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A GUIDE TO PHD GRADUATE SCHOOL: HOW THEY KEEP SCORE IN THE BIG LEAGUES

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Imagine an alternate universe in which you play college baseball, spend a few years in the minor leagues, and then get your big chance in the majors. In your first time at bat, you hit a towering drive. As the ball easily clears the center field wall, you nonchalantly toss aside your bat and prepare to jog around the bases to wild applause. Instead, the crowd moans and the umpire bellows "YER OUT!" Someone forgot to tell you that the rules are different in the major leagues. They play by a different scorecard.

This imaginary scenario would never happen in baseball, because the important rules of the game stay the same from the sandlot to the big leagues. The central message of this chapter, though, is that academic doctoral programs are not playing baseball but hardball. When you move from being an undergraduate (or even from many master's programs) to being a graduate student in a doctorate program, they change the rules! They use a different scorecard. If you understand how you got admitted to your PhD program, what the faculty want from you, and how to keep score, you have a good chance of going on to a successful academic career. You

will not be getting a letter from the chair of your department saying, in effect, "YER OUT!"

HOW YOU GOT ADMITTED

I remember being surprised a few years after getting my PhD when, over refreshments at a convention, several of my former fellow students from graduate school acknowledged that they initially had the same doubts I had. Although none of us ever admitted it at the time, we had each harbored the same unspoken fear during our first year of graduate school. "Any day now," I remember suspecting, "they're going to realize that I don't belong here with all these brilliant people. The admissions committee made a serious mistake."

Years later, I realized that my suspicions were all too true! After serving on graduate admissions committees for many years, I can tell you from first-hand experience that PhD admissions committees make serious mistakes. The problem is that they are forced to use performance data from one set of tasks to predict subsequent performance on an entirely different set of tasks. The admissions committees for PhD programs are like sports teams that try to predict from performance at professional basketball to performance in major league baseball. They select a Michael Jordan on the assumption that the greatest basketball player of all time must be an all-around athlete who will also excel in the big leagues of baseball. They are frequently wrong.

Unfortunately, undergraduates are graded primarily on how well they acquire facts—on knowing the periodic table of elements, reciting from memory the central arguments in Plato's dialogues, and listing the primary causes of the Civil War. When admissions committees examine an applicant's undergraduate straight-A transcript, what have they learned about the applicant? Not much! They have learned primarily that the applicant knows many facts.

Most PhD programs do not teach students to know *that*; instead, they teach students to know *how*. Admittedly, PhD programs teach some facts. The required courses in a PhD program are usually designed to make sure that all entering students have the same knowledge base. Learning facts, though, is far from the central goal in graduate school. Faculty members are not as concerned with your learning *that* as they are with your learning *how* to do top-notch research in your discipline.

People who are brilliant at learning facts are sometimes surprisingly poor at learning how to do research. I have been keeping records in my institution's PhD program for the past 12 years. Each year and across years, I try to predict from the admitted applicants' undergraduate grades and their scores on the graduate record exam (GRE) to various outcomes such as

TABLE 1.1
Success of Nine Variables at Predicting Who Gets a Stipend, Who Gets
Good Grades in Graduate Courses, and Who Gets a PhD (N = 90)

Predictor	Stipend	Graduate grades	PhD
Undergraduate GPA	.26*	.38*	.14
Last 60 hours GPA	.27*	.42*	.11
GPA in major	.28*	.30*	.18
GRE-V	.21*	.25*	.03
GRE-Q	.33*	.03	-.07
GRE-A	.40*	.23*	.02
Graduate research competence			.83*
Number of publications			.63*

Note. * $p < .05$.

finishing the PhD or publishing in top journals. Each year and across years, I have had little success.

To understand why I have been unable to predict who succeeds in graduate school, look at Table 1.1, which reflects information about 90 students who entered the PhD program at my institution from 1987 through 1995. The admissions committee, which has different faculty members from one year to the next, must decide not only who gets accepted to the program but also which of the admitted applicants have the most potential. They rank-order the admitted candidates and offer the “best” a departmental fellowship that includes both a tuition waiver and a sizable stipend. Of the 90 students who were admitted to the PhD program from 1987 through 1995, the committee awarded fellowships to 51 of them and told the other 39 that they could enter the program, but only if they agreed to pay their own way. The difference between getting a fellowship and not getting one at my university is worth approximately \$80,000 across four years. At many universities, the dollar difference is even greater.

