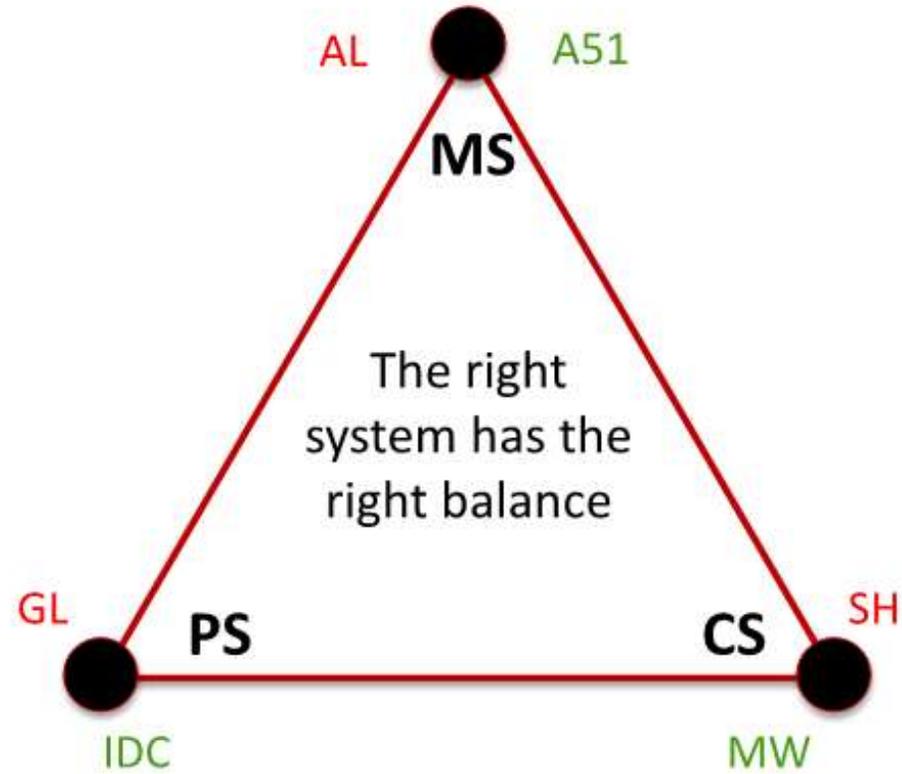




Prototyping Spaces for Entrepreneurship

“ Entrepreneurship is a process of fundamental transformation: from innovative idea to enterprise and from enterprise to value. ”

