# Learning in Place

Shaping the Future of Campus and Facility Planning
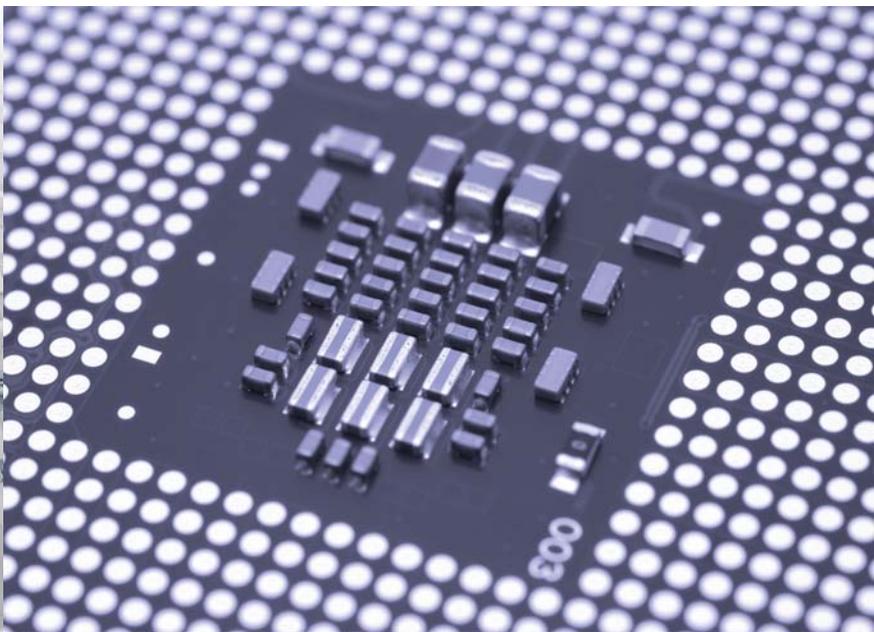
Looking Ahead: Higher Education in 2020

Earlier this year, the Pew Research Center's Internet & American Life Project and Elon University's Imagining the Internet Center surveyed an international pool of educational experts and stakeholders, asking them to respond to two differing scenarios for what higher education will look like by the year 2020. 1,021 people responded to the survey, including university directors and researchers, technology experts, venture capitalists and Ivy League professors. About 60% of the respondents believe higher education will look significantly different eight years from now, while 39% think the traditional college experience won't change drastically apart from improved integration of technology.

To some extent these numbers reflect how quickly respondents think major change is likely to occur in traditional academic settings. The most informative part of the survey comes from the detailed written elaborations provided by the participants, projecting what they believe we're likely to see in terms of new educational approaches, technological innovation, and the balance between virtual and on-campus learning. While there is disagreement regarding how long these changes will take, the underlying consensus is that significant transformations are inevitable and already underway.

Learning in Place: A Roundtable Discussion

As planning and design professionals deeply involved in higher education, SmithGroupJJR is keenly aware of the profound changes affecting our institutions of higher learning, and the need to anticipate how these changes will impact and inform the development of new campus spaces and facilities. To help facilitate this dialogue, SmithGroupJJR hosted a group of leading campus planning and design professionals from universities across the country for a roundtable discussion on the future of campus and facility planning. The discussion took place during the Society for College and University Planning (SCUP) 2012 national conference in Chicago. This document summarizes that conversation, and briefly examines a few key ideas and directions deserving of further examination and follow-up.

Roundtable participants represented a range of public and private institutions with diverse histories and missions. The discussion was striking for the level of consensus regarding the major trends and challenges facing higher education, and the extent to which these challenges will be met through a commitment to both innovation and institutional tradition. There was also strong agreement that a shared experience of place will continue to be a cornerstone in the creation of dynamic learning communities, giving physical planning and design a pivotal role to play in shaping the future of our higher education institutions.
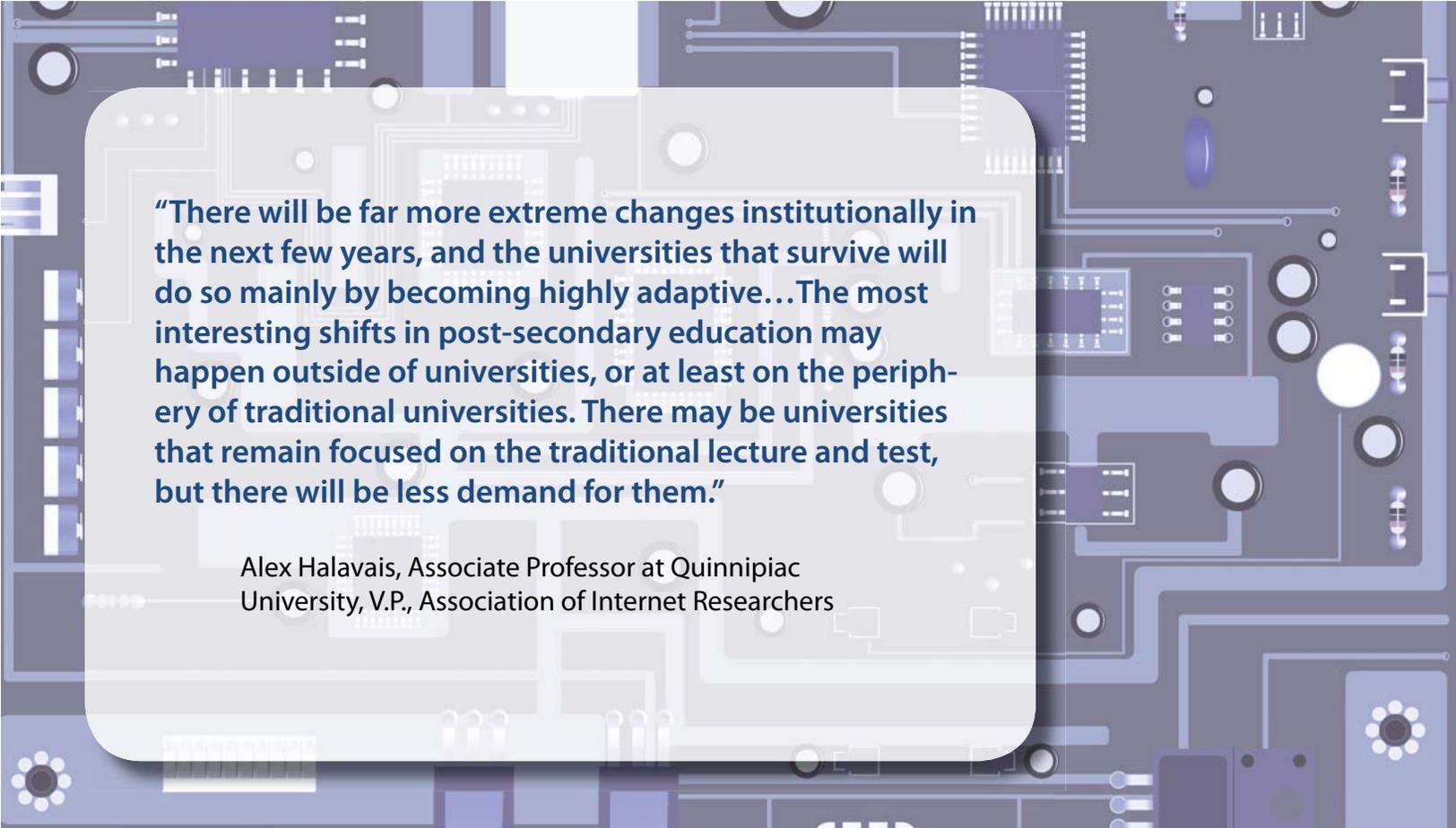
"There will be far more extreme changes institutionally in the next few years, and the universities that survive will do so mainly by becoming highly adaptive…The most interesting shifts in post-secondary education may happen outside of universities, or at least on the periphery of traditional universities. There may be universities that remain focused on the traditional lecture and test, but there will be less demand for them."

