ANNUAL PEER LEARNING NETWORK CONVENING OF PARTNERSHIP SITES

NOVEMBER 16-18, 2008

GATES-MARSHALL REDESIGN PROGRAM

ANNUAL PEER LEARNING NETWORK CONVENING OF PARTNERSHIP SITES

“Converting Student Potential Into Lifetime Achievement”

Hosted By The
PROJECT XLR8 TEAM

ROYAL HIGH SCHOOL
PRAIRIE VIEW A&M UNIVERSITY
ROYAL INDEPENDENT SCHOOL DISTRICT

Project Director:
A. Anil Kumar

Distinguished Guest:
(Ret. USAF) Col. Pamela Ann Melroy, NASA Astronaut

Funded by the
Thurgood Marshall College Fund
with support from the
Bill & Melinda Gates Foundation

November 16-18, 2008
Westin Oaks Galleria Hotel
Houston, Texas
ANNUAL PEER LEARNING NETWORK CONVENING OF PARTNERSHIP SITES
NOVEMBER 16-18, 2008

http://www.pvamu.edu/marshallgates/fall2008meeting
RECEPTION & DINNER  
November 16, 2008, Sunday  
6 PM - 9 PM  
Fogo de Chao  
8250, Westheimer Road, Houston  
713-978-6500

Distinguished Guest:  
(Ret.) Col. Pamela Melroy, NASA Astronaut

Welcome Remarks From:

Project XLR8  
A. Anil Kumar, Project Director  
Nathaniel Richardson, Superintendent

Thurgood Marshall College Fund  
Mr. Dwight Rhodes, Director  
The Center of Innovative HBCU School Reform Partnerships &  
Ms. Eve M. Hall, Vice President of Programs

Prairie View A&M University  
Dr. George C. Wright, President  
Dr. E. J. Thomas-Smith, Provost & Senior Vice President for Academic Affairs  
Dr. Willie F. Trotty, Vice President for Research & Development
Purpose:
- To review the development and progress of the redesign project at each site
- To explore opportunities for further funding and collaborations
- To explore issues of concern and identify potential solutions
- To learn from reform practitioners outside of the Peer Network

November 16, 2008, Sunday

Teams arrive at Westin Oaks

6:00 PM  Reception and Dinner for Network Participants and Guests
Location: Fogo de Chao, 8250 Westheimer, (713-978-6500)

Speaker
Astronaut Pamela Melroy, NASA
November 17, 2008, Monday (RHS and PVAMU)

7:00 AM  Breakfast on your own

**MORNING - ROYAL HIGH SCHOOL**

7:30 AM  Bus leaves Westin for Royal High School
8:30 AM  Greetings from:
          RHS – Principal Rick Storey
          RISD – Superintendent Nathaniel Richardson
          RISD School Board Personnel

8:45 AM  Visit classes and tour Royal HS (Look under Tours for schedules)
          Testimonies from RHS students and past graduates

11:15 AM  Bus departs for PVAMU

**AFTERNOON - PRAIRIE VIEW A&M UNIVERSITY**

11:45 AM  Lunch at PVAMU – Memorial Student Center
          Greetings from PVAMU Personnel
          President George Wright & Deans, VPs, Department Heads

          Keynote Speaker: Dr. Pamela Denkins, Human Research Project
          Space Life Sciences Directorate, NASA/JSC

1:00 PM  Overview of the School Redesign Project & The Center for Innovative
          HBCU School Reform Partnerships – Eve Hall & Dwight Rhodes

1:30 PM  Project XLR8 – Progress, Challenges & Efforts Towards Sustainability
          A. Anil Kumar
2:00 PM  Project XLR8 Team

2:45 PM  Site Presentations - School and College Faculty (30 minutes each)
Capitol High-Southern University
Coppin Academy-Coppin State University
Jones High School-Texas Southern University
Winston Salem Preparatory Academy-Winston Salem State University

4:45 PM  Day’s Wrap-Up and Charge for Tuesday - Dwight Rhodes & Eve Hall

5:00 PM  Bus departs for Westin

5:45 PM  Arrive at Westin

Evening  On your own
November 18, 2008, Tuesday (At Westin)

7:00 AM  Breakfast on your own

8 AM  Issues Confronting Schools and Colleges - The African American Male
       N. Richardson & Rick Storey

8:15 AM  Break Out Sessions - 30 Minutes Each
       Faculty and Administrators from each site will be formed into four groups.
       Each group will be a mix of people from schools and colleges.

       “Café Style” Participation: A table will be set up for each of the four topics,
       with one moderator/facilitator and one reporter for each topic. Each group
       will migrate from table to table contributing to the discussion and writing
       down their suggestions on the tablecloth. The advantage is that everyone
       gets to participate in all the forums.

       Topic 1: African American Male
       Topic 2: Teacher Training, Professional Development and Retention
       Topic 3: Ideas and Actions for Sustainability of Effort
       Topic 4: Curriculum Designs in Science, Mathematics, ELA and Social
       Studies

10:15 AM  Break (15 Minutes)

10:30 AM  Report Outs – Interactive Session,
       Dr. Tim Berkey, University of Houston-Victoria, Moderator
       This session is an Interactive Panel of Reporters from Break Out Sessions
       with audience input. Reporters from each table will summarize the salient
       points discussed at their table, addressing specific concerns that will lead
       to specific action items. Audience will have an opportunity to provide input
       and ask questions.
Expected Outcome: Specific Action Items to be taken back to individual campuses for further improvement.

12 Noon- Lunch
1:30 PM Passion, Vision, Courage (PVC) - Traits to Accomplish Sustainability, and Continued Efforts for School Redesign, Speaker: Dr. Tim Berkey

1:45 PM Quo Vadis? Where do we go from here? From Issues to Action – Plans and Perspectives from Sites. Where do we go at the conclusion of the high school redesign process with the grant (transitional period)- sustainability and long range vision for high school redesign process.

