Digital Scholarship Comes of Age
New questions about credibility, modes, and readership

B r a d d S h o r e was skeptical about starting an electronic journal. Scholars would discount it. Authors would avoid submitting material to an upstart found only on the web. This was not the legacy he imagined for the ten-year-old Center for Myth and Ritual in American Life (MARIAL), which will close in November 2010.
“I’m in my sixties, and for almost my entire career, print was it,” says Shore, the Emory College Distinguished Teaching Professor in Anthropology and director of the MARIAL Center. He is also the chair of Emory College’s Tenure and Promotion Committee. “I had big doubts that an online publication would be viewed with equal seriousness as a print publication.”

Shore soon realized that print would be too expensive, and he reconciled himself to the digital option. After meeting with the staff of the library’s digital scholarship initiative and Southern Spaces, Emory’s preeminent humanities e-journal, Shore grasped that the digital path offered vastly more potential than he’d originally thought. His sense of resignation was soon overtaken by unexpected enthusiasm.

“Not only were we excited by the possibility of being able to run a journal relatively inexpensively, it also became clear that an e-journal would be far more flexible and impressive than anything we could do in print,” says Shore. “Putting digital articles together is something extraordinarily refreshing and allows us to explore family life from many different angles and media. The whole is really more than the sum of its parts; the whole is something we’ve never had before.” The peer-reviewed Journal of Family Life began publishing last February.

For junior faculty, going digital could have some real career consequences, because tenure and promotion committees by and large have given a halting, and sometimes hostile, reception to the digital genre.

In the broadest sense, any journal that is accessible by digital technology—usually meaning the web—can be considered an electronic journal. But such an expansive definition includes any print journal that has just been digitally replicated. That describes virtually all science and medical journals from the major publishing houses and represents little more than a change of vehicle, but not content. To most scholars, a true e-journal must have emerged, fully formed, as a digital animal with no print forebears. Another distinguishing feature of many e-journals is that they experiment with some type of open-access model, thereby eliminating subscription and submission fees.

Shore’s early concern about the status of e-journals was not entirely ill-placed. As a class, e-journals have struggled to earn the prestige and credibility afforded traditional journals. Some hesitancy probably stems from the usual misgivings that hound the new and unusual. Academia, a cautious group to begin with, gravitates toward resources with high visibility and stability rather than innovative forms of presentation. For junior faculty, though, going digital could have some real career consequences, because tenure and promotion committees by and large have given a halting, and sometimes hostile, reception to the digital genre.

A May 26 article in Inside Higher Education describes what may await junior scholars who submit digital work to tenure review panels: “Even as the use of electronic media has become common across fields for research and teaching, what is taken for granted among young scholars is still foreign to many of those who sit on tenure and promotion committees. Many tenure review procedures are based on an assumption that a junior professor’s work can be divided easily into teaching, research and service.” One committee insisted on reviewing only a few selected pages printed from a multimedia digital project. The executive director of the Modern Language Association, Rosemary Feal, likened it to evaluating nominees for an Academy Award based on twenty still shots.

Even though the Modern Language Association and the Humanities, Arts, Science and Technology Advanced Collaboratory issued a preliminary guide for evaluating online scholarship in the humanities, Harry Rusche, Arthur Blank Distinguished Teaching Professor in English, warns his students to approach the world of digital scholarship at their own peril. Tenure committees, he says, “still count pages, they count titles, they look at the places where things are published.” Rusche is no Luddite. He has earned a reputation as a pioneer who applies new technology to teaching and research. When he was promoted to full professor in 1998, all of his relevant scholarship was already digital. He had to recommend qualified experts so that the promotion committee could evaluate his work.

The e-journal is just one mode of digital scholarly communication, a domain that also encompasses databases, professional and scholarly hubs, encyclopedias, dictionaries, discussion forums, and blogs. E-journals, though, are most easily compared and contrasted with...
A growing array

All of the digital publications that originate at Emory are open access, meaning they are available free of charge through an Internet connection.

Molecular Vision
http://www.molvis.org

Molecular Vision is a peer-reviewed journal dedicated to molecular biology, cell biology, and the genetics of the ocular and cortical visual systems. It represents Emory’s first electronic journal, dating back to October 1995. Submissions that include multimedia elements are accepted. The journal instructs authors to “write for the widest possible audience. The Molecular Vision readership is diverse. People who are not in your field will want to know if there are techniques or ideas that are applicable to their own work.”

