"Known Knowns, "Unknown Knowns," and "Known Unknowns": A New Agenda for Graduate Schools

How will we confront, then, the currently incomplete picture of career outcomes for graduate students? In a spirit of humor that will evoke serious implications, I will boldly revive some of Donald Rumsfeld's famous categories of knowledge—"known knowns" and "known unknowns"—to classify some of the existing and uncovered facts on which we can build our efforts. I will also draw upon a new category, the "unknown knowns," provocatively used by the Irish author Finton O'Toole and lucidly articulated in a New York Times book review of his most recent book...
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(Wheatcroft, 2011). Based on recent examples from politics and the economy, Wheatcroft explains that "unknown knowns" refer to knowledge that is possible to access or generate but which remains overlooked or unexplored. Begging patience from the doubters, I will argue that a set of "known knowns," "unknown knowns," and "known unknowns" can help us chart a clear course for our work in the area of graduate outcomes.

"Known Knowns" about Graduate Outcomes

There are at least three things that we know for sure about the outcomes of US graduate education today. First, for students in the aggregate, we know that graduate education at both the master's and doctoral level results in significant increases in lifetime earnings: for master's students, an increase of 18% over a bachelor's degree and for PhDs an incremental increase of 43% over a bachelor's degree (Carnevale, Rose and Cheah, 2011). Of course, like it or not, the labor market assigns different salary values to different types of degrees—for example, higher average salaries are awarded to PhDs in engineering than to PhDs in English. However when data are aggregated by field of study, it turns out that an advanced degree translates into lifetime earnings increases for degree holders in every field.

Second we know, very explicitly in some cases, what the intended outcomes are for a wide range of graduate degree programs in US graduate schools. Motivated in part by new demands from regional accreditors, many graduate schools have worked with their programs to articulate what knowledge and skills students should be able to demonstrate upon completion of their degrees. In this context, graduate schools are also conducting assessments of learning outcomes that go beyond external program reviews. These include internal reviews in the form of continuous, ongoing outcome-based assessment, and some type of program evaluation that is used to inform institutional strategic planning (Larick, 2011).

Notwithstanding the sometimes reductionist and simplistic approaches of "outside experts" on assessment that have met with resistance from faculty and many thoughtful graduate deans, a multi-layered assessment of graduate outcomes holds out many benefits. A nuanced articulation and assessment of the knowledge and skills that students should demonstrate upon graduation can have a significant impact on the preparation of students for career both inside and outside academia. While more work needs to be done to clearly articulate "transferable skills" needed across different career pathways, the graduate community has taken an important step toward defining desired outcomes at the program level.

The third "known known" can be found among some professionally targeted master's programs, where program faculty and graduate leadership have recognized the need to track, at a minimum, initial career placement of graduates. These kinds of placement data have long been associated with competitive MBA, MPA and MPH programs, but many other master's and professional doctoral programs have begun to recognize these data as essential. For example, career tracking has become a regular feature of the new Professional Science Masters' programs (PSMs). Both this placement information and the outcomes analysis serve as invaluable tools in a feedback system that supports quality improvement.

"Unknown Knowns": The Overlooked Facts

In addition to these "known knowns," we are also faced with a set of "unknown knowns," factual conditions that could be known if we only paid attention to the available data. While by no means comprehensive, these data point to a wide spectrum of careers that PhD degree holders have pursued for decades, including those outside academia. Unfortunately, the terminology that we often use to describe the careers PhD graduates pursue in business, government and non-profit domains—"non-academic" careers—highlights the privileged position that academic jobs have held. But the readily available data tell a different story (NSF, n.d.). For decades, more than half of the PhD graduates in science (including social science, management and administrative disciplines) and engineering have found careers in business, industry and government, while the number working in any role in four-year colleges or medical institutions reaches a maximum of only 45% in certain fields. This evidence supports what graduate deans have suspected or known anecdotally, that only a minority of PhD graduates are in tenure or tenure-track teaching positions.

The longer term career placement data are less readily available for the approximately 13% of total PhD graduates who are in the humanities and fine arts. However, what we do know is that over 15 years ago only about 60% of all employed humanities doctorate recipients worked as postsecondary faculty. (American Academy of Arts and Sciences, n.d.). In an ambitious 2005 report on PhDs 10 years after degree completion conducted by Maressi Nerad, findings challenged at least two common myths regarding PhD graduates (Nerad, 2005). The first myth was that students uniformly sought to become professors upon completion. Across the six fields Nerad studied, the percentages seeking this position ranged from a high of 81% in English to a low of 32% in biochemistry. The second myth held that a tenured job clearly held the top job satisfaction for those who attained it. Nerad's study showed that 10 years after completion, tenured faculty ranked only fourth in feeling "very satisfied" with their careers, falling well behind the most highly satisfied, those who held business/government or non-profit manager or executive positions. Tenured faculty also fell behind academic administrators and academic researchers who were not in tenured teaching positions.

Thus the common assumption that non-academic careers are second-best must confront the much more optimistic story told by data in the "unknown known" category: there is strong evidence that a majority of PhD degree holders find their way into careers outside the world of faculty and that for many, these careers are considered a highly satisfying outcome. This fact alone is something that we need to begin to discuss actively with our doctoral students as they pursue pathways through graduate school and into careers. However, there remains much to be learned if we are to adequately advise students and strategically and effectively plan and assess our programs at both the doctoral and master's level.