2:45 PM Closing Remarks, Eve Hall & Dwight Rhodes

3:00 PM Meeting adjourns
EXPERIENCE: Melroy was commissioned through the Air Force ROTC program in 1983. After completing a master’s degree, she attended Undergraduate Pilot Training at Reese Air Force Base in Lubbock, Texas and was graduated in 1985. She flew the KC-10 for six years at Barksdale Air Force Base in Bossier City, Louisiana, as a copilot, aircraft commander and instructor pilot. Melroy is a veteran of JUST CAUSE and DESERT SHIELD/DESERT STORM, with over 200 combat and combat support hours. In June 1991, she attended the Air Force Test Pilot School at Edwards Air Force Base, California. Upon her graduation, she was assigned to the C-17 Combined Test Force, where she served as a test pilot until her selection for the astronaut program. She has logged over 5,000 hours flight time in over 50 different aircraft. Melroy retired from the Air Force in February 2007.

NASA EXPERIENCE: Selected as an astronaut candidate by NASA in December 1994, Melroy reported to the Johnson Space Center in March 1995. She completed a year of training and evaluation and is qualified for flight assignment as a shuttle pilot. Initially assigned to astronaut support duties for launch and landing, she has also worked Advanced Projects for the Astronaut Office. Melroy served on the Columbia Reconstruction Team as the lead for the crew module. She served as deputy project manager for a crew survival investigation team and also performed CAPCOM duties in mission control. Melroy served as pilot on two flights (STS-92 in 2000 and STS-112 in 2002), and as mission commander on STS-120 in 2007. She has logged over 924 hours (over 38 days) in space.

SPACE FLIGHT EXPERIENCE: STS-92 Discovery (October 11-24, 2000) was launched from the Kennedy Space Center, Florida and returned to land at Edwards Air Force Base, California. During the 13-day flight, the seven member crew attached the Z1 Truss and Pressurized Mating Adapter 3 to the International Space Station using Discovery’s robotic arm and performed four space walks to configure these elements. This expansion of the ISS opened the door for future assembly missions and prepared the station for its first resident crew. The STS-92 mission was accomplished in 202 orbits, traveling 5.3 million miles in 12 days, 21 hours, 40 minutes and 25 seconds.
STS-112 Atlantis (October 7-18, 2002) launched from and returned to land at the Kennedy Space Center, Florida. STS-112 was an International Space Station assembly mission during which the crew conducted joint operations with the Expedition-5 by delivering and installing the S1 Truss (the third piece of the station's 11-piece Integrated Truss Structure). It took three spacewalks to outfit and activate the new component, during which Melroy acted as internal spacewalk choreographer. STS-112 was the first shuttle mission to use a camera on the External Tank, providing a live view of the launch to flight controllers and NASA TV viewers. The mission was accomplished in 170 orbits, traveling 4.5 million miles in 10 days, 19 hours, and 58 minutes.

STS-120 Discovery (October 23-November 7, 2007) launched from and returned to land at the Kennedy Space Center, Florida. During the mission, the Node 2 element named Harmony was delivered to the International Space Station. This element opened up the capability for future international laboratories to be added to the station. In addition, the P6 Solar Array was re-located from the Z1 Truss to the end of the port side of the Integrated Truss Structure. During the re-deploy of the array, the array panels snagged and were damaged. An unplanned spacewalk was successfully performed to repair the array. The mission was accomplished in 238 orbits, traveling 6.2 million miles in 15 days, 2 hours, and 23 minutes.
Dr. Pamela Denkins’ professional career, spanning almost 40 years, has evolved in both national and international environments. She has worked for Southwestern Bell, TRW, Ford Aerospace, the City of Houston, and lived abroad in the Middle East and worked for Saudi Aramco. She currently works at JSC in the Division of Space and Life Sciences, serving as the Technical Officer and Grants Administrator for the Human Research Program Ground-based Research Initiatives. As a technical professional, she possesses experience in engineering and management, which includes environmental analyses, communications, computer security project management and technical support services. Denkins has also been featured in numerous research publications.

Dr. Denkins is a graduate of TSU with a bachelor’s degree in physics, a master’s degree in mathematics and a doctorate in environmental toxicology. She was recently honored by Texas Southern University by inviting her to be commencement speaker at their August 11, 2007 graduation ceremony. In her commencement speech, she described her own TSU/NASA relationship, which began in 1968, the year she became a NASA junior cooperative education student, and also her work with NASA programs, some of which were implemented at TSU since 2002. She is committed to NASA’s programs, which are “designed to educate, inspire, and promote interest in science, mathematics, engineering, and technology careers, education, and small business initiatives.” She closed her speech by reiterating the need for engineers and researchers in
NASA’s work force, and how institutions like TSU could fill that void. She encourages students to “visualize their success so that they may achieve their goals.”
TIMOTHY BERKEY, Ed.D.

B.S. Miami University
M.S. University of Akron
Ed.D. University of Akron

Administration & Supervision

Professor
Chair, Graduate Programs

Tim Berkey is Chair of Graduate Programs in the School of Education and Human Development at the University of Houston-Victoria. He teaches educational leadership and is a two time recipient of the university’s Excellence in Teaching Award. His research and authorship of professional and field based articles have focused on the changing roles of school leadership. He has served as a private consultant to school districts and organizations throughout the country and has focused his work in the areas of effective educational leadership, change management, teacher leadership, knowledge transfer, and school improvement.

Dr. Berkey earned his undergraduate degree in business administration from Miami University and his masters and doctorate from the University of Akron. Prior to joining the UHV faculty, Tim served as a teacher, principal, and superintendent spanning a period of thirty years in Ohio and Illinois. His experiences as a principal of three Blue Ribbon schools include state and national recognition for innovative programs by the JFK School of Government, Ford Foundation, National School Boards Association, American Association of School Administrators, the Great Lakes Governor’s Association, Crain’s Business Magazine and Newsweek.