Kauffman Foundation, 2008. *Entrepreneurship in American Higher Education*



Culpepper et al. *Making Makerspaces Conference*, MIT 2016

maker culture

resources

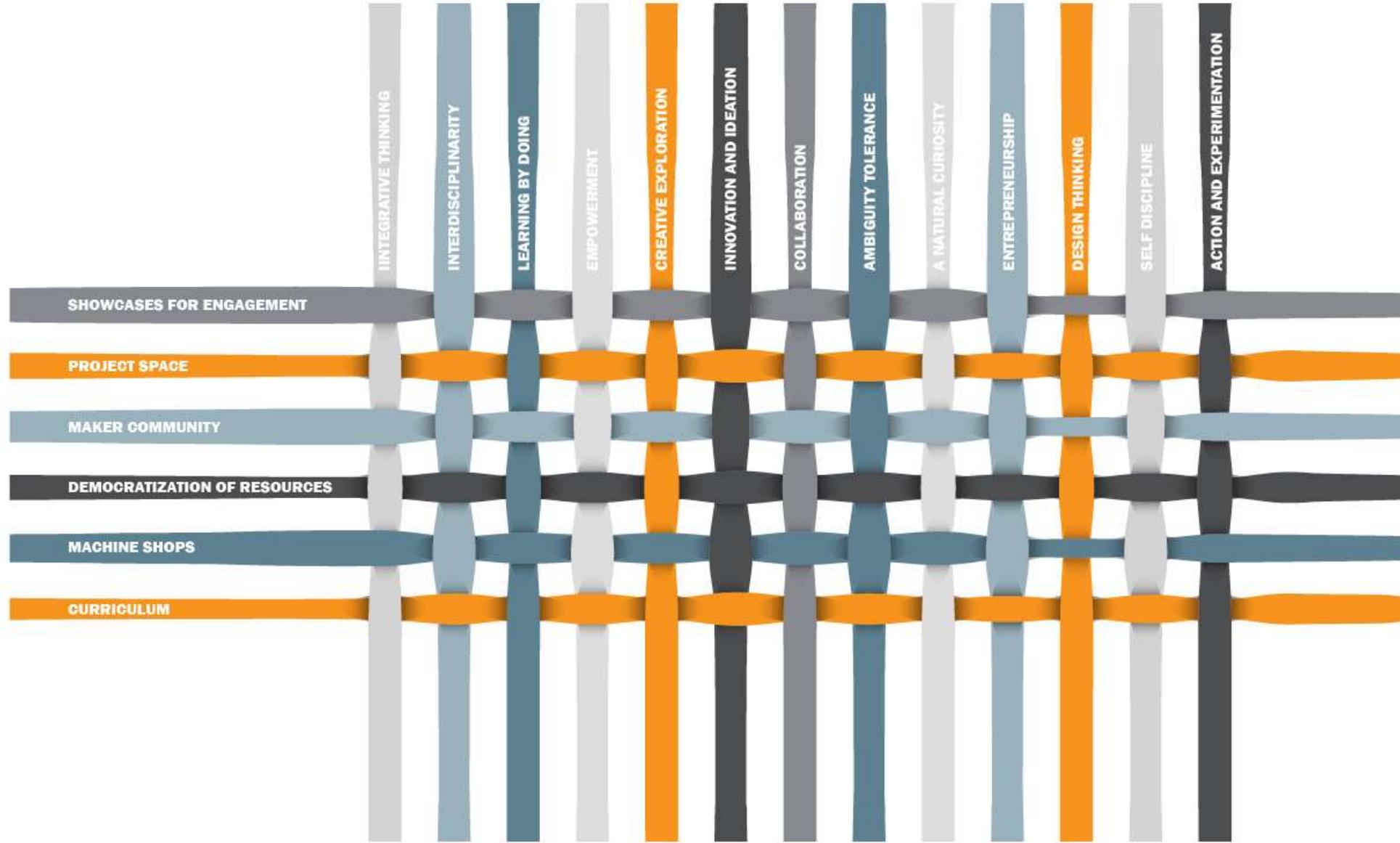
machine
shop

project
space

community
space

MAKER CULTURE

RESOURCES



“ Entrepreneurship is the pursuit of opportunity
beyond resources controlled. ”

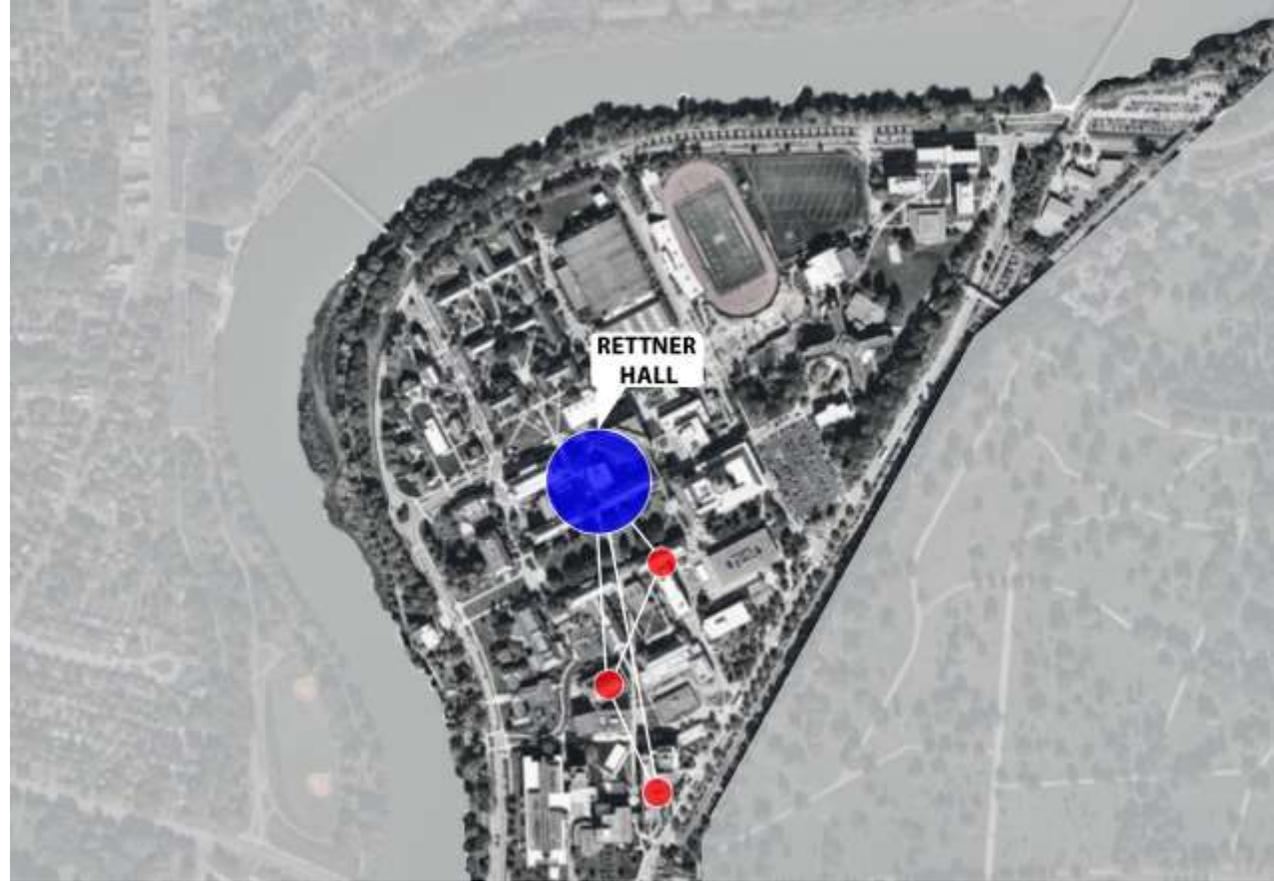
Professor Howard Stevenson. *Harvard Business Review*