Voyages
http://www.slavevoyages.org

This collaborative database contains records of nearly 35,000 transatlantic slaving voyages that carried more than 10 million Africans between 1514 and 1866. The interactive website also identifies more than 67,000 Africans aboard slave ships by name, age, gender, origin, and place of embarkation. Voyages allows users to create listings, tables, charts, and maps based on database searches. It debuted in December 2008.

Journal of Family Life
http://www.journaloffamilylife.org

The peer-reviewed multimedia journal is described as “a gathering place for ideas and information addressing all aspects of American Family Life.” Submissions are encouraged from all disciplines, including psychology, family studies, religious studies, theology, anthropology, and literature. Poetry and fiction are also welcomed, as are submissions from non-academics, such as journalists, novelists, parents, and observers. It began publishing in February 2009.

Practical Matters
http://www.practicalmattersjournal.org

Through a variety of media and genres, this journal examines the study of religious practices, the field of practical theology, and the intersection of the two from a variety of disciplinary perspectives. Practical Matters is an academic journal with a diverse audience and content and contains both peer-reviewed and non-peer-reviewed material. The journal encourages submissions about diverse religious traditions from those both inside and outside academia. It began publishing in spring 2009.

Other Resources

Current Models of Digital Scholarly Communication
Results of an Investigation by Ithaka for the Association of Research Libraries

Directory of Open Access Journals
http://www.doaj.org


The Evaluation of Digital Work (Modern Language Association Guidelines)
http://www.philosophi.ca/pmwiki.php/Main/MLADigitalWork
People are experiencing the world through multiple media. That may mean we need to think about different forms of scholarship.

—Liz Bounds, Associate Professor of Christian Ethics, Candler School of Theology, Cofounder of the Electronic Journal Practical Matters

Academic Exchange: What audience are you aiming for with Practical Matters?
Liz Bounds: We’re trying to aim at some different audiences, which is tough. There’s one audience—scholars in the field—who might hear about this in more conventional ways, like at a scholarly meeting. But we also wanted to be accessible to people who might be scholars in other fields, or who might not be scholars at all. The Internet makes it possible to follow a connection, and you go, Look, there’s this whole journal that’s doing all this stuff. The web-based platform and the nature of the medium enable it to be used in ways we don’t fully anticipate yet.
AE: The journal is staffed by students in the Graduate Division of Religion. How is it structured and funded?
LB: At the moment funding is primarily from a Lilly Foundation grant, which got us started. Lilly’s desire is that we ultimately be self-sufficient. It’s been a remarkable coincidence that the emergence of this journal happened with the emergence of the digital initiatives at the library. That support from Emory has been critical. It includes server support and staff support. Production and contents of the journal are managed by the Practical Matters staff, but the enabling platform and ability to use that platform are what Emory has contributed. These are skills that are going to start changing the criteria for what is scholarship. It’s going to be slow, but it’s going to happen.

We, like Southern Spaces, are a student-run journal, but we’re not a student journal. That’s a huge distinction. We have a faculty advisory board that periodically reviews the journal and gives feedback. But the complexity and rapid changes in the digital environment are such that we need more than that, so now I am serving as a faculty advisor.
AE: How is digital technology changing scholarship?
LB: It’s going to have to change for People are experiencing the world through multiple media. That may mean we need to think about different forms of scholarship.

In terms of shaping scholarship, the technologist needs the scholar, and the scholar needs the technologist.

—Connie Moon Sehat, Senior Strategist of Digital Scholarship Initiatives, Woodruff Library

AE: What are you finding?
CMS: First, because this lab is going to be very grounded in the libraries and in collaboration with the Manuscripts, Archives, and Rare Book Library, I think there’s the potential to create an organization with a unique archival strength in comparison to other initiatives going on around the country. A second way that the library dimension might offer particular insight, especially as digital technologies continue to impact research disciplines, involves information access: how does one create an appropriate research environment that allows access to information in a way that understands its potential uses? For example, how do scholars of history versus medicine use information, and what would it actually mean to be collaborative about their research?

It has been my experience that in terms of shaping scholarship, the technologist needs the scholar, and the scholar needs the technologist. In a way, it’s just data to the technologist. But interpretive problems, understanding how this could affect methodologies in research or pedagogy, that’s definitely in the scholar’s field. And yet the scholar can’t even imagine some of the technological possibilities that are out there now. So one of the things that...