Dr. Berkey has recently authored a book on change and leadership titled, “Improving Your Daily Practice: A Guide for Effective School Leadership” that will be released this fall by Eye on Education.
Thurgood Marshall College Fund  
Fall Convening November 16-18, 2008  
Houston, TX

Participants

Guests
(Ret.) Col. Pamela Ann Melroy, NASA Astronaut  
Dr. Timothy Berkey, University of Houston-Victoria  
Dr. Pamela Denkins, NASA/JSC  
Mr. Richard McReavey, Superintendent, Waller ISD  
Mr. Gene Glover, Superintendent, Hempstead ISD  
Dr. Sharon Young, Principal, Hempstead High School  
Ms. Kelly Baehren, Principal, Waller High School  
Mrs. Sharron Burnett, Dean of Faculty, KIPP Houston High School  
Ms. Chrystal Hebert, KIPP Houston High School

Thurgood Marshall College Fund
Mr. Dwight Rhodes, Director, The Center of Innovative HBCU School Reform Partnerships  
Ms. Eve Hall, Vice President of Programs

Baltimore, MD

Coppin Academy
Mr. Frank Whorley, Consultant to Coppin State University

Coppin Academy High School
Mr. Ronnel L. Carey, Principal  
Ms. Keisha Smith  
Ms. Karen Zipp
Ms. Susan Arisman

**Baton Rouge, Louisiana**

**Capitol Pre-College Academy**
Ms. Lori Green  
Ms. Kristin Narceau  
Mr. Willie Lewis

**Southern University & A&M College**
Dr. Ivory Toldson, Professor, Behavioral Studies  
Dr. Gussie Trahan, Associate Professor, Education  
Dr. Johnny Tolliver, Vice Chancellor of Academic Affairs
Winston-Salem, NC

Winston Salem Forsyth County Schools
Dr. Kenneth Simington, Assistant Superintendent, Student Services

Winston-Salem Preparatory Academy
Dr. Richard Watts, Principal
Mr. Larry Lewis, Assistant Principal
Ms. Deborah Gravlee, Curriculum Coordinator
Ms. Phyllis Penn
Mr. Nathan Portuphy

Winston-Salem State University
Dr. Cynthia Jackson-Hammond, Dean, School of Education and Human Performance
Dr. Beth Day-Hairston, Associate Professor of Special Education

Houston, TX

Jones High School
Mr. Eric Ford, Assistant Principal
Mr. Livy Wilson, Management Team Leader
Ms. Opal Harrison
Ms. Veronica Rideau
Charlissa Fuller
Andrea Vallien
Ms. Ida Holmes

Texas Southern University
Dr. Jay Cummings, Dean, College of Education
Dr. Tyrone Tanner, Assistant Professor, Educational Administration and Foundation
Royal Independent School District
Mr. Nathaniel Richardson, Superintendent
Ms. Joy McMahan, Liaison

School Board Members:
Mr. Chris Cardiff, President
Dr. Lawrence Brandyburg, Vice President
Mr. Frank Cobio, Secretary
Mrs. Emily Hilsman, Member
Mr. Elton Foster, Member

Royal High School
Mr. Rick Storey, Principal
Mr. Rick Kerschner, Assistant Principal

Ms. Rhonda Pavelka, Office
Ms. Joyce Byars, Counselor
Mr. Osaro Derrick, IPC
Mr. Allan Kaster, Chemistry/Physics
Ms. Amanjot Ludher, Biology/Chemistry
Mr. Stan Kitzman, Social Sciences
Ms. Sion Mitchell, Physics/IPC
Ms. Dawn Richardson, Chair, Science
Ms. Jane Short, Chair, Mathematics
Ms. Traci Toler, Chair, English
Ms. Lisa Zdanciewicz, English
Mr. Conrado Garcia, Mathematics
Mr. James Yeager, Chair, Social Sciences

Royal Middle School
Dr. Gary Bates, Principal
Ms. Nicole Poenitzsch, Assistant Principal
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Prairie View, TX

Prairie View A&M University
Dr. George C. Wright, President
Dr. E. Joahanne Thomas-Smith, Provost & Senior Vice President for Academic Affairs
Dr. Willie F. Trotty, Vice President for Research & Development
Dr. Lauretta F. Byars, Vice President for Student Affairs and Institutional Relations
Dr. Michael McFrazier, Associate Provost and Associate Vice President for Academic Affairs

Project XLR8
Dr. A. Anil Kumar, Project Director
Head, Physics, & Professor, Electrical & Computer Engineering
Dr. Edward L. Mason, Head, Curriculum & Instruction

College of Arts & Sciences
Dr. Danny R. Kelley, Dean
Dr. Onimi Wilcox, Associate Dean

Mr. Brian Cudnik, Physics
Dr. Natali Hritonenko, Mathematics
Dr. Laurette B. Foster, Mathematics
Dr. Michael Nojeim, Social Sciences
Dr. Tamiko Porter, Chemistry
Dr. Al Burrs, Biology
Dr. Premkumar Saganti, Physics
Dr. Sarah Wakefield, English
Ms. Surekha Sanga, Staff, Physics
Ms. Chelsee Hill, Major, Psychology

Dr. Dejun Liu, Head, Language and Communications
Dr. Aliakbar-Montazer Haghighi, Head, Mathematics
Dr. Harriette Howard-Lee Block, Head, Biology
Dr. Aderemi Oki, Head, Chemistry
Dr. Walle Engedayehu, Division Head, Social Work, Behavioral & Political Sciences

College of Education
ANNUAL PEER LEARNING NETWORK CONVENING OF PARTNERSHIP SITES
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Dr. Lucien Yates, Dean
Dr. Barry Pelphry, Associate Dean

Dr. M. Paul Mehta, Professor
Dr. Patricia Smith, Assistant Professor

College of Engineering
Dr. Kendall T. Harris, Dean

Office of Sponsored Programs
Mrs. Ann Craddock
Mrs. Kim Allen-Dickey
TOMORROW'S PROFESSOR e-MAIL NEWSLETTER
http://ctl.stanford.edu/Tomprof/index.shtml

The articles following this page are a selection from an excellent series sent by Rick Reis, sponsored by The Stanford University Center for Teaching and Learning http://ctl.stanford.edu. Dr. Richard M. Reis is the Executive Director - Alliance for Innovative Manufacturing at Stanford, & Director for Global Learning Partnerships, Stanford Learning Laboratory.

Anyone can SUBSCRIBE to the Tomorrows-Professor Mailing List by going to: https://mailman.stanford.edu/mailman/listinfo/tomorrows-professor?
Folks:

The announcement below about a new website for masters, doctoral, and postdoctoral researchers should be of interest to a number of you.

Regards, Rick Reis

The Graduate Junction

http://www.graduatejunction.com/site/about

The Graduate Junction, www.graduatejunction.com, is the first website to bring together Masters, Doctoral and Postdoctoral researchers from any discipline around the globe. It aims to provide an easy way to meet and communicate with others who share common research interests in a global multidisciplinary environment. Through The Graduate Junction you can learn about current research being undertaken by other graduate researchers all over the world. The Graduate Junction also aims to become a central source of relevant information.

