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Randolph Hall

Managing Innovation Inside Universities

Systematic Change for Research, Service
and Learning



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Preface

As a student, professor, and research engineer in industrial engineering, operations research, and systems engineering, I have had the opportunity to apply my knowledge in many areas, including healthcare, transportation, supply chains, queueing, and homeland security. I have taught students how to use observations and data to analyze how systems perform, optimize decisions, and implement improvements. My research has been published in books on transportation science, patient flow, and healthcare scheduling that I edited for Springer.

My career has included another path: leading research at the University of Southern California (USC) for nearly 15 years. I have been responsible for not just the study and analysis of problems, but also defining mission and strategy and implementing policy, incentives, investments, and systems. I have also led university-industry relations for research and innovation. From my experience, I gained perspective as to the challenges universities face in bridging the knowledge we convey to students, companies, and colleagues and our own practices—our own receptivity to systematic methods, analysis, objectivity and innovation, the types of things we study and teach in departments of management science and operations research.

In my extensive conversations with university and industry leaders, I have heard a common frustration: universities are slow to change. By this, I do not mean that universities are not a critical source of knowledge and technology. I mean that universities are slow to modernize their own technology, organization, methods, and practices, through novel and successful ideas. I have wondered, what would it take to capture the creative forces of our students, faculty, and staff within a culture of “*inside innovation*” that strategically and continuously makes universities stronger and more successful?

More than a decade ago, as VP of research, I saw how research publications had moved to digital from paper. Data sets were easier to find, share, and integrate among communities of scholars. Software was being produced collaboratively through open-software models. Projects had become more interdisciplinary as they took on larger societal challenges, such as security, climate change, and global health. Yet,

many of our processes and incentives were stuck in the past, when publications and articles were set in type; algorithms were encoded on punch cards; and data sharing was a rarity.

Through an initiative co-led with our Annenberg School of Communication, I examined USC's policies, institutional support and culture, with an eye toward creativity, collaboration, and impact in the presence of new technology. Would we as an institution support non-conventional research products, different from a traditional publication enshrined in paper, perhaps embedding interactive tools or moving images? Would we also invest in research that crossed disciplinary boundaries or combined the talents of many faculty, staff, and students in teams? Digitization and the internet had opened possibilities for scholarships that had not existed even 10 years earlier, and we needed to change.

For example, I looked at our tenure and promotion manual and saw how it emphasized "independence," even though scholarly practices had evolved toward collaboration. Our focus changed to assessment of research contributions. I saw how interdisciplinary research required institutional support and formed a DC-based office to help faculty create large multi-investigator proposals. I identified the need for seed funding and developed internal support for initiating new research that was novel and collaborative.

Managing Change Inside Universities was born out of these experiences, recognizing the disconnects between the creative ideas of individual students and faculty and changes in society, in particular technology, diversity, and the changing nature of work.

Motivation and Preparation

In preparation for this book, I spoke with more than 100 university leaders on their strategy for innovation and discovered a common set of frustrations, similar to what I observed in my own work: protracted deliberations, lack of empowerment, regulations, vested interests, inattention to competition, and sluggish responses to changes in the surrounding world. I also observed that universities more readily built programs focused on *outside* innovation (technology transfer, entrepreneurship centers, training programs) than *inside* innovation (improving the university itself).

Universities have a special place in America's system of higher education: a system that includes more than 4000 institutions; a system that includes 2-year community colleges, for-profit institutions that emphasize online vocational teaching, as well as 4-year colleges that offer liberal arts education. Universities are distinguished for their multitude of missions, including knowledge creation, education, and a commitment to serving the needs of society that extend beyond the campus. Universities educate doctoral students in addition to undergraduates and masters students and, in so doing, they train the professoriate for colleges and universities of all types. By the numbers, America has nearly 300 doctoral granting

universities classified by the Carnegie Foundation as very high (R1) or high (R2) in research activity.

American universities also have outsized influence globally. International comparisons based on research output, scientific honors, publication citations, and other impact measures place U.S. universities well above other nations. Historically, American universities have had exceptional success attracting scholars and doctoral students from around the world.

My question became: how could universities succeed in their enduring mission of education, research, and service in light of changes in technology, society, and the world at large? Along with this, how could universities elevate their influence in a world that increasingly relies on technology platforms (for better or for worse) as a source of information?

While universities, along with all higher education, face many challenges of the moment (cost of education, student debt, equity and inclusion, the Covid-19 pandemic to name just a few), I began to see universities as fundamentally challenged at their core as *trusted* learning and knowledge producing institutions.

Just as innovation can occur *inside* or *outside*, trust has inside and outside dimensions. Inside trust represents relationships among faculty, staff, students, and administration. If the university community does not trust each other to meet their commitments or to behave ethically and responsibly, how can innovation occur? Likewise, if universities fail to keep pace with new opportunities, then will they be trusted within the university community? Trust outside is also lost if old practices are defended from a perspective of privilege, such as rights that faculty possess but not the general working population; such as convoluted decision processes that inhibit experimentation; such as practices favoring legacy student applicants. Trust and innovation are intertwined.

I examine innovation and trust together for another important reason: information technology, such as artificial intelligence (AI), demands it. Impartiality and independence place universities in a unique position to help resolve the ethical dilemmas surrounding new technology, which I call fundamental challenges, each demanding innovation in university practices; each affecting trust in technology, for which universities should be a model.

1. *Privacy, Secrecy, and Transparency*: Universities create, possess, preserve, and distribute enormous quantities of data and information, including highly personal data such as patient and student records. In the past, universities built large libraries and filing systems for the physical artifacts of information. These have been replaced by digital content. Unlike physical artifacts, digital content can be copied, transmitted, and shared without limit through interconnected networks. What types of information must then be held and protected for privacy, and when does privacy cross a line to become secrecy? How do universities contribute to ethical practices of technology businesses that have amassed, integrated, and even shared “god view” records on individuals?
2. *Knowledge*: Between the Civil War and World War I, universities metamorphosed from an orientation toward developing the person to helping students

acquire specialized knowledge, supporting new industries. The industries that defined the academic departments of 1920 barely resemble the industries of the 2020s. Networked databases, search algorithms, mobile devices, and AI have augmented human knowledge, making mastery and interpretation of digitized information increasingly important relative to the information recalled from one's own mind. How should the college degree, disciplines, and departments reorganize as a result?

3. *Community*: College campuses are places where creativity and understanding are stimulated and young adults mature, through connections among students, faculty, and staff, through both serendipity and the design of space. Campuses for major universities are enormous, with daytime populations comparable to small cities. They sometimes coalesce around a single place, but often split off health science campuses (and their attendant hospitals) or specialized research institutes. These are ways that physical proximity defines universities. But university communities are also defined by the connections among colleagues around the world within disciplines. In light of remote work and education, how should academic communities be built, and how will that affect university mission and success?
4. *Freedom, Power, and Cooperation*: Academic freedom and tenure are powerful forces for individual creativity and entrepreneurship. Universities study big problems (think of homelessness, climate change, or access to healthcare) through cooperative teams and interdisciplinary education. Yet, they struggle with how to ethically communicate through digital media, and whether new means of communication align with faculty and staff responsibilities, including civility and respect for diverse points of view. They struggle with notions of intellectual property, plagiarism, sharing and reuse, in a time when open data both catalyzes new technology, such as generative AI, and threatens the original creators. How should universities balance freedom and duty?
5. *Truth*: As the public sees more content through social media, news sites, Wikis, AI, and search algorithms, we need to decipher truth from the noise of data that may not be authentic, accurate, or validated. Universities have been challenged by research that could not be reproduced, because it was not conducted with precision, well documented or, even worse, because it failed standards of integrity. Universities have a special obligation not just to educate their enrolled students on how to interpret information. They also need to inform people on the issues that matter through research and scholarship. How will universities support the discernment of truth among the masses of information now available?

The Need for Innovation

Universities are challenged to achieve their potential because of the impediments to change. Universities are slow to develop novel solutions that can enhance learning, improve student outcomes, or improve access to an affordable education. Their

organizational structures were defined in the early twentieth century, in an economy and culture that barely resembles the present. They operate in many domains that lack alignment with each other, struggling to fulfill a unified purpose.

Universities have also suffered when they strayed from two of their defining characteristics: independence and objectivity. Academic integrity violations, conflicts of interest, foreign influence, research irreproducibility and commercialization of research have created doubts as to the credibility of university-based science. Questionable relationships with industry and donors have instilled doubts as to objectivity, both inside and outside the university. When objectivity is doubted, reputation as an unbiased provider of research and analysis erodes.

During the Covid-19 pandemic, universities showed an ability to adapt but not necessarily to innovate. Platform technology like Zoom was introduced to maintain continuity of education. But Zoom does little more than replicate classroom instruction. While a legacy of the pandemic may be a realization that online education can be effective, it is unclear whether education will be improved as a result. More generally, the burden of crises (reputational, financial, student conduct, etc.) may invite change, but can also make leaders averse to experimentation, or unable to invest time in the strategic thinking needed to promote novel change. The obstacles to change are many.

- Focus on transfer of technology and knowledge out to the private sector disincentivizes inside innovation for improvement.
- A disconnect between university administration and university faculty and students impedes the flow of innovation within universities, failing to capture university research to advance university practices and offerings, or implementing new systems without sufficient understanding of their implications and alternatives.
- Sluggish and disbursed decision-making prevents the implementation of coherent strategies that creatively serve students, patients, research sponsors, and other stakeholders.
- Dependence on localities and state governments impedes aspirations toward a broader presence, expanding to serve communities and learners far beyond the college campus.
- A mismatch between the demographics of faculty and the demographics of society at large has slowed university response to evolving needs of a diversifying nation.
- Fondness for traditions among alumni and other stakeholders, who simply like things the way they were.

Universities simultaneously face competition for influence and for revenue. Search engines, social media and other IT platforms have elevated private entities as providers of information. As companies become more attentive to a social mission, and universities more attentive to entrepreneurship, they look more like each other. Education technology companies are delivering on-line courses directly to students. Online program managers (OPMs) are taking large shares of revenue from universities as compensation for the services they provide. Large technology

companies offer certificate training in technical skills, which they recognize in their employee hiring. Clinical services provided by academic health centers directly compete for patients with private providers. Moreover, the broad mission of universities makes them vulnerable to agile competitors that focus on the most profitable university activities.

Methods and Sources

Managing Change Inside Universities is informed by many sources. I began my work by talking with university leaders—presidents, chancellors, provosts, and heads of associations—for their perspectives on the prospects and impediments for change inside universities. I sought their opinions as to which universities are innovative, and why, and I sought input on my book’s scope. With their guidance, I have focused on the integrated theme of innovation and trust, spanning universities. I examine education, research, and clinical care, the three biggest components of their budgets (though not all major universities have clinical programs). After much research and investigation, I selected four universities for detailed examination, including visits and numerous interviews, each documented in book sections.

I cite various books and research papers that address university leadership, innovation, entrepreneurship, and history, with emphasis on authors who have been university leaders. The work of Derek Bok, Jonathan Cole, Abraham Flexner, Clark Kerr, Frank Rhodes, and Laurence Veysey were particularly influential. To frame the book in contemporary challenges, I provide example issues from articles in the *Chronicle of Higher Education* and other magazines and newspapers. In my recommendations, I have incorporated concepts found in the literature, such as “partners in education” and “open science.”

Throughout the writing process, I have also completed peer-reviewed research on university innovation. I have examined strategic plans, mission statements, tenure and promotion policies, institutional peer assessments, metrics, and intellectual property policies. I have surveyed faculty and student innovators, drawing from fellows in the National Academy of Innovators and students within Blackstone LaunchPad sites. I have also surveyed university-industry relationship managers from academia and industry. I contributed to three national initiatives aimed at advancing innovation in universities: the National Academies Roundtable for Aligning Incentives for Open Science, the National Science Foundation supported Promotion and Tenure—Innovation and Entrepreneurship (PTIE) Coalition and the University Industry Demonstration Partnership. I also helped establish a new organization: the Higher Education Leadership Initiative for Open Scholarship (HELIOS). In the past, I led USC’s university-wide assessment for the Association of Academic Health Center’s Aligned Institutional Mission program.

Book Organization and Contribution

The sources and scope of *Managing Change Inside Universities* set it apart from prior books on innovation and change. My perspective that innovation and trust are an inseparable system, operating both inside universities and reaching outside, is also a distinction.

I believe in unified mission, in particular that core activities of education, research, service, and clinical care should be synergistic and interdisciplinary. System alignment is not easy. Cross-subsidies that move financial surpluses from one area to fill the deficits of another complicate relationships. Differing work profiles and expectations and differing professional standards complicate faculty collaborations. Nevertheless, alignment and a silo-breaking vision are essential to releasing the full power of universities. For these reasons, I organize the book by cross-cutting issues.

