

The Evolution and the Future of Mechanical Design

Some years ago I had been asked to join a gathering of mechanical engineering students, many close to graduation, to talk with them sagely about their careers and life after graduation. During the discussion, one of the students asked me: "Professor, what is the future of mechanical engineering?" To which, without really thinking, I promptly responded: "Well, the future of mechanical engineering is not mechanical engineering." A rather frozen silence descended in the auditorium, many people leaning forward and glancing around them in an uneasy manner, obviously querying themselves in disbelief: "Did he really say that?" Indeed I had, and so I proceeded to explain myself: "You see, we really need to ask ourselves what we define as mechanical engineering. What we define it today and what we should be defining it for the future. Then we can begin to talk about the future of 'mechanical engineering'." After that, everybody sat back relaxed and we proceeded to talk about how mechanical engineering is indeed changing and how different things we will end up doing as mechanical engineers in the years ahead.

This incident came back to me recently when starting to face decisions about what should be included as appropriate content in our *Journal of Mechanical Design*. Formal descriptions of the journal's content have been very well served over time by the journal's associations with the Design Engineering Division (DED) Technical Committees, as listed in the journal's purpose and scope:

The Journal of Mechanical Design communicates original contributions of permanent interest on all aspects of the design of mechanical systems, primarily in the form of articles of considerable depth. The journal also publishes technical briefs, design innovation papers, discussions of published papers with rebuttal, book reviews, and editorials.

Technical areas include: design theory and methodology (including creativity in design and decision analysis), design automation (including risk and reliability-based optimization and design sensitivity analysis), design for manufacturing, design of direct contact systems (such as cams, gears and power transmis-

sion systems), design of mechanisms and robotic systems, the design of micro- and nano-scaled mechanical systems, and failure prediction and analysis.

The journal has drawn much of its strength from the work of the members of these committees, and will continue to do so in the years to come. As the research activities in our technical committees evolve, so will the contents of this journal. In that spirit, I would like to invite all DED Technical Committees to contemplate what are the evolving areas of their research interests and how these are reflected in the journal's stated and actual contents. I will be seeking their advice in how we may modify the journal's statements on purpose and scope, and how to make the journal more representative of the evolving nature of mechanical design. I also encourage all authors and readers of the journal to be active members of the DED Technical Committees and to communicate their thoughts to their colleagues there. Moreover, I will welcome any input and advice you are willing to share with me directly (pyp@umich.edu).

In the occasional disciplinary jesting that happens in our professional circles, I hear the suggestion that mechanical engineering is now just "a profession of the past." While our college enrollments certainly belie that assertion, what I tell my jesting colleagues is this: As long as humans retain body dimensions that belong to the macro world and as long as they continue to move in it, mechanical engineers will always be there to manage the discoveries of the micro- and nano-worlds into the reality of the macro world, and to translate them—along with everything else—into the designs that will continue to serve us all. In other words, there is just no future without mechanical design!

Looking forward to your thoughts and advice.

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