This new free online resource has been developed by graduate researchers at Durham and Oxford University (UK). They have designed a simple, easy to use platform which only provides relevant information and functionality. More information about The Graduate Junction’s vision, its Team and university testimonials are available online.

Launched in May 2008, early versions of The Graduate Junction, with limited publicity, attracted more than 8000 researchers from over 70 countries to register. Now with a redesigned site, an expanded Team and articles in well established press such as The Chronicle of Higher Education (US) and The Times Higher Education (UK), the community is growing rapidly.
Please help us to build an online global graduate research community. If presently you cannot find exact matches to your research interests, fill in some very basic details about your own research and as the news spreads, others will be able to find and contact you! The information listings have only just been added so it will take some time to provide comprehensive coverage. If you are organizing a conference or involved with a graduate journal and want to list it for free please contact us. If you support our vision please help us spread the news to other researchers at your institution.
Folks:

Welcome to the 2008-09 academic year! Let’s kick things off with what has been one of the most popular postings on the Newsletter over the years, the annual "Beloit College Mindset List," that looks at today's college freshman and what they have and have not experienced in their short lifetimes. The results are both useful and sobering for any professor over 30. So here it is for the entering class of 2008 who will graduate in 2012. Beloit College - 700 College St. - Beloit, WI 53511 - 608.363.2000 - webmaster - Copyright © 2008 Reprinted with permission.

Regards, Rick Reis reis@stanford.edu

The Beloit College Mindset List

This month, almost 2 million first-year students will head off to college campuses around the country. Most of them will be about 18 years old, born in 1990 when headlines sounded oddly familiar to those of today: Rising fuel costs were causing airlines to cut staff and flight schedules; Big Three car companies were facing declining sales and profits; and a president named Bush was increasing the number of troops in the Middle East in the hopes of securing peace. However, the mindset of this new generation of college students is quite different from that of the faculty about to prepare them to become the leaders of tomorrow.

Each August for the past 11 years, Beloit College in Beloit, Wis., has released the Beloit College Mindset List. It provides a look at the cultural touchstones that shape the lives of students entering college. It is the creation of Beloit's Keefer Professor of the Humanities Tom McBride and Public Affairs Director Ron Nief. The List is shared with faculty and with thousands who request it each year as the school year begins, as a reminder of the rapidly changing frame of reference for this new generation.
The class of 2012 has grown up in an era where computers and rapid communication are the norm, and colleges no longer trumpet the fact that residence halls are "wired" and equipped with the latest hardware. These students will hardly recognize the availability of telephones in their rooms since they have seldom utilized landlines during their adolescence. They will continue to live on their cell phones and communicate via texting. Roommates, few of whom have ever shared a bedroom, have already checked out each other on Facebook where they have shared their most personal thoughts with the whole world.

It is a multicultural, politically correct and "green" generation that has hardly noticed the threats to their privacy and has never feared the Russians and the Warsaw Pact.

Students entering college for the first time this fall were generally born in 1990. For these students, Sammy Davis Jr., Jim Henson, Ryan White, Stevie Ray Vaughan and Freddy Krueger have always been dead.

1. Harry Potter could be a classmate, playing on their Quidditch team.
2. Since they were in diapers, karaoke machines have been annoying people at parties.
3. They have always been looking for Carmen Sandiego.
4. GPS satellite navigation systems have always been available.
5. Coke and Pepsi have always used recycled plastic bottles.
6. Shampoo and conditioner have always been available in the same bottle.
7. Gas stations have never fixed flats, but most serve cappuccino.
8. Their parents may have dropped them in shock when they heard George Bush announce "tax revenue increases."
9. Electronic filing of tax returns has always been an option.
10. Girls in head scarves have always been part of the school fashion scene.
11. All have had a relative--or known about a friend's relative--who died comfortably at home with Hospice.
12. As a precursor to "whatever," they have recognized that some people "just don't get it."
13. Universal Studios has always offered an alternative to Mickey in Orlando.
14. Grandma has always had wheels on her walker.
15. Martha Stewart Living has always been setting the style.
16. Haagen-Dazs ice cream has always come in quarts.
17. Club Med resorts have always been places to take the whole family.
18. WWW has never stood for World Wide Wrestling.
19. Films have never been X rated, only NC-17.
20. The Warsaw Pact is as hazy for them as the League of Nations was for their parents.
21. Students have always been "Rocking the Vote."
22. Clarence Thomas has always sat on the Supreme Court.
23. Schools have always been concerned about multiculturalism.
24. We have always known that "All I Ever Really Needed to Know I Learned in Kindergarten."
25. There have always been gay rabbis.
26. Wayne Newton has never had a mustache.
27. College grads have always been able to Teach for America.
28. IBM has never made typewriters.
29. Roseanne Barr has never been invited to sing the National Anthem again.
30. McDonald's and Burger King have always used vegetable oil for cooking french fries.
31. They have never been able to color a tree using a raw umber Crayola.
32. There has always been Pearl Jam.
33. The Tonight Show has always been hosted by Jay Leno and started at 11:35 EST.
34. Pee-Wee has never been in his playhouse during the day.
35. They never tasted Benefit Cereal with psyllium.
36. They may have been given a Nintendo Game Boy to play with in the crib.
37. Authorities have always been building a wall across the Mexican border.
38. Lenin's name has never been on a major city in Russia.
39. Employers have always been able to do credit checks on employees.
40. Balsamic vinegar has always been available in the U.S.
41. Macaulay Culkin has always been Home Alone.
42. Their parents may have watched The American Gladiators on TV the day they were born.
43. Personal privacy has always been threatened.
44. Caller ID has always been available on phones.
45. Living wills have always been asked for at hospital check-ins.
46. The Green Bay Packers (almost) always had the same starting quarterback.
47. They never heard an attendant ask "Want me to check under the hood?"
48. Iced tea has always come in cans and bottles.
49. Soft drink refills have always been free.
50. They have never known life without Seinfeld references from a show about "nothing."
51. Windows 3.0 operating system made IBM PCs user-friendly the year they were born.
52. Muscovites have always been able to buy Big Macs.
53. The Royal New Zealand Navy has never been permitted a daily ration of rum.
54. The Hubble Space Telescope has always been eavesdropping on the heavens.
55. 98.6°F or otherwise has always been confirmed in the ear.
56. Michael Milken has always been a philanthropist promoting prostate cancer research.
57. Off-shore oil drilling in the United States has always been prohibited.
58. Radio stations have never been required to present both sides of public issues.
59. There have always been charter schools.
60. Students always had Goosebumps.
"My sense is that the main problem with general education in the sciences is that we have set ourselves the wrong goal. Rather than think about the problem of producing miniature scientists, let me advance a Modest Proposal for an alternate goal: Students should be able to read the newspaper on the day they graduate. What I am suggesting is that we think about the way our students will use their science education in later life, and then adopt goals that support those uses."

