Foreword

As I write, it is late fall 2020 – a time of devastating global pandemic, climate change, rising nationalism, and vividly exposed long-standing racial and economic fault lines. Two things are clear: we have never needed graduate-prepared scientists and scholars, citizens, and leaders more; and universities and funding agencies have never needed more to sharply focus investments on the graduate programs and pedagogies that these thinkers and doers must have.

The need for better data on graduate program learning outcomes, for the alignment of those outcomes with changing workforce demands, and for funding models that best encourage access to and completion of high-quality graduate education is not new. Today's troubles simply make that need more urgent. So, Brian Mitchell's monograph could not have come at a better time. In it, he outlines a comprehensive framework and set of research questions that would provide the data necessary to enhance graduate student learning and career preparation and improve graduate programs.

Take, for example, [chapter 1](#) on the science of graduate-level learning. As Dr. Mitchell notes, graduate online learning has been taking place for at least two decades. Full online degree programs have been predominantly at the master's level but an increasing number of doctoral programs are making that transition. Thus, he asks, "Can the development of research methods in the PhD be transitioned to self-paced and/or electronic delivery?" He then goes on to explore the intersection between acquisition of research and teaching skills and challenges researchers to devise studies to address questions such as "Which specific research skills do teaching experiences impact most?" and "Do research skills impact teaching effectiveness?" Later in this same chapter, in particularly insightful, and near prescient, sections on mentoring and learning in online environments, the author engages questions regarding learning

outcomes in distance-delivered graduate programs and approaches to understanding what constitutes effective e-mentoring.

Consider now the extremely rapid, pandemic-induced transition from in-person to nearly ubiquitous online graduate learning in March 2020. Universities around the world rapidly pivoted to online didactic learning and began experimenting with creating virtual research teams and projects. Throughout the summer and fall of 2020, presentations at numerous higher education association meetings began to share ongoing experiments with virtual peer and faculty mentorship. Clearly the higher education enterprise has demonstrated agility and a deep commitment to its students. Yet, as argued in this monograph, without a rigorous research and evaluation framework to measure the efficacy of the models being piloted, these noble experiments will remain just that, leaving us to wonder which of the models actually work, which are dead ends, and what investments we could make that might improve any or all of them.

None of us have a crystal ball but of one thing we can be certain: the future of work will not be a simple linear extrapolation of its past. Current graduate students will enter first jobs that may not have existed at the time they started their graduate programs. They will change jobs and employment sectors more often than in the past and the route they take throughout those careers will look more like a London tube map than an interstate highway. How will graduate programs and faculty help to prepare their students for this changing work environment? As the comprehensive literature review included in this monograph demonstrates, it is far from glib to say more research is needed. In [chapter 2](#) on graduate student career preparation, the author lays out a research agenda that could inform curricular redesign and inform design and implementation of the professional development opportunities necessary to help students prepare for evolving careers. In a powerful concluding section to this chapter, Dr. Mitchell asks us to consider how we might reimagine and measure the very nature of what is considered career success.

In a final chapter, made all the more pressing given the serious financial pressures that universities around the globe are experiencing, the author calls for research that will help universities marshal financial-aid packages in ways that maximize opportunities for both access and timely degree completion. He challenges researchers and the graduate education community writ large to move beyond a singular focus on representational diversity at the point of admission to a broader understanding of the undergraduate-to-graduate pathway and the climates of inclusiveness necessary for graduate student well-being – points rendered even more urgent by current events.

I have had the privilege of working directly with Brian during the years he served as the Council of Graduate Schools/National Science Foundation (CGS/NSF) Dean-in-Residence. During his time with us, I learned a great deal from him, as did CGS staff and community. This monograph is rooted in his deep understanding of the graduate ecosystem and the kinds of research needed to make it even more responsive to changing student demographics and changing social and economic contexts. I am absolutely delighted that his wisdom and insights will now be shared with an even broader community.

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