Doctoral education is the lynchpin for higher education reform, and in this sense the reformation of scholarly thinking begins in doctoral education and natural science. The Formation of Scholars was built from an unusual process in which faculty, program administrators, and graduate deans from corresponding departments in participating institutions were brought together to share experiences. The results provide new guidance toward creating and sustaining new doctoral programs. This book should be required reading for those who care about higher education: "This book should be required reading for those who care about higher education." —DON KENNEDY, president emeritus, Stanford University and former editor-in-chief, Science

The length of doctoral education in the U.S. lies in its willingness to continually reinvent itself. That reinvention hinges crucially on performance of both the faculty and the program's capacity to reinvent itself in positive and productive ways. The program's capacity to reinvent itself hinges crucially on performance of both the faculty and the program's capacity to reinvent itself in positive and productive ways. The Formation of Scholars provides extraordinarily rich insights into the thinking of graduate scholars and faculty across six fields as they reflect on program goals, program structure, and the program's capacity to reinvent itself in positive and productive ways. The CID project has made a lasting contribution to the toolbox of graduate deans. It will be a wonderful resource for effecting change in one of the most dynamic and important parts of the higher education enterprise—preparation of the PhD." —SUSANNE ORTEGA, vice provost and graduate dean, University of Washington

The Formation of Scholars
Rethinking Doctoral Education for the Twenty-First Century

GEORGE E. WALKER, CHIRS M. GOLDE, LAURA JOI
ANDREA CONNEL BUESCHEL, PAT HUTCHINGS
Academics are very careful with words. The title of this book, *The Formation of Scholars*, embodies two key terms that call for explanation and interpretation. Why *formation*? Why *scholars*? The answer is that the juxtaposition of these two ideas captures the essential character of the work reported in this volume. Doctoral education prepares scholars who both understand what is known and discover what is yet unknown. They conserve the most valued knowledge of the past even as they examine it critically. They invent new forms of understanding as they move their fields ahead. Yet the more they understand, the heavier their moral obligation to use their knowledge and skill with integrity, responsibility, and generosity. They are thinkers and actors, intellectual adventurers and moral agents. The idea of formation, borrowed from religious educators, refers to the kind of education that leads to an integration of mind and moral virtue that we often call character or integrity.

When I first began working in teacher education, I was admonished by insiders never to use the phrase “teacher training.” Training implied mindless, routine practice more appropriate to an assembly line than to a classroom. It also reinforced the rampant behaviorism that dominated the fields of teacher preparation and teacher evaluation. The correct term was “teacher education,” which more aptly captured the fundamentally intellectual, strategic, and thoughtful functions associated with teaching. I took this instruction to heart. Indeed, when I delivered my presidential address to the American Educational Research Association in 1984, I concluded my remarks with a revision of Shaw’s “Those who can, do; those who cannot, teach,” changing it to “Those who can, do. Those who understand, teach.” Teaching must be understood as an intentional act of mind for which a rich educational experience is necessary. Yet this move may not be enough.

In recent years, my colleagues and I at The Carnegie Foundation for the Advancement of Teaching undertook our comparative studies of education across the “learned professions” of law, engineering, the clergy, teaching, medicine, and nursing. In parallel, we initiated the study of
doctoral education that is described and analyzed in this book. We recog-
ized early on that doctoral education could be examined as a form of
professional preparation. Those with PhDs are prepared both to
know and to do. Holders of the PhD are prepared to profess their disci-
plines and their fields of study, not only to understand them deeply but
also to take upon themselves the moral responsibility to protect the integ-
ity of their field and its proper use in the service of humanity. We found
the term formation—used extensively in the field of religious education
and the preparation of clergy—to be particularly appropriate for describ-
ing this integration of the intellectual and the moral in preparing for the
many roles of the scholar—discovery and synthesis, teaching and service.
Thus we had evolved from training to education and from education to
formation.

The PhD is the monarch of the academic community. It is the very
highest accomplishment that can be sought by students. It signals that its
recipient is now ready, eligible, indeed obligated, to make the most dra-
matic shift in roles: from student to teacher, from apprentice to master,
from novice or intern to independent scholar and leader. The PhD marks
its holder as one charged to serve as a steward of the discipline and
profession. If this language sounds mildly ecclesiastical, it is no accident.
We do not choose the language of “formation” or “stewardship” capri-
ciously. The doctorate carries with it both a sense of intellectual mastery
and of moral responsibility. That the entire process concludes with all
members of the community dressed in religious robes and engaged in an
act of ordination of the novice by the master with a priestly hood is no
accident.

So is the PhD to be understood as just one more learned profession,
the academic parallel to engineering, law, or medicine? Not really. I
remember my surprise at the scheduling of commencements at my alma
mater. When completing graduate study at the University of Chicago, I
saw that the undergraduate commencement was to be held on Friday,
when all of the baccalaureate degrees would be awarded—including the
degrees of MD and JD. The graduate commencement for recipients of
master’s degrees and PhDs was scheduled for the following day. When I
expressed my confusion over this placement of the medical and law
degrees, I was informed that both of these degrees were inherently
“undergraduate.” Indeed, we regularly refer to the four years of medical
school as “undergraduate medical education.” Outside the United States,
the first medical degree has traditionally been the Bachelor of Medicine;
only recently has the first law degree changed from an LLB to a JD,
degrees did not prepare their recipients for lives of scholarship and
teaching. True graduate degrees are special.