Alex Halavais, Associate Professor at Quinnipiac University, V.P., Association of Internet Researchers
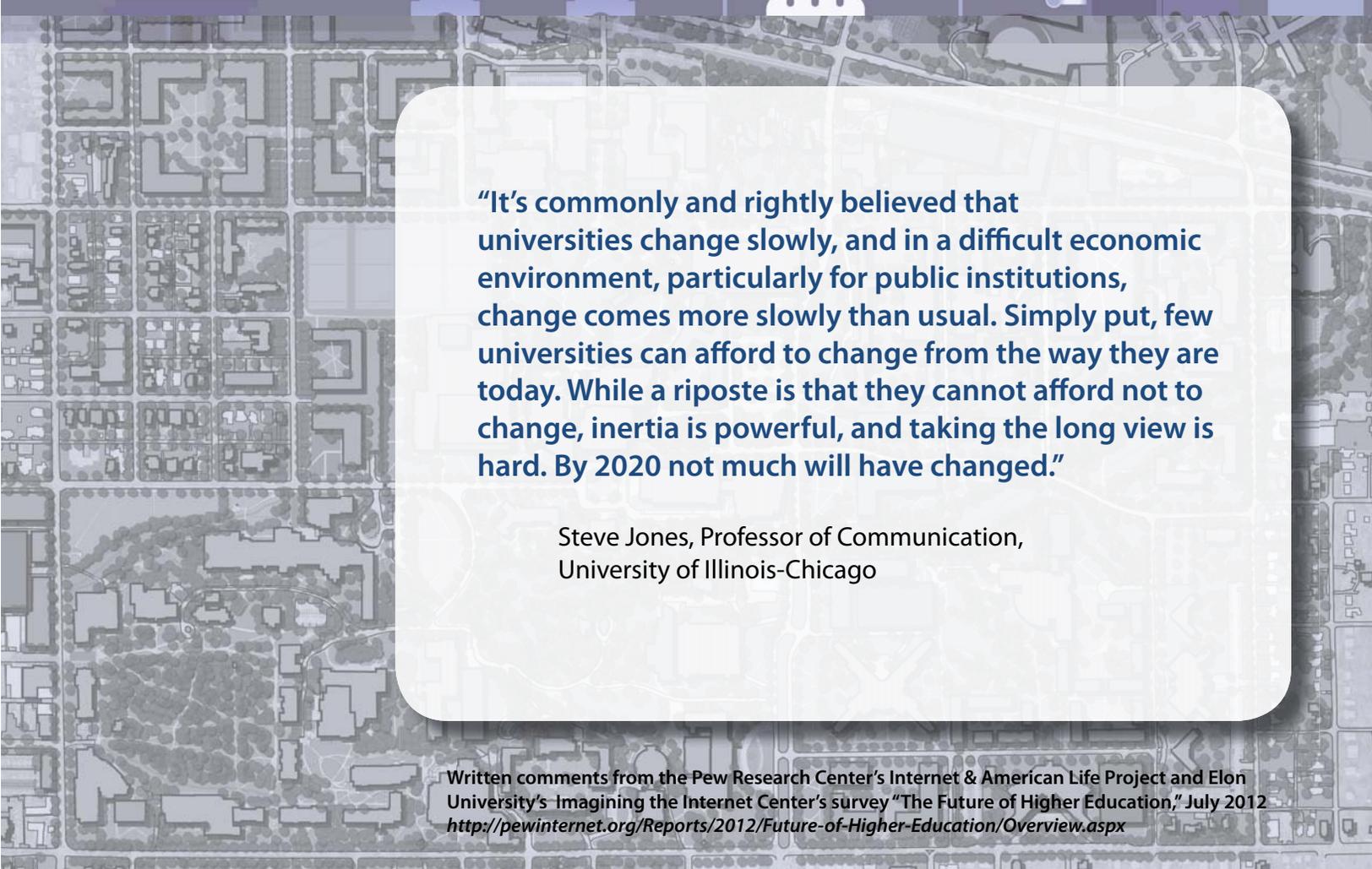
"It's commonly and rightly believed that universities change slowly, and in a difficult economic environment, particularly for public institutions, change comes more slowly than usual. Simply put, few universities can afford to change from the way they are today. While a riposte is that they cannot afford not to change, inertia is powerful, and taking the long view is hard. By 2020 not much will have changed."

