A Tribute to Jerry Marsden
from the Mathematical Sciences Community

By Anthony M. Bloch and Melvin Leok

The applied mathematics community lost a beloved and influential colleague with the death of Jerry Marsden in September 2010. As chair of the Scientific Program Committee and a member of the Steering Committee for ICIAM 2011, Jerry exerted a strong influence on the structure and scientific content of the congress.

Indeed, in many ways Jerry was the heart of the ICIAM 2011 program. From the start he and scientific co-chair Ivar Ekeland promoted a "big picture" view of applied and industrial mathematics. They considered it important that ICIAM break into new areas, such as multimedia and statistics. They also felt strongly that the meeting should not lose sight of the connection of mathematics to socioeconomic challenges, such as climate change, and to other disciplines, such as biology.

In essence, they wanted to build a big tent that would include all mathematical scientists doing sophisticated application-oriented mathematics. To realize their vision, early on they conceived the idea of thematic plenary sessions or tutorials.

Jerry advocated the inclusion of groups that might find it difficult to attend ICIAM. Accordingly, the organizers allocated special funds for young scientists in North America, as well as for a cross-section of scientists from developing nations. Jerry also insisted that, unlike other big meetings, ICIAM should not have exclusive social activities. The value of ICIAM, he believed, lies in part in the chances for students to meet the "big names" and for everyone to network. And so it was that the opening receptions and the Marsden memorial reception were open to all delegates.

Well connected in the applied mathematics community, Jerry was a professor at the California Institute of Technology from 1995 on, and he had spent the preceding 27 years at the University of California.

Jerry Marsden

On Wednesday evening, Jerry’s long-time friend and collaborator Alan Weinstein (UC Berkeley) gave a memorial lecture, Barbara Kefetis, who was an undergraduate with Jerry at the University of Toronto, introduced Alan, whose lecture was titled "Introduction to Marsden and Symmetry" in homage to Jerry’s key work on symmetry in dynamics and his popular book Mechanics and Symmetry with Tudor Ratiu. After discussing Jerry’s first paper (on projective geometry), written when he was an undergraduate at Toronto, Alan presented highlights of Jerry’s prolific output on geometric mechanics through the years. Symmetry emerged as playing a crucial role in much of geometric mechanics, and Jerry was a central figure in this development.

Following the lecture was a reception in memory of Jerry, hosted by Springer, Phil Holmes (Princeton University) and Katepalli Sreenivasan (NYU) spoke. Jerry and Phil were instrumental in the founding of the Journal of Nonlinear Science; Katepalli is the current editor.

Three sets of minisymposia had been organized in honor of Jerry’s work, with the range of topics reflecting the astounding breadth of his interests in geometry and its far-reaching applications. Many of the speakers also described the profound influence of Jerry’s generosity, insights, and mentoring on their professional careers. Participants in two of the sessions—Applications of Numerical Geometric Methods in Dynamics and Control and Geometry, Mechanics, and Dynamics—were shown in the accompanying photos.

During Jerry’s years at Caltech, his work focused on a systematic and rigorous application of geometric and dynamical techniques to computational and real-world science and engineering problems, which spanned the gamut from micromechanics to interplanetary transport and control of mechanical systems. A final two-part minisymposium, organized by Kamran Mohseni of the University of Florida at Guelph, was devoted to the "Caltech Period." Speakers in the morning session were George Haller (McGill University), Alison Marsden (UC San Diego), Shane Ross (Virginia Tech), and Rousslan Krechetnikov (UC Santa Barbara). Igor Mezic (UC Santa Barbara), Melvin Leok, Matthew West (University of Illinois, Urbana-Champaign), and Mohseni discussed their research in the afternoon session.

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