If you examine the leftmost column of Table 1.1, you will understand why your undergraduate advisers kept telling you to get good grades and study hard for the GRE if you wanted to be admitted to graduate school, and especially if you wanted funding. Admissions committee members typically see three undergraduate grade point averages: your overall average for four years, your average in the last 60 hours, and your average in your major. They also see three GRE scores: the verbal score, the quantitative score, and the analytical score. Every one of these six variables is significantly correlated with whether the admissions committee will award a fellowship. The higher a student’s undergraduate grades and GRE scores, the more likely that student was to get a coveted stipend.

Now examine the middle column of Table 1.1. Five of the six variables were significantly correlated with grades in graduate courses. If faculty

members had been interested in predicting which of the entering students would get the best grades in graduate courses, they would have been very pleased with themselves. It is not surprising that undergraduate grades predicted graduate grades, because many required graduate courses are little more than advanced versions of the courses you took as an undergraduate. They emphasize learning *that* more than learning *how*. The correlations with undergraduate grade point average might have been even higher, except that some of our graduate courses require students to show that they are learning *how* to do what they will later be required to do in their professional careers.

The significant correlations between graduate grades and two of the three GRE scores are surprising, given that other researchers have found little relationship between GRE scores and graduate course grades (e.g., Sternberg & Williams, 1997). One possible explanation is that in my institution's program we admit students with a much wider range of GRE scores (all the way from 800 to 1450 total GRE-V plus GRE-Q) than in many other PhD programs. Another possible explanation is that faculty members give good grades to students who write well and appear to think analytically about the major topics covered in our courses.

Students who write well and think analytically, however, do not necessarily hit home runs when it comes to research. Look at the rightmost column in Table 1.1, which shows correlations between the six predictors available at the time of admission and which 56 of the 90 students made it all the way to a PhD. Not one of the six variables had a significant relationship with getting the PhD. If anyone tries to tell you that graduate admissions committees know at the time of admission who will get a PhD and who will not, tell them you have a few ballparks you would like to sell them.

The reason you cannot predict who is going to get the PhD is that my institution's graduate program, like most PhD graduate programs, changes the rules once new students arrive. We do not award doctoral degrees to students who do nothing more than get good grades. Instead, we award doctoral degrees to students who demonstrate research competence and publish in the professional literature. I asked three faculty members to rate the demonstrated research competence of these 90 graduate students and to estimate how many publications each student had at the time that he or she left the program. The three faculty members displayed high agreement on who was good at research and how often students had published. As you might expect, faculty ratings of research competence were also highly correlated with how many publications the student produced during his or her stay in the program. At the bottom of the rightmost column of Table 1.1, you can see how well these ratings of research competence and publication predicted getting the PhD. Clearly, students who were good at research

finished the program, whereas students who were not as good at research, *even many of the students who excelled in graduate course work*, tended to strike out.

Experienced faculty members know that it does not take a genius to get a PhD. I do not ever recall meeting a new graduate student and thinking that the student was too dumb to succeed in graduate school. All 90 of the students on whom I have data were more than smart enough to succeed. The only factor that separated them seemed to be motivation. I had one student who came to us with straight A grades and 1450 GRE V + Q. He got the top grade in every course in his first semester and then *dropped out of the program*! Once he saw what my colleagues and I did for a living, he knew that he could not force himself to spend the rest of his life doing it as well. He could not see himself sitting in an office all day asking and answering questions about abstract theoretical processes. Most of the 34 students who left our program without a PhD were very similar to him. They had the verbal ability. They had the analytical ability. They could get outstanding grades. When it came to research, though, it soon became apparent to them and to the faculty that they had no interest and were just going through the motions. If you find yourself resenting the time you spend on research, do yourself a favor. Get out! You are in the wrong PhD program. Either go to a different PhD program or reconsider your decision to become an academic.

If you find yourself not loving research and less than thrilled about designing, conducting, and writing up research studies, one of the saddest decisions you could make is to go through the motions just to get a PhD. You might grudgingly continue in a PhD program just to get those magic letters after your name, but you have also boxed yourself into one of life's least pleasant corners. You have spent valuable years establishing credentials that qualify you to do one thing—a thing you do not enjoy. Also, without a reasonable publications record and enthusiastic faculty letters of recommendation, your job prospects will be slim. It would be much wiser to take a master's degree and find a job, perhaps in industry, that better suits your interests.

Not everyone has a genuine *passion* for doing research. I have a colleague who was once warned by his chair, at a school that emphasized teaching, that he had better stop spending so much time on research if he wanted to get tenure. He continued anyway! I have had students who entered the program without funding (because their undergraduate grades and GRE scores were abysmal), put themselves into many thousand of dollars of debt because they loved doing research, and are now distinguished faculty members at other institutions. People who find doing research boring (or even annoying) do not make it in PhD programs. People who love doing research get rewarded. As much as we would like to, we cannot predict

which is which from the admissions materials, because we have no way of knowing who will be turned on by doing the type of research that we do.

Entering graduate students should make it their mission in a PhD program, therefore, to discover a type of research that they love doing. Look for journal articles that you think make more fascinating reading than the best novels. Look for articles and research presentations that have you shaking your head and saying, "Wow! I wish I had run those studies!" Look for research programs that get you so excited you cannot stop thinking about related concepts and cannot wait to get in the lab to test the latest ideas. If you have the type of interests that lead to a successful academic career, you will succeed in your mission to identify the research agenda that will become the love of your life.

WHAT THE FACULTY WANT FROM YOU

When you enter a graduate PhD program, you need to alter your self-concept. From grade school until graduate school, teachers rewarded you for sitting in class, taking meticulous notes, spending a lot of time studying the texts and your lecture notes, and taking exams on what you had learned. When you did well at these activities, you earned praise, respect, and other rewards from parents, teachers, and (sometimes) peers. You took pride in being very good at taking exams and standardized tests. If you are like most of us, you derived a large part of your self-concept from these skills, at which you excelled.

Suppose you entered a PhD graduate program and kept doing exactly what you had done all through your education. You read all the assigned texts, arrived at each class punctually, took thorough notes, went home to memorize the study materials, and aced all the exams. When your adviser mentioned getting involved in research, you promised yourself that you would do so as soon as you had finished impressing the faculty with how smart you were in their courses. You would probably be shocked to be warned that the faculty had put you on probation and that they suspected you would not make it all the way to a PhD.

The warning might arise because you misunderstood what faculty members wanted from you as a student in their PhD program. Most faculty members want to show you how to do research and scholarship. They want to prepare you for an academic or other research-oriented career. They know that no one is ever going to pay you to sit in a classroom, take notes, and score well on exams. They expect you to alter your self-concept—to draw your self-esteem not from being a student but from being a researcher and scholar.

Admittedly, the messages you receive from faculty members are usually mixed. They would be appalled if you were to pay no attention to courses. They want you to demonstrate a grasp of the basic concepts in their (and your) academic discipline. They want you to pass all your required courses and excel in at least some of them. Never forget, though, that the way to a faculty member's heart is through genuine enthusiasm for research.

To illustrate my point with a success story, when I moved from one university to another I was not ready to begin research immediately at the new place. I was staying up half the night, surrounded by unpacked boxes both at work and at home, to write lectures for courses I had never taught before. Within a day of getting the key to my new office, though, there came a knock at the door. A new first-year graduate student entered and told me that she wanted to do research with me. I put her off with talk of being swamped and subtly suggested that she try again during the following semester. The next day, she was back talking about an idea that I had suggested under "future directions" in a recent article. I got rid of her as politely as possible. The following day, she was back asking about whether I thought the best way for *us* to do the study might be with a 2×3 or a 2×4 design, and which control groups *we* needed. She would not take no for an answer!