Steve Jones, Professor of Communication, University of Illinois-Chicago
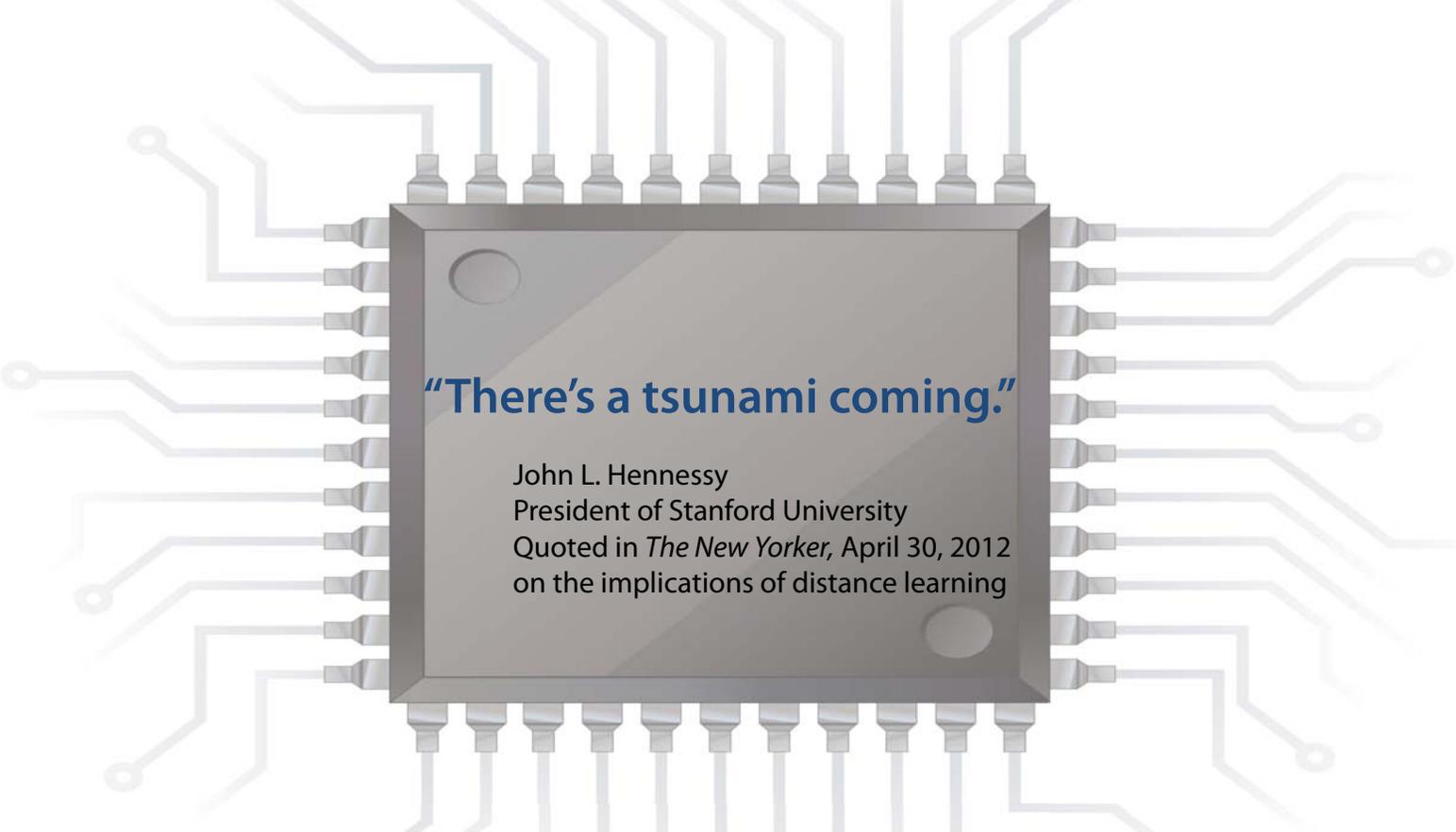
"There's a tsunami coming."

John L. Hennessy
President of Stanford University
Quoted in *The New Yorker,* April 30, 2012
on the implications of distance learning

The first half of the Roundtable discussion focused on the significant trends that are impacting higher education, and the changing role of campus and facility planners within this dramatically shifting landscape. It is important to note that as big as these changes promise to be in terms of pedagogy and institutional priorities and funding, it is less clear what these changes signify for the long-term future of place-based education — and the requisite responses in physical planning and design.

The experience of place on a campus is just as rooted in tradition as its teaching methods and curriculum. While the physical environment will continue to provide the stage and connective fabric for higher education, the ground is clearly moving.

New pedagogies are transforming education.

The emergence of new pedagogies represents a sea change for traditional institutions. The increasing use of technology, online learning, open sourcing of curriculum, and new models for student/teacher interaction and collaboration are transforming the delivery of the learning experience.

While there is a strong sense of tradition at most institutions that makes wholesale curriculum changes unlikely in the short term, the entire Roundtable panel expects some new hybrid of on-line learning and on-campus living/interaction to emerge at their institutions in response to this trend. A few institutions are already mandating a specific number of in-person, on-campus student/teacher learning hours as a core academic requirement for graduation.

Many institutions are also facing questions over the value of their traditional higher education curriculum. There is an increasing emphasis on the need for skill-based and/or trade-based education, and a pressure to frame curriculum around emerging technology and job markets. These trends will exert pressure on institutions to change more quickly than they've been accustomed to, often in ways that run counter to their academic traditions. The recent controversy at the University of Virginia was cited as exemplifying this growing tension between change and tradition.

"Coursera is part of a new wave of massive open online courses, or MOOCs . . . Coursera launched last fall at Stanford, then expanded in April to Princeton, Penn and Michigan. MIT and Harvard responded the following month by re-launching MIT's global online initiative as edX, with a $30 million investment from each school. (In July) Coursera . . . (added) 12 new schools to its consortium, including U-Va., Duke, Johns Hopkins and CalTech.

Seven of the top national universities (as measured by U.S. News) are now involved in the MOOC push, along with U-Va., Georgia Tech and the Universities of Illinois and Washington among the top publics."