Folks: The posting below takes a new look at what kind of general science education should be made available to all college students. It is by James Trefil is the Clarence J. Robinson Professor of Physics at George Mason University. The article appeared in the Spring 2008 Liberal Education, Vol. 94, No. 1. Association of American Colleges and Universities [http://www.aacu.org/liberaleducation/index.cfm](http://www.aacu.org/liberaleducation/index.cfm) and is adapted from a presentation made in October 2007 at "Promoting the Liberal Sciences: Science as Liberal Education," a joint conference sponsored by the American Conference of Academic Deans and the Phi Beta Kappa Society. Both the article and the conference presentation are based on Professor Trefil's latest book, Why Science? (Columbia Teachers College Press, 2007). Copyright © 2008, all rights reserved. Reprinted with permission. To respond to this article, e-mail liberaled@aacu.org, with the author's name on the subject line. Rick Reis reis@stanford.edu

**Science Education for Everyone: Why and What?**
By James Trefil

The notion that a liberally educated person should know some science is well accepted these days. You would have to go pretty far in American academe to find the kind of academics C. P. Snow talked about a half century ago in The Two Cultures-the ones who were proud of their ignorance of the second law of thermodynamics. What I would like to explore in this essay is not so much the "whether" of general science education, but the "why." What exactly constitutes good science education, and how can we
recognize when our students have received it? Once we have answered this question, the answer to the "what" question-the actual content of the curriculum-is relatively easy to find.

Before going on, I need to make one point. There are (at least) two different kinds of things that go under the name of "science education." One involves the education of future scientists and engineers-an endeavor that is, I think, in pretty good shape (although improvements are always possible). The other involves the education of what I call "the other 98 percent"-the students who will not go on to careers in science and technology. It is this latter sort of education that I want to discuss. In particular, I want to ask what sort of education the other 98 percent should get in the sciences.

There is a long history of thought on this subject in both the United States and England. John Dewey set the stage for our current debate in 1910, when he argued that the proper goal of science education (what we would call today general education in science) was to create a "scientific habit of mind." Dewey was somewhat vague on the details of this goal, although his main motivation seemed to be social utility (what I will call the "Argument from Civics" below). By the 1930s, however, University of Wisconsin educator I. C. Davis had expanded Dewey's notion as follows:

We can say that an individual who has a scientific attitude will (1) show a willingness to change his opinion on the basis of new evidence; (2) will search for the whole truth without prejudice; (3) will have a concept of cause and effect relationships; (4) will make a habit of basing judgment on fact; and (5) will have the ability to distinguish between fact and theory. (Davis 1935, 117) Who can argue with that?

The problem with this sort of goal-a goal that, I suspect, the great majority of academic scientists would endorse-is that it is both completely unrealistic and totally out of line with the way science is evolving. If we have this sort of goal in mind, we will treat the purpose of general science education as being the production of students who are, in effect, miniature scientists. "If we can't make you into a full-fledged scientist," the
argument seems to go, "we'll get you as far along that track as we can." In the words of Nobel Laureate Carl Weiman of the University of British Columbia, scientists engage in the general education of students because "we want them to think like us."

The result of this attitude is the almost universal general education science requirement of "eight hours of science," with or without a laboratory, that we find in American academe. Departmentally based, these courses typically are of the "Physics (or Chemistry or Astronomy or Biology) for Poets" type, aiming to get the students through a simplified version of the main concepts of a single discipline. The problem, of course, is that anyone who has spent time in the trenches knows that very few students are going to acquire a "scientific habit of mind" in these courses, and the majority of them can be counted on to forget most of what they learned shortly after the final.

The Argument from Civics

My sense is that the main problem with general education in the sciences is that we have set ourselves the wrong goal. Rather than think about the problem of producing miniature scientists, let me advance a Modest Proposal for an alternate goal: Students should be able to read the newspaper on the day they graduate. What I am suggesting is that we think about the way our students will use their science education in later life, and then adopt goals that support those uses.

As my Modest Proposal suggests, I think that the most important use our students will make of whatever science they acquire will be in their future role as citizens. Pick up a newspaper or listen to a news broadcast any day and you will find issues that relate to science-global warming, stem cells, food additives, genetic engineering, and new advances in medicine, to name just a few examples. These sorts of issues form part of the public discourse that is the fabric of our democracy, and one of the most important goals of education is to prepare students to be active participants in it. The idea that the primary goal of general science education is to prepare students to assume the role of active citizens is what I call the "Argument from Civics."
It is important to realize that the kinds of issues that arise in public debate rarely involve scientific questions alone. Instead, the science acts as a kind of entrance ticket into the debate—a necessary background that allows a person to get to the real issues involved. Take the ongoing stem cell debate as an example. A person who has no concept of the molecular machinery of life is going to have a hard time understanding what a stem cell is and why it is important. An elementary understanding of some basic modern biology, however, allows that person to enter the real debate, which, until recently, was inextricably bound up with the moral and religious issue of whether the sacrifice of a week-old embryo to harvest stem cells was ethically justifiable. This is not a scientific question at all, but the point is that you cannot bring your personal moral calculus to bear on the issue until you know enough science to understand what a stem cell is.

As of this writing, it looks as if this particular issue may be resolved by a scientific advance (basically, the newfound ability to manipulate DNA to turn mature skin cells into functioning stem cells). I would like our students to understand the collective sigh of relief that went up in the scientific and religious communities when this result was announced in the fall of 2007.

When we take as our goal the production of students who are comfortable handling science-related issues that arise in public debate, two propositions follow immediately, both of which are profoundly out of tune with the current academic consensus: (1) the students need to know something about all areas of science, rather than a lot about a single area; and (2) the students do not need to be able to "do" science.

