



“DESIGN EDUCATION: INNOVATION AND ENTREPRENEURSHIP ”

MUDD DESIGN WORKSHOP VIII

26–28 MAY 2011

FINAL (REV. 1) PROGRAM

Supported by Harvey Mudd College and the National Science Foundation, this **workshop** brings together engineering educators, designers and researchers to articulate the relevant issues of innovation and entrepreneurship in engineering design education. The **participants** intend to identify and delineate the key intellectual and institutional issues that engineering design educators must address.

ORGANIZING COMMITTEE: Clive L. Dym, *Harvey Mudd College* (Chair); Alice Merner Agogino, *University of California at Berkeley*; Aaron Altman, *University of Dayton*; Cindy J. Atman, *University of Washington*; J. Edward Colgate, *Northwestern University*; Daniel D. Frey, *Massachusetts Institute of Technology*; Peter Gregson, *Dalhousie University*; Ahmad Ibrahim, *Yorkville University*; Larry J. Leifer, *Stanford University*; Christopher L. Magee, *Massachusetts Institute of Technology*; Gregory B. Olson, *Northwestern University*; John W. Prados, *University of Tennessee, Knoxville*; Sheri D. Sheppard, *Stanford University*; Janis P. Terpenney, *Virginia Polytechnic Institute and State University*; and John W. Wesner, *Carnegie Mellon University*.

12:00PM, THURSDAY: OPENING LUNCHEON

PLATT CAMPUS CENTER

Welcome: Robert Cave, Vice President for Academic Affairs, *Harvey Mudd College*

Remarks: Clive L. Dym, *Harvey Mudd College*

Keynote: “Finding One’s Way,” Alice Merner Agogino, *University of California at Berkeley*
Larry J. Leifer, *Stanford University*

2:00PM, THURSDAY (S1): CHARACTERIZING INNOVATION

PARSONS DESIGN STUDIO

Moderator: Cindy J. Atman, *University of Washington*

D. M. Ferguson and M. W. Ohland, *Purdue University*, “What is innovativeness in engineers?”

A. F. McKenna and A. Carberry, *Arizona State University*, “Characterizing the role of modeling in innovation.”

R. Currano and M. Steinert, *Stanford University*, “A framework for reflection in innovation design.”

R. Burton, L. Schlemer and L. Vanasupa, *California Polytechnic State University, San Luis Obispo*, “On the use of pattern interruption and self observation in human systems for transformative innovation.”

4:00PM, THURSDAY (S2): STUDENTS SEEING INNOVATION**PARSONS DESIGN STUDIO**

Moderator: Ahmad Ibrahim, *Yorkville University*

- K. E. Bigelow, *University of Dayton*, "Student perspectives in an all-female first-year engineering innovation course."
- K. Lau, S. Beckman and A. M. Agogino, *University of California at Berkeley*, "Diversity in design teams: An investigation of learning styles and its impact on team performance and innovation."
- J. Rhee, D. Parent, L. Speer, A. Basu and L. Gerston, *San Jose State University*, "Formative assessment of the influence of personality in a multidisciplinary senior project combining innovation and entrepreneurship."
- M. V. Manuel, *University of Florida*, A. F. McKenna, *Arizona State University*, and G. B. Olson, *Northwestern University*, "The driving force behind student innovation in capstone design projects: Insights into the human connection."

6:30PM, THURSDAY: INFORMAL DINNER & PRESENTATION**PLATT CAMPUS CENTER**

Speakers: "A conversation about change in teaching engineering: Insights from the Academic Pathways Study,"
 Sheri D. Sheppard, *Stanford University*
 Cindy J. Atman, *University of Washington*
 Ken Yasuhara, *University of Washington*

8:00AM, FRIDAY (S3): IMPROVING INNOVATION LEARNING (I)**PARSONS DESIGN STUDIO**

Moderator: J. Edward Colgate, *Northwestern University*

- E. Gerber, J. Olson and R. Komarek, *Northwestern University*, "Innovation-based learning: A pilot study, evaluation, and emerging design principles."
- M. K. Thompson, *Korea Advanced Institute of Science and Technology*, "Fostering innovation in cornerstone design courses."
- [D. S. Strong, *Queen's University*, "An approach for improving design and innovation skills in engineering education: The multidisciplinary design stream."](#)
- J. R. Goldberg, *Marquette University*, "Learning to identify unmet needs and new product opportunities."