Daniel de Vise
The Washington Post
July 17, 2012

Teacher and student populations are shifting.

Wave of Retirement

The upcoming retirement of large numbers of older, tenured faculty will have a significant impact on higher education throughout the U.S. Most institutions will be significantly rebuilding their faculty over the course of the next 5 to 10 years, at the same time they address the emergence of new pedagogies and increasing economic and financial pressures. Hiring and tenure practices, along with teaching and research responsibilities, will likely change.

Changes in Enrollment

In terms of student enrollment, the expectation before the recession was that many institutions would face a stagnant or shrinking enrollee pool; however, most have stayed stable or seen growth in enrollment. Some Roundtable participants felt this stability and growth was fueled by the recession, and that a recovering economy could potentially lead to a general drop in student enrollment. Our panel viewed the impacts as dependent on geographic location and an institution's competitive niche – not as a trend that will affect everyone the same way.

There has also been an increase in two-year college and community college transfers to four-year institutions. More and more four-year institutions are creating formal partnerships with community colleges to provide an option for degree transfer and enrollment.

Growing International Diversity

For some institutions their international student body has been a major source of growth. This is consistent with recent studies showing a record number of international student enrollments in U.S. schools, with particular growth in undergraduate enrollment. According to the Center for International Education, the U.S. continues to have the world's largest number of international enrollments as well as the greatest share of mobile students.

" . . . there are now 32 percent more international students studying at U.S. colleges and universities than there were a decade ago."

Open Doors 2011 Survey,
Institute of International Education
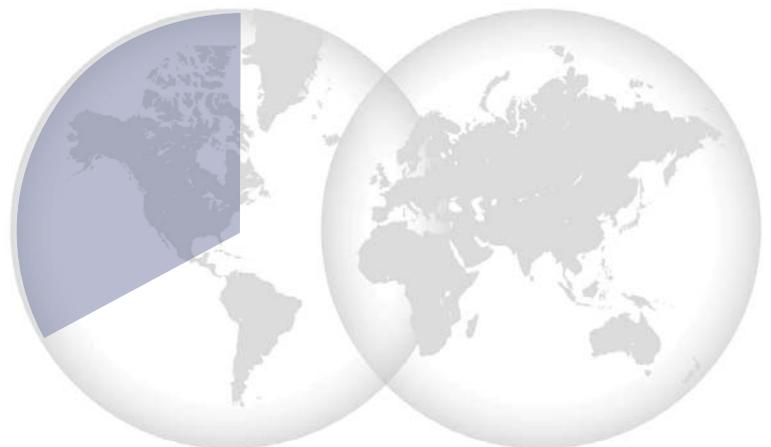
> **For decades, college fees have risen faster than Americans' ability to pay them. Median household income has grown by a factor of 6.5 in the past 40 years, but the cost of attending a state college has increased by a factor of 15 for in-state students and 24 for out-of-state students. The cost of attending a private college has increased by a factor of more than 13 . . .**
>
> *The Economist,* September 2, 2010

It's increasingly about the money.

Economic and funding pressures will continue to place new demands (and limits) on colleges and universities. The recession and a more conservative budgeting climate have led to decreased public funding for higher education in the U.S., while the growing problem of student debt and an increased demand for more affordable, accessible education are requiring institutions to control costs and keep tuition rates and student fees in check. There is an increased expectation for research dollars to underwrite and justify curriculum, leading to financial scrutiny of disciplines that do not offer the necessary return on investment. Rather than building new, more and more institutions are renovating and repurposing existing facilities.

In terms of physical planning and design, the impact of these trends is already pronounced. Roundtable participants said they are seeing a lot more analysis and tracking of project financials and a higher level of accountability for project financial performance in their planning, design and construction work. Strategic budgeting and phasing have become a critical part of the planning and design process. Aesthetic and image improvements such as public art are increasingly challenging to fund.

US inflation
Q1 1978=100

- College tuition & fees
- Educational books & supplies
- House prices
- Consumer prices
- Average hourly wage

1,200
1,000
800
600
400
200
100
0

1978 80 82 84 86 88 90 92 94 96 98 2000 02 04 06 08 10

Sources: Bureau of Labour Statistics; FHFA; Thomson Reuters
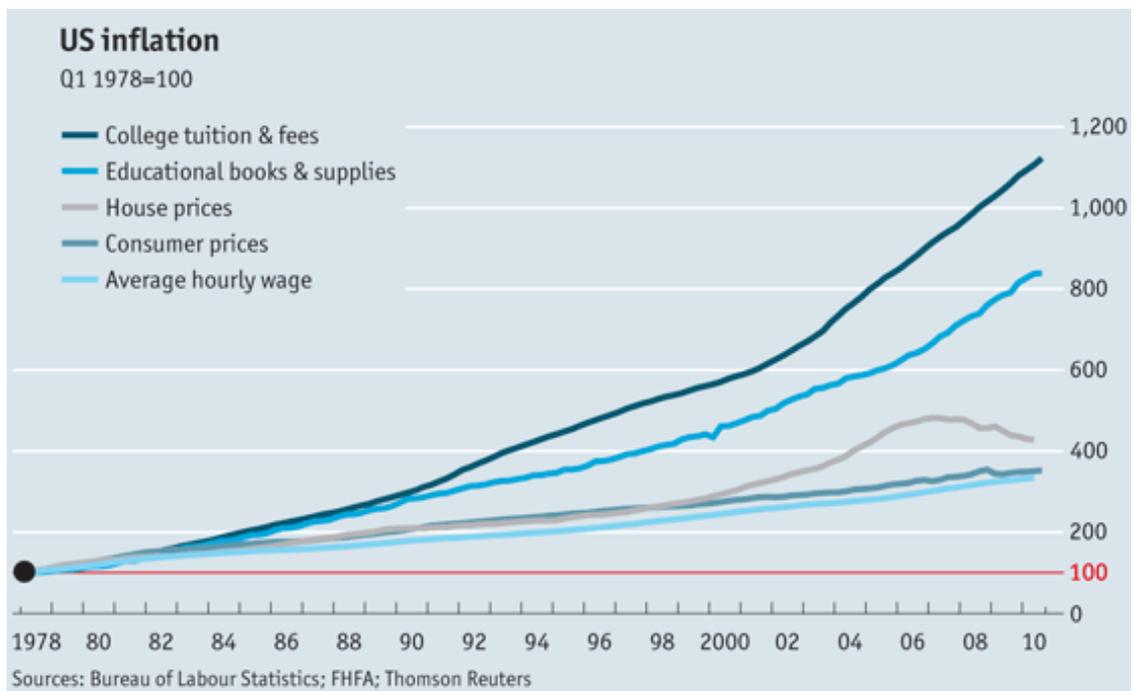
UNLV's proposed public-private partnership to build a multi-use village, anchored by a 60,000-seat mega-event center.

Consumer and community demands are changing the education marketplace.

Institutions are viewing their prospective students as consumers who want a different higher educational product/experience than they've had in the past. Providing what these student consumers are looking for has already become an important consideration for institutional planning and development, and will continue to have a growing influence on campus space and facility design.

There is also a clear trend in cost consciousness among the current student consumer. Students are comparison shopping for their education, weighing the superior brand value of four-year universities against less expensive alternatives, including community colleges. This cost consciousness extends to more than just tuition costs. For example, Alex Roe said the University of Connecticut recently put some revenue-generated projects on hold because they did not want to raise student fees in the current economic climate.

There is also a growing understanding that institutions can no longer afford to function completely independent of their host community, a change that has been driven in part by growing financial pressures. This is leading to more outreach and engagement, and to an increase in community development partnerships as institutions seek to leverage their impact as "economic engines." This growth in public/private partnerships to fund new campus development projects is creating a larger circle of constituents with a vested financial interest in project outcomes.

"We are in a world now where we are trying to align the university's development and interest with the regional economy."

David Frommer, University of Nevada, Las Vegas

Sustainability has become an integrated part of the conversation.

While sustainability was mentioned frequently by Roundtable participants, it has clearly evolved beyond the status of trend or innovation. Rather, it has become an integrated part of the planning and design conversation within the higher education landscape.

The advent of self-reliant spaces has contributed to a loss of campus cohesion.

The trend towards creating distinct campus schools or precincts that better serve the needs of specific academic departments and neighborhoods has also fed another trend: the advent of the "super space" on today's campuses. In effect, these are self-reliant facilities with their own food service, their own student support areas, and their own special campus spaces surrounding them. Whether it's an iconic stand-alone building or a new academic subdistrict, the result is often a silo effect leading to a loss of overall campus cohesion and connectedness.

Design guidelines that establish a consistent palette of materials and amenities were not viewed as sufficient by themselves to create this more integrated campus fabric. Our Roundtable discussion suggested the need for a campus planning/design approach that reestablishes this larger, overarching campus connection and interaction — particularly at the site design level.

"It's like every new complex created its own memorable space, so we were kind of a victim of our own success in that we wanted to create memorable spaces but in a way created so many, you wonder if you missed the ones that mesh everybody together. It is really about bringing the landscape up to the point where that is what brings everybody back and knitted together again."

Mark Hough, Duke University

## Understanding the power and psychology of place.

What makes a campus space or facility particularly memorable and iconic, helping to forge a sense of personal connection to the institution? What creates the magic of place in campus design, and how do we as planners and designers help capture and preserve this? This proved to be a particularly fruitful area of discussion, with interesting implications for both architectural and site design.

Tradition matters.
Cathy Blake of Stanford University described an informal survey she conducted in 2006 asking students and faculty to name their top 10 favorite places on campus, their 10 least favorite, and to explain why. It was an open-ended survey with no prescriptive list of places and no stated preference for interior vs. exterior space, or architectural vs. open space. Over 2600 faculty and staff responded.

Whether respondents identified exterior or interior spaces as their favorites, the Stanford survey results showed a consistently strong emphasis on reflective places that embodied the traditional identity of the institution:

> "... it was all of the iconic, historic spaces; none of the innovative spaces, none of the big festive places, none of the party spaces. The shopping center, no. Athletics, no. It was all of those very traditional spaces. It's amazing how traditional the responses were and how uniform they were. Almost any water feature was high up there, but it would be the library plaza or the library fountain because of the calming. At our campus . . . it was everything that was calming, restful and peaceful. It wasn't anything that was lively, full of vitality, or lots of fun."
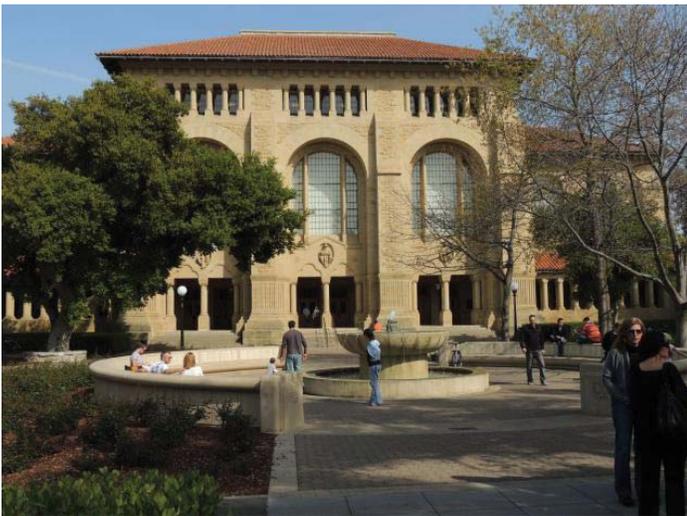
Stanford University's venerable Green Library and courtyards (left) were ranked as the #2 favorite place on campus, while the more recently constructed Meyer Library was the #3 least favorite place.

Cary Weatherford, University of Colorado Denver, related this to a SCUP conference presentation he had seen earlier in the day by Michael Haggans, who conducted a similar survey at the University of Minnesota and discovered a strong connection between students valuing a place, that place's name, and the sounds they experience there:

> *"These spaces are not sound proof, but they are quiet, and the students associated most strongly with 1) the names, and 2) with the sounds that they hear."*

Cathy confirmed the importance of sound in the Stanford findings. Steve Troost, Michigan State University, connected this to a conference presentation by environmental psychologist Sally Augustin of Design with Science, who cited a number of studies about the blend of sensory factors that create memorable, valued spaces and environments.