Academic Exchange: Explain your role in the library.
Connie Moon Sehat: I’ve been asked to help advise the creation of a research laboratory where what we’re calling digital scholarship would happen. I am also involved in creating a certificate curriculum in digital scholarship and media studies in the graduate school for Ph.D. students. I think the basic question is, how are these technologies going to transform research and teaching methodologies for traditional disciplines, whether they’re history, biology, or business? What I’ve been doing is trying to assess the strengths that are particular to Emory.
digital scholarship tries to do is be interdisciplinary. In our case, the goal is to create an actual, physical space that might mesh scholars and technologists with librarians, invite them to sit together, and let that interaction allow for creative possibilities.

**AE:** What do you think it will take for digital scholarship to gain greater credibility?

**CMS:** There are now small, peer-reviewed venues and journals devoted to digital humanities. Additionally, some projects have gained credibility through the participation of scholars who vet the information. As any young field comes into maturity, peer review processes are put in place and more centralization happens, and all this is happening for digital scholarship. I think the real pressure that digital scholarship presents is, what would it mean to deny somebody tenure if, for example, they spent six years of their life creating a large digital project that was submitted to a peer review process and accepted by main scholars in that field but wasn’t an individual effort? It took maybe three scholars, plus a team of technologists. Should that work be counted for tenure? I think people in digital scholarship say yes. If you can cite it, if it has intellectual creativity and value, it’s a production, it’s stable, it’s vetted, why should it not be accepted just as well as a monograph?

That’s the major challenge: how do we move to the next level and actually become a field or discipline proper, asking the question, What is online scholarship? And the definition shifts. Some people will say digital scholarship is purely about the tools. Others say it’s mostly about the questions it raises in terms of the politics and ethics of knowledge. I think it’s addressing the opportunities and problems presented by technologies to traditional methodologies in research and teaching. I can’t see that it’s only about tools. There’s a larger question at stake. The tools are a response to technological problems, such as the abundance of information created by our computers.

**AE:** Do you think the monograph has a future in electronic form?

**CMS:** Yes, but there is a tremendous amount of data scholars are going to have to deal with. For instance, if you want to be a scholar of the Clinton or George W. Bush administration, that’s 33 versus 140 terabytes of information. Even if you’re a scholar of the classical world, you have increasing networks and amounts of data at your fingertips; how are you supposed to have access to all that data? At what point does it make sense only for a single person to try to do a monograph with all of that?
traditional journals because many are refereed and follow clearly delineated editorial guidelines and missions. These “born digital” entities represent an entirely novel instrument of scholarly exchange. Authors suddenly find themselves able to layer text with photos, video, audio, maps, interactive graphics, data sets, or archival material, none of which have paper-based analogues. E-journals also scramble the rigidly linear timeline of print journals by paring down the interval between submission and publication to weeks instead of months.

E-journal creators are making the rules of digital scholarship as they go. Allen Tullos, an associate professor in the Institute of Liberal Arts and senior editor of *Southern Spaces*, knew that to stand a chance of success the journal had to preserve expert peer review. But who do you get to referee a photo essay or video that explores both history and literature, and what about a submission that incorporates both elements on top of abundant text? Tullos built a roster of reviewers with specialized skills. “We send photo essays to reviewers just as if they were written pieces about history or literature,” Tullos says. “For interdisciplinary pieces, which are the norm for us, the reviewer might be an expert in documentary film studies and also familiar with oral histories and video applications.”

Tullos routinely asks reviewers to recommend colleagues to add to his list—an idea he got from the editors of *Molecular Vision*, Emory’s oldest e-journal (1995) and its solitary representative in hard science. After launching, the journal, which covers the biology and genetics of visual systems, struggled to attract submissions from leading researchers. It had “zero reputation and zero impact factor (a measure of a journal’s importance within its field),” according to Robert Church, a professor of ophthalmology and one of the founding editors. Editor-in-chief and cofounder Jeff Boatright, an associate professor of ophthalmology, remembered when one of the field’s foremost researchers, and also a friend, joked over a beer that *Molecular Vision* was a journal of last resort. “Since then, he’s published five articles in the journal,” says Boatright. Eventually, and in no small part by careful assembly of a respected editorial board, *Molecular Vision* cemented its place in the top ranks of ophthalmic journals. Now it receives about five hundred submissions annually, often from top names in the field.