10:00AM, FRIDAY (S4): IMPROVING INNOVATION LEARNING (II)**PARSONS DESIGN STUDIO**

Moderator: Alice Merner Agogino, *University of California at Berkeley*

- S. Brunhaver, M. Lande, S. D. Sheppard and E. Carryer, *Stanford University*, "Fostering an enterprising learning ecology for engineers."
- S. L. Beckman, *University of California, Berkeley*, and M. Barry, *Stanford University*, "Design as a learning process: Implications for teaching."
- A. Johri and H. J. Teo, *Virginia Polytechnic Institute and State University*, "Levering advances in open innovation to re-design design learning."
- [D. Schaefer and J. L. Thames, *Georgia Institute of Technology*, J. H. Panchal, *Washington State University*, S. Haroon, *The RBR Group*, F. Mistree, *University of Oklahoma*, "Innovative design education in a global distance learning setting: Challenges–Opportunities–Experiences."](#)

12:00PM, FRIDAY (GREEN ROOM, PLATT CENTER)**SECOND DAY LUNCHEON**

Host: Ziyad H. Duron, Chair, Department of Engineering, *Harvey Mudd College*

2:00PM, FRIDAY (S5): VIEWS FROM ON TOP**PARSONS DESIGN STUDIO**Moderator: Daniel D. Frey, *Massachusetts Institute of Technology*

J. Chen, *Zhejiang University*, C. L. Magee, *Massachusetts Institute of Technology*, and K. L. Pey, *Singapore University of Technology and Design*, "What design adds to a modern research university."

U. Jorgensen and A. Valderrama, *Technical University of Denmark*, "Response strategies to new challenges to engineering and design education."

J. McCormack and S. Beyerlein, *University of Idaho*, D. Davis, H. Davis, M. Trevisan and J. Lebeau, *Washington State University*, S. Howe, *Smith College*, J. Khan, *Tuskegee University*, P. Brackin, *Rose-Hulman Institute of Technology*, P. Thompson, *Seattle University*, P. Leiffer, *LeTourneau University*, and R. Gerlick, *Pittsburg State University*, "Contextualizing engineering ethics in capstone projects using the IDEALS professional responsibility assessment."

4:00PM, FRIDAY (S6): ENTREPRENEURSHIP**PARSONS DESIGN STUDIO**Moderator: Peter Gregson, *Dalhousie University*

N. Duval-Couetil, T. Reed-Rhoades and S. Haghigi, *Purdue University*, "Engineering students and entrepreneurship education: Involvement, attitudes and outcomes."

K. Yasuhara, *University of Washington*, H. L. Chen, M. Lande and S. D. Sheppard, *Stanford University*, "Educating engineering entrepreneurs: A multi-institution analysis."

J. Garcia, J. Sinfield, A. Yadav and R. Adams, *Purdue University*, "Learning through entrepreneurially-oriented case-based instruction."

Z. M. Oden, M. K. O'Malley, G. Woods, T. Kraft and B. Burke, *Rice University*, "Outcomes of recent efforts at Rice University to incorporate entrepreneurship concepts into interdisciplinary capstone design."

6:30PM, FRIDAY: MDW VIII BANQUET**PLATT CAMPUS CENTER**Host: Christopher L. Magee, *Massachusetts Institute of Technology*

Speaker: "Creating a world class technology and design based university"

Thomas L. Magnanti, *Singapore University of Technology and Design*
Massachusetts Institute of Technology

8:00AM, SATURDAY (S7): CURRICULUM MATTERS**PARSONS DESIGN STUDIO**Moderator: Janis P. Terpenney, *Virginia Polytechnic Institute and State University*

S. R. Daly, J. Christian, S. Yilmaz, C. Seifert and R. Gonzalez, *University of Michigan*, "Assessing design heuristics in idea generation within an introductory engineering design course."