Take the current debate over global warming as an example of this first proposition. It involves the burning of fossil fuels (chemistry), the effect of carbon dioxide on the earth's energy balance (physics), the changes this may produce in the climate (earth sciences), and the effects that those changes may or may not have on the biosphere (biology). All of this has to be understood before we can get to the real issues in the debate, which involve questions about the level of obligation we have to future
generations, the level of stewardship we should show toward the planet, and so on. Or take another subject like the debate over the long-term storage of nuclear wastes. This involves things like the understanding of radioactivity (physics), the question of the long-term stability of the Yucca Mountain facility (geology and hydrology), and the possible consequences of the release of radioactive materials (biology).

As these examples show, if we are to equip our students to function as citizens in the increasingly complex world we are building, we will have to teach them something of all the sciences, and not have them specialize in a single discipline. I would argue that a student who takes a Physics for Poets course, and who leaves the university without hearing the term "DNA" uttered in a classroom, has been poorly prepared to carry out his or her role in American democracy. (I would say the same about a student who satisfied his or her science requirement by taking a biology course, and who never heard the term "alternate energy" in a classroom.) It seems self-evident that if we expect our students to be able to deal with the kind of complex interdisciplinary problems that arise in public debate, the very least we can do is teach them the basic principles that underlie these problems.

A common response to the notion of teaching all of the sciences is the claim that the standard type of courses really teach something called the "scientific method," and that this will magically give students the background they need to read the newspaper on the day they graduate. This argument is so silly that I scarcely know where to start commenting on it. If it were applied to any other field, its vacuity would be obvious; after all, no one argues that someone who wants to learn Chinese should study French, acquire the "language method," and learn Chinese on his or her own. If we expect our students to understand the basic principles of ecology or geology, we should teach those principles explicitly. To do otherwise is to indulge in what I call the "teach them relativity and they'll work out molecular biology on the way home" school of thought.

Incidentally, the notion that there is a magical "scientific method" explains a bizarre feature of the modern scientific community. I am referring to the fact that, outside of
their fields of specialty, professional scientists, as a group, are probably the most scientifically illiterate group in the United States. The reason is simple: scientists are never required to study science outside of their own fields. The last time a working physicist saw a biology textbook, for example, was probably in high school. If you do not believe me, ask one of your scientific colleagues how he or she deals with public issues outside of his or her field. Chances are you'll get an answer like "I call a friend," a technique I refer to as having recourse to the Golden Rolodex.

Thus, the kind of education offered in the modern, departmentally based university is not really designed to give our students—even science students—the sort of background they will need to function as citizens. The same can be said for the notion that the purpose of general education is to produce students who can do science at some level. I would argue that these sorts of skills are largely irrelevant to the goal of citizenship. The best argument I can think of to support this proposition comes from my own background, where courses with titles like "Music Appreciation" and "Survey of Renaissance Art" played a major role in my education. They taught me something about how to get more out of an opera or a visit to a museum, but nothing at all about how to play a musical instrument or produce a painting. When I really want to annoy my colleagues, I like to say that demanding that our students do real science is equivalent to stationing guards at an auditorium entrance and allowing no one to enter unless he or she can play the violin.
The way science is done today

As I suggested above, the traditional view of general education is out of touch not only with the need to produce scientifically literate citizens, but also with the way science itself is developing. Over the last thirty years, a revolution has occurred in the way research scientists carry out their jobs—a revolution whose consequences have not even been considered by those concerned with general education. I am talking about the impact on science of the availability of massive computational and data storage capability.

Throughout most of history, the ultimate limitation on the level of complexity with which we could describe the universe was the capability of the human brain. Isaac Newton, for example, was able to describe the motion of a single planet around the sun by solving equations with pencil and paper. His followers struggled (unsuccessfully) for centuries to describe a system of several planets circling a star—never mind the thousands of moons, asteroids, comets, and other stuff that is actually out there. The point is this: the real world is extremely complex, but our ability to describe that complexity has always been limited.

Until recently, that is. The human mind has produced a tool—the digital computer—that is much better than the human brain at dealing with certain kinds of complexity. Each of us can remember only so much, for example, but somewhere there is a computer (or system of computers) that can tell you every passenger flying on United Airlines tomorrow. A computer can perform in seconds a task that would take a human being hours (think of calculating your income tax, for example). What this means is that today, for the first time, we can access and store huge amounts of information about physical systems, and then manipulate that information in massive computer codes capable of producing predictions for the behavior of systems of unprecedented complexity. And, of course, as science comes to be dominated by these sorts of computer outputs, the kinds of questions that the ordinary citizen has to deal with will change.
Take the current discussion about global warming as an example. The basis for all of the predictions about the future of our planet are computer codes that go by the name of General Circulation Models (GCM). In a GCM the atmosphere and ocean are broken up into millions of boxes, and in each box the known laws of physics and chemistry are applied to predict future behavior. The computer then adds up the results of all of these calculations and makes its prediction about the climate.

To make such a model work, you have to put in thousands of different pieces of data and describe thousands of different processes. For example, ice reflects sunlight while water absorbs it, so the model has to deal with the formation of sea ice—a complex process. Clouds, vegetation, and land use changes all have to be taken into account, as do many other effects, and the final results of the calculation depend on the accuracy of your input data and the validity of your description of the individual processes (such as the formation of clouds), as well as the validity of your description of the interaction among all the processes. This is a calculation of enormous complexity, and I suspect that there is not a single individual in the world who really understands the working of the entire GCM code.

Yet every citizen is going to have to make decisions about public policy and private lifestyle choices based on his or her assessment of the validity of those computer outputs. A moment’s reflection will convince you that this assessment is actually composed of a layered set of questions, each more general than the last. The question at the bottom concerns the individual inputs into the computer model—for example, did we get the sea ice changes right? This is a purely scientific question, one probably best left to the experts. The next question involves what happens when these inputs are put into a GCM. Will the final results be sensitive to whatever uncertainties there are at the first level? At the next level, we face the problem of validation—do the descriptions of the world in the computer match the world we actually live in? This is a question that will be debated publicly by scientists, and one that the average citizen can follow. It is only after we get through all of this that we can get to the true bottom line: what are we going to do (or not do) about global warming? No matter how complex the science behind future
debates, the outstanding questions will always be layered in this way.

What background knowledge does the average citizen need to deal with these layered questions for himself or herself? I think it is clear that the standard lab-based science course is not going to get the student very far along toward this goal. Watching an ice cube melt or dissecting a (real or virtual) frog provides very little understanding of the complexities of modern computer-driven science. It is just too far from that ice cube to the output of a GCM.