### A Generational Shift

With a generational change, scholars will fully embrace digital scholarship, and increasingly they will earn tenure for doing it, says Tullos. He notes that one of the *Southern Spaces* editorial board members was appointed to a chaired faculty position in digital history at the University of Nebraska. Tenure committees will naturally become better prepared to consider digital projects because they will have grown up, academically, with the new media.

E-journal reputations will also sort themselves out. “All of the digital journals need to establish themselves and prove that they are for real,” says Marshall Duke, Charles Howard Candler Professor

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**A Feast of Honors**

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Remarks and a toast from President Jim Wagner and Provost Earl Lewis

We know that our list of 2009 books is incomplete. If you published a book this year, please send the title, author(s) or editor(s), and publisher to Allison Adams, editor of the Academic Exchange, at aadamo2@emory.edu. Likewise, if you know of a colleague who published a book this year, again, please let us know. The list of honorees will also be published on the AE website.

RSVP by December 4: Roopika Risam, rrisam@emory.edu

Hosts: The Center for Faculty Development and Excellence, the Academic Exchange, and the University Research Council
Digital scholarship, some argue, has already expanded the definition of what constitutes scholarship itself, and therefore should give rise to updated measures for evaluating scholars and their work. A blog may spark interesting debates, but it’s hard to argue that it is scholarship. It’s not much of a stretch, though, to look afresh at other digital work, such as collaborative data collections. At Emory, the Voyages transatlantic slave trade database stands as an example. It documents almost 35,000 slave ship voyages responsible for the transport of more than ten million Africans. Such meticulously compiled resources open questions about how they might be judged and by whom.

“What would it mean to deny somebody tenure if, for example, they spent six years of their life creating a large digital project that was submitted to a peer review process and accepted by main scholars in that field but wasn’t an individual effort,” says Connie Moon Sehat, senior strategist of digital scholarship initiatives for the Woodruff Library. “It took maybe three scholars, plus a team of technologists. . . . If you can cite it, if it has intellectual creativity and value, it’s a production, it’s stable, it’s vetted, why should it not be accepted as well as a monograph?”

Determining what qualifies as scholarship will become intertwined with questions of accessibility and audience, and for what, precisely, a university grants tenure, says Liz Bounds, an associate professor of Christian ethics and faculty advisor of the e-journal *Practical Matters,* whose first issue was published this past spring. (Bounds emphasizes that while *Practical Matters* is staffed by graduate students under faculty supervision, as is *Southern Spaces,* it is not a student journal.) Digital media allows scholars to reach beyond academia, and *Practical Matters* wants to do just that. “We wanted to try to keep the twin goals of greater access and academic standards,” says Bounds. “This shift links with our conversation at Emory about the public dimension of scholarship, which has not been traditionally considered important for tenure.”

Time and a changing of the academic guard will lead to more favorable attitudes toward public engagement with scholarship, says Gary Laderman, chair of the Department of Religion, professor of American religious history and cultures, and co-executive editor of the online magazine *Religion Dispatches.* “Younger scholars are more actively seeking out different kinds of outlets for their knowledge, which is a direct result of the digital revolution. All of these things are merging and have an impact on what it means to be a scholar, what it means to be engaged in public scholarship, and what your responsibilities as a scholar are. It’s such a challenge for young scholars who are concerned about getting tenure. We want to make sure where they get published is going to count in some way.” — STEVE FRANDZEL

**The Academic Exchange**

**DIGITAL SCHOLARSHIP COMES OF AGE**

of Psychology and founding editor of the *Journal of Family Life.* “Over time, a ranking or tier system will develop for online journals, and we’ll know that journal X is more important than journal Y.”

Interested in topics like these? They have all been covered recently in the *AEWeekly,* a weekly email news supplement to the *Academic Exchange.* Subscribe, and every Monday afternoon you’ll receive bios on new faculty, short reviews of new books by Emory authors, a featured “website of the week,” information on faculty resources, notices of upcoming lectures, and excerpts from them later on, in case you missed being there in person.

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The Evidence of Transformation
Three faculty experiences of learning outcomes assessment

When Emory underwent its Southern Association of Colleges and Schools (SACS) accreditation affirmation in 2003, phrases like “learning outcomes assessment” were not a big part of the vocabulary. Since then, however, the national conversation about quality and accountability in higher education, heightened by the 2007 report of then-Education Secretary Margaret Spellings’s Commission on the Future of Higher Education, has taken on greater urgency.

SACS and its regional counterparts, which serve as the gatekeepers between institutions and federal student aid, are calling for much more evidence than ever before on what students are actually learning. But how to ask this question—and exactly what question it is that needs asking—is provocative and challenging.

Emory is now gearing up for its fifth-year interim report to SACS, due in March 2010. The university must document that assessment of student learning is taking place in all its educational programs, as well as show that assessment initiatives are being established in educational programs and administrative and educational support services before its next full reaccreditation review in 2014.

Faculty are necessarily called upon to be a part of this process, and that work is well underway. The Academic Exchange invited three faculty members from disparate fields and with different student populations to reflect on their experiences assessing student learning in their programs. On these four pages are the remarks of Sheila Tefft of the Journalism Program, Gordon Newby of Middle Eastern and South Asian studies, and Keith Wilkinson of the Graduate Division of Biological and Biomedical Science on the work of thinking through those processes more systematically as the SACS interim report approaches.

Knowledge and Application
Learning assessment in the Journalism Program

Journalism students need to be critical thinkers, academically and professionally. So how do we assess learning that leads to critical thinking with direct application in the professional world? In the new environment of multimedia journalism, students must know the fundamentals and employ them in professional practice.

In the Emory Journalism Program, students combine journalism studies with a major in the liberal arts and sciences or business. News reporting and writing are cornerstones of the journalism classroom. Proficiency in editing, news style, punctuation, grammar, and spelling go hand-in-hand with writing skills.

Journalism history, ethics, and law are additional priorities, laid down when journalism education was revived at Emory in 1996.

Students learn the fundamentals with the technology and formats needed to write and report news for different media.

The Journalism Program will complete its first assessment of these learning goals during the 2009-2010 academic year. The assessment will focus on both students’ knowledge of journalism and ability to apply that knowledge meaningfully in their careers.
Learning to Follow the Butterfly
How dynamic learner outcomes helped me to be a better teacher

Gordon D. Newby, Professor and Chair, Middle Eastern and South Asian Studies

When I started teaching, a little over four decades ago, I modeled myself on some of my best teachers. I lectured, tested, and assigned research papers that came in close to the end of the course. The sum of the student contributions, tests, quizzes, and term papers—plus some show of interest by asking questions in class or visiting me in my usually lonely office hours—was translated into a grade. That grade, I believed, as had my teachers before me, was the sufficient indicator of the transfer of knowledge from me to my students.

Over time, I came to doubt that certainty. After several decades in private and public university teaching, I began thinking about what we know as learner outcomes and assessment in spring 1994, when I joined the late Professor John Fenton in teaching a course in Comparative Sacred Texts. That fall, Professor Vernon Robbins joined the course, and Professor Laurie Patton joined in 1996, after Professor Fenton’s death.

Our challenge was to construct and teach a course to Emory freshmen that compared the sacred texts of three, four, or sometimes five religious traditions, when, by their own admission, most of the students had only a partial grasp of the sacred texts of their own tradition or no tradition at all. “I don’t have a religion; I believe in science,” I remember one student saying.

In our first attempt, we taught the course “cafeteria” style with samples from each tradition, some discussion (usually in the form of answering the “I don’t understand . . .”), questions, quizzes, and tests. It became clear that this approach was not working. Students kept each tradition in the separate compartments of the cafeteria tray we provided, and Judaism did not touch Hinduism or Islam. And the tests gave only a static picture of what the students were supposed to get from the course, much like pinning a butterfly to a matte when the object was to examine butterfly migration—that is, how to get out of the fact-based examination and find a way to teach and assess the dynamic act of comparison.
In order to get out of that static mode, we wanted to involve students with the faculty as a community of learners. This approach put us, as instructors, in the middle of the learning process. We decided to start with a tradition most familiar to the majority of Emory freshmen, the Judaism of the Hebrew Bible. We had ascertained that this was the most familiar by asking each student to write his or her own view of the creation of the universe using a set of descriptive tasks:

1. Describe the sources of power that brought the created world into being.
2. Explain the processes by which these sources of power caused things and beings to be.
3. List the order in which things came into being in the created world.
4. Describe the relation of humans to the sources of power and to other created things and beings. In other words, describe the order of the universe.
5. Describe the higher and lower status (the hierarchy of things) in the universe.