I regaled my new faculty colleagues with stories about this pest who would not go away, and how she kept insisting that she and I start a research project immediately. From that moment I knew, and so did all my colleagues, that we had a winner! She understood right from the start that her self-esteem, not to mention her future academic career, depended not on grades but on research and scholarship. She had made the transition from what I call an "undergraduate mentality," in which grades are all-important, to a more professional perspective based on learning *how* to do what would be required in later academic employment. She went on to earn the PhD, land an academic position, gain tenure, and win awards for her teaching excellence. She is currently chair of a university psychology department.

Successful graduate students do their homework before applying to PhD programs. They use the Internet, professional journals, and other sources to identify the exact line of research in which each faculty member is currently interested. They choose a department in which one of more faculty members are recognized experts in knowing how to conduct a specific type of research. When they arrive, they take the initiative. They beat down the faculty member's door. They insist that he or she teach them how to do it right. They become passionate about participating in and extending the faculty member's ongoing program of research. They understand that faculty members value them as research apprentices who will evolve into research collaborators.

Successful graduate students also understand the time constraints of publishing research. In many disciplines, the typical study takes a full academic year to design, conduct, analyze, interpret the results, and write a report of just one study. Many of the prestigious peer-reviewed journals look for three or more such studies to support a connected narrative in one submitted manuscript. Then the manuscript might have to undergo several revisions. It might easily take three years from conceptualizing the idea for the research project to final approval from an editor. And all that time is spent putting just one line on your vita! You can easily see from this typical time table why graduate students need to begin to build publications from day one and not wait until the third or fourth year of a PhD program to set out on the publication trail. When faculty members turn to writing those all-important letters of recommendation for you, which comes sooner than one would wish, you will find that they evaluate graduate students the same way they evaluate candidates for a faculty position in their department: on their academic vita.

KEEPING SCORE: YOU ARE YOUR VITA

Since I have been in my department, we have hired more than half the current faculty. I have been intensely involved in all of these searches, both during the time I was department chair and later. Would it surprise you to know that I have *never* seen the graduate transcript of any of my colleagues? We do not request a transcript of graduate grades because my colleagues and I would regard that information as useless. We are trying to hire the best scholars, not people who got the best grades in their graduate courses.

The information that we need to arrive at a short list of applicants is contained in the letters of recommendation and, primarily, in the academic vita. Wise graduate students, therefore, will start at day one of their first year in a PhD program to develop a strong vita. My advice to new graduate students is to put your vita on your computer immediately. Alter your perspective so that you derive your professional self-respect entirely from what is on that document. From the start of graduate school on, throughout what we hope will be a long and productive career, you *are* your vita.

At first, you might find it depressing to construct an academic vita, because many of the headings will be followed by blank lines. Do not worry about it. Everyone starts that way. One reason for constructing an academic vita is to remind you that it is empty. Write in your appointment book a time once a month when you will print your vita and think about how you could improve it. Being reminded that you have an empty vita, like the prospect of being hanged in the morning, is a wonderful way to concentrate your attention on what matters.

Everything you do in graduate school should have as its ultimate goal developing your academic vita. Let us start at day one of the PhD program and imagine that you have only headings, with no entries in any of the categories. One of the categories on an academic vita is "Professional Memberships." Every discipline has professional organizations to which faculty members belong. Most of these organizations have student memberships that are relatively inexpensive. Some of the student memberships even include free subscriptions to one or two of the organization's publications. Ask which of these organizations your faculty members belong to and respect, find out about student memberships on the Internet or elsewhere, and *join*. Overnight you will have filled in some blank places on your vita and established that you are a serious, professional, motivated person.

Now consider those graduate courses that you are required to take. Some of them may be in areas of your discipline that do not interest you. If you balk at putting time and effort into courses that are not in your own area of specialization, however, you will establish a poor reputation in the eyes of faculty members. Always remember that faculty members talk to each other frequently about graduate students. Most faculty members do not look favorably on students who pick and choose when they are going to work hard, any more than they would want a new faculty colleague who had that trait. Instead of blaming the faculty for making you take courses in an area other than your own, you should welcome the opportunity, because it exposes you to ideas that might be useful in building your academic vita.