Hall for Media Arts and Innovation, U of Rochester

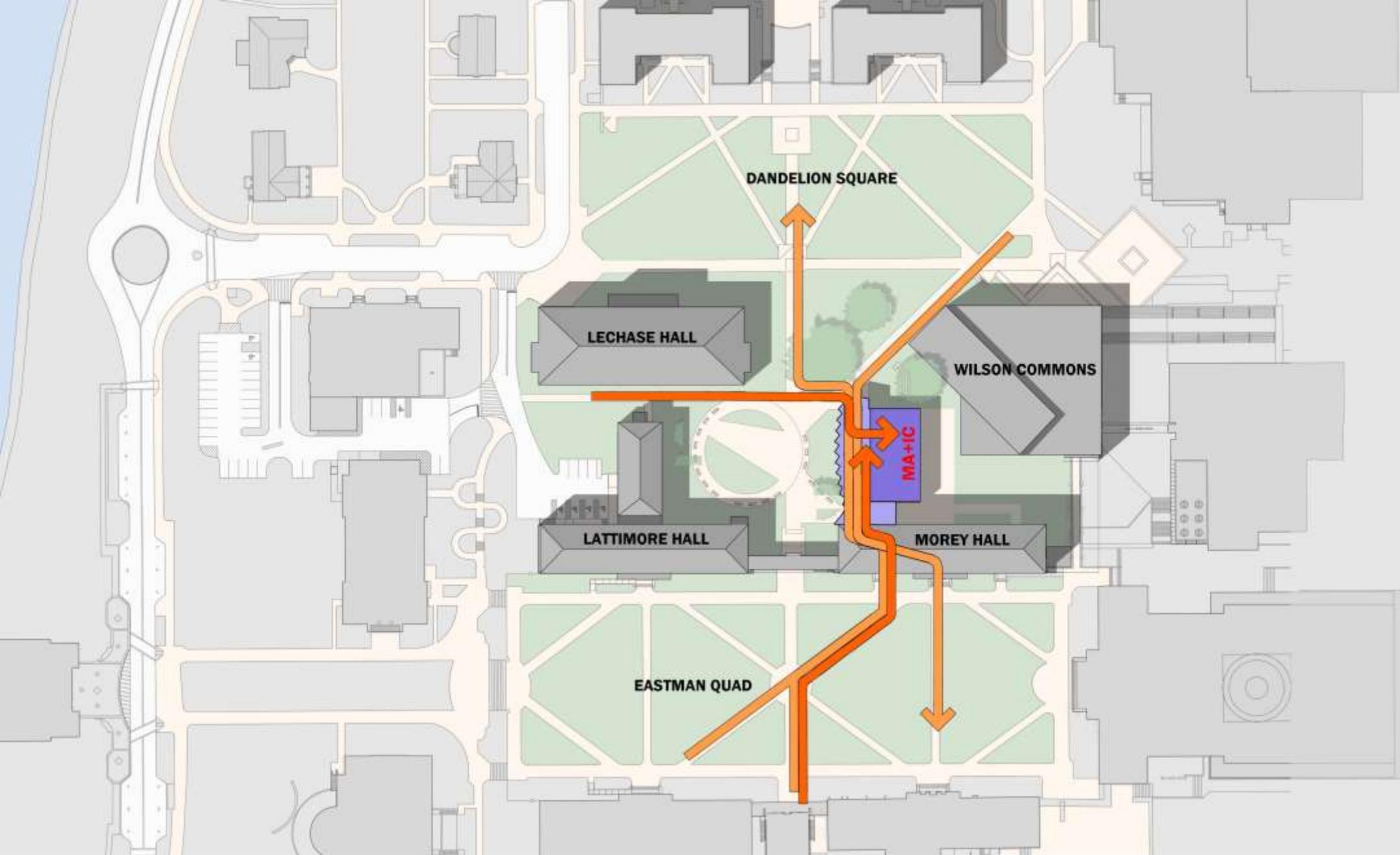
- Focus on entrepreneurship through 22 research centers, including Ain Center for Entrepreneurship
- SoE sponsors Kauffman Entrepreneurial Year (KEY Program)
- Rettner Hall bridges between Engineering and Media Arts and spurred changes in the curriculum
- Primary donor of the building, Ronald Rettner, was a noted entrepreneur