We then had the students read the first two chapters of the Book of Genesis and write and post on LearnLink their descriptions of creation as set forth in those two chapters. Following this, we had the students read a Rabbinic description of creation that added many more details to the Genesis account and perform the same descriptive tasks. When they had done that, they then were asked to perform comparative tasks:

- Compare the sources of power in the religious tradition assigned for the day to the sources of power you identified in the tradition or traditions you explored previously in this unit on creation.
- Compare the processes by which sources of power caused things and beings to be in the religious tradition assigned for the day with the means you identified in the tradition or traditions you explored previously in this unit on creation.
- Compare the order in which things came into being in the religious tradition assigned for the day with the order you identified in the tradition or traditions you explored previously in this unit on creation.
- Compare the relation and hierarchy of things and beings in the universe the religious tradition assigned for the day to the relation and hierarchy you identified in the tradition or traditions you explored previously in this unit on creation.

We then followed this through Hinduism, Christianity and Islam, in that order, building on the comparisons, so that, in the end, the best of the students could compare across all of the traditions and across all of the course’s topics: creation, end of the world, sacrifice, and religious practice.

We encouraged students to post their assignments on the class LearnLink conference (and rewarded them for doing so). This fostered self-assessment and group cooperative learning. Unit tests were, of course, held in confidence between the instructors and the students. Through this process, we could see that we were teaching the fundamentals of reading, careful analysis of source materials, and the use of textual details as evidence in presenting an argument. Additionally, the students found that they had a better picture of their performance at any given point in the course. Best of all, we knew what we wanted our students to take away from the course and whether we were helping them to that end. By concentrating on assessing the dynamics of learner outcomes, we found that we were more successful as teachers and more of our students lived up to our expectations.

As an extension of our experience with this class, the Department of Middle Eastern and South Asian Studies is using a similar learner outcome model in structuring our core major courses with good results and less trepidation about assessment in the upcoming SACS review.

At the Heart of Learning
Assessing graduate student education in the biological sciences

KEITH WILKINSON, DIRECTOR, GRADUATE DIVISION OF BIOLOGICAL AND BIOMEDICAL SCIENCES, AND PROFESSOR OF BIOCHEMISTRY

Preparation for the upcoming SACS accreditation process has presented us at Emory with the opportunity to formalize our assessment of educational strategies. As director of the Graduate Division of Biological and Biomedical Sciences (GDBBS), I have recently become more educated myself, this time in the formalities of learning assessment. This exposure to methods of assessment has revealed that we already do most of what is necessary, albeit in a rather reflexive and less-than-
systematic way. We are now being asked to examine our assessment processes and to make them more formal and standardized.

At the heart of learning assessment are three questions: What do we want our students to learn? How do we determine whether our students are learning? Can we recognize and respond to shortcomings in our educational methods? A number of direct and indirect methods of evaluation go into answering these questions.

In the GDBBS we have defined several learning goals. We hope that all graduates will be able to

- critically evaluate scholarship and research in their field,
- formulate and prepare research proposals for funding,
- conduct independent research using methods appropriate to the field or discipline, and
- communicate the results, findings, or new interpretations of their scholarly work to peers, students, and the general public.

To assess progress toward these learning goals we use a number of exercises and assessment tools that each address one or more of the goals. No one measure is definitive, and several address the overall achievements of the students.

- Communication skills are vital to the success of any professional. Our students have many opportunities to hone those skills, and we often evaluate their presentations by soliciting written audience feedback and faculty comments. Students gain experience in communication by presenting published research papers in the first year, continuing journal club presentations in their chosen fields, and presenting their own research as more senior students.

- In addition, written grant proposals are part of many courses in the GDBBS, and every student takes a lead role in writing their research publications, giving their advisor an opportunity to help hone their logic and language.

- Teaching is also a form of communication, although to become accomplished one needs training and additional aptitude and skills. All graduate students at Emory must teach, and both their teaching supervisors and students offer observations and suggestions. Many other opportunities to “teach” arise in mentoring undergraduates and junior graduate students, as well as in presentations at laboratory meetings and scientific meetings. The best teachers seek out additional teaching activities, and these can be important for those seeking jobs in teaching.