What accounts for the mystique of the PhD? It is the academy’s own
means of reproduction. In a Darwinian sense, the academy invests most
heavily in its own means of reproduction and sustainability. The denou-
ement of the doctorate, the dissertation, is not only a piece of original
research intended to set its writer apart from all who preceded her. It is
also a celebration of the scores of scholars on whose shoulders any piece
of individual scholarship rests. Even as the candidate writes the disser-
tation—the contribution to knowledge, the evidence of scholarly
innovation and invention—the text is peppered with footnotes and refer-
ences, citations and bibliographies, acknowledgments and attributions.
Each of these bears witness to every scholar’s debt to her predecessors in
scholarship. References and footnotes also acknowledge the work of con-
temporaries who live in the same professional and disciplinary commu-
nity as the candidate, or in a closely neighboring field of study. Scholar-
ship is a social and communal activity. Thus candidates give recog-
nition to the continuing presence of their extended intellectual com-
munity as the scaffold that supports and sustains their research work,
whether present in the teachers and colleagues of one’s own program, or
ever helpful in the whispers, hints, proof texts, and challenges of scholars
long dead but still audible through their published work. It is also why,
we argue in this volume, nothing is more critical to the quality of a doc-
toral program than the character of the intellectual community created by
its teachers and students.

We at the Carnegie Foundation elected to devote five years to the study
of the PhD and its possible futures because we felt strongly that the aca-
demic profession bridges past and future in the context of each individual
doctoral program. The doctorate as an institution provides the stability
and tradition that renders scholarship a human activity that transcends
generations, cultures, and contexts. It is both a paragon of innovation
and a defender of the faith. The doctorate is both transformation and
impediment; it preserves what is enduring, but can also paralyze—
hardening categories and freezing traditions into empty rituals. The best
doctoral programs attempt to discover the “sweet spot” between conser-
vation and change by teaching skepticism and respect for earlier tradi-
tions and sources while encouraging strikingly new ideas and courageous
leaps forward. As readers of the late Thomas Kuhn can aver, scholars are
evaluated and rewarded by how faithfully they labor within the existing
paradigms, but they are celebrated and venerated for scientific revolu-
Also decided, unlike most previous studies of the doctorate, to treat doctoral education as domain- and field-specific, not as a generic activity at the all-university level. Both scholarship and teaching in any field reflect the character of inquiry, the nature of community, and the ways in which research and teaching are conducted in that particular discipline or disciplinary intersection. We therefore elected to distribute our efforts across a set of fields selected to represent the full extent of the academic enterprise.

This kind of work is complex and labor intensive. Working across six fields—chemistry, education, English, history, mathematics, and neuroscience—demanded the efforts of a remarkably diverse and multi-talented team. Since I write both to introduce the volume and, as president of the Foundation, to express my gratitude to my colleagues, the scholars who made this work possible, I conclude by turning to them and acknowledging their creative leadership.

Leading the team was George Walker, a theoretical physicist by training and scholarship, who served for many years as graduate dean and vice president for research at Indiana University. A national leader in graduate education, George has been an energetic and charismatic leader of this work. Coaxing him to leave Bloomington to come west and lead this project was no small challenge. Fortunately, he is a lifelong San Francisco Giants baseball fan, which made the “pitch” far easier than it might have been.

Chris Golde began her academic career at Stanford University with a pioneering dissertation study of the complexities of doctoral education and continued this work as a faculty member at the University of Wisconsin. As director of research for the Carnegie Initiative on the Doctorate (CID), she coordinated the several research functions associated with the effort and was a central figure in designing the many convenings that brought together participants both within and across disciplinary communities.

Laura Jones, trained as an anthropologist and archaeologist, joined the project to add strength to the research and convening programs of the CID. Andrea Conklin Bueschel, a higher education scholar with special interest in the unique role of community colleges, was a key member of the team.

Pat Hutchings, vice president of the Foundation, coordinated the final critical stages of writing this book, leading its transformation from a rich and varied array of insights and hypotheses into the tightly argued and gracefully presented monograph we have before us.

The project was counseled by a wise advisory committee chaired by Donald Kennedy, former president of Stanford University and editor-in-chief of Science during the entire period of the study.

I am particularly grateful to the hundreds of faculty members and doctoral students from more than forty institutions that participated in the work over its five-year lifetime. They were the engines of reform, the experimenters as well as the experimented-upon. If this work makes the future impact that we intend, it will be through their efforts, past and future.

Doctoral education is a set of experiences that incorporates training, education, and formation. It is a process led by faculty and brought to life by students. It is the key experience upon which the future of global higher education rests. We hope that this volume will support the many ways in which the formation of scholars can be effected through the transformation of graduate education.

Lee S. Shulman
Stanford, California