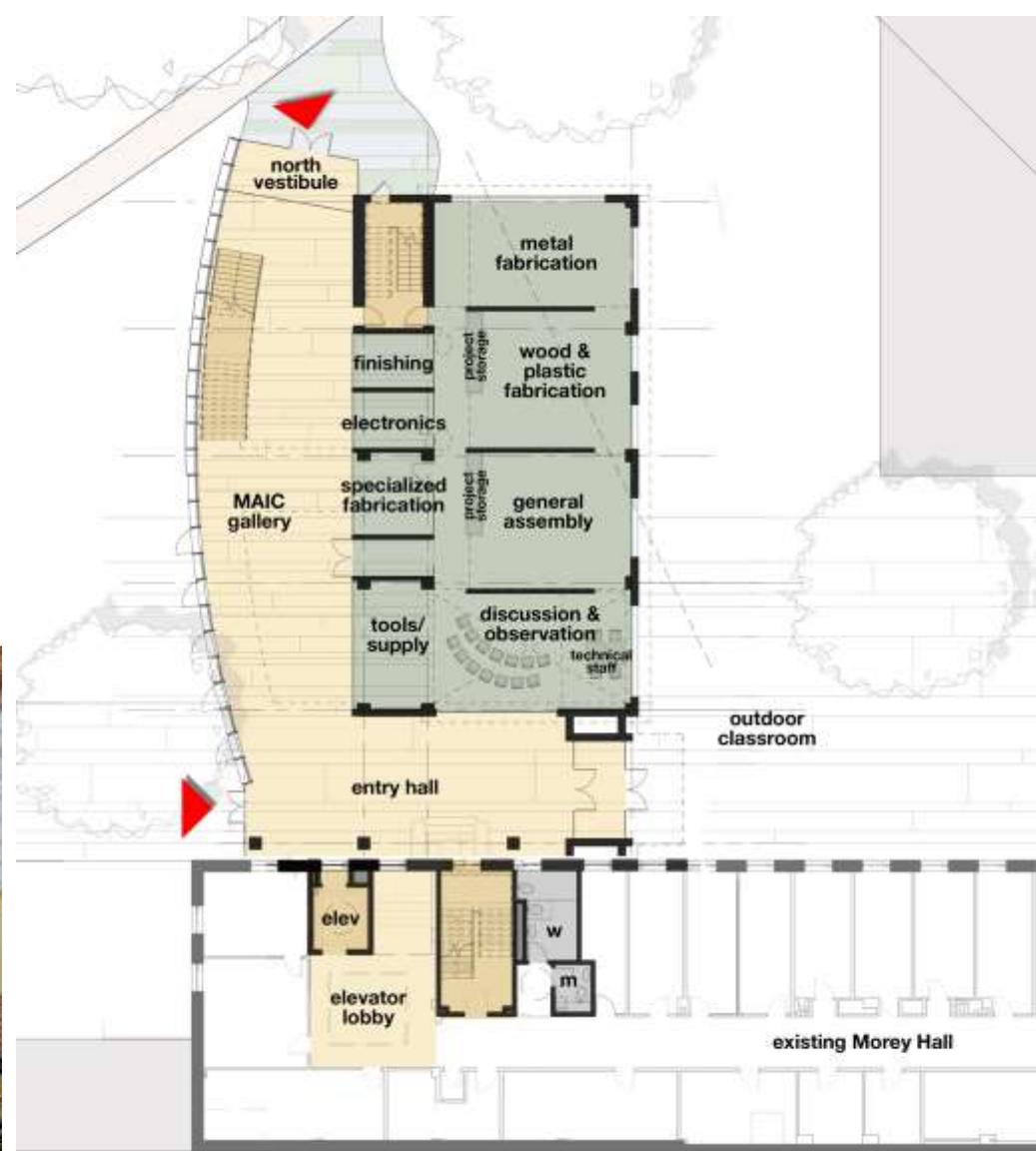
Hall for Media Arts and Innovation, U of Rochester

- 18,900 sf facility focused on Fabrication Studio, Digital Media Lab, Video and Audio Studio
- Open atrium serves as project gallery and connects all fabrication spaces
- Open 24-hours a day and connects upper and lower Quad of the campus



- Small-scale on-campus network predominantly for Engineering
- Off-campus resources at RIT and non-profit space Rochester Makers
- Rettner Hall becomes the flagship campus resource



