have better schools. "We're far from the promise of equal opportunity," he contends. As a nation that scorns public assistance, aiding the disadvantaged is used as a wedge between political parties, Furstenberg explains. When welfare reform was enacted in 1996, for example, it lacked social programs for self-improvement, especially for men. "We've tried to get women more employable, leaving the men, more or less, to fend for themselves. That's a silly policy."

Marriage promotion is just as myopic. "Marrying a man who is not going to be able to carry the load of support is like marrying another child," he observes. "Some of the women commented, 'I've got two children. I don't need a third.'" Instead of promoting marriage, he recommends giving couples the skills to manage relationships. "A marriage that isn't viable right from the start is probably not going to get more viable over time."

When it comes to teenage, premarital sex, the government takes a moral stance: Don't do it. "We've adopted an approach that has been foolhardy," Furstenberg scoffs. "We need to prepare teenagers to make intelligent, informed decisions for if and when they do have sex, because they will. Most of them do." The real danger, according to Dorothy Mann, executive director of the Family Planning Council of Southeastern Pennsylvania and 25-year friend of Furstenberg, is that the government's abstinence efforts don't help young people deal with the situation if they do become pregnant. "Frank totally embraces the concept of prevention, but he also understands what can be done to improve their lives if they become young parents," Mann says. "He bridges those two worlds."

Their greatest obstacle is that they started poor.

A Baltimore native who joined Penn in 1967, Furstenberg stumbled into this research because his mother was a social worker at Baltimore's Sinai Hospital. She worked with teen mothers to avoid unwanted, repeat pregnancies, and she invited her son to evaluate the program in 1965.

Furstenberg has become an admirer of the women he's documented. "In a certain way, the three books I've written are an effort to tell their stories," he says. He's pestered four decades of Penn students with anecdotes about his Baltimore Study. "Now," he says with a smile, "I'm done."

—G.W. Miller III, CGS'03

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YOUR BRAIN ON POVERTY

Besides doing research on how the brain works, psychology professor Martha Farah has been applying the methods and insights of neuroscience to "real world" issues. One of them is the effect of poverty on brain development. Poverty can be a kind of neurotoxin, argues Farah, the Walter H. Annenberg Professor in the Natural Sciences and director of the Center for Cognitive Neuroscience. And the deprivation experienced by disadvantaged kids shows up in how their brains grow and function.

Farah and researchers from Penn's and Children's hospitals analyzed a long-term database that tracked 110 children born to mothers on welfare. Around half of the moms used crack while pregnant. Household visits over more than a decade recorded how the parents related to their children and how stimulating the home was. "The biggest effects," says Farah, "are on language and memory." The researchers found that kids who received better nurturing from parents scored higher on memory tasks, and those with access to books and toys and museum visits developed better language skills. Prenatal substance abuse seemed to have little impact on language or memory. MRI brain scans reveal that the children in the study who got less attention and love tended to have a larger hippocampus, the brain structure associated with forming and retrieving memories. The results are consistent with animal studies that show similar neural deficiencies in rat pups that had little contact with mothers or grew up in bland environments.

Farah suspects that the hormones released by stress are a major cause. "We know stress is itself neurotoxic," she says. "And we know that the lower a family's socio-economic status, the higher the level of stress on everyone. Poor children are especially vulnerable to the effects of stress on brain development." The effects of below-average cognitive function not only last a life time for individuals but point to a physical mechanism that can keep communities locked away in poverty for generations.

—PN

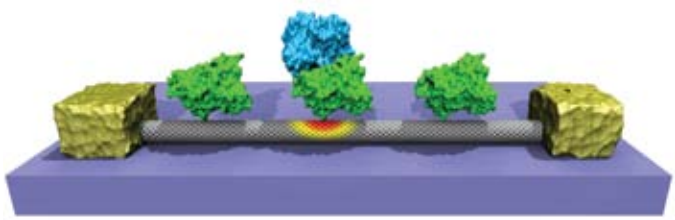
UNDERGRAD EXPLORES CARBON NANOSTRUCTURES

Carbon may be ubiquitous in our world, but research by physics and math major Sujit Datta, C'08, shows there is still much to discover about this element's remarkable features. Working in the lab of Associate Professor of Physics Alan T. "Charlie" Johnson, Datta has been exploring the unusual electrical properties of one-atom thick sheets of graphite called graphene and of carbon nanotubes, graphene cylinders that are one nanometer – a billionth of a meter – in diameter. His work is helping form the foundations for potential technology ranging from new biomedical instruments to more advanced computers.