Many of the best research ideas in any academic discipline come from thinking about connections between seemingly disparate areas of research. I remember my mentor telling me in the first year of graduate school that he had an advantage over me in coming up with good research ideas. His advantage was that he did not read the current journals in his own area! He was not kidding. If you read only the ideas in the most recent journals in your own area, you might think about ways to refine the ideas in those articles, but they are still someone else's concepts. Ideas derived from a journal article's concepts will most likely have far less impact on the field than nonderivative ideas. It is much more profitable to read the latest ideas in an area (or discipline) different from your own and think about parallels to the central questions that you and your adviser are studying.

We may not know how to teach graduate students to formulate creative hypotheses (although see McGuire, 1997, for helpful hints), but we do know that generating important new questions is more valued in academia than mechanically answering questions that have been generated by others. We also know that nonobvious ideas, which usually make the greatest contribution, frequently arise from thinking in depth about areas of scholarship other than our own. You should view those "required" courses as opportunities to develop nonobvious ideas about your own area of research. If you do,

you will be on your way to adding important lines to the section of your vita where you list your publications.

No matter what anyone tells you, no matter the academic position you seek, to be competitive you need to place lines on your academic vita under "Publications." I've participated in many academic job searches. Busy faculty members are typically confronted with several boxes bulging with applicants' folders. In each folder they find the applicant's cover letter, lengthy letters of recommendation, reprints of published work, various other materials the applicant thought would help his or her cause, and an academic vita. Most committee members head straight for the vita. They often turn immediately to the "Publications" section. At this point, many of them do not know (or care) about your name, your gender, or any of the other background information usually included on the front page. They want to see what you have contributed to the published literature in your discipline.

Be warned. Do not attempt to fool faculty committees by including in the "Publications" section articles that are only under review, abstracts of conference publications, your unpublished master's thesis, or anything other than articles that have passed peer review and are either already printed or granted final acceptance and in press. Do include all of these that you can, and send reprints of the strongest contributions.

Except for very unusual academic positions, the typical committee member spends approximately 10 seconds examining the folder of an applicant who has no genuine academic publications before coding that application as an automatic "REJECT!" Knowing the fate of such applications at day one of graduate school should tell you where to place your efforts. Yes, you have to do well at your courses. Yes, you have to take your teaching assistant and other assigned duties seriously if you are going to learn the tools of the trade and get good letters of recommendation. But when you are under crushing time pressures, as you will be, print your vita and spend a few moments contemplating those blank lines under "Publications." Remember that you *are* your vita. If the "Publications" section stays blank, that is just what you will be to most faculty search committees—a blank, a nothing, not worthy of more than 10 seconds consideration.

Even if you discover during graduate school that you find research boring but love teaching, you will eventually need publications. You might be able to find an academic position that emphasizes teaching over all else and will hire you based primarily on your teaching record. If you do, however, you will likely discover six years down the road that most of the small colleges want to see some publications during those six years to support a positive tenure recommendation. They might not provide much in the way of facilities for conducting research, but having a few publication lines on your vita helps and a lack of publication lines hurts your tenure chances. At the very least, you are going to have to produce some published reviews

of other people's research, which are almost impossible to accomplish if you have no love for the research topic.

Exhibit 1.1 shows a sample vita. It is only a sample, but it includes the most typical categories. You can probably find better examples of an academic vita on the Internet and elsewhere. Your faculty mentor will be happy to comment on which additional headings you should include. As long as I was going to invent a fictitious vita, though, I felt that I might as well give you a lofty target. During graduate school, try to make your vita look as much as possible like that of Sally O. Superstar. It is unlikely

EXHIBIT 1.1
Sample Academic Vita

Sally O. Superstar
Curriculum Vitae

Office Address

Department of XXX
University of YYY
YYY, ZZZ 99999-9999
Phone: (555) 555-5555
e-mail: SOS@YYY.edu

Biographical Data

Birthdate: February 30, 1985
Place of Birth: YYY, ZZZ
Citizenship: USA
Social Sec. #: 333-33-3333