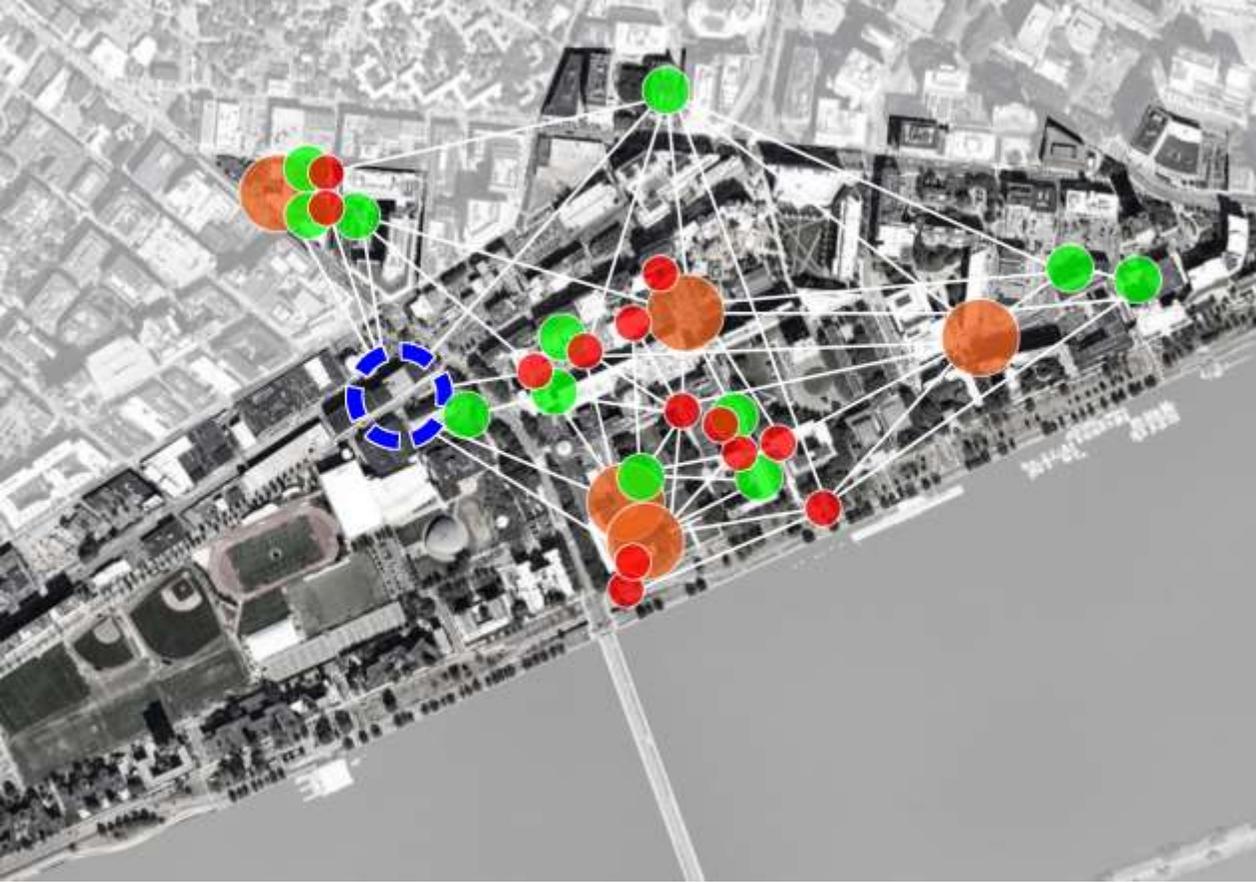


New House Dormitory, MIT

- Renovation of existing student dormitory
- First construction project to implement MIT's new Architectural Principles for MIT Undergrad Residences
- Prioritizes *Mens et manus*, experiential learning and practical arts within the residence

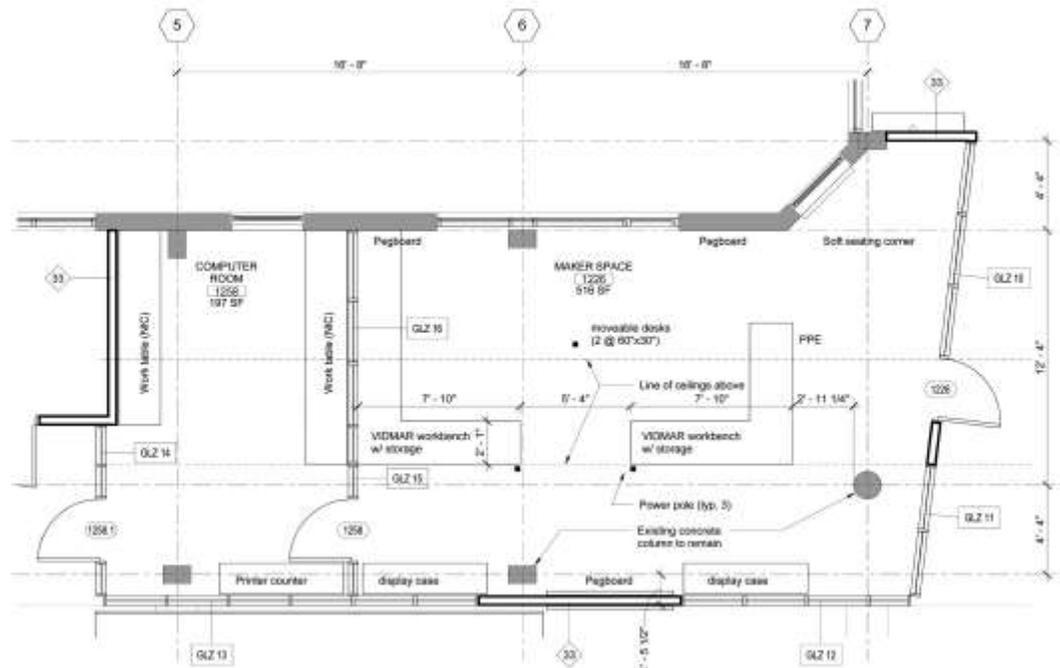
New House Dormitory, MIT

- Student run 500 sf maker space
- Paired with 250 sf computer lab
- High degree of transparency to the public space
- Highly flexible, all movable furniture
- Anticipated for social events, hack-athons