In one project, Datta helped develop a carbon nanotube electrical device that can detect and bind certain viral proteins. Datta says, "This gives us a very simple and fast biomedical sensor that may eventually be of great use in medicine." Datta also works on projects that help shape our basic understanding of single- and few-layer graphene, a material scientists learned to isolate only four years ago. After learning the skills to make high-quality graphene samples, Datta then examined them with a technique called electrostatic force microscopy. He found that the electrical properties of graphene vary significantly depending on how many layers of the material are stacked upon one another, and he was able to quantify these differences. Datta also discovered a better way to create graphene nanoribbons – cross-sections of graphene sheets with their own unique features. Other methods leave rough edges on the nanoribbons, which diminish their electrical properties, but Datta discovered a chemical process that can etch ribbons with crystallographic edges.

Datta explains, "If we can understand the capabilities of carbon nanostructures and eventually make transistors and other electrical components out of them, then we can cram many of these things on computer chips and have significantly more powerful computers."

—PR



Bob Johnson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PARSING OUT JUSTICE

"I just have a lot of passion for doing economic analysis of political matters," says Claire Lim. As an undergraduate at Seoul National University, she followed her passion, double majoring in economics and political science. As a Penn Ph.D. student in economics, she continued to foster that fascination with data and numbers and politics.

In the U.S., more than 90 percent of civil and felony cases are handled by state-court judges. With a dissertation-research grant from the National Science Foundation, Lim has factored how the decisions of appointed judges differ from those who are elected. "Appointment and election are typical ways of selecting public officials," she explains. "If you can't understand these two important institutions, then you are basically failing to understand an important part of government operation."

For her study, Lim looked at judges in Kansas, where both systems of selection are used. In some districts judges are appointed by the governor. When their first term expires, they face no challenger but must be reelected by a simple yes-or-no majority. In other Kansas districts, judges face competitive elections for their first and subsequent terms. Lim put together a massive data set on the backgrounds, career profiles, sentencing behaviors and electoral outcomes for 243 Kansas judges who sat on the bench in 1976 and after. The data also captured the political climate in each of the state's 31 judicial districts.

"What I found is that appointed judges are very homogeneous and elected judges are very, very heterogeneous in terms of their ideological preferences," Lim says. The sentences of appointed judges clustered at a moderate point between lenient and severe, but elected judges handed down sentences that scattered across that spread.

"Elected judges are also much more responsive to voters' preferences," Lim interprets. "But in these noncompeting reelections appointed judges are almost always rubber stamped by voters – their reelection is not affected by their decisions at all." Appointed judges, her data show, dispense a moderate and consistent form of justice while elected judges mete out harsher or more lenient sentences, depending on the political leanings of their district's voters.

"Claire's dissertation is original and ambitious," observes her advisor, Antonio Merlo, the Lawrence R. Klein Professor of Economics. "It combines state-of-the-art economic modeling, data analysis and econometrics to study an extremely important set of issues."

For the near term, Lim is heading to Stanford as an assistant professor of political economy. She plans to continue feeding her data-parsing passion with economic analysis of campaign spending, term limits and other political matters.

—PN

ART, UP CLOSE AND PERSONAL

From cataloging rare artifacts from West Africa's Benin Kingdom to helping organize an exhibition of contemporary multimedia artist Vito Acconci, students in the Halpern-Rogath Curatorial Seminars gain an intimate perspective on art. Offered by the Department of History of Art, the seminar is one of the few in the country that teaches students practical and theoretical knowledge about curating.

This spring, students in a seminar led by visiting lecturer Kathy Curnow worked with Penn's Museum of Archaeology and Anthropology to plan an exhibition of Benin artifacts and wrote entries for the exhibition's catalog. In addition to analyzing exhibits of African art in New York, Washington, D.C. and locally, students examined priceless, centuries-old objects in the Penn Museum's collection. "It was really interesting touching something you usually think of as being behind a big glass case next to a guard," says history of art junior Laura Sagues. "We got to see details on the pieces that we would never have been able to see in photographs."

