

## Guest Editorial

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The papers in this special issue of the *International Journal of Engineering Education* detail the proceedings of Mudd Design Workshop VIII, “Design Education: Innovation and Entrepreneurship,” which was held on the campus of Harvey Mudd College in Claremont, California, during 26–38 May 2011. Supported by Harvey Mudd College’s Department of Engineering and Center for Design Education, and the National Science Foundation, this workshop brought together engineers and designers—educators and practitioners—over three very busy days to talk about the importance of innovation and entrepreneurship in engineering design education, in preparing engineering students for professional practice. In many ways, MDW VIII turned out to be perhaps the most successful of all: we had 85 registered participants, far above our long-term average of 57, and yet we still maintained our lively and intimate conversations.

At the opening luncheon, as Chair of the MDW VIII Organizing Committee, I followed my customary practice of introducing dictionary definitions of both innovation and entrepreneurship to provide a start on a common vocabulary for the Workshop. But most of my opening remarks were devoted to explaining how Harvey Mudd’s Engineering curriculum works and to testifying to the visionaries—most notably the late Jack L. Alford and M. Mack Gilkeson (who thankfully is still with us)—who created Engineering Clinic, as well as the predecessor of HMC’s current first-year design experience, E4. We had two keynote talks in which two prominent design researchers and educators retrospectively reflected on the paths they followed to their many achievements. Alice Merner Agogino talked about how she forged her own path, how she learned and evolved through her graduate students, and plotted it all out with an illustrated mind map. Larry J. Leifer drew an analogy to hunters and gatherers, visually depicting an indirect, iterative path to a target and an associated return path toward reaching a goal, stressing the point that there is no single successful map for life.

A broad variety of design, engineering and education issues were discussed in the next seven sessions, which were titled: Characterizing Innovation; Students Seeing Innovation; Improving Innovation Learning I & II; View from On Top; Entrepreneurship; and Curricula Matters. These sessions are summarized in the last paper of this special issue, a wrap-up paper by Altman, Dym, Hurwitz and Wesner, which also details the main concepts and key ideas that were developed at MDW VIII.

We were once again fortunate to have two outstanding after-dinner events. On Thursday night, Sheri Sheppard, Cindy Atman and Ken Yasuhara excited us and brought us up to date on what had been learned in the Academic Pathways Study, supported by the National Science Foundation. Sheri and Cindy went on to present a celebration inspired by my forthcoming formal retirement from Harvey Mudd and from leading the MDW series. I have to say, that celebration both surprised and moved me, as well as some of my family who were invited (unbeknownst to me) to that dinner. On Friday night, Thomas L. Magnanti, Institute Professor at MIT and president of the new Singapore University of Design and Technology captured our attention by describing both high-level and curricular-level issues attendant to the creating and found of an ambitious new technological university.

Following the long-established MDW tradition, the workshop sessions were constructed to give *everyone* a chance to participate, to be heard as well as to listen. Workshop sessions were typically scheduled for two hours, starting with brief presentations by three or four panelists in each session, and concluding with moderated, open discussion. After presenting their own current research, panelists were asked to reflect on ideas and attitudes about what needs to be done in the future. The papers that appear in this Special Issue reflect the panelists’ research and positions, and they represent a rich body of experience and knowledge that enhances and advances our understanding of *learning* in the context of *innovation* and *entrepreneurship*. I hope that experience and knowledge can be brought to bear in support of design education with the same intelligence and vigor that the participants brought to Mudd Design Workshop VIII.

I want to acknowledge once again the support of the members of MDW VIII’s Organizing Committee. As they have done many times before, they worked hard to maintain the MDW’s reputation for providing an informative, stimulating and inspiring venue for discussing engineering education: 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* and *Singapore University of Technology and Design*; Peter Gregson, *Dalhousie University*; Ahmad Ibrahim, *University of Yorkville*; Larry J. Leifer, *Stanford University*; Chris Magee, *Massachusetts Institute of Technology* and *Singapore University of Technology and Design*; Gregory B. Olson, *Northwestern University*; John W. Prados, *University of Tennessee, Knoxville*; Sheri D. Sheppard, *Stanford University*; Janis P. Terpenney, then at *Virginia Tech* and the *National Science Foundation*, now at *Iowa State University*; and

John W. Wesner, *Carnegie Mellon University*. The Organizing Committee's involvement once again led to an MDW that was stimulating, thought-provoking and interesting, as well as being serious, engaging and fun.

The support of the National Science Foundation, through grant EEC-1102663 under the direction of Program Officer Alan Cheville, is gratefully acknowledged. The grant made many things possible, including some ten "travel fellowships" for participants from under-represented groups, the creation of a web site for the MDW community (see below), as well as providing for the support of Ray Hurwitz, HMC '14, who as a rising sophomore provided outstanding support during the Workshop, implemented our assessment, built the web site and contributed mightily to the wrap-up paper by Altman, Dym, Hurwitz and Wesner.

Finally, Harvey Mudd College continues to offer the MDWs a very supportive environment. In particular, Professor Ziyad H. Duron, Chair of the Department of Engineering, and Robert J. Cave, Vice President for Academic Affairs and Dean of Faculty, deserve great thanks for supporting the MDW series as a matter of course as well as for providing warm welcoming remarks for our participants. And as I have said before, I *most particularly* and *vigorously* and *cheerfully* thank Sydney Torrey of HMC's Department of Engineering for unflagging organizational, logistical, editorial and administrative contributions, as well as the Department's Sue Lindley for a variety of helpful administrative actions. Sydney also provided incredible and extraordinarily discrete support for the Thursday night celebration I mention earlier. Finally, Kevin Mapp, formerly of HMC's Department of College Relations and now running his own studio, took a lot of pictures during MDW VIII: many of them can be found at the new Mudd Design Workshop web site, [www.mudddesignworkshop.com](http://www.mudddesignworkshop.com).

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