- Research accomplishments are measured in several ways, including grades in dissertation research, qualifying examinations incorporating a research proposal, regular dissertation committee meetings, the oral defense of the thesis, and publications in scholarly journals.

- Finally, a measure of overall success is afforded by the placement and career advancement of a student after leaving Emory. We look for the quality of the postdoctoral experience that most students undertake upon graduation, the record of continued employment is some aspect of the sciences, and the level of appointment held by the students five, ten, and fifteen years after graduation.

In spite of this rather lengthy inventory of assessment tools, most graduate programs lack consistency in the application of these tools and carry out only cursory global comparisons of all students. This makes it difficult to identify common mistakes in our approaches and prevents us from gaining a larger picture of how our efforts succeed or fail. Nonetheless, the potential of most students is broadly recognizable by the time they graduate. External measures of post-graduate success include the student’s publication history, the quality of their initial placement, and the nature of their eventual career trajectory.

Our response to the results of these evaluations is as crucial to the process as the evaluations themselves. Our curriculum is routinely altered as shortcomings are identified. For instance, we have begun to provide more formalized training in grant writing, have sought to place students in the laboratory more quickly in response to lengthening “time-to-degree” statistics, and have greatly amplified our coverage of non-academic careers for our students.

These moves seem to pay off. Nearly a fifth of our students submit fellowship applications every year, and the success rate for funding these applications is 50 percent, higher than the national norm of about one third. Similarly, the expanded coverage of non-academic careers has challenged some of our faculty to rethink the definition of a “good” placement; no longer is a career in the professoriate the only quality outcome.

But ultimately, and perhaps in spite of whatever we do in formal coursework and evaluation, there are three traits that seem to correlate with success: aptitude, curiosity, and hard work. These qualities can be groomed and nurtured but probably not taught. Perhaps we should consider modifying the admission and evaluation processes to take this into account. If we could learn how to assess these traits, we could admit more students with a high probability to succeed. If we focus our energies on nurturing these critical traits, then we will have optimized the education we provide.
The Perils of Peer Review
It’s very easy to cast [peer reviewers] as enemies because they have pointed out weaknesses, and we don’t want to hear that. These weaknesses entail significant amounts of work on our part. It’s very easy to be dismissive and say, There’s something wrong with this person—they’re unfair, they didn’t bother to read my paper, they don’t like this area. It conserves energy on your part to take that sort of interpretation. The harder interpretation to live with is to say, These people saw something in my paper that needed to be done, and darn it, I’ve got work to do. . . .

There’s also a risk to always sending a paper to the most visible journals. Your earliest draft of the paper, before it’s been rejected several times, is probably not as good as the draft after you’ve received some feedback. If you send this early draft to a highly visible journal, your odds of getting it accepted are not so good. You might send it to a specialty journal or a lower-tier journal, and you might have a better chance. The problem is a sort of tipping point. If you send it to a less visible journal and it gets accepted, you feel, Oh, I had a chance. But if you send it to the top one and it gets rejected, you say, That paper wasn’t really ready for the top; I should have waited. This is a difficult dilemma, but there is a resolution to it: make more use of your peer-review network of your colleagues and your friends. You do not want to send other than your very best effort out for review.

—Randy Hodson, professor of sociology, Ohio State University, and editor, American Sociological Review, from “What Readers Want,” the Art of Publishing Workshop, April 17, 2009, sponsored by the Department of Economics

The Cell Remembers
At one point during fetal development, some of your cells decided to make a leg and some cells decided to make an arm. At one point it was one cell that decided to do that. Once the cell that decides it’s going to make an arm divides to make all the cells that we need to make an arm, it needs to remember that it’s supposed to make an arm. It needs to remember what the mother cell decided. And all the millions and millions of cells that will come from that one cell—each cell division—they need to remember that’s what they’re supposed to do, too. Cells rely on this mechanism to remember what they’re supposed to be doing. . . . This very specific conclusion is at the heart of what happens as we age. It’s at the heart of what happens in every thing we do.

—Victor Corces, Arts and Sciences Distinguished Professor, Howard Hughes Medical Institute, Professor and Chair, Department of Biology, Emory College, from “Beyond the Genome: DNA is Not Destiny,” March 16, 2009, sponsored by the Office of the Provost and the Faculty Council