Clearly there is a growing body of scholarship that could help inform a better understanding of campus placemaking. A quick, cursory review of a few other campus favorite space surveys (University of Alabama, UC Davis, and University of Washington) points to some interesting patterns and themes — one of the main ones being that the most valued campus spaces tend to be traditional, iconic spaces. For example, at both the University of Alabama and UC Davis the two most favorite places were the Quad and the Arboretum.

http://www.uafacilities.ua.edu/planning/information/2012-cmp-summary.pdf
http://lda.ucdavis.edu/people/2008/BLee.pdf

More recently built spaces tend to score lower in these surveys. As our Roundtable discussion concluded, there is likely a need for newer spaces to patina and embed themselves in the culture of the institution before people can connect with them on this traditional level.

" . . . contemporary mainstream discourse in (the academic development) field generally has not addressed the integral role of the classroom and other campus sites in the teaching and learning process. A starting point for considering this issue could be the extensive scholarship, particularly in the fields of sociology and psychology, about the influence of the constructed environment on human behavior and perception."

"Designing More Effective On-campus Teaching and Learning Spaces: A Role for Academic Developers"
Peter Jamieson, *International Journal for Academic Development,* Vol. 8, No. 1/2, May/November 2003

UW-Madison's Botanical Garden (left) and Loyola University Chicago's LakeShore Campus provide students and faculty with a blend of social and contemplative spaces.

It's not all about collaboration and social gathering.
There is a strong need for private, revitalizing and contemplative space as well as public/active space – and a tendency for that private space to be among the most valued on campus, especially for older students, faculty and alumni. These quotes from the University of Washington campus open space survey further support that finding:

"In the hectic world of medical academia someplace quiet and peaceful, a place to retreat to, is important. It helps one's sanity."

"The view can be incredible and inspiring. Just walking through the groves of trees can allow a sense of escape from the hectic dealings with faculty and students and allow me to regain my balance and perspective."

http://www.washington.edu/community/files/2003/08/B.pdf

While there is currently a pronounced planning and design emphasis on campus gathering spaces that will bring people together and encourage collaboration and community, this small sampling of survey results indicates that private, quiet spaces are also highly valued — in many cases more so. Outdoor spaces have particular power and potential in this regard, but the implications for interior design are also strong.

The campus spaces you value can change as your age and role within the institution change.
The surveys that tabulated the age and role/status of the respondents reveal a preference for certain types of spaces based on age and the length of the person's relationship with the institution. Younger students rank the public spaces and residence halls higher, while older students, faculty and alumni rank the more private spaces higher. People literally graduate to a different campus space preference.

Certain iconic public spaces cross the lines to be loved by everyone, but the age divide could potentially explain why Stanford's Tressider Memorial Union was the #4 most favorite place and the #1 least favorite place in the same survey. The UC Davis student-conducted survey broke down space preferences by undergrad, grad, faculty, alumni and age, revealing very similar divergences in space tastes.

Acoustics aren't just for the concert hall.
There is clearly tremendous potential for sound to be a more deliberate part of the campus design palette. Water was mentioned during our discussion, as was Stanford's "Whispering Circle" – an outdoor space named by students for its acoustical properties that many faculty didn't even know it had before the survey. The surrounding architecture has created a circular acoustical environment for this plaza – an effect first noted in the "whispering gallery" of London's St. Paul's Cathedral. Significant placemaking benefits could be realized from a more formal exploration of indoor and outdoor acoustical design.

The magic is different for international students.
Steve Troost raised the point that designing for campuses with a growing international student population will likely require a different design vernacular and value system in terms of traditional associations, colors, materials, possibly even the dynamic between social and private spaces.

A recent SCUP paper on the emulation of American and European traditions in the design of new campuses in China suggests an interesting tension between classic campus design and its resulting cross-cultural associations:

(There is an) expressed interest on the part of a Chinese institution's leadership for classical-axial architectural references for a new campus. Classical design was interpreted across the language gap as including neo-Classical, Federalist, and neo-Georgian compositions, architectural styles evolved from Vitruvius's notes on architecture.

At the same time, there are important cultural limits to how this traditional form can be expressed:

Any perceptible pattern seen in a plan, site map, cross section, or elevation that approximates Chinese pictograms that may be associated with misfortune are to be eschewed. For instance, tetrads of elements and building configurations that resemble the ideograph for the number four (四) are considered unlucky, since the pronunciation of the word "four" in some dialects is nearly homophonous with the word "death."

Charles Craig, "The Yin and Yang of Genius Loci," *Planning for Higher Education* V41N1, 2012

A better understanding of these kinds of cross-cultural associations and perceptions would be extremely helpful to inform placemaking design in an increasingly international or diverse campus context.

Creating a stronger sense of entrance and identity for its urban campus led to an increase in alumni financial support for Marquette University in Milwaukee (right).

Valued spaces help forge alumni bonds.
A strong sense of alumni connection and loyalty that leads to them giving back to the institution was discussed as a critical outcome of the on-campus experience – especially for private institutions:

"I think what you are looking for is the bonding moments; the life blood of the institution is that sense of dedication to your alma mater."

To what extent does "the magic of place" help forge this experiential bond and nurture alumni loyalty and support? What can we learn from seeing how alumni respond to favorite spaces surveys, and the types of new campus design projects that win their donations and support after they graduate? For example, Marquette University in Milwaukee reported that their completed entrance and identity project led to a significant increase in alumni donations. Attachment to place has return-on-investment implications that are not well documented or analyzed — but need to be.

Flexible learning space in Mesa Community College's Health Wellness Building

Active learning in the classroom at Arizona State University, College of Nursing & Health Innovation

Is the traditional classroom dead?

The overall consensus from our Roundtable was no. There is still an ongoing role for the traditional lecture hall – although there is clearly a need for much greater flexibility in its design and the range of pedagogical uses and approaches that educational classrooms are able to support.