"Known Unknowns": The Data Gaps We Need to Fill

This third category of important student and program outcomes might be characterized as the "known unknowns." In the flurry of interest over "learning
outcomes" by programs seen over the past decade, it is remarkable that the actual careers that students pursue subsequent to graduation have received relatively little attention. At the undergraduate level, a lack of data on employment outcomes might make more sense given that broad liberal education is the central goal of many distinguished universities. By contrast, professional preparation is at the core of graduate education, whether a degree is classified as a "professional degree" or a "research degree" according to traditional classification schemes. For graduates of professional master's or professional doctorate programs, the ability to assess how knowledge and skills acquired in graduate school actually measure up to the demand of the specific jobs, from social work, to marketing to public administration, is fundamental to assessing the quality of the degree program. Similarly, for particular PhD programs, where graduates are trained to recognize, interpret, and understand problems at the frontiers of knowledge in a field, so as to advance those frontiers, knowing the particulars of where graduates will make that contribution is essential to assessing the reach and robustness of their education. Detailed information about job placement and career trajectories of graduates of particular programs and types of programs is essential to meet the needs of at least three stakeholders: students, employers and programs.

First, students need this information at the application stage so that they can make informed choices about which degree program is most aligned with their long-term goals. As enrolled students, they can also use these data to make strategic choices about curricular emphasis, internships or research foci. Employers, for their part, equally benefit from this kind of tracking because it opens the door to more active and productive discussion between employers and institutions about the particular skills and abilities most aligned with success in their organizations. Finally, graduate deans need this information because it puts them in a position to answer a critical question about the match between graduate programs and career success: how can we make sure that a particular program or type of program equips graduates to exercise the creative, conceptual, organizational and professional skills required to have a productive and impactful career? Deep and effective assessment of all graduate programs requires an answer to that question, which needs to be based on a better empirical understanding of the careers students pursue.

Of course, there are many questions surrounding the acquisition of such data. Whose job is it to build the tools necessary to develop nuanced tracking mechanisms for both short and long term career outcomes? Some might respond that turning this

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"unknown" into a "known" fails to universities, and where graduate outcomes are concerned, to the graduate dean's office. But for many CGS deans this may not be a realistic expectation. A great number of American universities are reeling from one of the most financially challenging periods in half a century and institutionalizing a survey program of undetermined costs may be difficult. At present, we can look to the examples of graduate schools that have begun to develop capacity in this area. For example, Princeton University has implemented a robust initial career placement survey, which reported on 100% of graduate placements in 2011. Efforts to institutionalize five and ten year follow-ups are just beginning. And typically the response rate for the follow-up is about a third of the initial placement response. Meanwhile, Indiana University collects data on job placement by program for all graduates as does Cornell. The University of Michigan collects data on job placement by program for all doctoral graduates and almost all master's graduates. Since the nineties, the University of Michigan has been tracking graduates five years out, and has recently expanded their reporting to ten years. But in the main, US graduate schools are only in the early stages of collecting initial placement data.

CGS has also been working on this front to support the efforts of graduate schools to gain a better understanding of where their graduates find employment both initially and over the longer term. Currently we are piloting an outcomes instrument for the entire population of PSM programs in the US. The strong cooperation of both the graduate deans and PSM directors bodes well for an outcome that can support a useful template for graduate schools more broadly. What we already know from this work is that employer engagement is going to be a critical part of a fully robust career tracking system. We know that many employers have sophisticated recruitment systems that target students enrolled at institutions that have produced high-performing graduates in the past. But there is little evidence that companies feed that information in any formal way back to the institutions from which the students graduate.

Finding good examples of best practices in this area is the first step in creating useful partnerships and in identifying synergies between graduate schools and employers. To this end, a joint effort by CGS and ETS, Pathways through Graduate School and into Careers, will provide an evidence base for what is known and unknown about graduate degree holders' journeys into careers. By analyzing data on what students know about career options, illuminating pathways that individuals with graduate degrees actually follow, and exploring how universities and employers might partner to inform students about opportunities, this study will launch a national platform for addressing gaps between graduate education and career outcomes for graduates.

I conclude with a note about how these different categories of knowledge, be they known or knowable, relate to the current US debates about jobs. The most dominant discussion about jobs focuses on whether there are more or fewer jobs when compared to some benchmark date in the past. But the real "jobs" issue is less about the periodic fluctuation in the direction of the arrows and more about job creation. Are we putting people in the kinds of jobs that create meaningful work for all citizens? Studies show that it is the areas with concentrations of highly-educated workers where innovation happens, thus creating more jobs for everyone at all educational levels (Gougherty, 2011). To effectively address the pressing issues in the current and future US workforce, we must position ourselves to

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embrace the “known knowns,” to acknowledge the “unknown knowns” and to do what it takes to convert the “unknown unknowns” to “known knowns.” That means more effective and intentional tracking of the placement and career outcomes for our graduates and ultimately utilization of that information in improving our programs. Graduate deans, I fear that this is now on your agenda.

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References: