

An aerial photograph of a university campus. In the center is a large, rectangular green field with a dark path running through it. To the right are several multi-story brick and white buildings. To the left are trees with autumn foliage. The top of the image is overlaid with a dark grey semi-transparent box containing the title text.

How to Start a University: **The New Global Universities** **and Reinventing Higher Education**

BRYAN E. PENPRASE
MIT X TALK - APRIL 24 2024

Some of my history

•20 Years at Pomona College

- Chair, Physics and Astronomy
- Founding Director of Liberal Arts Consortium for Online Learning (LACOL)

•5 Years at Yale and Yale-NUS College (Singapore)

- Member at inaugural curriculum committee for Yale-NUS College
- Member of Freshman Scholars Committee at Yale University
- Founding Director of the Yale-NUS Teaching and Learning Center

•6 Years at Soka University of America

- Served as Dean of Faculty and expanded Soka University of America
- Now Vice President of Sponsored Research and External Academic Relations
- Led curriculum design and hiring for Life Sciences Program at SUA
- Developed new faculty development programs
- Author of book *STEM Education for the 21st Century* (Springer, 2020)
- Author of the forthcoming book with Noah Pickus - *New Global Universities: Reinventing Education in the 21st Century* (Princeton, 2023)

•Visiting Scholar, Harvard Graduate School of Education

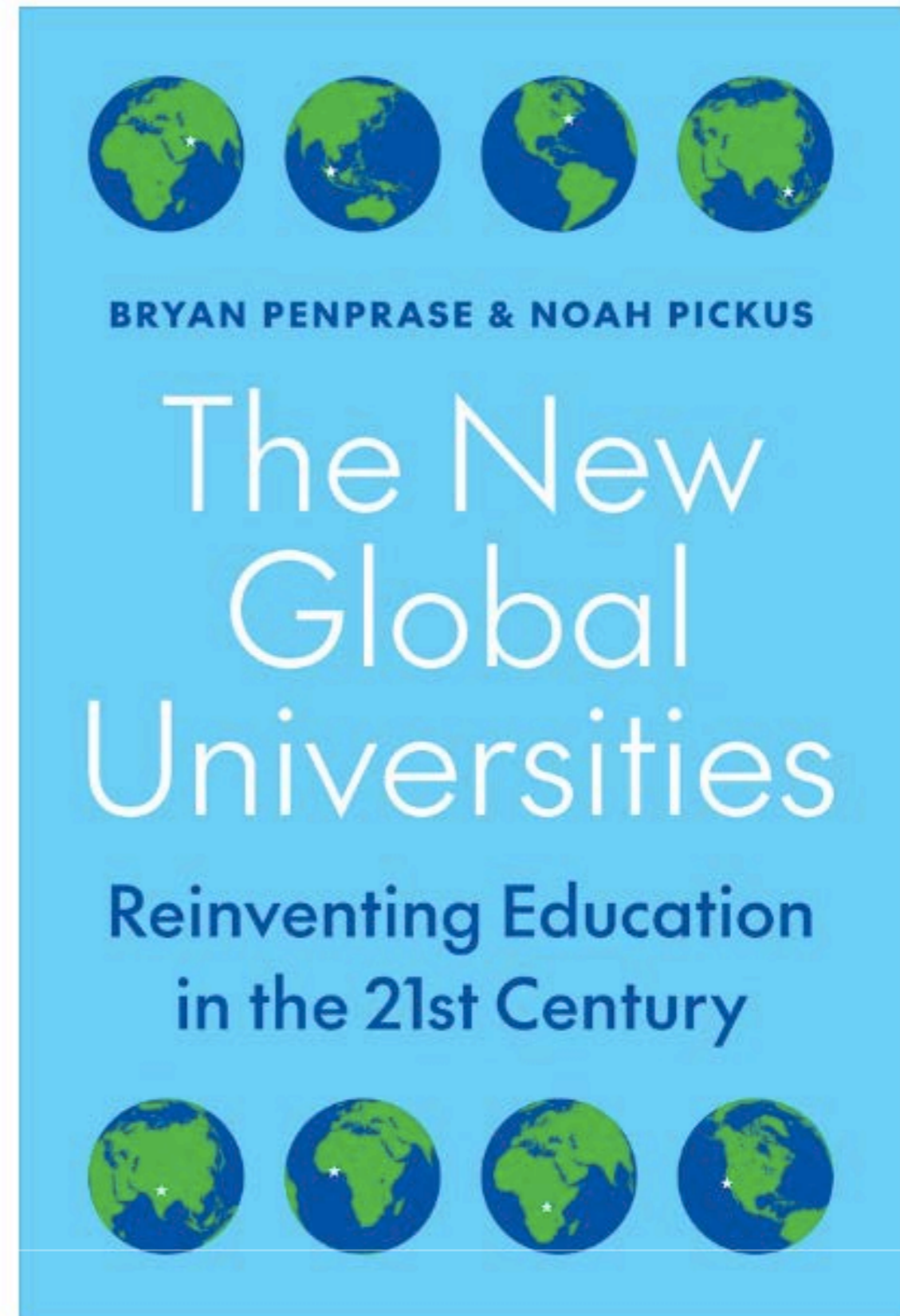
Our new book!

[Education](#)

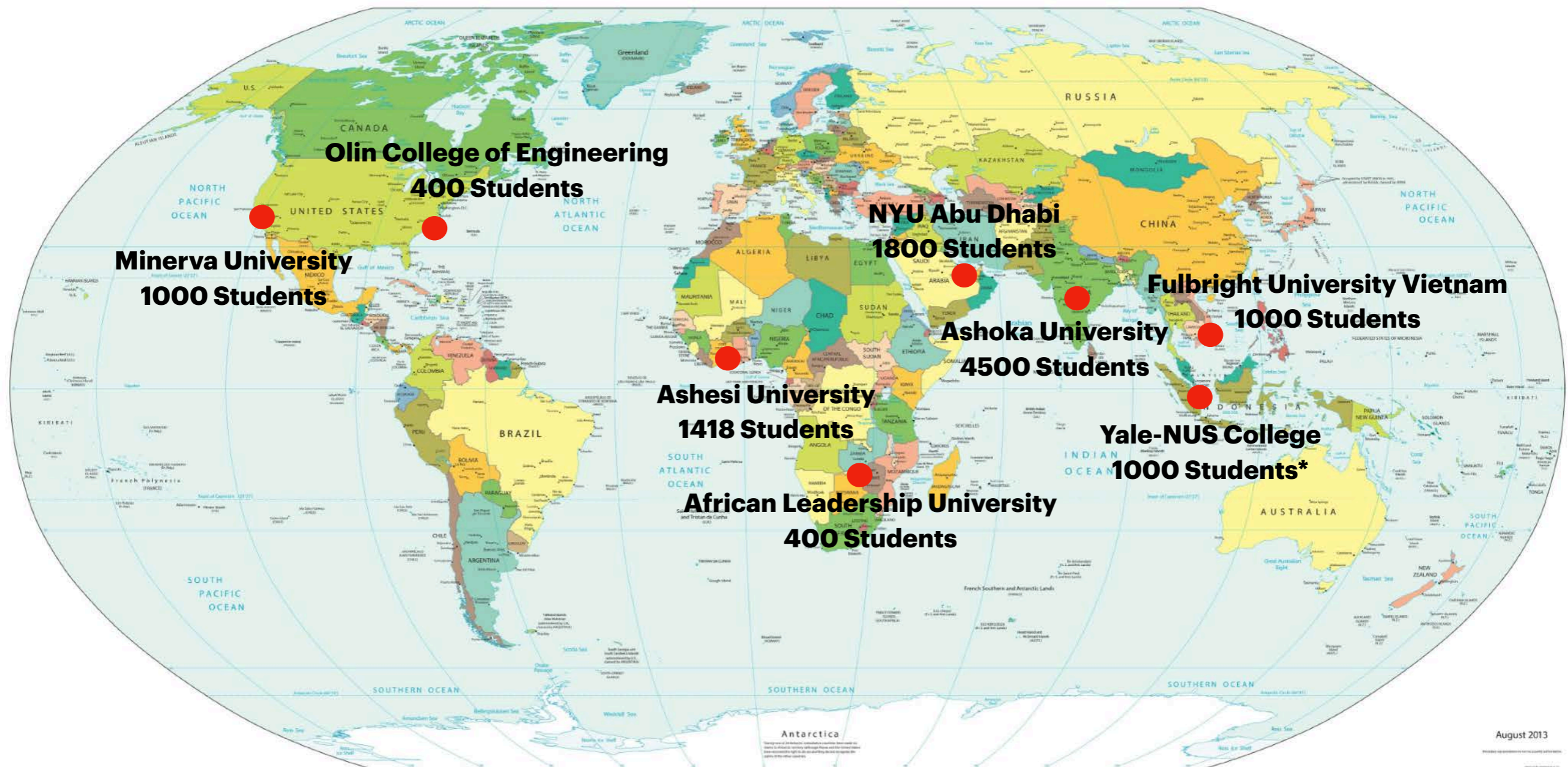
The New Global Universities: *Reinventing Education in the 21st Century*

[Bryan Penprase and Noah Pickus](#)

Reimagining higher education around the world:
lessons from the creation of eight new colleges and
universities in Africa, Asia, the Middle East, and
North America



The New Global Universities: Reinventing Education in the 21st Century by Bryan Penprase and Noah Pickus (Princeton University Press, Fall 2023)



Case studies culture formation with new innovative forms of STEM pedagogy and curriculum

Mission Statements

Minerva University: Nurturing Critical Wisdom for the Sake of the World.

Ashesi University: To educate a new generation of ethical, entrepreneurial leaders in Africa; to cultivate within our students the critical thinking skills, the concern for others and the courage it will take to transform a continent.

Olin College of Engineering: Transforming engineering education toward a world in which engineering serves everyone.

African Leadership University: Not excellence for the few, but excellence and impact at scale.. “Missions not Majors”

NYU Abu Dhabi: To educate global citizens, and produce knowledge in order to promote human understanding and to better society.

Ashoka University: To enable critical thinking, complex problem solving, effective communication, teamwork, and innovation for impact and change.

Fulbright University Vietnam: “...scientific, social, and humanistic modes of inquiry and action, optimized for a dynamic and impatient future.”

Yale-NUS College: A community of learning, founded by two great universities, in Asia, for the world.



YALE-NUS COLLEGE, SINGAPORE



OLIN COLLEGE OF ENGINEERING, USA



ASHESI UNIVERSITY, GHANA



ASHOKA UNIVERSITY, INDIA



NYU ABU DHABI, UAE



FULBRIGHT UNIVERSITY, VIETNAM



AFRICAN LEADERSHIP UNIVERSITY, RWANDA



MINERVA UNIVERSITY

Stormclouds for Higher Education

LARGE NUMBER OF INCUMBENT INSTITUTIONS SLOW TO CHANGE

About 15.9 million undergraduates & 3.1 million graduate students attended
~3,900 colleges and universities
in fall 2020 across the United States.



Why are new universities needed?

LOW COMPLETION RATES FOR STUDENTS IN THE US

College Completion Rates by Sector

Private nonprofit 4-year institutions: 68%

Public 4-year institutions: 63%

Private for-profit 4-year institutions: 29%

Public 2-year institutions: 29%

SOURCE: NCES Undergraduate Retention and Graduation Rates, May 2022. <https://nces.ed.gov/programs/coe/indicator/ctr>

Why are new universities needed?

DECREASING FAITH IN HIGHER EDUCATION

From Gallup, <https://news.gallup.com/poll/508352/americans-confidence-higher-education-down-sharply.aspx>

Shifting Confidence in Higher Education Among Demographic Groups, 2015-2023

% of U.S. adults with "a great deal" or "quite a lot" of confidence in higher education

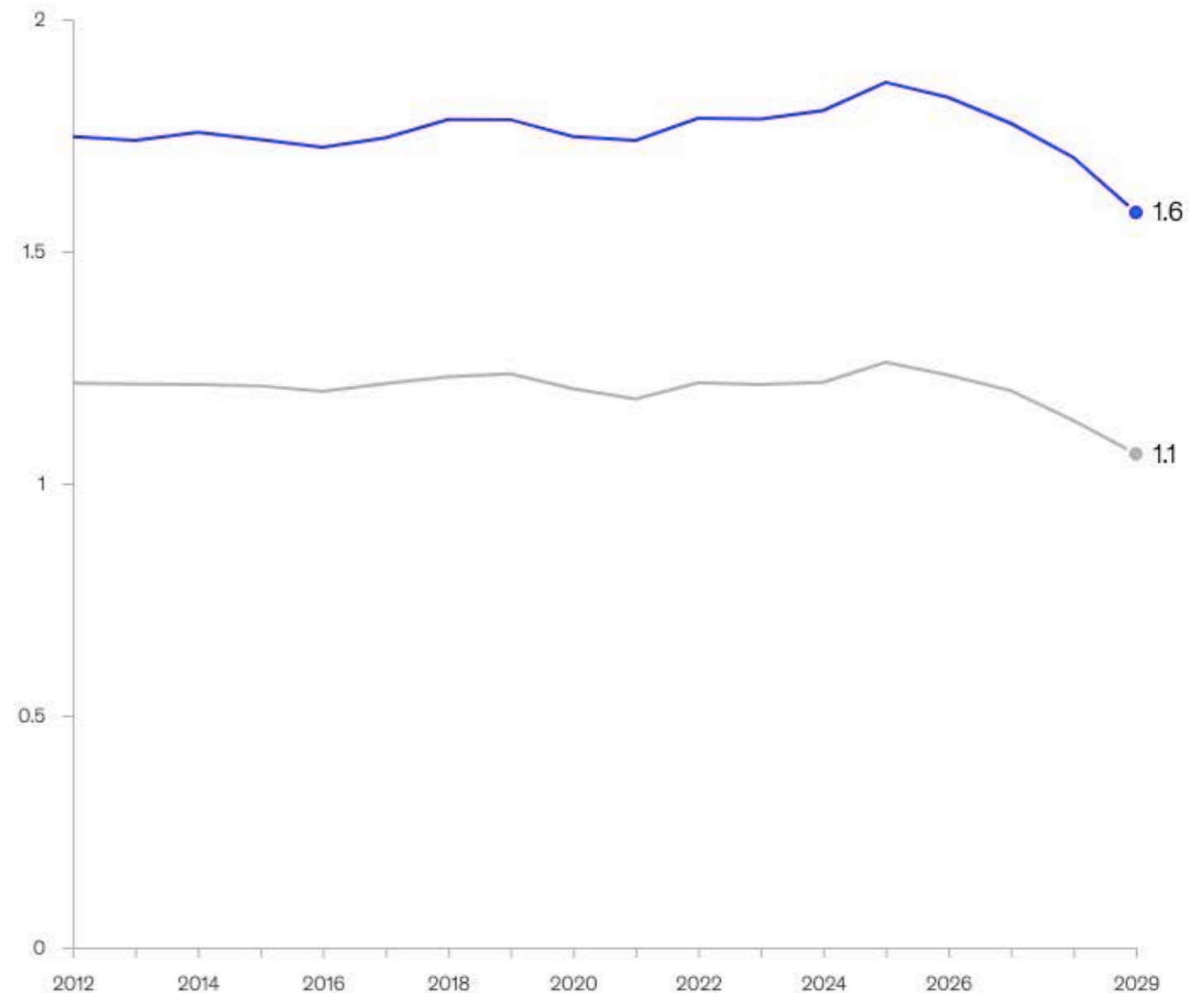
	2015	2018	2023	2015-2023
	%	%	%	pct. pts.
Party identification				
Republicans	56	39	19	-37
Independents	48	44	32	-16
Democrats	68	62	59	-9
Education				
No college degree	54	45	29	-25
College degree only	57	50	47	-10
Postgraduate degree	67	60	50	-17
Gender				
Men	52	45	33	-19
Women	61	51	39	-22
Age				
18 to 34	60	51	42	-18
35 to 54	55	49	39	-16
55 and older	55	46	31	-24

Stormclouds for Higher Education

CHANGING DEMOGRAPHICS REDUCING STUDENT POPULATIONS

The following visualizations build upon the Higher Education Demand Index (HEDI), developed by Nathan Grawe, professor at Carlton College. HEDI models the probability of attending college and the impact of demographic changes by type of school and geography.

Forecasted number of 18-year-olds enrolled in higher education
2-year and 4-year institutions, millions of students



<https://www.mckinsey.com/industries/education/our-insights/higher-education-enrollment-inevitable-decline-or-online-opportunity>

● 2-year ● 4-year

Data: Nathan D. Grawe, *Demographics and the Demand for Higher Education*, Baltimore: Johns Hopkins University Press, 2018

Stormclouds for Higher Education

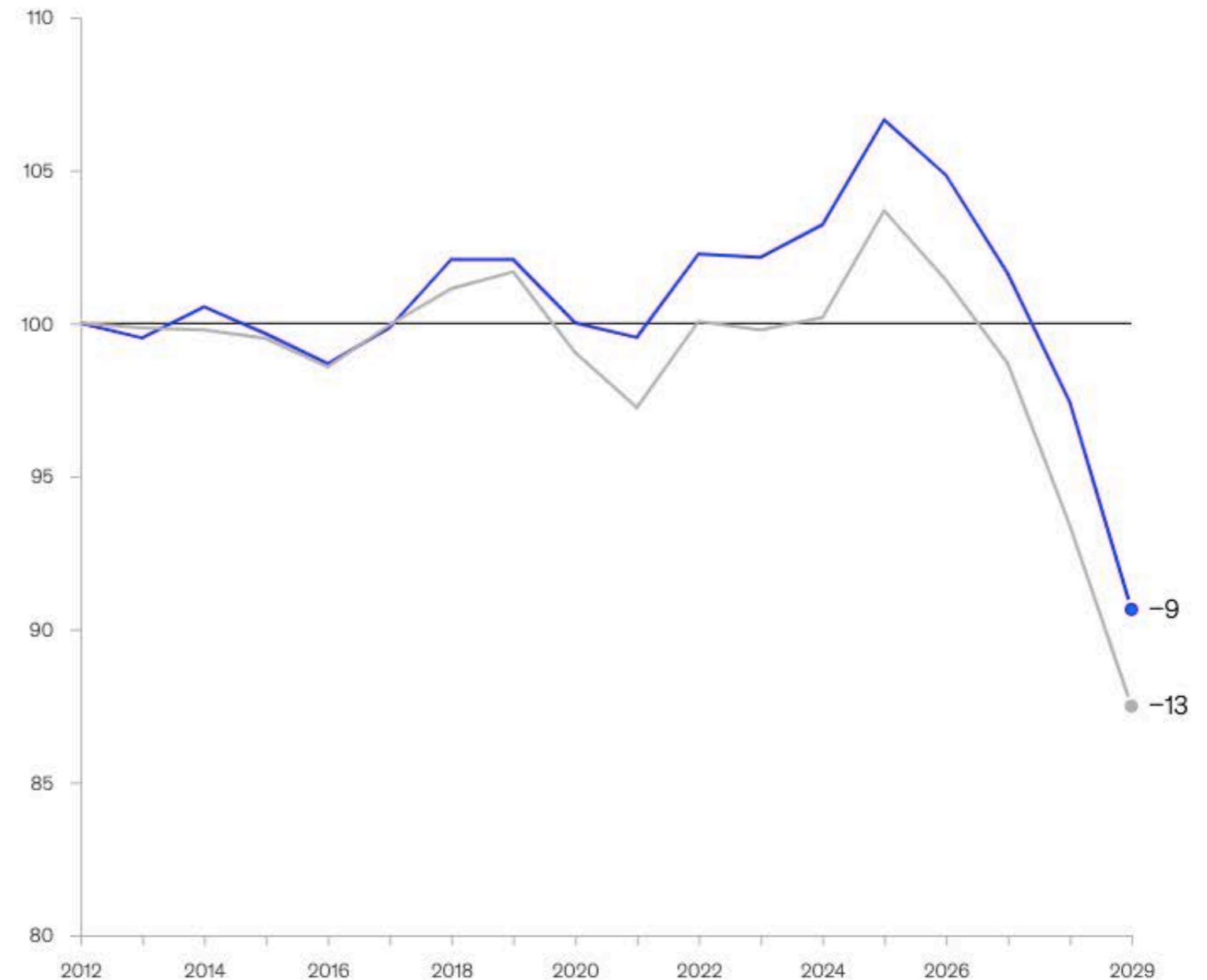
CHANGING DEMOGRAPHICS REDUCING STUDENT POPULATIONS

HEDI projections begin in 2012 and extend to 2029. They show that **two-year** schools will face a stark decline in overall enrollment (-13 percent since 2012), while **four-year** schools will see a slightly lower, but still significant, drop (-9 percent).

Change in number of enrolled 18-year-olds

Enrollment in 2-year and 4-year institutions, indexed to 2012

% change from 2012



<https://www.mckinsey.com/industries/education/our-insights/higher-education-enrollment-inevitable-decline-or-online-opportunity>

● 2-year ● 4-year

Data: Nathan D. Grawe, Demographics and the Demand for Higher Education, Baltimore: Johns Hopkins University Press, 2018

Resistance to Change

FROM CLARK KERR, “THE USES OF THE UNIVERSITY”

“Of the eighty-five institutions in the Western world established in 1520 that still exist in recognizable form, seventy of them are universities in the same locations, with some of the same buildings, with professors and students doing much the same things.” (The other fifteen institutions include the Parliaments of the Isle of Man and of Iceland and several Swiss cantons). “Colleges and universities are among the most long-standing of social institutions”

Clark Kerr, *The Uses of the University*, p. 115.



Resistance to Change

FROM BRIAN ROSENBERG

on the factors resisting “change:”

“...broad factors including reputation and incentive structures in the process of change in this most immutable of industries and ... the incompatibility of some of higher education’s most deeply embedded practices, such as departmental autonomy, shared governance, and tenure, with the need for transformation.”

from Rosenberg, Brian. *Whatever It Is, I’m Against It* (pp. 30-31). Harvard Education Press.

Resistance to Change

FROM BRIAN ROSENBERG

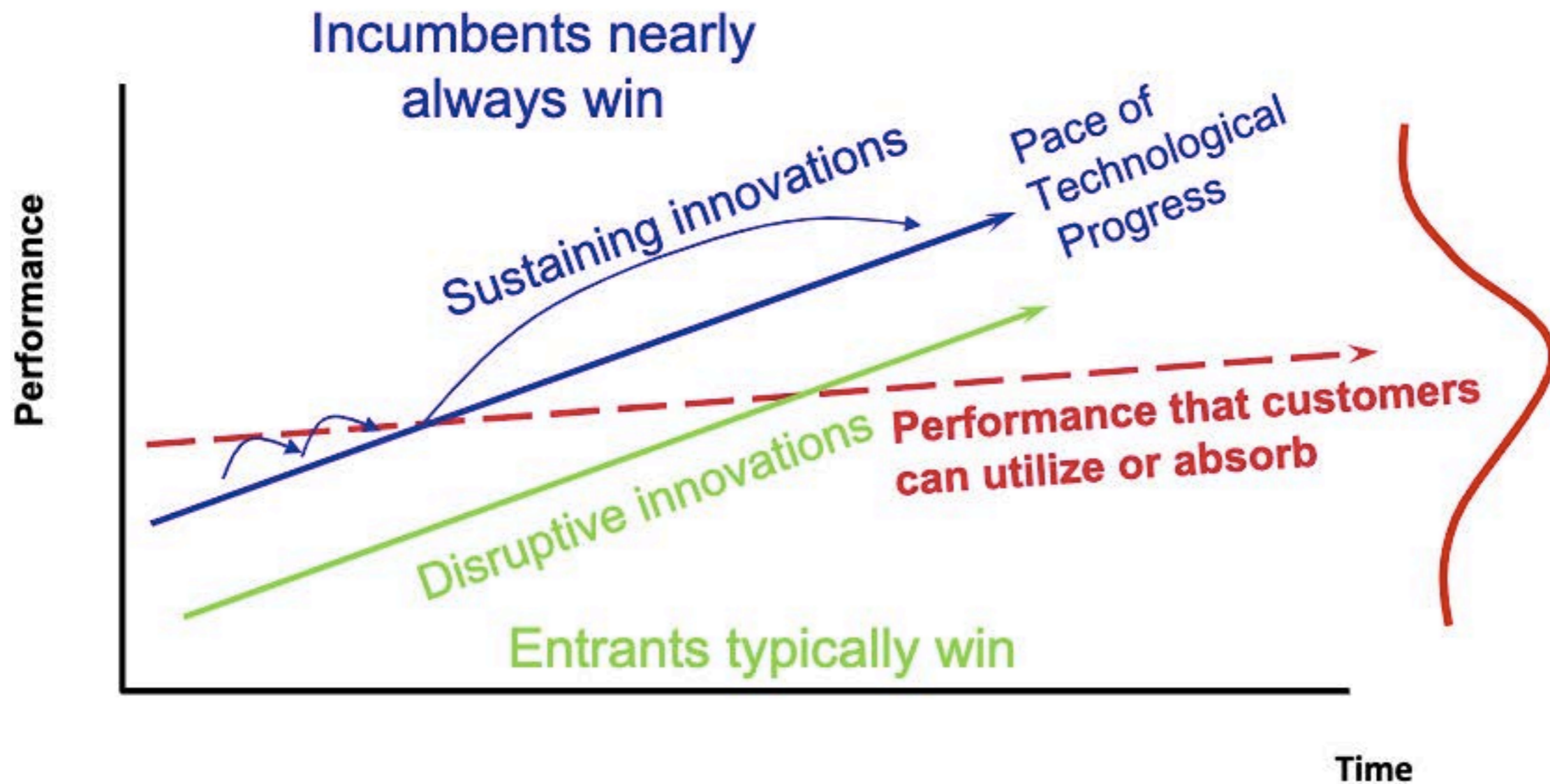
on the “strategic plan:”

“There are many words that could be used to describe these entirely reasonable if wholly self-evident and generic priorities—anodyne comes to mind—but strategic and plan are not among them.”

(from Rosenberg, Brian. *Whatever It Is, I’m Against It* (p. 103). Harvard Education Press.)

Does Higher Ed need “Disruption?”

BASIC IDEAS OF DISRUPTIVE INNOVATION



Disrupting Higher Education

BASIC IDEAS OF DISRUPTIVE INNOVATION

What makes a successful Disruptive Innovation?



Enabling Technology

An invention or innovation that makes a product more affordable and accessible to a wider population.



Innovative Business Model

A business model that targets nonconsumers (new customers who previously did not buy products or services in a given market) or low-end consumers (the least profitable customers).

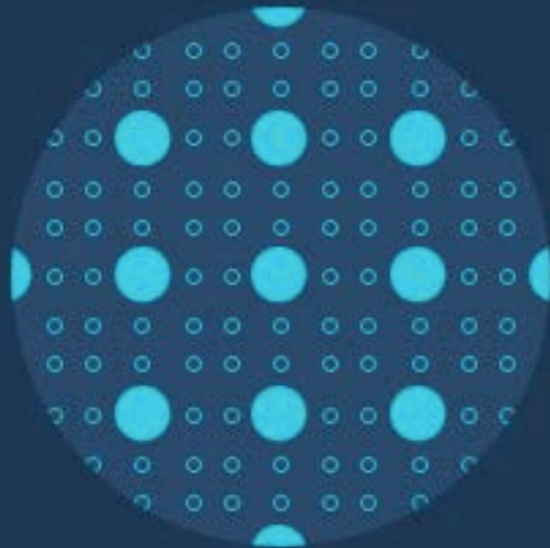


Coherent Value Network

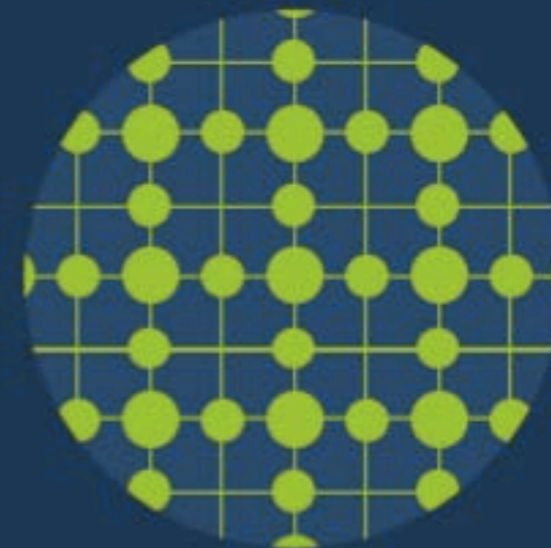
A network in which suppliers, partners, distributors, and customers are each better off when the disruptive technology prospers.

Disrupting Higher Education

MODULARITY VS INTERCONNECTED



VS



MODULAR

Standardized components
Optimized for price, speed
Often outsourced
Rapid adoption
Expands industries

Interdependent

Unique components
Optimized for function, reliability
In-house
Slow adoption
Creates industries

Figure from <https://www.christenseninstitute.org/interdependence-modularity/>

Enter the “Startup” University! What is needed to start a university?

SIMULTANEOUS, COMPLEX, INTERTWINED VISIBLE TASKS

- **Generating Prestige**
- **Building a Sustainable Business Model**
- **Surviving the Build and Launch Phase**
- **Recruiting and Training Faculty**
- **Designing a New Curriculum and Gaining Accreditation**
- **Building a Campus and Virtual Environment**

Ingredients Needed to Start a University

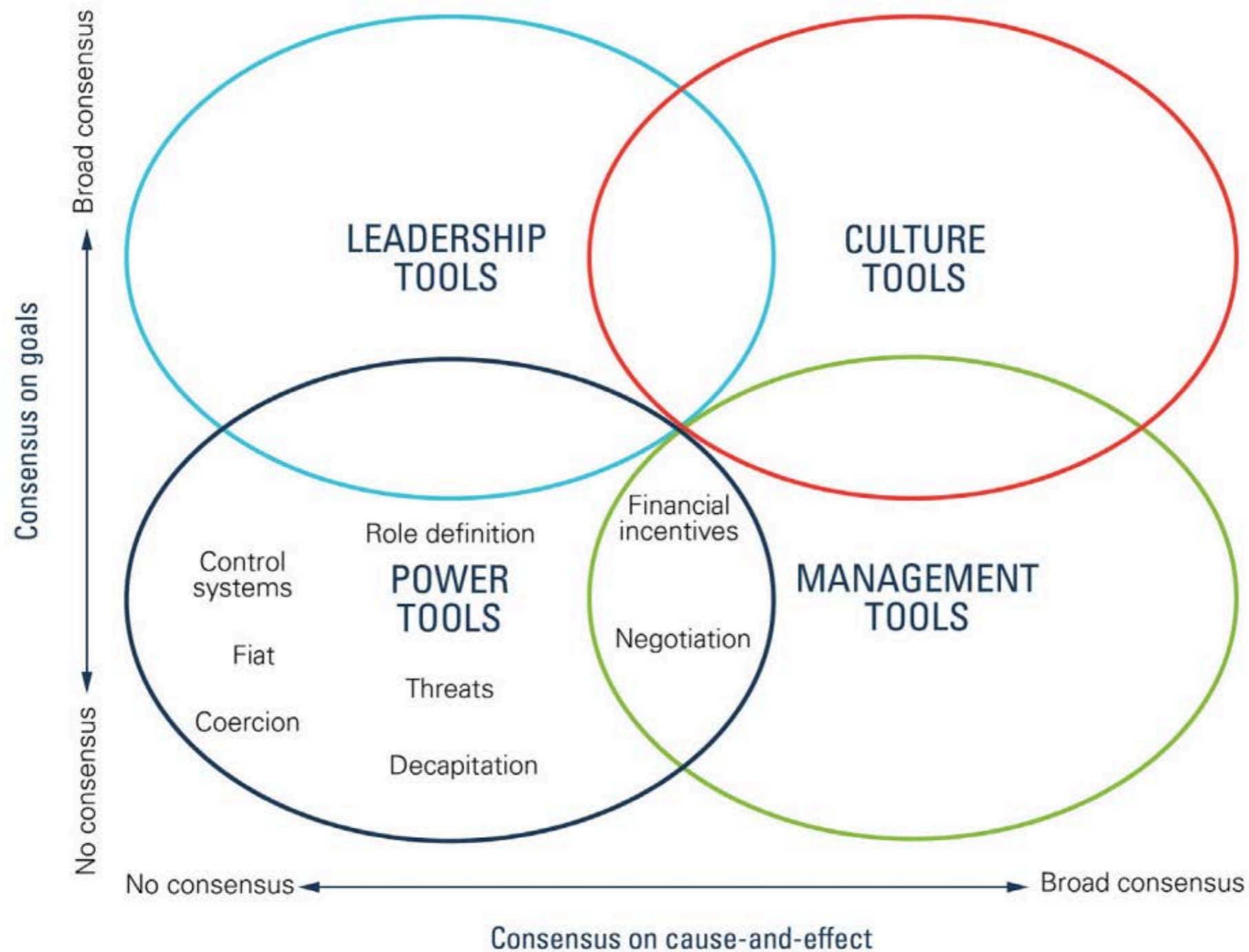
INVISIBLE TASKS - PERHAPS MORE IMPORTANT

- **Establishing a shared Mission and set of Values**
- **Developing an Institutional Culture**
- **Navigating and Reinforcing Local, Regional and Global Cultures**
- **Building on these Same Cultures through Students, Faculty and Intellectual Activities**

Disrupting Higher Education

ORGANIZATIONAL LEADERSHIP STYLES (M. HORN)

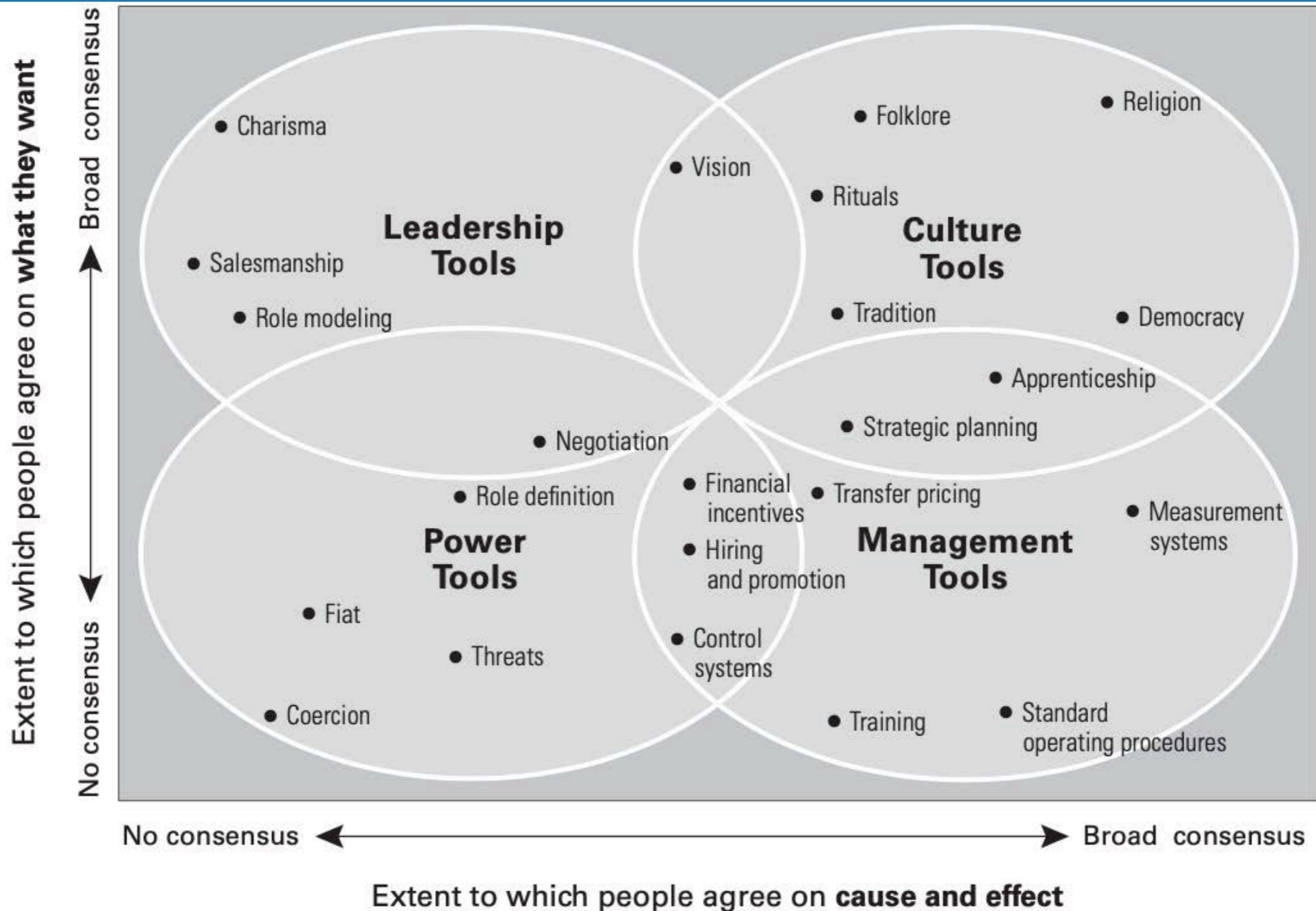
From "How leaders can successfully manage change in colleges and universities" by Michael B. Horn, 2022



Disrupting Higher Education

ORGANIZATIONAL LEADERSHIP STYLES (C. CHRISTENSEN ET AL)

"Tools of Cooperation and Change" by Christensen et al (2006)

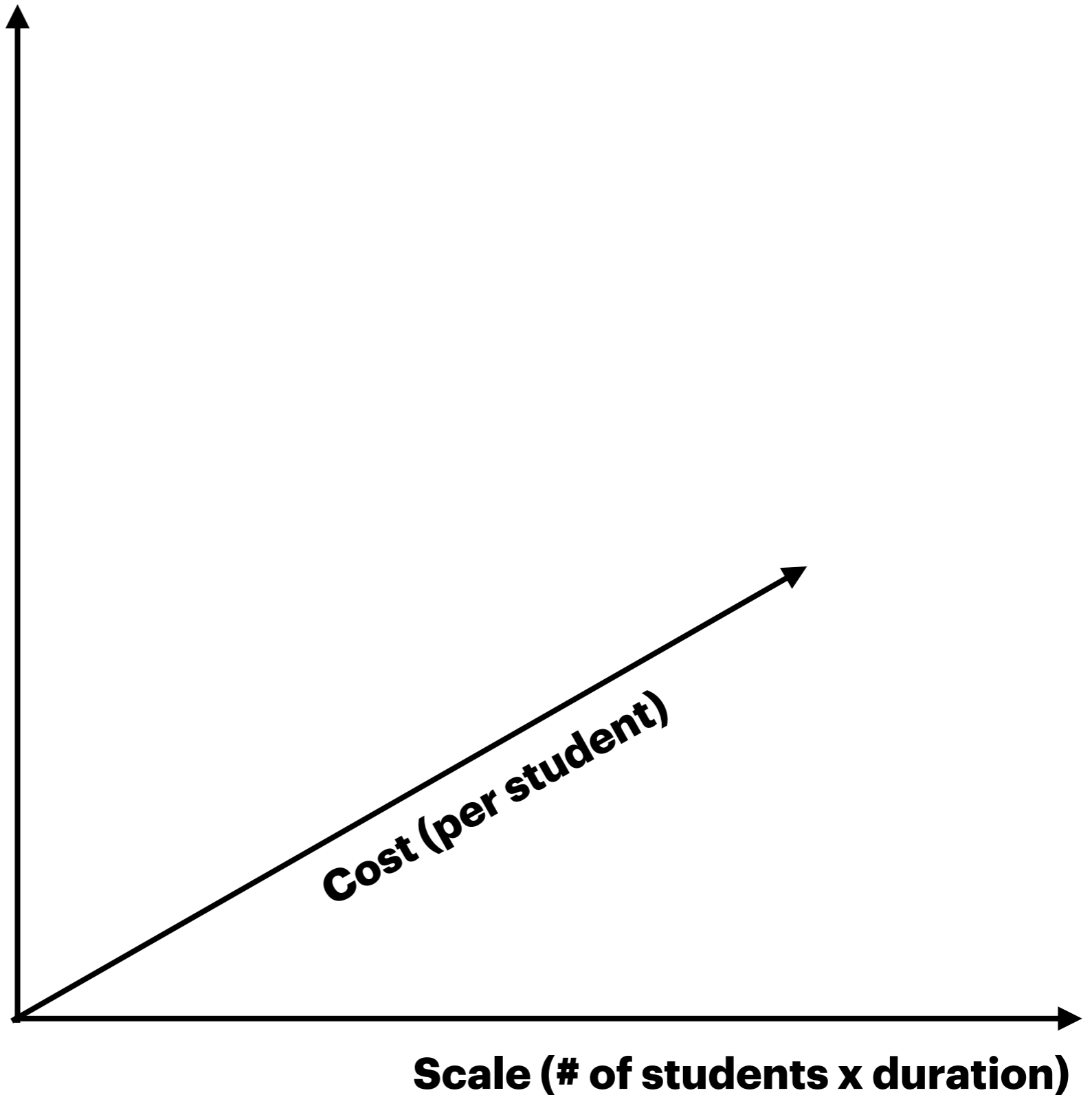


Innovation Space in Higher Education

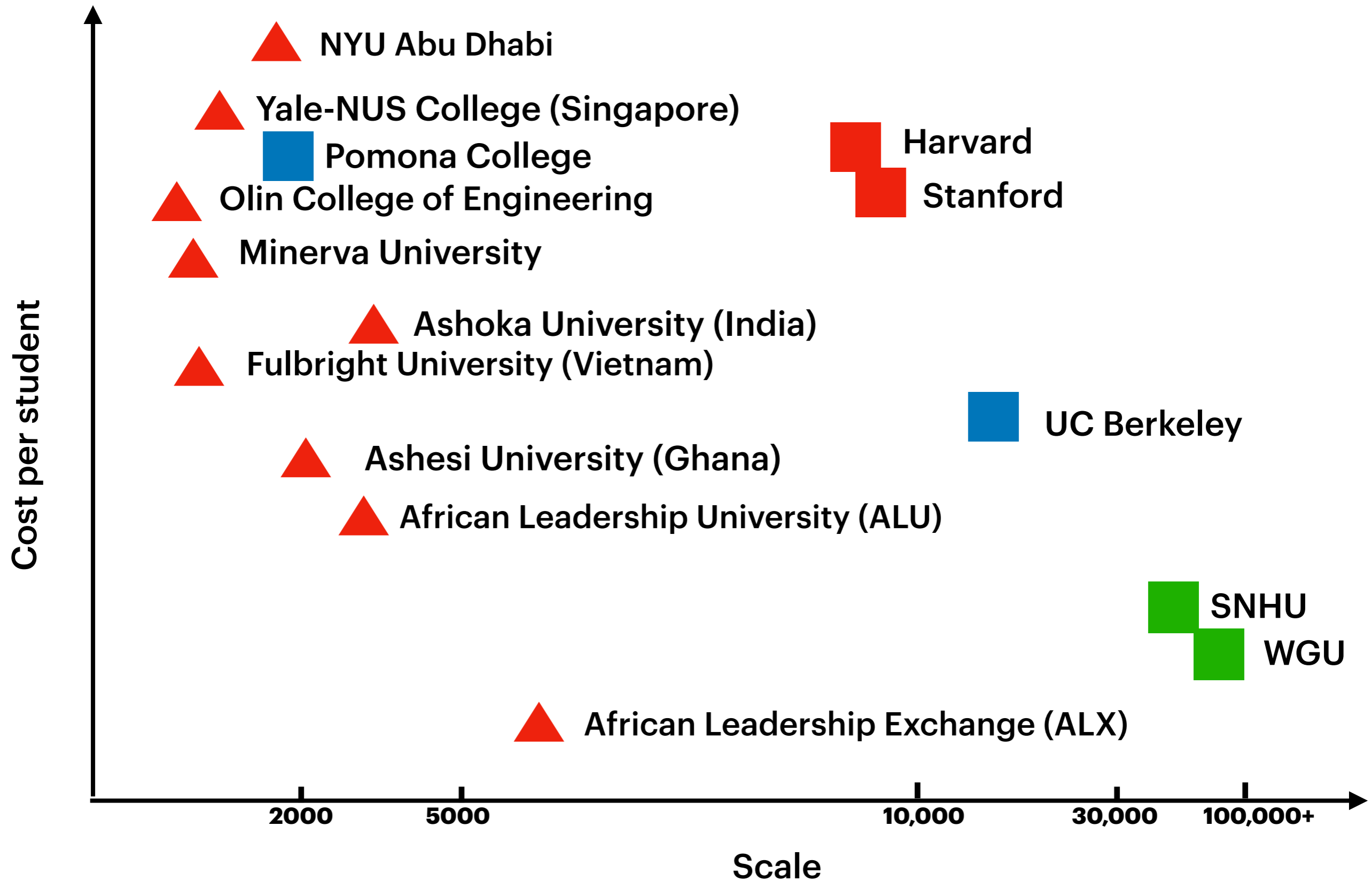
Impact(s)

Can operate in
three (or more) dimensions:

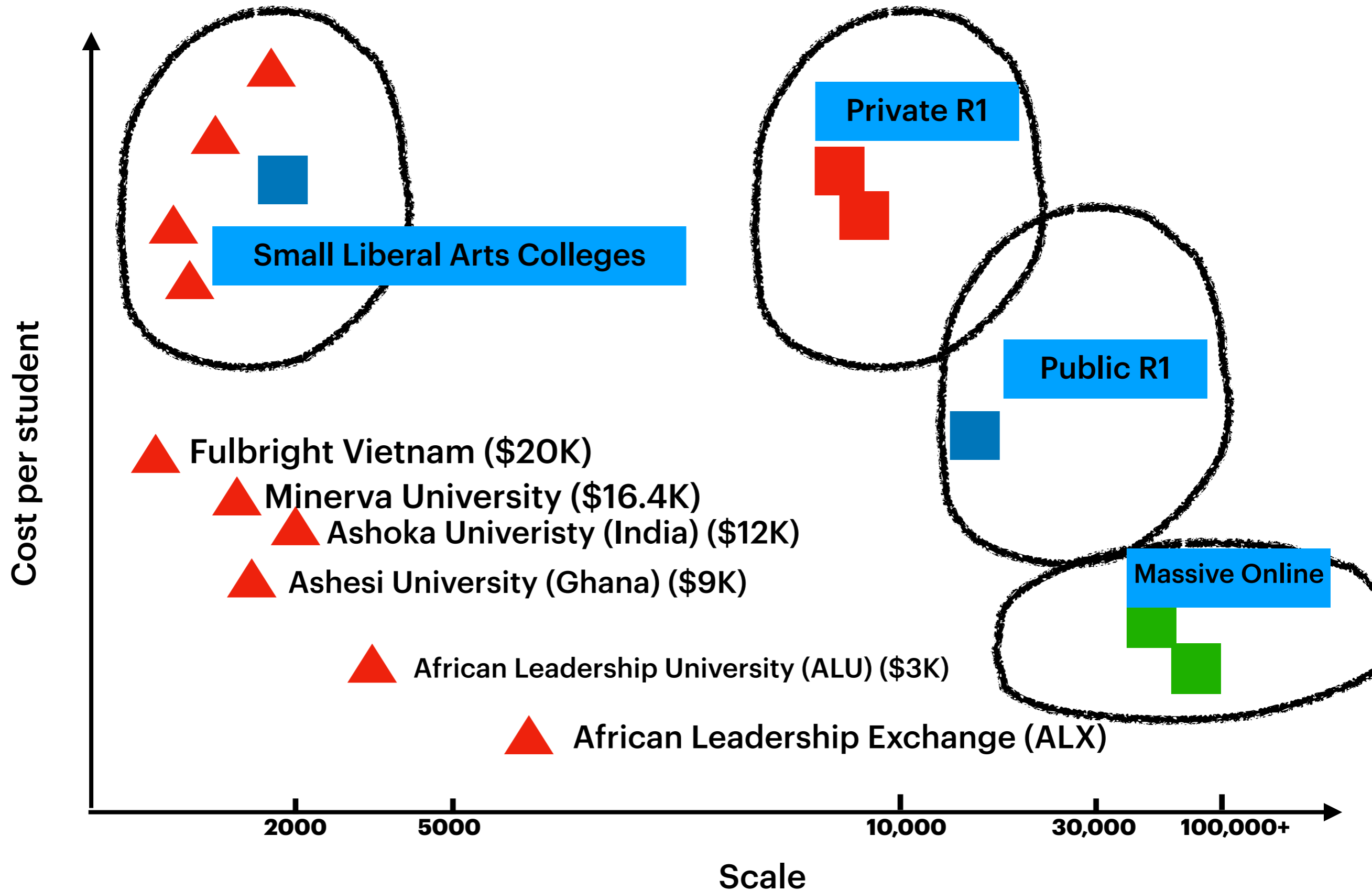
1. Transformative Teaching
2. Social Mobility
3. Research and Discovery
4. Access and Large Size



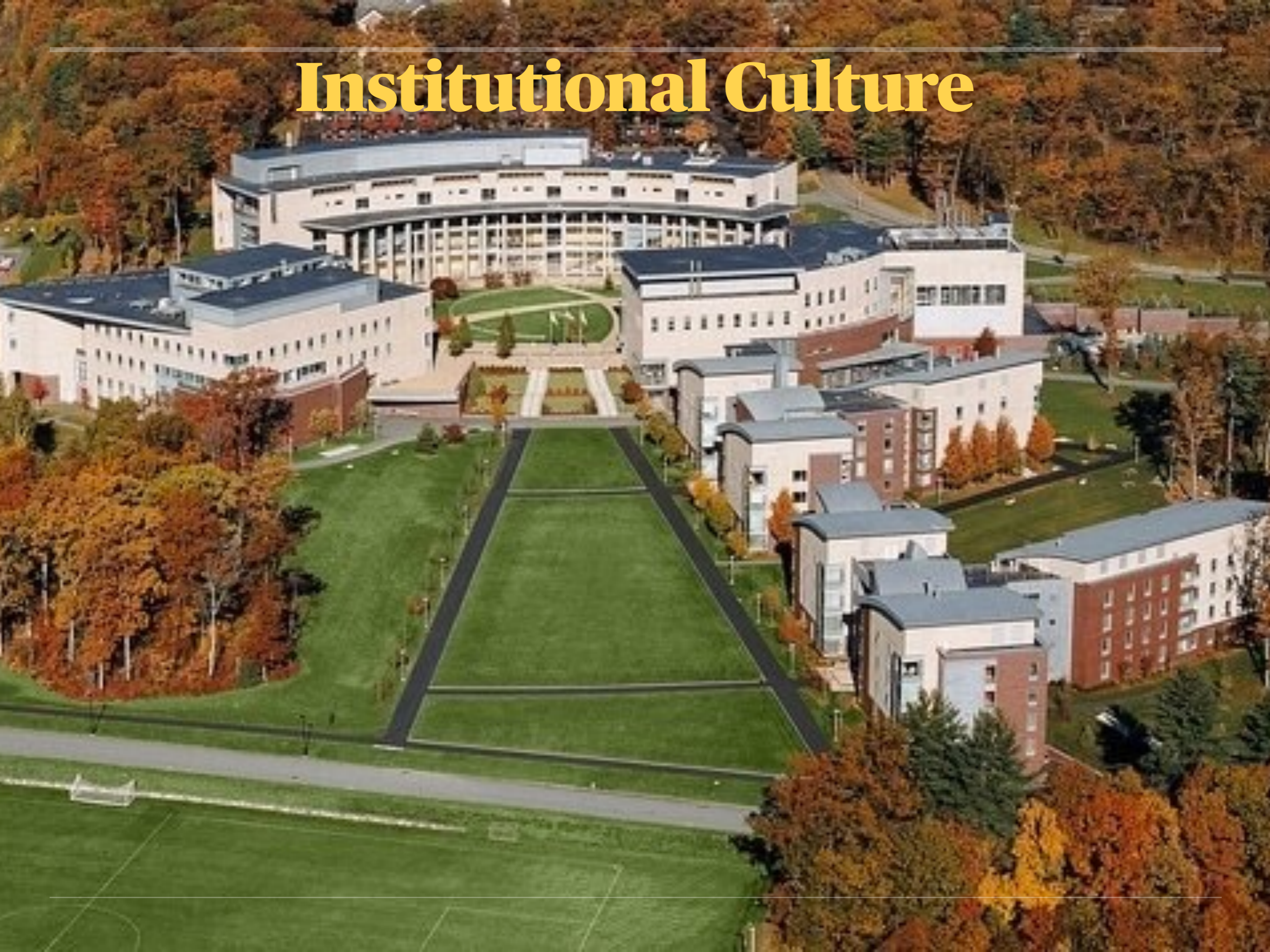
Parameter Space in Higher Education



Parameter Space in Higher Education



Institutional Culture





FROM EDGARD SCHEIN,

ORGANIZATIONAL CULTURE AND LEADERSHIP (1992)

Three Levels of Culture

- Artifacts: visual structures and processes (easy to see, harder to decipher)
 - Espoused Values: conscious goals and strategies
 - Underlying Assumptions: unconscious, invisible and assumed (ultimate source of values and actions)
-

Teaching Culture Impacts



Liberal Arts Approaches to Teaching: The Impact on Research

Baccalaureate origins of
doctorate recipients
(2008-17)
Bachelor degree (1999-
2008)

Baccalaureate institution	Doctorates in all disciplines		Doctorates in S&E	
	Rate	Rank	Rate	Rank
Caltech	42.1%	1	40.9%	1
Harvey Mudd	29.8%	2	29.2%	2
Swarthmore College	22.4%	3	15.3%	5
Reed College	22.1%	4	16.2%	4
Carleton College	18.6%	5	14.2%	6
MIT	18.5%	6	17.5%	3
Grinnell	16.3%	7	11.8%	7
Haverford College	14.6%	8	10.5%	10
Princeton	14.3%	9	10.6%	9
Pomona College	14.2%	10	10.4%	11

Data from NSF compiled by Swarthmore College.
Rate: number of doctorate recipients per 100 bachelor's
degrees awarded in all fields 9 years earlier

Teaching Culture Impacts



Liberal Arts Approaches to Teaching:

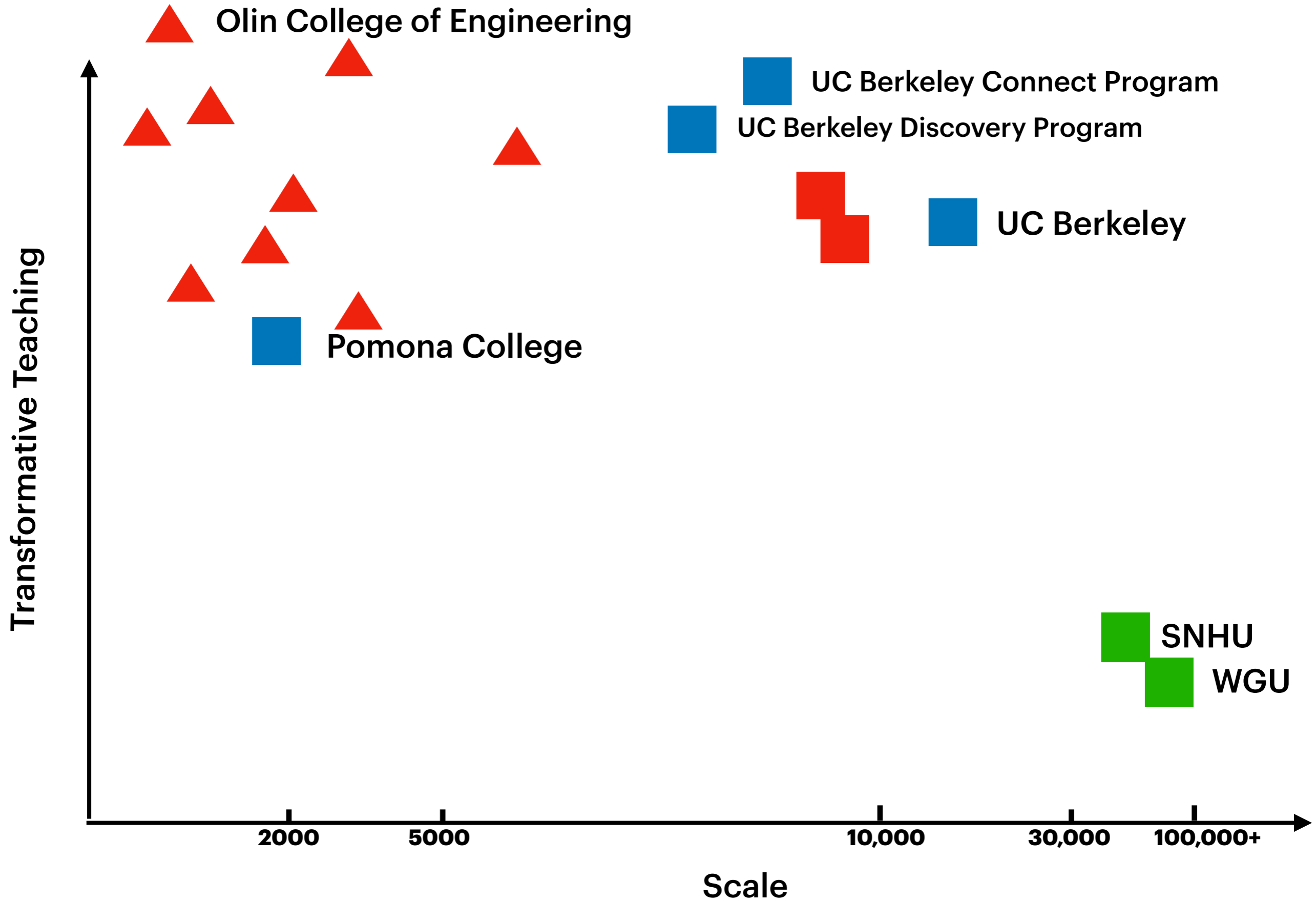
...twelve of the fifty-three Nobel prize winners between 1999 and 2008 who received their undergraduate education at a U.S. college or university received it at a liberal arts college, amounting to 23 percent of Nobelists educated in the U.S.[1] This is all the more remarkable given that less than 2 percent of U.S. undergraduates study at a liberal arts college. The top ten institutions per capita for producing Nobel Prizes include two U.S. liberal arts colleges, Swarthmore and Amherst.

[1] Ferall, V.P., *Liberal Arts at the Brink*, quoted in Penprase and Pickus (2023).

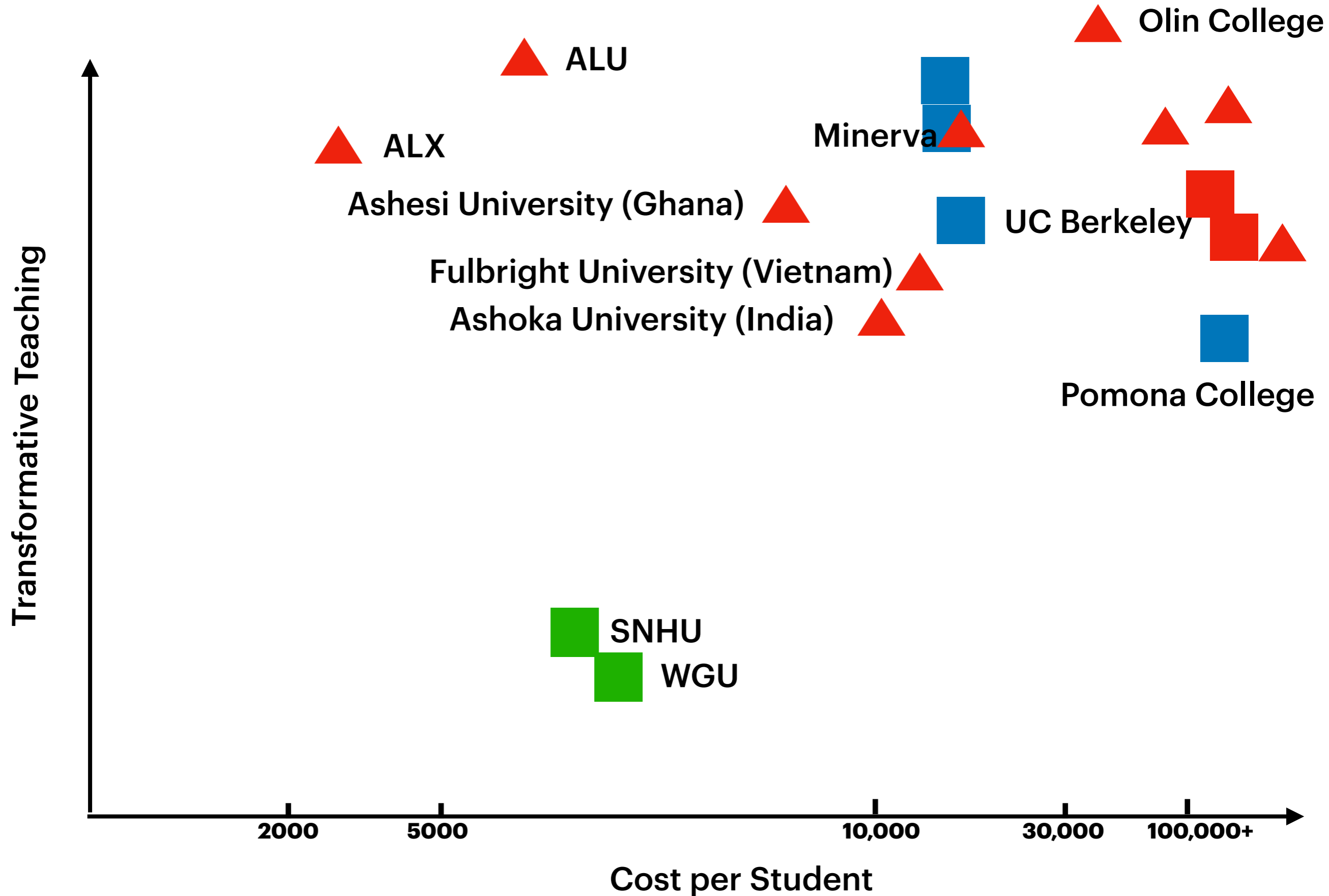
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Parameter Space in Higher Education



Parameter Space in Higher Education





Larger Impacts of New Universities

LEVERAGING AND INSTITUTION'S UNIQUE CULTURE

- Impact on Future Generations and Future Industries - by sustaining higher education through the future
 - New types of education for unprecedented global crises and “Fourth Industrial Revolution.”
 - Provides models for redesigning STEM and liberal arts education globally
 - Providing models for new kinds of liberal arts inspired interdisciplinary work aligned with grand challenges and entrepreneurship
-

Additional Functions of Universities - how do these fit in?

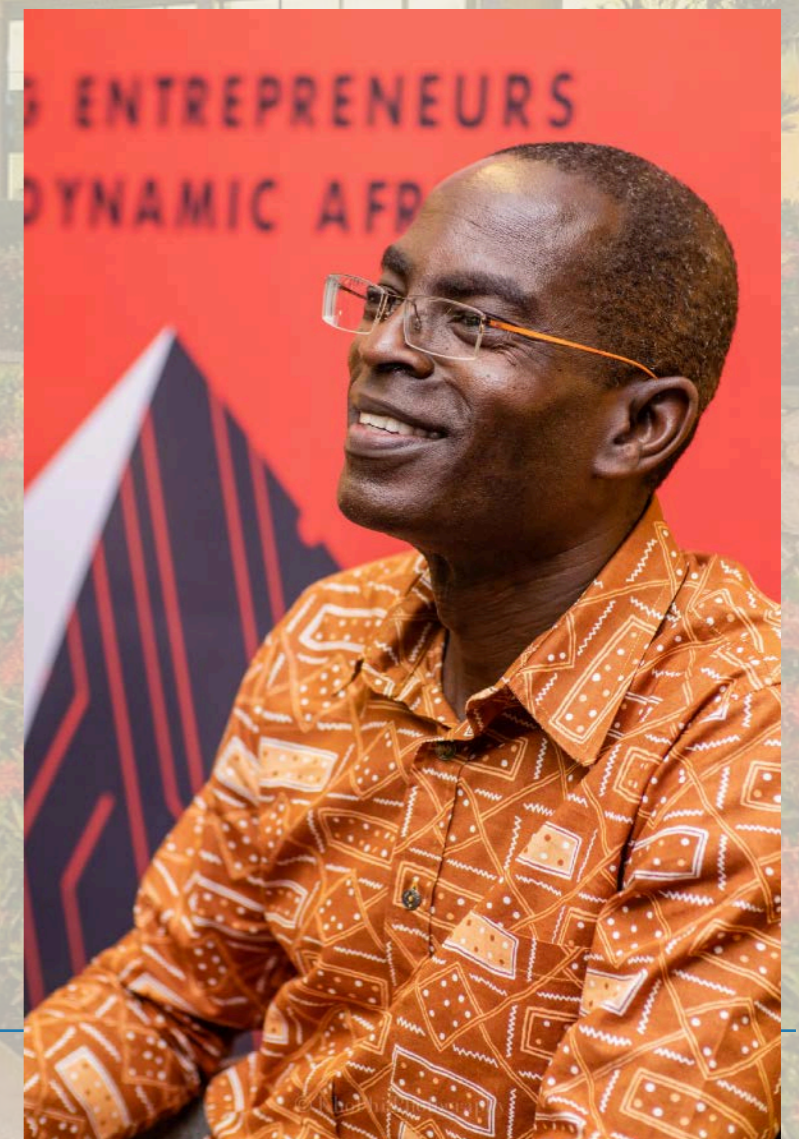
- **Patents, Nobel Prizes and Discoveries that shape the future and transform society - knowledge creation**
- **Social Mobility - and helping provide equity and more representation in economic, political and cultural leadership**
- **Training future generations of students, postdocs, professors who lead STEM education globally and make future discoveries**
- **Providing economic growth for a state, country or region**
- **Providing a space for dialog and discussion about most pressing issues facing society and world.**
- **Inspiring the public and representing cutting edge of science, engineering and other fields**

Origins and Leaders: Ashesi University

“When I think about an African Renaissance,”

I really am thinking about an Africa that has emerged to be an equal partner in the world polity -- so economically doing well, culturally doing well, an equal player on the world stage. I'm also thinking about an Africa that is more interconnected within itself, and an Africa where the young people on the continent feel a sense of pride and confidence.”

Patrick Awuah, founding President, Ashesi University (Ghana)



Origins and Leaders: NYU Abu Dhabi

“Every university worthy of the name will be a sacred space for the dialogue that advances thought and understanding.”

On new universities: “they will become incubators for a secular ecumenism that not only rejects secular dogmatism but also seeks to create a community of interlocking communities, a whole that is greater than the sum of its parts—a world that today is only a dream.”

From J. Sexton, [Standing for Reason - The University in a Dogmatic Age](#)



John Sexton, Founding President, NYU Abu Dhabi

Origins and Leaders: NYU Abu Dhabi

Mariet Westermann on Liberal Arts: “It’s about the mind being one of the great gifts that we have, that we are endowed with. It needs to be given free rein to develop itself. To develop thought and especially to maximize your own potential, especially in your early years when you can study at a university.”

on returning to NYU Abu Dhabi: “The baby had become this handsome young adult, and it seemed a great opportunity to help it become a fully well rounded grown up.”



Mariet Westermann, current President, NYU Abu Dhabi

Origins and Leaders: Olin College

“The bottom line is creativity as a way of thinking,” which **“requires courage and it requires a sense of belief in your ability to do something before you can get serious in trying it.”** Creativity is not something you can learn from a book. **“Reading a book about creativity is about as useful as reading a book about swimming,”** says Miller. **“You have to get in the water and move your arms around.”**

The traditional engineering curriculum, with its hierarchical nature and emphasis on applied science, is like classical music, he argues: it teaches students to “reproduce the notes that Beethoven wrote two hundred years ago, and you do this exactly the same tempo and everything that he did.” Useful to a point—but not conducive to discovery and innovation. Olin’s curriculum, in contrast, operates more like jazz, and as Miller says, **“Jazz has to start from inside and is more of an extemporaneous conversation than a recital.”**



Rick Miller, founding President, Olin College of Engineering

Origins and Leaders: Olin College

On being a “tempered radical” - “If you think about “tempered” in the sense of a metal becoming tougher from alternately being heated up and cooled down - if you’re a tempered radical, maybe in a certain setting you increase the heat, you push harder, you put on more pressure... It’s the tempering that allows you, hopefully, to be more effective, because different situations call for different kinds of reactions.”

Her question to faculty, staff and students: ““Are we hearing all voices? Seriously, are we? Does everybody feel that same level of comfort and sense of belonging?””

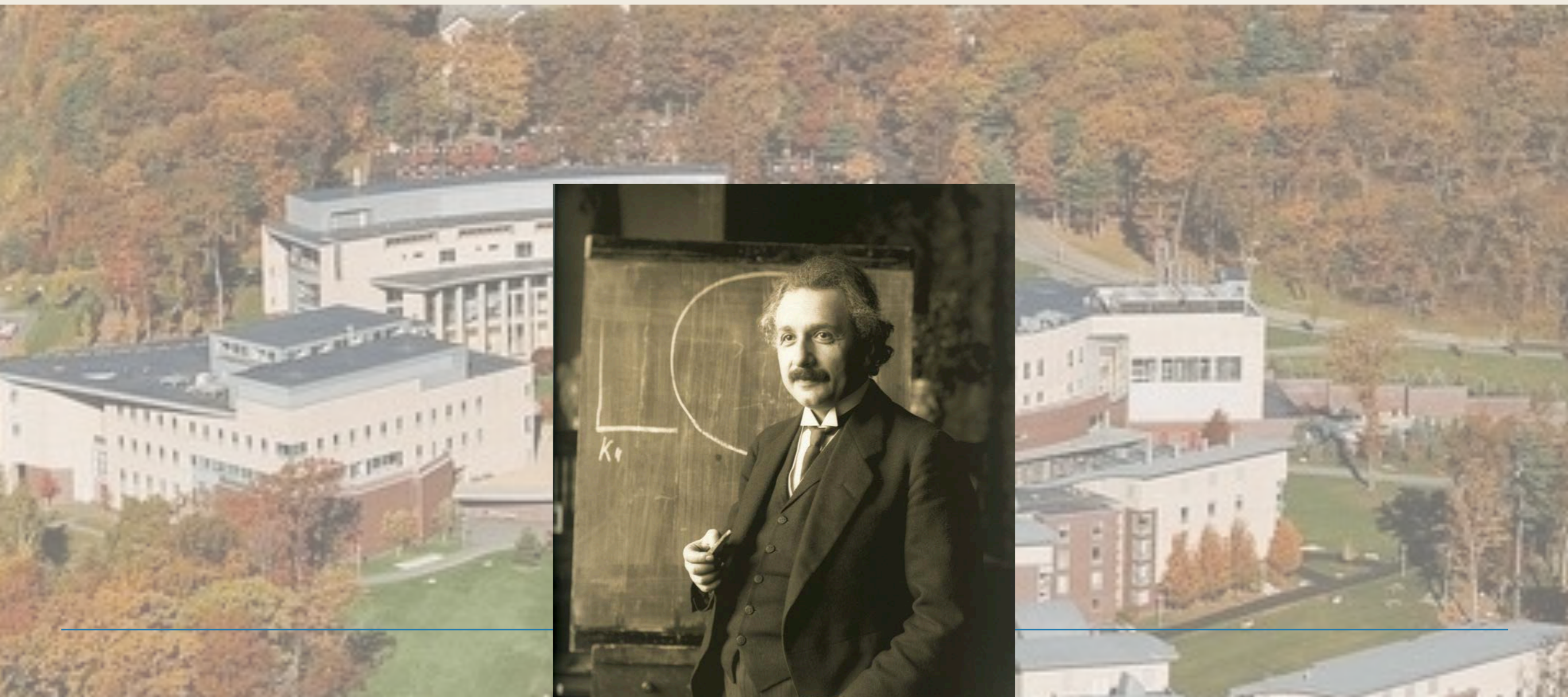


Gilda Barabino, current President, Olin College of Engineering

On re-imagining Higher Education

“I am enough of the artist to draw freely upon my imagination. Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world.”

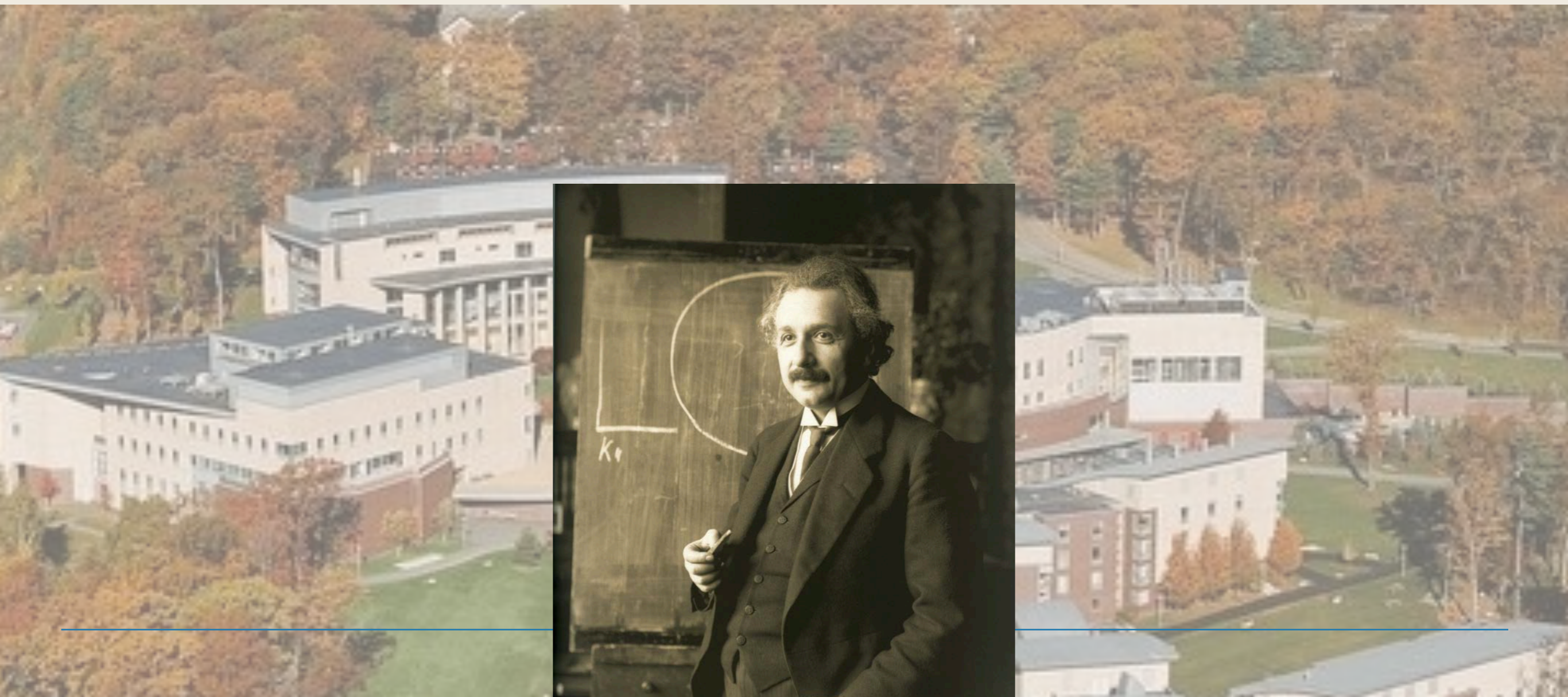
Albert Einstein



On re-imagining Higher Education

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New from Princeton

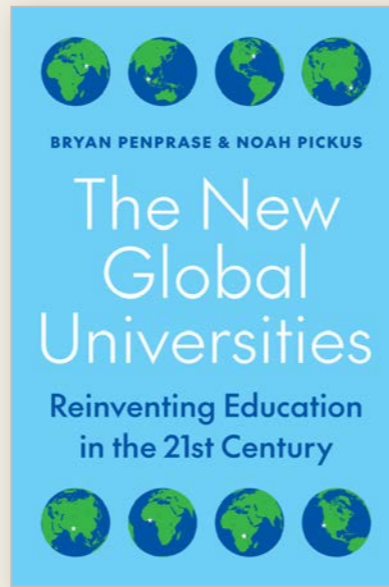
The New Global Universities: *Reinventing Education in the 21st Century* Bryan Penprase and Noah Pickus

Reimagining higher education around the world: lessons from the creation of eight new colleges and universities in Africa, Asia, the Middle East, and North America

Higher education is perpetually in crisis, buffeted by increasing costs and a perceived lack of return on investment, campus culture that is criticized for stifling debate on controversial topics, and a growing sense that the liberal arts are outmoded and irrelevant. Some observers even put higher education on the brink of death. *The New Global Universities* offers a counterargument, telling the story of educational leaders who have chosen not to give up on higher education but to reimagine it. The book chronicles the development and launch of eight innovative colleges and universities in Africa, Asia, the Middle East, and North America, describing the combination of intellectual courage, entrepreneurial audacity, and adaptive leadership needed to invent educational institutions today.

The authors, both academic leaders who have been involved in launching ventures similar to the ones described, offer a unique inside perspective on these efforts. Bryan Penprase and Noah Pickus show how the founders of new colleges and universities establish distinctive brands in a sector dominated by centuries-old institutions, secure creative sources of funding, attract stellar faculty and students, and design appealing curriculums and campuses—all while managing tradeoffs and setbacks, balancing local needs and global aspirations, and wrestling with challenges to academic freedom. These new educational institutions include two universities in Asia and the Middle East built by well-established American parent institutions, others in Africa and North America that offer holistic reform from the ground up and leverage new technologies to lower costs, and still others that adapted the American liberal arts model to Asian and African contexts. Their experiences offer lessons for future founders of new universities—and for those who want to renew and rejuvenate existing ones.

Bryan Penprase is vice president for sponsored research and external academic relations at Soka University of America. He was a founding faculty member of Yale-NUS College in Singapore and an American Council on Education (ACE) fellow at Yale University and taught physics and astronomy at Pomona College for over twenty years while conducting astrophysics research at Caltech. He is the author of *STEM Education for the 21st Century*, *The Power of Stars*, and *Models of Time and Space: The Foundations of Astrophysical Reality throughout the Centuries*. Noah Pickus is associate provost at Duke University and dean for academic strategy at Duke Kunshan University. He was formerly chief academic officer at Minerva Project, director of Duke's Kenan Institute for Ethics, founding director of the Institute for Emerging Issues at North Carolina State University, and cohort codirector of the Arizona State University-Georgetown University Academy for Innovative Higher Education Leadership. He is the author of *True Faith and Allegiance: Immigration and American Civic Nationalism* and coauthor of *Liberal Arts and Sciences Innovation in China*.



Publication date: December 5, 2023.
Hardback ISBN: 9780691231495
Price: \$32.00/£28.00
352 pages. 6.13 x 9.25 in.

“Penprase and Pickus have done something that is almost impossible to do. They went searching for gold in what was thought to be land that was strip-mined, and somehow found buried treasure. *The New Global Universities* is important and accessible. It tells spellbinding stories about the future of education that need to be told.”

—Michael Sorrell,
President of Paul Quinn College

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