What are the keys to getting the most out of an institution's educational facilities? Here are a few ideas that emerged during our discussion:

Emphasize adaptability in renovation and design.
Classroom design cannot be reduced to a clearly stated formula that will still be in vogue five years from now. The planning and design process needs to create the most adaptable, flexible classroom spaces possible. The use of movable walls, multifunctional furniture, flexible seating, and cutting-edge information technology and simulator integration are all key parts of a rapidly emerging future in which the formal lecture is only one of a variety of educational methods that can be effectively utilized in the classroom.

Utilize classroom demand analysis.
This was mentioned as a supplementary approach to traditional needs-driven space analysis — an approach that is particularly useful for the strategic renovation and reuse of existing classroom and lab space. Classroom demand analysis identifies imbalances in classroom supply and demand based on current utilization, leading to more efficient design recommendations and approaches.

Engage faculty and students as part of the design and renovation process.
The question was asked "Who's driving the innovation in classroom design at your institution?" The response was generally not the faculty. Kate Sullivan mentioned that design competitions for classroom renovation dollars at University of Wisconsin System schools have spurred numerous innovations - many spearheaded by faculty and student teams. There is a significant opportunity for faculty and students to play a key role in shaping the future of their learning environments.

Simulation at Texas Tech University Health Science Center, F. Marie Hall SimLife Center

# Developing a shared language for integrated campus planning and design.

The discussion frequently came back to the idea it started with: that the effectiveness of a collaborative, iterative campus planning and design process is dependent on a shared and clearly understood language among increasingly diverse participants. Special terms and lingo that are common to planners and designers are not always effectively translated during the process; a survey related to the use and understanding of the word "circulation" was brought up as an example. "Brand" was also mentioned as a word that is not universally liked among academics when discussing institutional identity and reputation.

The need for this shared language is further driven by the increasing technological requirements of facility projects — especially research facilities — and the increasing involvement of Trustees, faculty and other stakeholders in the planning and design process. As Bonnie Humphrey of Northwestern commented, "The process has evolved. The Trustees have become very involved in new construction and I think across the board, faculty are more knowledgeable. They hear what their other peer institutions are doing. 'He just got a clean room that has x, y and z – we need one of those, too.'"

The value of a commonly shared vocabulary was also related to the need for more simplicity in the formal idea: William Johnson's maxim "If your President can draw it on a napkin, you can achieve it." Besides leading to more effective communication and shared understanding during the planning process, the real power of great ideas simply expressed is their likelihood of winning support and getting built.

"If your President can draw it on a napkin, you can achieve it."

William Johnson
Co-founder of Johnson, Johnson & Roy
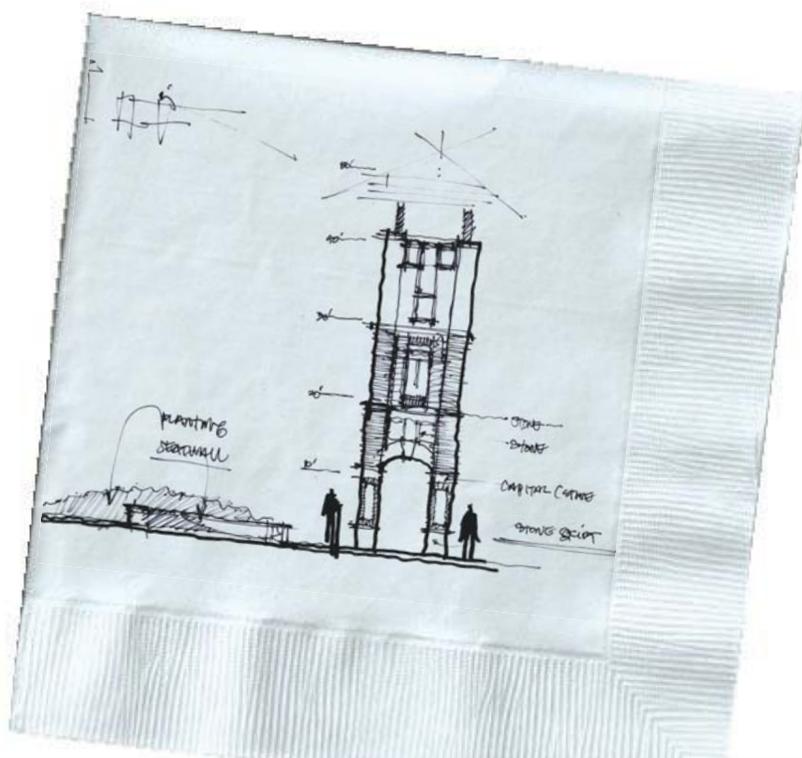
Know your institution's unique DNA.

One idea that clearly emerged from the discussion was the importance of responding to the changes in higher education in a way that reflects "a layering and understanding of what each institution provides." There is no one-size-fits-all solution to planning and designing for what's next in higher education. It will require a diversity of approaches and solutions — and a strong understanding of each university's ability to adapt based on their unique culture and mission.

In other words, we can't be trendy when facing trends in higher education — especially when we're dealing with highly traditional institutions that have been historically slow to change. Campus and facility planners need to provide a very thoughtful response that synthesizes change and innovation with the embedded culture of each institution, recognizing its particular niche in the competitive marketplace. Starting with an analysis of an institution's unique genome could provide a compelling, effective way to frame a discussion about tradition and change at the outset of a planning and design process.