- Dense constellation of spaces distributed throughout the campus
- 130,000 sf located in 40+ distinct spaces
- MIT W70, first makerspace designed within a residence hall



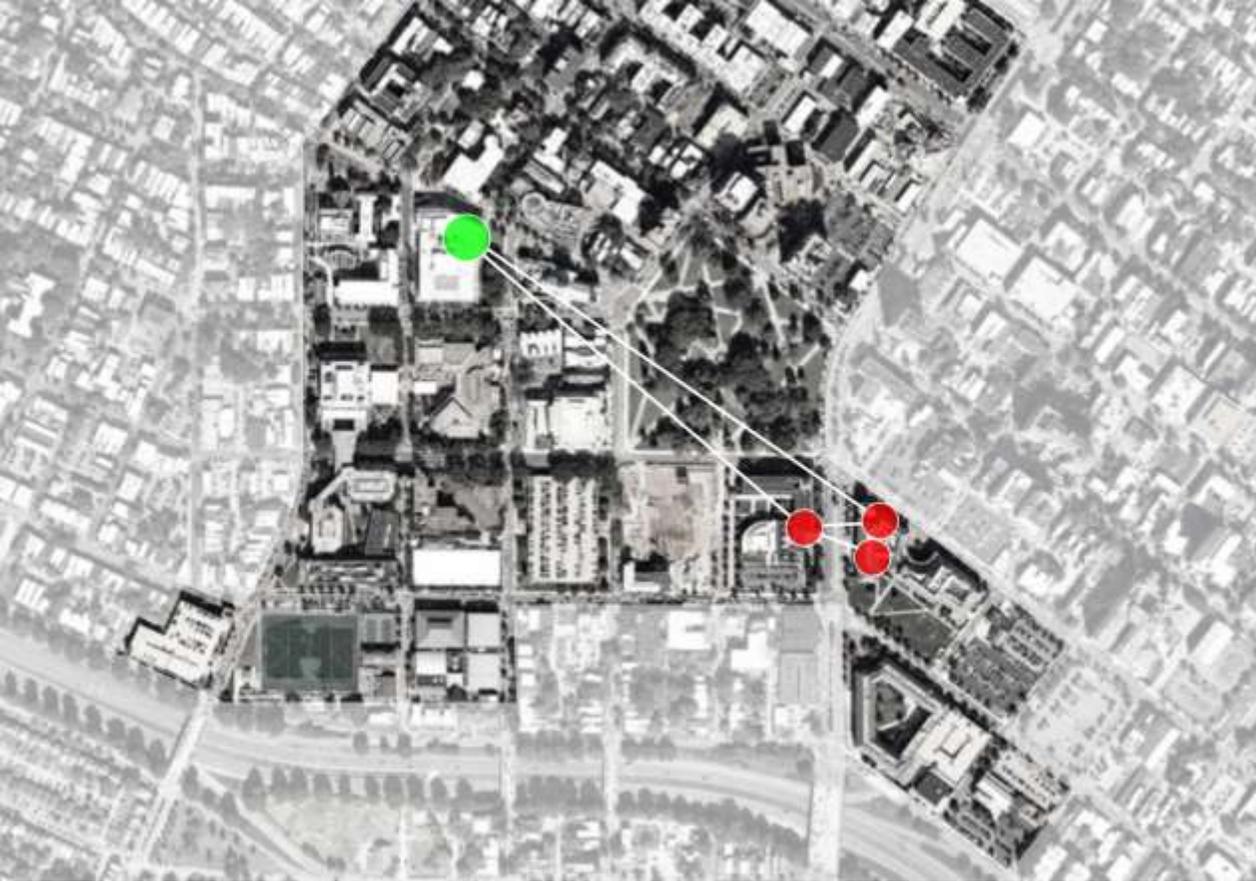


Maker Innovation Center, VCU

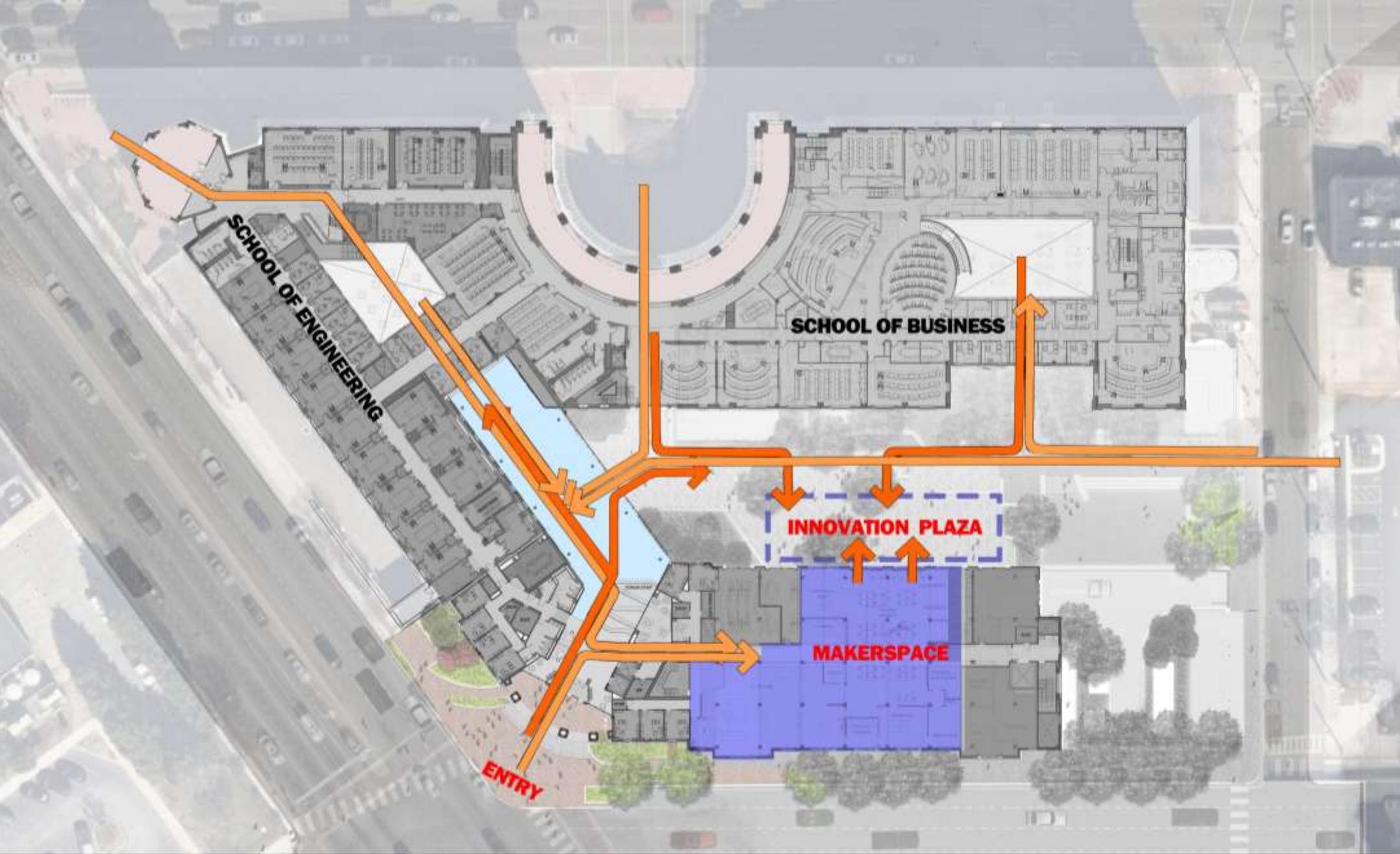
- ERB is primarily about economic development, innovation and entrepreneurship
- Strategic decision to pair Engineering with School of Business