There is, however, one educational scheme that I believe forms a necessary prerequisite to tackling issues like global warming. I call it the "Great Ideas" approach to teaching science. It relies on the fact that science is basically hierarchical in nature, with a relatively small number of general principles (conservation of energy, for example) forming the basis for our understanding of a wide range of phenomenon. These Great Ideas form the skeleton, the framework, of our understanding of the universe, and they span all fields of science. I would suggest that an understanding of these ideas and their interactions is what every student needs to know in order to begin acquiring the ability to deal with the issues he or she will encounter as a citizen in the twenty-first century.

The reader may or may not agree with this approach to general education in the sciences, but I think we can all agree that we need to start bringing the system more into line with the way science is done today and the way our students will encounter it in their lives. Time to get to work!

Reference

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Tomorrow’s Teaching and Learning
The Future - The Era of Engagement

Higher education is shifting from a passive teacher-centered approach to a transactional collaborative approach. Three forces of change have been largely responsible for this transformation.

The first profound change in higher education is the unprecedented advances in communications technology. In particular, the Internet has made possible a wide range of teaching and learning innovations associated with accessing educational opportunities and information. Online learning was the first step in this process of providing increased access and convenience to students. However, by itself, the Internet and online learning did not initially have the same transformative effect on higher education as it had in society generally. Approaches to teaching and learning were still dominated by information transmission techniques such as the lecture. Other forces were required to effect a transformation in teaching and learning.

The second set of changes is within the institutions themselves. There are budget
constraints, an increasing focus on research, and growth in class sizes, resulting in a commensurate loss of contact with the professor. Efficiencies are needed to address the cost of higher education while addressing quality concerns. The challenge cannot be met by simply increasing funding for higher education. This is not a realistic prospect. Institutions of higher education have begun to recognize that they are in a difficult situation in terms of reducing costs while addressing quality concerns.

The third change is the recognition and the dissatisfaction with the quality of the learning experience in higher education. It is becoming clear to many, including students, that traditional methods are unable to address the need for higher-order learning experiences and outcomes demanded of a changing knowledge- and communication-based society.

The convergence of these forces of change has created the conditions under which it is imperative that higher education seriously consider new approaches to teaching and learning. As daunting as it may seem, these approaches must address financial constraints and quality concerns while maintaining and even enhancing the core values of higher education.

These forces are multiplicative and have converged to effect fundamental change. This convergence started to take shape at the beginning of the twenty-first century. Sustained educational discourse and collaboration came to the fore, and the visionaries recognized that it was not enough to simply layer these capabilities onto conventional delivery approaches to teaching and learning. Likewise, incremental changes will not address the challenges faced by higher education. Fundamentally new approaches and designs are required. The seeds are blended approaches to learning.

Blended learning offers an approach and a way of thinking about the educational experience that avoids either/or choices and the downsides of online and face-to-face experiences. It offers a way to maximize effectiveness and efficiency. Online learning was perceived as isolating and did not fit well with the ethos of the campus-based higher
education institution. Blended learning provided an acceptable means to question traditional face-to-face learning experiences in terms of not fully capitalizing on the opportunities of the Internet, or recognizing the potential of sustained online communities of inquiry. Alternatively, blended learning offers a way to extend and to enhance the educational experience in an effective and efficient manner.

As a result, blended learning has emerged as a major break-through to enhance both the quality of the teaching and learning transaction and the cost-effectiveness of designing blended learning courses. The early advocates, scholars, adopters, and senior administrators now are converging on a solution to the dilemma of addressing costs and enhancing learning. Most important, incentives are being put in place, and there is an increased adoption of blended designs by those in the mainstream of higher education. A critical mass of blended learning course designs serve as exemplars, having received the serious attention of leaders in higher education.

Blended approaches to learning are not just more trendy technology-driven ideas and gadgets that will fade as fast as they come. Blended learning questions conventional practices and the belief in the lecture as an effective approach to engage students in critical and creative thinking and learning. Blended learning designs illustrate how higher education can revisit and strengthen the fundamental values and practices that have been seriously compromised over the last half-century. Serious discourse about blended learning has reached the highest levels of academia.

>From the students' perspective, rapid societal and technological changes have had a commensurate impact on how they think and learn. But it is not the talk of Net Geners, "digital natives," and Millennials, nor is it the suggestion that students want technology for technology's sake. In fact, it has been shown that higher education students are not totally swayed by technology and do have a discerning perspective about technology. Moreover, they appear to be more willing to challenge traditions. Certainly, undergraduate students have begun to question the quality of their educational experiences and are a major catalyst for change.
The coauthor of a recent study on students and technology stated that students "want to be linked in the network, but they want a lot of face-to-face time" (Kvavik, 2005). Moreover, students want this interaction not as an "extra" tagged onto the "normal" workload. To be purposeful and meaningful, such interaction must be integral to learning activities that allow reflection. Net Geners or Millennials are also much more predisposed to collaborative learning experiences (Dziuban, Moskal, & Hartman, 2006; Howe & Strauss, 2000). Students are knowledgeable about technology. They understand and want to use it when it makes sense and when it can enhance the collaborative learning experience. Changing student characteristics and expectations create the condition and reason for adopting blended approaches to course design. However, blended learning designs must get it right, and they must make sense to the demanding and critical Net Geners. Students want to be actively and collaboratively engaged in relevant learning experiences that have meaning and practical implications. In short, they want both face-to-face and online learning experiences that connect them to other students and the instructor. This represents a serious challenge for instructors and designers in meeting these expectations.

The forces cited above are flattening the educational world, not dissimilarly to the way the rest of society has been flattened (Friedman, 2005). Blended learning is about flattening the hierarchical control of the classroom with increased interaction and engagement. Students are being asked to assume increased responsibility for their learning but must be given commensurate control of the learning experience. Faculty are being encouraged to adopt new approaches, incorporate collaborative tasks, and develop technological skills. Institutions are being asked to provide attractive and welcoming common spaces for individual and collaborative inquiry. Classrooms will need to become more open, and learning spaces will need to become more flexible. Although for many this change is barely visible on the horizon, the transformation has begun.