Last fall, seminar students worked with art history professor Christine Poggi as she curated an exhibit of Acconci's work called *Power Fields*, housed at the Slought Foundation. In the course of researching Acconci's avant garde pieces and analyzing the theoretical issues involved in displaying them, students visited and interviewed the artist in his Brooklyn studio. The interview was filmed and became part of the exhibit. "It was an amazing experience," says history of art junior Roland Betancourt. "The fact that we were engaging the work and that he (Acconci) had a personal investment in our conversation took our discussion to a new level."

—PR

Lauren Hansen-Flaschen

Candace diCarlo

FROM SCREENING ROOM TO CLASSROOM

Most Penn students recognize actor Kalpen Modi, a.k.a. Kal Penn, from the characters he's played on the big screen. But 100 Penn undergraduates recently got to know Modi in an entirely different role – that of teacher. Modi, whose credits include the television series *House* and movies like *The Namesake* and the *Harold and Kumar* series, taught a spring semester class called Asian Americans in the Media.

"Many great film classes that focus on theory are so insightful but don't take into account some of the production-based focal points of what it's like to make a film, set foot in a studio and have meetings with executives and producers," Modi says. "On the flip side, some production-based classes don't take into account the effects, beyond the marketplace, of what certain images mean to certain folks. I wanted to make sure students had a balance, and I hope I helped them think about the media in ways they may not have before."

In developing the class's rigorous curriculum, which included pop quizzes, exams and a 15-page research paper, Modi worked closely with Grace Kao, associate professor of sociology and director of the Asian American Studies Program. Students studied a unique combination of material, ranging from academic journals to trade publications like *The Hollywood Reporter* to a variety of films. They learned also from Modi's experiences as an industry insider and gained a perspective that Kao says "academics can't really share with students."

—PR

POWER AID

This spring Kathryn Cunningham, C'08, received a letter saying that her namesake had been born in The Gambia. The note was from a woman whom Cunningham, a biology major, had met two summers ago while volunteering at the Sulayman Jungkung General Hospital (SJGH) in Africa. Although it is one of The Gambia's largest, the hospital has electricity for less than 10 hours a day. When the woman came in needing a transfusion, there was no power to operate the blood bank. Cunningham found herself giving an on-the-spot blood donation that helped saved the woman's life. In gratitude, the woman promised to name her next child "Kathryn."

This experience is one of many that drive Cunningham's commitment to Power Up Gambia, the non-profit she founded to provide solar-powered electricity to SJGH. The hospital depends on generators and can only afford to run them for a few hours daily. It functions for most of each day without running water or power to operate basic equipment like ultrasound machines, incubators and refrigerators. "Patients showed up and we'd have to say, 'We can't run those tests right now because our microscope isn't available,'" Cunningham explains. "It was unreal."

During Cunningham's stint there, the SJGH director showed her an estimate from the Gam-Solar company for a $300,000 solar energy system that would power round-the-clock electricity and running water for the hospital. "I thought, 'I'm 20 years old and it's $300,000' – I mean I still pick up SEPTA tokens when I see them," Cunningham says. "I came home not really expecting to do anything about it."

But upon hearing her stories from The Gambia, Cunningham's parents and friends encouraged her to raise money for the cause. Armed with a projector and a convincing presentation, Cunningham has since raised more than $250,000. The money has already provided SJGH with a solar-powered water pump that supplies all-day running water and energy-saving light bulbs that allow for more efficient energy use.

In the past two years Power Up Gambia has formed a 12-member board and has added educational activities to its goals. Cunningham says the organization gives presentations to schools about renewable energy, African cultures and "the importance of giving back." The group was a finalist in this year's J.P. Morgan Good Venture Competition, and Cunningham is a finalist for the 2008 BR!CK Awards, which honor youth service.

As the group's recognition grows, so does Cunningham's greatest challenge – time. This semester she has juggled work for Power Up Gambia with applying to Penn's School of Medicine, planning her upcoming wedding and finishing undergraduate coursework. But Cunningham plans to maintain a place for Power Up Gambia well into her future. After she meets her goal for SJGH, she wants to turn the group's attention to the hospital's satellite clinics in The Gambia's hinterlands. She dreams of eventually turning Power Up Gambia into a self-sustainable organization. "Hey," Cunningham exclaims, "why not Power Up Africa!"