Education

PhD University of YYY June 2011 (Expected)
MS University of YYY June 2009
BS University of ABC June 2007

Honors and Awards

2011 Elected to National Academy of Sciences
2007–2011 National Science Foundation Graduate Fellowship
2003–2007 ABC University Scholarship

Professional Memberships

American XXX Association
American XXX Society
Regional XXX Association

Publications

Superstar, S. O. (in press). The meaning of everything. *Science*.
Superstar, S. O., & Faculty, F. O. (2011). The meaning of the universe. *Science*, xxx, xxx–xxx.
Faculty, F. O., & Superstar, S. O. (2010). The meaning of life. *Science*, xxx, xxx–xxx.

Manuscripts Under Review

Superstar, S. O. The meaning of meaning. *Science*.

continued

EXHIBIT 1.1
Continued

Manuscripts in Preparation

Superstar, S. O. Meta-meaning. *Science*.

Conference Presentations

Superstar, S. O. (2010, Aug.). *A general theory of life's place in the universe*.
Invited address presented at the American XXX Association Convention, Sea
of Tranquility, the Moon.

Superstar, S. O. (2009, Aug.). *Life*. Invited address presented at the American
XXX Society Convention, New York.

Teaching Experience

Lecturer	Seminar on Life	Spring 2011	University of YYY
Lecturer	Mechanisms of Life	Fall 2010	University of YYY
Lecturer	Principles of Life	Spring 2010	University of YYY

Professional References

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that you will be elected to the National Academy of Sciences as a graduate student, but you can at least join a few professional associations.

You can also do what the fictitious Sally has done. Start by publishing once or several times as a junior author with Frank O. Faculty, or whoever your mentor happens to be. Go on to publish as first author with your mentor. Then show that you can extend your mentor's work into brilliant new directions, possibly publishing your PhD dissertation on your own. Include any manuscripts you have under active editorial review and in preparation, just to show that you have new work in the pipeline. List all your conference presentations, but beware compiling the type of vita that has page after page of presentations and only one or two publications in refereed journals. Most departments do not want faculty members who

merely present data at conferences and do not bring the work to completion by publishing it for the wider academic audience. List your teaching experience. For some types of academic positions, attach to the vita a teaching portfolio that explains your teaching philosophy, experience, and practices. Finally, list the people who will write letters of recommendation for you, so that interested departments can contact them directly.

Always remember, though, that the most important lines on your vita are found under the "Publications" heading. During my last year of graduate school, my mentor gave me the best advice I have ever heard for aspiring academics, whether in graduate school or later in their careers. I urge you to make a sign with these 10 golden words and tape it to the wall directly behind your desk so that you cannot help but see it every day. Do not settle for good grades in graduate courses. Do not settle for conference presentations. Do not settle for papers that are endlessly in preparation. Instead, "*Get it out the door with your name on it!*"

CONCLUSION

The transition from undergraduate to graduate study involves a transition from student to scholar and researcher. Many of the skills that guarantee success as an undergraduate (e.g., strong test-taking skills and good grades) can be unrelated to success as a graduate student, where the ability to conduct research—both effectively and prolifically—is the strongest measure of success. For some students, this transition is difficult, and successful graduate students are those who are able to discover research areas they truly enjoy and who are able to translate this interest into publications, the holy grail of graduate work. This chapter has sought to point out some of the basic keys to accomplishing this goal, such as researching programs before entering graduate school, starting research immediately on entering graduate school, and pressing faculty for training and guidance. Although the formula is not a guarantee for success, the strategies outlined can increase students' chances of having successful graduate careers and thus improve their prospects of achieving their ultimate aim, faculty positions.

REFERENCES

- McGuire, W. J. (1997). Creative hypothesis generating in psychology: Some useful heuristics. *Annual Review of Psychology*, 48, 1–30.
- Sternberg, R. J., & Williams, W. M. (1997). Does the Graduate Record Examination predict meaningful success in the graduate training of psychologists? A case study. *American Psychologist*, 52, 630–641.