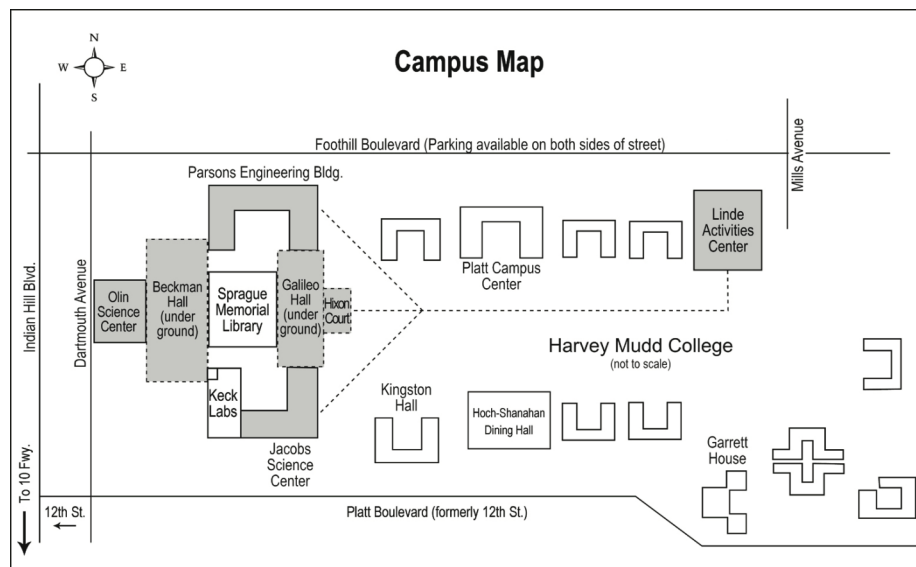
A. Silva and L. Faria, *Technical University of Lisbon*, "Two approaches to design teaching in a mechanical engineering curriculum."

L. Oehlberg, I. Leighton, B. Hartmann and A. M. Agogino, *University of California at Berkeley*, "Multidisciplinary human-centered design: Fostering innovation across engineering, humanities and social sciences."

W. M. Butler, J. P. Terpenney, R. M. Goff, and H. M. Steinhauer, *Virginia Polytechnic Institute and State University*, R. S. Pant, *IIT Bombay*, "Improving the aerospace capstone design experience through simulation based learning."

10:00AM, SATURDAY (S8): MDW VIII POSTER SESSION**PLATT CAMPUS CENTER**Moderator: Aaron Altman, *University of Dayton*

- A. Goncher and A. Johri, *Virginia Polytechnic Institute and State University*, "Do authentic constraints inspire innovative solutions? Findings from a case study of a freshman engineering design project."
- B. Hyman, R. Fales, Y. Lin and R. A. Winholtz, *University of Missouri*, and J. Borgford-Parnell, *University of Washington*, "Capstone design as cornerstone for project-based learning throughout the curriculum."
- B. Morkos, S. Joshi and J. D. Summers, *Clemson University*, and V. Mucino, *West Virginia University*, "International capstone immersion experience: A preliminary evaluation of senior design in Mexico."
- S. Petersen, *Ingomar & Ingomar*, and M. Steinert, *Stanford University*, "What designers can learn from artists and architects about the philosophy within conceptualization."
- C. Roschuni and A. M. Agogino, *University of California at Berkeley*, "Teaching design research for innovation and entrepreneurship."
- M. Schar and M. Lande, *Stanford University*, "'What Counts' for success: Understanding the role of product manager and its implications for teaching design engineering students."
- L. A. Shluzas and L. J. Leifer, *Stanford University*, "Preparing tomorrow's medical device designers as entrepreneurs."
- C. Z. Qian and S. C. Visser, *Purdue University*, "Design for all: A multi-disciplinary design experience."

12:00PM, SATURDAY: CLOSING LUNCHEON**PLATT CAMPUS CENTER**Host: Clive L. Dym, *Harvey Mudd College*.

Parking is available along Foothill Blvd. on both sides of the street, behind the Linde Activities Center, on the south east corner of Foothill Blvd. and Mills Ave., on Dartmouth Ave., and very limited areas on Platt Blvd. and 12th St.

MDW VIII will be held in the Engineering Design Studio in the Parsons Building at Harvey Mudd College. It begins with registration at 11:00AM on **Thursday, 26 May**, in the southwest lobby of the Parsons Building. Lunch follows at noon, and the workshop continues through the afternoon of **Saturday, 28 May**.