—PR

Courtesy of Kathryn Cunningham


Ashley Lo

PURSUIT OF KNOWLEDGE

A powerful mix of frustration and curiosity has fueled Joshua Cook's accomplishments. This drive will soon take the College senior to a place that has educated scientists who have asked some of the most definitive questions in human history. Cook is the recipient of a prestigious 2008 Gates Cambridge Scholarship. With it, he will pursue an MPhil in clinical biochemistry at the University of Cambridge in England. "To be able to study in the environment that fledged Isaac Newton, Darwin, and Watson and Crick – that's something pretty amazing," Cook says.

The biology major came to Penn with a longstanding interest in clinical medicine, but he soon found himself drawn to research. During his freshman year, he found a job in the lab of Bryan Wolf, a professor in the Department of Pathology and Laboratory Medicine in the School of Medicine. "I really came to love what I was doing in the lab," Cook explains. "I wasn't just washing glassware; I was planning and doing experiments that were getting published and making real contributions to the work of the lab."

Cook's research culminated in his thesis on how insulin-secreting cells of the pancreas regulate the production of a protein that may be involved in the development of type-2 diabetes. He has submitted the paper for publication and presented it at the American Diabetes Association's 67th Scientific Session – the world's largest conference in the field of diabetes research.

Cook's experiences in the lab made him realize "the power of the life of a physician-scientist," and after Cambridge he will be attending the M.D./Ph.D. program at Columbia University College of Physicians & Surgeons. He hopes to combine his devotion to medical practice with the researcher's pursuit of knowledge. "Every question that you think you've answered presents a new question," Cook says. "The more I learn, the greater effect my work can have."

—PR

2008 LEVIN FAMILY DEAN'S FORUM

At this spring's Levin Family Dean's Forum, world-renowned experimental psychologist and popular science writer Steven Pinker gave a talk on "The Stuff of Thought." The Harvard professor has won praise and sparked debate for work that explains how words relate to thoughts and what that reveals about human nature. In his lecture, he discussed how aspects of language, ranging from grammatical structures to swearing to innuendo, serve as a window into our thoughts, emotions and social relationships.

Pinker's research on cognition and language has been honored with many prestigious academic awards, and his talent for wittily and eloquently translating complex ideas for lay audiences has garnered popular acclaim. He was named one of *Time* magazine's 100 Most Influential People in the World Today. His newest general-audience book, *The Stuff of Thought: Language as a Window into Human Nature*, was a *New York Times* bestseller.

"At a time when genetics, neuroscience and cognitive psychology are revealing new insights about the brain at an explosive pace," said SAS Dean Rebecca Bushnell, "it's writers like Pinker who make it possible for the non-scientist to go along for this thrilling ride."

—PR


Lisa Godfrey

HEART OF THE MATTER

It takes a giant machine to study nature's tiniest particles. For more than a decade, Penn physicists have been hard at work with more than 5,000 scientists and engineers from around the world putting together the Large Hadron Collider, the biggest, most powerful particle accelerator ever built. The pioneering scientific instrument at CERN (the European Organization for Nuclear Research) in Geneva, Switzerland, is due to begin operations later this year. It will fling protons in opposite directions around a 17-mile circuit at nearly the speed of light – and then smash them together. Cosmologists believe the universe at the Big Bang was smaller than an atom. The subatomic debris that flies out of the head-on collisions will mimic conditions at the birth of the universe 15 billion years ago. Physicists hope to catch a glimpse of elusive but predicted particles, like the Higgs boson, that could help crack open the code of the physical world just as genetic discoveries led scientists to break the code of life. Penn's scientists are part of the ATLAS experiment, one of four detectors that will track and measure what happens at the heart of matter when protons break apart at high energy levels. The monster detector, a small piece of the much bigger instrument, is about seven stories tall and weighs as much as the Eiffel Tower. ATLAS will search for answers to questions like, What are the origins of matter? What gives mass to elementary particles? What else can we learn about the basic forces that have shaped the universe and will determine its fate? "In some ways we know what we're looking for, and in some ways we don't," says Assistant Professor and ATLAS collaborator Evelyn Thomson. "But that may be interesting. If we don't find something that we're looking for, then we can rule out the standing theories and search for others. Maybe we will find something completely unexpected that causes a revolution in our understanding of the universe." —PN

Two of eight "big wheels" in the ATLAS muon spectrometer