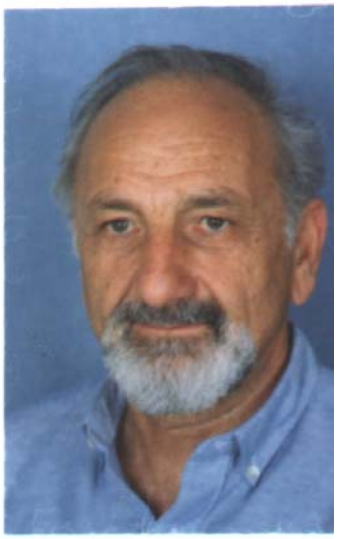
SMU Dept. of Mechanical Engineering & Southwest Mechanics Lecture Series *Presents . . .*



Israel Wygnanski

Aerospace & Mechanical Engineering Dept.
The University of Arizona Tucson

Thursday, March 6
2:00 - 3:00 pm
110 Junkins Bldg.

On Active Separation Control from Bluff Bodies

Abstract: Active control of separation by steady blowing or suction followed quickly the formulation of boundary layer theory and is almost as old as the latter. For many years it was accepted that momentum coefficient represents the control authority (lift enhancement and drag reduction) whenever blowing is used, and mass flow coefficient represented suction. It was shown recently that neither is perfect. Periodic excitation, that is relatively a novel concept, seemed to be more effective in providing separation and circulation control. An attempt is currently underway to formulate the most effective scheme for separation and circulation control and the answer to that question may not be unique. The flow around some airfoils will be discussed at off design conditions, as well as the flow around bluff bodies. The case of a tilt rotor airfoil (or finite wing) is especially challenging because of the very demanding requirements from this configuration as it transitions from hover to cruise.

Prof. Wygnanski received his Ph.D. in Mechanical Engineering from McGill University in 1964. He has held positions at the University of British Columbia, Boeing Scientific Research Laboratories, and Tel Aviv University. He is currently a Professor in the Department of Aerospace and Mechanical Engineering at the University of Arizona. He has published over 150 scientific articles and in 2001 received the Fluid Mechanics Medal from the American Institute for Aeronautics and Astronautics (AIAA). He is a fellow of the AIAA, the American Physical Society (APS), the Institute for Advanced Study-Germany, and is a member of the U.S. National Academy of Engineering. His research interests include aerodynamics of fixed wing and rotary wing aircraft, control of separation, high lift devices and drag reduction, aero-acoustics, and turbulent shear flows and their control.