- School of Engineering motto, “make it real”, built around hands-on skill development
- VCU, or “Venture Creation University”

Maker Innovation Center, VCU

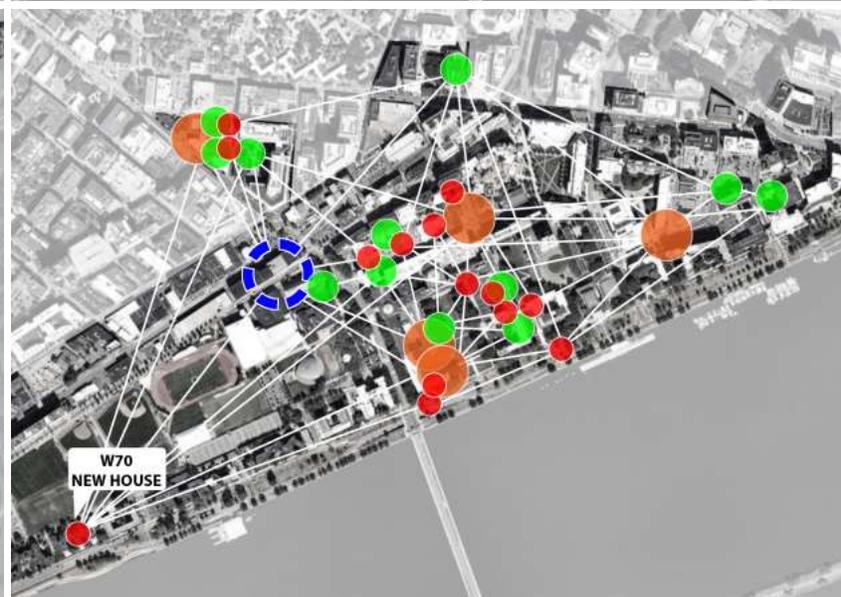
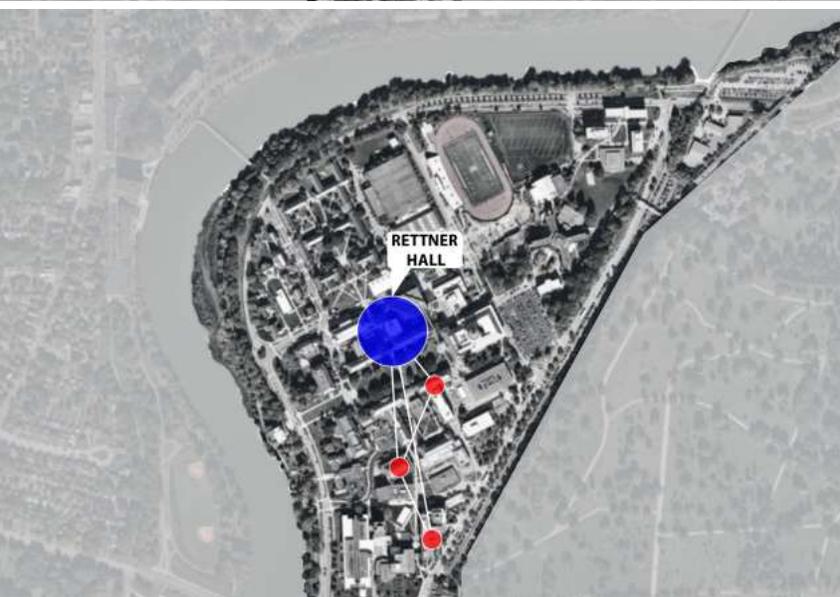
- 10,000 sf makerspace
- Expanded machining capabilities and additive manufacturing
- Project studio space modeled after Yale CEID
- Designed to expand making outside to the “Innovation Plaza”