In the eight chapters that follow, *Managing Change Inside Universities* provides examples of how leadership, culture change, innovation, and trust can make universities more effective in knowledge creation, learning, and service to society. In Chap. 1, I provide historical context, comparing the formative period from the Civil War to World War I to the present. Chapters 2 and 3 examine change and leadership within the context of purpose and mission. Chapters 4 and 5 focus on the transformative effects of technology—specifically digitization and data—and the relationship to trust. Chapters 6 and 7 address frameworks through which change can occur, first the role of entrepreneurship (along with its internal counterpart, intrapreneurship) and then innovation, representing novel change for the better. In Chap. 8, I offer conclusions and recommendations for university leaders, within a culture of learning, innovation, and trust.

I provide four examples of how universities have achieved change, each married with concepts introduced in preceding chapters. Cornell University illustrates innovation within an Ivy League private university through creation of a new venture—a campus in New York City—along with organizational structures that have promoted interdisciplinarity. Tecnológico de Monterrey demonstrates the power of university leadership in realigning programs and organizations within a new institutional model. Georgia Tech shows how strategic planning and technology can create a culture of creative innovation among faculty, students, and programs. Last, Plaksha, a new university in India, demonstrates the possibilities of a “startup university,” established by tech entrepreneurs. All four universities have a strong focus on engineering, including two that are among America’s top 10 programs in industrial engineering and operations.

Throughout *Managing Change Inside Universities*, I write in the first person and I draw from my own stories, and those from my family. I do this to connect my ideas to the human challenges that motivate and impede change.

Gaining Trust and Managing Change

In sum, the challenges facing higher education generally, and universities in particular, invite examination as how best to serve society in the coming decades, becoming more trusted and more influential, both on the inside and on the outside. My examination is informed by an awareness—gained from management science and operations research—that universities should operate as integrated systems, where the elements support each other toward a unified vision and purpose. I am also informed by interactions I have observed between universities and industry, both cooperative and competitive, and what we can learn from each other.

Most importantly, universities can do more to serve society’s pressing needs. My goal for *Managing Change Inside Universities* is to offer ideas and strategies for how universities can capture the creative forces of their faculty, staff, and students toward increasing their effectiveness in their core missions of research, learning, and serving society’s need for trusted information. In doing so, I provide insight into how knowledge organizations can prosper and lead in a world that is changed by the technologies we create.

Los Angeles, CA

Randolph Hall

Acknowledgments

Managing Change Inside Universities was inspired by my work as VP of Research at the University of Southern California, through which I experienced the gaps between the creative energies of our faculty, staff, and students and our ability to implement novel change that serves the opportunities and needs of the time. My position gave me the opportunity to learn, observe, and implement changes, working to advance impactful research, modernize research practices, and elevate integrity.

I thank my wife Janice Partyka, who supported my project of passion—writing this book—through the many twists and turns of the Covid-19 pandemic. Her review and comments on the manuscript were enormously helpful in clarifying my exposition.

I am grateful for the many people who provided valuable background information on the direction of higher education. I had the good fortune to interview Bob Berdahl, Mary Sue Coleman, Barry Glassner, Tom Katsouleas, Lynn Mahoney, Janet Napolitano, C.L. (Max) Nikias, Deborah Prentice and John Slaughter, all university presidents or chancellors, former or present. I thank the provosts I interviewed as well, John Barthell, Jean Morrison, and Nicholas Santilli. From associations, I thank these leaders: Tony Boccanfuso, Valerie Conn, Bruce Darling, Marc Kastner, Mary Lee Kennedy, John O’Brien, Wendy Streitz, Stephen Susalka, and Steve Wartman. Special thanks go to Tony Boccanfuso for his contributions to Chap. 6.

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I illustrate how universities innovate through four examples: Cornell, Tecnológico de Monterrey, Georgia Tech, and Plaksha. I received remarkable support from leadership at each university. When I conducted interviews, I had no affiliation with these universities. Subsequently, faculty from Georgia Tech and Tecnológico de Monterrey (though not the people I interviewed) collaborated in

a research proposal that I led for the National Science Foundation, to establish a new engineering research center on global supply chains.

At Cornell my special thanks go to VP for Research and Innovation Emmanuel Giannelis as well as Christina Cornell for her exceptional organization. My meetings at Cornell were extensive, including President Martha Pollack, Provost Michael Kotlikoff, Deans Lynden Archer, Kavita Bala, Augustine Choi, Jens David, Ben Houlton, Andrew Karolyi, and Greg Morrisett as well as former Dean Lance Collins. I also thank Fernando Gomez-Baquero, Deborah Estrin, Patrick Govang, Josh Hartman, Hugh Hemmings, Gary Kortetzky, John Leonard, Joel Malina, Katherine McComas, Lisa Nishii, Lisa Placanica, Robert Scharf, Larry Schlossman, Louis Walcer, Wendy Wolford, and Ying Yang for their insights.

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To maintain objectivity, USC was not represented as an exemplar of innovation. To the degree I have commented on USC, I draw from my personal experience in university leadership and published articles. My comments on USC are not intended as examples of good or bad practice. They help tell the story of how innovation might (or might not) occur inside universities and illuminate the irony of how deeply creative people can find change so difficult in institutions bound to tradition.

Finally, I thank Dr. Eva Dodge, my personal inspiration. She opened my eyes to a world beyond my home in California, a world illuminated through postcards and stories of adventure. My Great Aunt Eva personifies why universities must open their doors to students with a thirst for knowledge, the quest for justice, and the courage to break tradition.

Competing Interests The author has served as Vice President of Research and in other administrative positions at the University of Southern California. He is a graduate of the University of California at Berkeley. When conducting interviews, he was unaffiliated with the universities featured as case studies. Subsequently, faculty from Georgia Institute of Technology and Tecnológico de Monterrey (though not the people interviewed) collaborated in a research proposal for the National Science Foundation to establish a new engineering research center.

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About the Author

Randolph Hall As VP of Research for 14 1/2 years, Dr. Hall led research across the entire University of Southern California (USC), overseeing research advancement, administration, and research ethics, including research strategy, policy, and initiatives. He was also founder/principal investigator for two national research centers: the Center for Risk and Economic Analysis of Threats and Emergencies (CREATE) and the National Center for Metropolitan Transportation Research (METTRANS). As chair of Industrial and Systems Engineering, Hall led the department to become the first named academic department at USC, which rose to become a top-15 department nationally, propelled by a major endowment gift from USC Trustee Daniel Epstein.

Hall is the author of *Queueing Methods for Services and Manufacturing* and editor of the *Handbook of Transportation Science, Patient Flow, Reducing Delay in Healthcare Delivery*, and the *Handbook of Healthcare System Scheduling*. He has numerous research publications in the fields of transportation, highway automation, innovation, logistics, healthcare operations, system engineering, and queueing.

Dr. Hall obtained all of his degrees (BS, MS, and PhD) from the University of California at Berkeley, in Industrial Engineering and Operations Research and in Civil Engineering.

Chapter 1

Introduction



Abstract America’s research universities matured during the formative period between the Civil War and World War I, a time of remarkable change. Universities now have the opportunity to transform again through systematic change, coupling innovation with trust, both inside through their own practices and offerings and outside through societal impact. Cornell University is provided as an example of how a university founded in the nineteenth century achieved dramatic change through a new venture, establishing an innovation-focused campus in New York City.

Keywords Innovation · Trust · Transformation · Land grant · Industrialization · Standards · Governance · Tenure · New venture

When I came into his office he greeted me with, “I find that I must ask you to resign as obstetric resident. I’ve learned since appointing you that your work has not been satisfactory and I cannot consider you. You can sign this resignation now.” With this, he handed me a typewritten letter of resignation dated and requiring only my signature.—Oral History of Dr. Eva Dodge¹

Eva Dodge, my great aunt, had a passion for medicine. “I recall very vividly asking the ward nurse why the doctor had prescribed treatments,” she wrote in her memoir. But Eva was not rewarded for her curiosity. The nurse replied, “You are to do as you are told. The reasons are the doctor’s business.”² These words changed Eva’s life. Rather than becoming a missionary nurse, as she had intended, Eva would become a doctor—venturing into a profession that valued *knowing why* but not always valuing her as a person.

Passion, determination, and curiosity are characteristics of innovators. As one of the first female students at the University of Maryland School of Medicine, Eva

¹Dodge, E. (undated). Oral history. Little Rock, AK: Historical Research Center, University of Arkansas Medical School Library. p. 21.

²Dodge. *op. cit.* p. 3.

Dodge needed to innovate as she transcended barriers, including rules and standards selectively applied to women and minorities.

Universities in America are a source of innovation, which I define as the successful creation and application of new ideas. The culture of freedom of thought and expression found in universities stimulates creative discovery and novel technology—the Internet, Google Search, and magnetic resonance imaging (MRI), to name a few examples. America could not lead the world in Nobel Prizes, inventions, high-tech industry, and pharmaceuticals without the excellence of our universities. We would not attract promising students and scientists from China, India, the Middle East, and Europe without our academic culture of learning, collaboration, and entrepreneurship.

In *Empire of Ideas*, William Kirby writes that “In 2022 nearly every major ranking of global universities shows American institutions in leading positions.” Kirby goes on to state: “Yet we know this was not the case in 1922.”³ However, by 1922, American universities had transformed, establishing a foundation that propelled them to excel relative to their international peers over the last century. “As the leaders in our system of higher education borrowed from the educational traditions of England and Germany, and mixed them with our own national needs, an idea for a new kind of university—an American model—was born,” wrote Jonathon Cole in the *The Great American University*.⁴

America built its foundation for higher education between the Civil War and World War I, an age when industry and technology transformed the American economy. The foundation from more than a century ago became traditions. Given the changes in work and society since then, along with the dramatic elevation of companies in the information technology sector, it is time to consider how universities can continue to be effective as a trusted creator and conveyor of information and knowledge. How, then, might they improve through innovation: the successful creation and application of new ideas? In the words of Kirby, just because American universities have worldwide prominence now, “there is no reason to assume it will be true” a century from today, in 2122.

Managing Change Inside Universities asks how to build the foundations of innovation from which American universities can continue to excel in the future, both relative to their international peers and their counterparts in the private sector. Within this first chapter, I present the key ideas of *Managing Change Inside Universities*, each to be explored in depth in the chapters that follow, as shown below.

³Kirby, W.C. (2022). *Empires of ideas, Creating the modern university from Germany to America to China*, Cambridge, MA: Belknap Press. p. 4.

⁴Cole, J.R. (2009). *The great American university, Its rise to preeminence, Its indispensable national role, Why it must be protected*. New York, NY: Public Affairs. p. 44.

Takeaways and Key Ideas

- 1) America's research universities matured during the formative period between the Civil War and World War I, a time of remarkable innovation and change. Innovations continued later, but few of the most highly regarded research universities in the United States were founded after World War I.
- 2) Universities both collaborate with and compete with the private sector, for which information has become the dominant product. Companies and universities compete for revenue, knowledge, reputation, and trust.
- 3) University innovation requires both an outside focus (such as technology transfer) and an inside focus (improving the university itself). Likewise, trust in universities has inside and outside dimensions and is a necessary ingredient for successful change.
- 4) Innovation and trust are needed to succeed in the fundamental mission of universities: research, service, and learning, integrated as a whole.
- 5) Systematic change entails a desire to experiment, learn, and implement.
- 6) As happened at the start of the twentieth century, America's universities can build the foundation now for success over the next century.

Source of Innovation

Innovation can occur in many ways, both from within existing enterprises and through the formation of new enterprises in the form of “startups.” Apple, the world's most highly valued company in 2023, has done both, first through its initial formation in 1976 as a personal computing company and three decades later through its reinvention of the telephone and camera through the creation of the iPhone. But Apple did more than invent a new disruptive technology. It changed the relationship between the private sector and universities.

University ranking derived from metrics and opinions—such as *U.S. News* in America and *Times Higher Education (THE)* and Quacquarelli Symonds (QS) globally—are imperfect in measuring the quality of universities or evaluating the experiences provided to individual students or stakeholders. Nevertheless, they influence perceptions and influence university priorities, in some cases to the point of setting explicit ranking targets within strategic plans.⁵ Though *U.S. News*, *THE*, and QS use different methods, they are remarkably similar in their conclusion that nine American universities, led by MIT, Stanford, and Harvard, all founded between 1636 and 1891 (1803 on average), are among the best in the country and best in the world (Table 1.1).

⁵Diep, F. and Gluckman, N. (2021, October 1). Colleges still obsess over national rankings. For proof, look at their strategic plans. *The Chronicle of Higher Education*.