The challenge is to reexamine the core values of higher education so that they will be
enhanced and not lost. The goal is to create, enhance, and sustain the vitality of communities of inquiry. Higher education will be the poorer if the result is to simply deploy blended learning designs to find greater efficiencies but without the commensurate qualitative gains of purposeful collaboration. Frankly, higher education has to do better to improve the design, the facilitation, and the direction of meaningful learning experiences. There is no longer any reason to use the lecture to simply transmit information. Students can and should come to "class" armed with the most current information and be ready to engage in the critical and creative process of making sense of the information followed by an exploration of the implications and applications.

Blended learning is the organic integration of thoughtfully selected and complementary face-to-face and online approaches and technologies. As a result, blended learning redesigns will multiply exponentially resulting in variations and related innovations that will spawn even further advances. The word blended is used to suggest that it is more than a bolting together of disparate technologies with no clear vision of the result. Blended approaches to educational design recombine concepts that were previously considered contradictory, such as collaborative-reflection and asynchronous-community. The primary measure of the impact of blended learning will be the qualitative shift in the process and outcomes of learning itself. The results will be most readily determined by the satisfaction of our students and the success of our graduates.
Folks:

In this month’s Carnegie Perspectives looks at the poor retention rates of low income college students. It is by Vincent Tinto, a recent visiting scholar at the Carnegie Foundation for the Advancement of Teaching. The posting is #41 in the monthly series called Carnegie Foundation Perspectives. These short commentaries exploring various educational issues are produced by the CFAT <http://www.carnegiefoundation.org>. The Foundation invites your response at: CarnegiePresident@carnegiefoundation.org.

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When Access is Not Enough

(Introductory note from Pat Hutchings, vice president, CFAT). Over the past several years, the Carnegie Foundation has had the privilege of working with community colleges in California. That work has brought home both the great strength of these institutions and the challenges they face. It has also created occasions for us to interact with others working in this arena, including Vincent Tinto, distinguished university professor and chair of the Higher Education Program at Syracuse University, and a visiting scholar here at the Foundation last year.

In this piece, Vincent shares insights informed by his long interest in student success, especially student retention, and by his recently completed four-year study of basic skills learning communities on 19 campuses across the country, including 13 two-year institutions.

Pat Hutchings
August 2008
by Vincent Tinto

While many observers applaud the fact that the access to higher education for low-income students has increased over the past two decades and the gap in access between them and higher income students decreased, few have pointed out that the gap in the completion of four-year degrees has not decreased. Indeed, it appears to have increased somewhat. That this is the case reflects a range of issues not the least of which is the well-documented lack of academic preparation which disproportionately impacts low-income students. The result is that while more low-income students are entering college, fewer are able to successfully complete their programs of study and obtain a four-year degree. For too many low-income students the open door to American higher education has become a revolving door.

What is to be done? Clearly there is no simple answer to this important question. Yet it is apparent that unless colleges are able to more effectively address the academic needs of low-income students in ways that are consistent with their participation in higher education, little progress is possible. But doing so will be not achieved by practice as usual, by add-ons that do little to change the experience of low-income students and the ways academic support is provided. Too many colleges adopt what Parker Palmer calls the "add a course" strategy in addressing the issues that face them. Need to address the issue of student success, in particular that of new students? Add a course, such as a Freshman Seminar, but do little to reshape the prevailing educational experiences of students during the first year. Need to address the needs of academically underprepared students? Add several basic skills courses, typically taught by part-time instructors, but do nothing to reshape how academic support is provided to students or how those courses are taught. Therefore, while it is true that there are more than a few programs for academically underprepared students, few institutions have done anything to change the prevailing character of their educational experience and therefore little to address the deeper roots of their continuing lack of success.
Fortunately, there are currently some who have, and their efforts could point the way for other colleges to follow. These are efforts that take seriously the task of reforming existing practice. Among these is the use of supplemental instruction that connects academic support to the classrooms in which students are trying to learn. For example at El Camino College in California, where students—particularly low-income students—approach college one course at a time, supplemental instruction is aligned with a specific class and its goal is to help students succeed in that one course. In other instances academic support is embedded in a course as is the case in the iBest initiative at Highline Community College in the State of Washington.

The adaptation of learning communities for underprepared students in which basic skills courses are linked to other courses in a coherent fashion is another effort that seems to pay off. At LaGuardia Community College in New York, what is being learned is that basic skills courses can be applied to the task of learning in the other course(s) to which those courses are linked. Students participating in LaGuardia’s learning communities support one another, while faculty also work with each other and the students, ensuring that assignments across courses are related. The result? Students are more likely to improve in both performance and persistence.

Other efforts that focus on the teaching of basic skills courses are also bearing fruit. In California and in several other states, faculty are coming together to explore how they can restructure the teaching of basic skills to better promote the success of their students. An initiative by the Carnegie Foundation and The William and Flora Hewlett Foundation, Strengthening Pre-collegiate Education in Community Colleges (SPECC), is one of these. At the SPECC institutions, collaborative faculty inquiry groups are exploring different approaches to classroom instruction, curriculum, and academic support. Their inquiry into the effects of these approaches engages a wide range of data, including examples of student work, classroom observations, and quantitative campus data.
What these and other efforts have in common is the recognition of the centrality of the classroom to student success and the need to restructure our efforts and the support students receive in those places of learning which, for most low-income students, may be the only place on campus where they meet each other and the faculty and engage in learning. Lest we forget, most academically underprepared low-income students do not think of success as being framed by the first year experience, the second year experience and so on as do many academic researchers. Rather it is, in their view, constructed one course at a time. You succeed in one course, then move on to the second course, and so on. If our efforts to promote the success of low-income students, especially those who enter college academically underprepared, are to succeed, our efforts must be directed to those courses and the classrooms in which they take place, one course at a time.

What these and other initiatives also demonstrate is that the success of academically underprepared students does not arise by chance. It does not arise from practice as usual, but is the result of intentional, structured, and proactive efforts on their behalf that change the way we go about the task of providing students the support they need to succeed in college. Without such support, the access to college we provide them does not provide meaningful opportunity for success.

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Education Redesign


Testing, Evaluation, Assessment


Science and Related

- The Edge of Medicine, William Hanson, Palgrave MacMillan, 2008

Cognitive Aspects

- The Brain that Changes Itself, Norman Doidge, Penguin Books (2007)
General Topics of Interest

- A Whole New Mind, Daniel H. Pink, Riverhead Books (2005)