- Historically clustered around SoE
- The Workshop, opened in 2016 to broadly support maker culture
- SoE and Business are paired to foster innovation and entrepreneurship







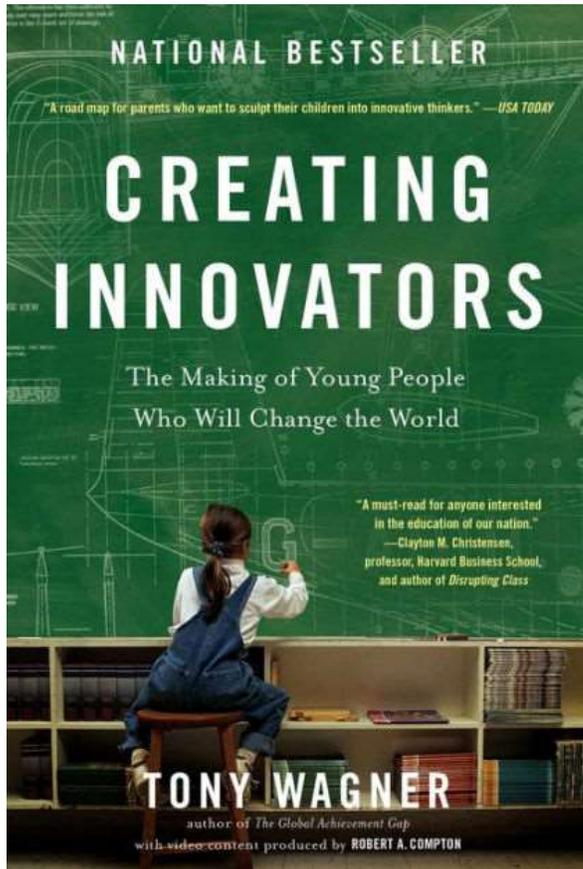
Commonalities

- Each project is unique in its situated community, curriculum and culture
- Openness and transparency, “making on display”
- Located strategically to bridge across disciplines, to break natural academic silos
- Investment in physical resources should be supported by evolution of the curriculum to maximize its potential

““ A dynamic, open ecosystem of resources that spur economic and cultural growth through collaboration and innovation. ””

Peter Hirshberg and Dale Dougherty, *Maker City*

Top characteristics for Innovation



- Interdisciplinary problem-solving
- Exploration, play and empowerment
- Creative thinking skills
- Teamwork

Tony Wagner, *Creating Innovators*

Top characteristics of Entrepreneurs



forbes.com

- Open minded, persistent learner
- Resourceful, proactive
- Resilient, embraces failure as learning
- Highly adaptable, willing to take risks
- Purpose, passion and tenacity

Thematic overlap of entrepreneurship and makerspaces

- Sites of opportunity, innovation and resource appropriation
- Ambiguity tolerance defined by experimentation and creativity
- Radical openness to disrupt natural pathways
- Quick iterations - high degree of “learning speed”

““ By shifting the focus of learning from individual cognitive development, to learning as a sociocultural practice, the situated learning perspective provides us a useful lens to understand how maker spaces might support the development of an innovative and entrepreneurial students. ””

Professor Victoria Bill, NYU Lab Manager

“ we learned that we have to prototype our way into any new space; to continuously iterate, adapt, and evolve our spaces after we move in; and to think of space primarily as a way to change behavior, not as a facilities project or a showpiece for our brand. ”

George Kembel, Director, Stanford d.School