University of Chicago Campus
FROM AN AIRPLANE OVER MIDWAY
CHICAGO, ILL.   1.
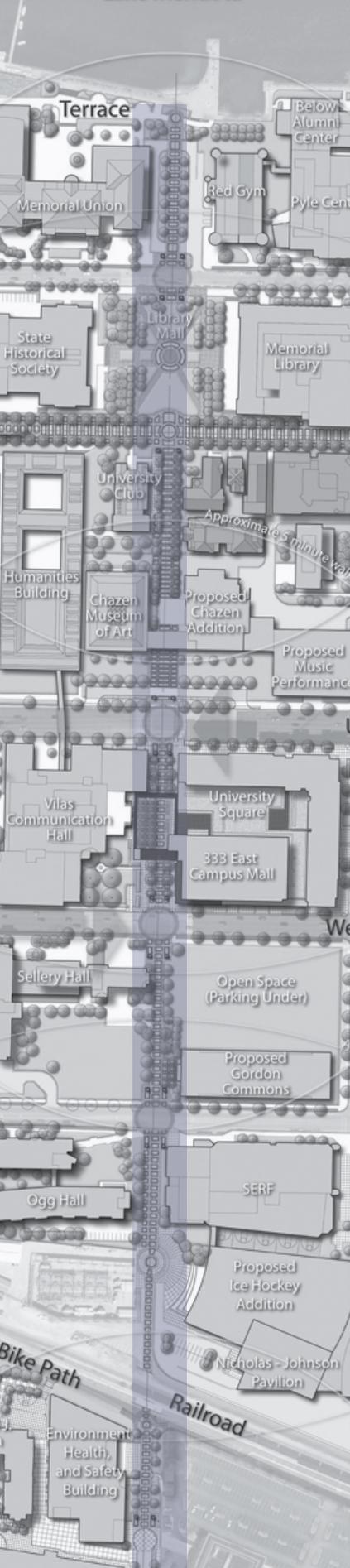
Financing: It helps to have a formula.

The question was raised "How do we effectively fund interconnective campus site/landscape projects in an era of shrinking budgets?"

Stanford's answer is a funding formula – essentially a tax of 5 to 6% on all capital projects and building projects. This has proven very successful, although it creates peaks and valleys of funding and project activity depending on the number of capital projects.

Kana Wibbenmeyer of Loyola University said their CFO has created a structure to fund their capital projects that involves the funding of depreciation, a financing source completely independent of endowment gifts, tuition, and fees. The approach creates a funding pool that doesn't compete with faculty salaries because it is wholly separate.

Creative project phasing and contingency management were also cited as important methods for advancing projects that might otherwise get cut.

The University of Wisconsin-Madison's East Campus Gateway (left and below) was conceived and designed as a whole, but is being implemented through a series of architectural projects built over a prolonged period of time. The resulting seven-block campus connector has taken shape section by section, without one budget having to fund and build the entire thing.

Alicia Murasaki of the University of Chicago said they stress more due diligence around contingency planning. Project contingencies are not defined as straight percentages, but established as a thoughtful, detailed part of the overall budget. The potential dicing of a project is defined up front, so that if cost overruns are encountered there is an understanding of what pieces will have to be cut. At the same time, they also identify the additional pieces or projects they can do if they get good bids. Rather than having unused contingency, the budget surplus is strategically used to advance other projects.

The creative reframing of site improvement projects as part of utility projects is also an effective way to better leverage their funding. Utility construction provides the opportunity to not only rebuild campus public spaces but to improve and invigorate them in a highly cost effective manner.

Tell the right stories.

There is an increased need to sell the value of a project in order to secure funding for it. As Mark Hough put it, "Whether or not we have the money often isn't the issue; it is the perception of how we spend our money."

Campus improvement projects are more likely to be viewed as luxuries that can't be afforded in these lean economic times, especially for public institutions, where it is often assumed that choices are being made between buildings and faculty. Since the difference between the operating and capital budgets is often hard to explain, a PR campaign has become a helpful – and increasingly necessary – approach for advancing projects. Whether it's coming up with a great name or compiling data on return on investment or how the landscape matters, having the right story to tell is becoming a critical part of moving projects from planning to implementation.

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"For every state education dollar UNLV receives, the University returns $8 to Nevada's economy . . . It's clear UNLV will be an economic engine for the region. We are part of the economy of Las Vegas."

Neal Smatresk, President
University of Nevada, Las Vegas
Las Vegas Sun, September 13, 2012

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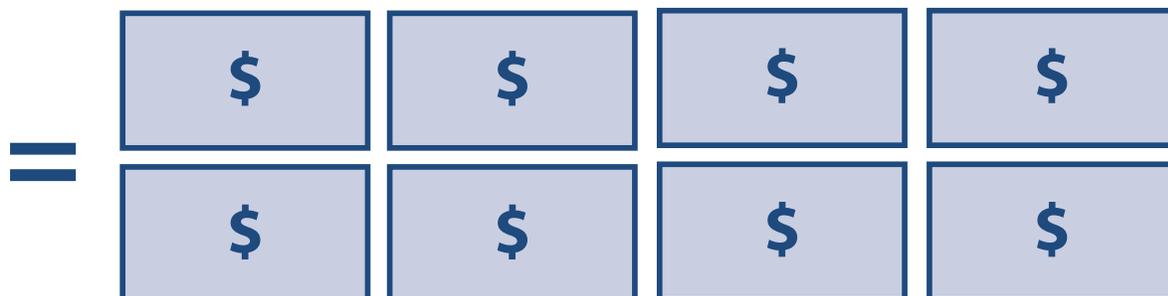
> **Whatever that body of literature is that exists in research needs to be brought to the table because now people are just designing these places that we ostensibly believe will magnet people together and create interaction. There isn't a lot of research on this and if there is, it is not intersecting with the actual design.**
>
> Kate Sullivan, University of Wisconsin System

Conclusion

Physical planners and designers are faced with a particularly daunting challenge in addressing the changes in higher education. New campus spaces and facilities take many years to design and construct, and then must serve the institution's needs for extended periods of time. How do we effectively anticipate the new and nontraditional demands for campus spaces and facilities?

Campus planners and designers need the right tools to help link an institution's iconic history and identity to its emergent future. Our conversation suggests a number of promising avenues for follow up to help support this task.

- Roundtable participants are clearly looking for a deeper investigation of campus placemaking principles. Pulling together the relevant sociological and psychological data on how physical space affects perception and behavior — particularly in learning environments — would provide valuable insights.

- A number of Roundtable participants have already gathered data about the favorite places on their campuses. Conducting additional surveys and aggregating the results could help identify some evidence-based patterns for the type and character of campus spaces that students, faculty and alumni value most.

- Proving value is an increasing need for planners and designers. Researching and compiling data regarding the return-on-investment benefits of campus spaces and facilities, including their impact on alumni donations and student recruiting and retention, would help planning and design teams tell the stories that are needed to support and advance new projects.

Acknowledgements