

Ven Te Chow Award Response

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[Slide 1 – Title Slide]

Mr Chairman, Ladies and Gentleman, it gives me great pleasure to accept the Ven Te Chow award of ASCE's Environmental and Water Resources Institute. I want to thank Chandra Pathak of the South Florida Water Management District, who nominated me for this award, and the colleagues who wrote reference letters to support the nomination. I am grateful for their appreciation of my work. I want also to thank my wife, Helen, and my two daughters, Amy and Linda, for their love and encouragement over years. I would like also to acknowledge past winners of the Ven Te Chow Award who are in the audience this morning: Jacques Delleur, José Salas, and Vijay Singh.

An occasion like this is an opportunity to look back at the past and acknowledge some formative influences on my career, and also to look forward and assess some trends that I think will influence hydrologic engineering in the future.

When I look at the list of past recipients of this award, I see many names of people whom I regard as my professional mentors. I am honored to join them on this list. I believe I am the first recipient of this award who was also a student of Ven Te Chow, so I would like to take a few moments to tell you about that experience.

[Slide 2 with picture of Ven Te Chow]

When I was growing up in New Zealand, the academic ideal was very British: Oxford and Cambridge. However, when I became an undergraduate student at the University of Canterbury, I realized that the engineering textbooks we were studying came from American universities, including Illinois, and I resolved to pursue my graduate education where the textbooks came from. I arrived at Illinois in the Fall semester of 1972 and I

vividly remember my first visit to the Hydrosystems Laboratory, sitting in Dr Chow's office in a little chair next to his desk. I was just 22 years old. In a flash, my world had been transformed from a quiet life in a small country very far away, to mixing in a global community at the forefront of learning. It was a unique, life-changing experience, one that I'll never forget.

[Slide 3 with picture of Handbook of Hydrology]

I subsequently dedicated my "Handbook of Hydrology" to Ven Te Chow as "Scholar, Teacher, Author, Friend". As a scholar, he was meticulously careful, concerned to get every detail correct. As a teacher, he was very methodical, presenting his ideas within a sound theoretical framework. As an author, he had a clear writing style, able to convey complex ideas in a simple way. As a friend, he had a light touch, always leaving the other person with an option to make a different choice than the one he had suggested. I hope the books I have authored and edited have been able to continue the tradition that he established of conveying hydrologic engineering knowledge to the farthest corners of the earth.

[Slide 4 with picture of UT Tower]

I would like also to thank my colleagues at the University of Texas at Austin, which has been my congenial faculty home for the past 30 years. I wish in particular to acknowledge my colleague, Daene McKinney, who has been a stalwart supporter of ASCE and EWRI. I joined the faculty at Texas in 1981, upon the retirement of Leo Beard, another recipient of the Ven Te Chow Award. I also serve as Director of the Center for Research in Water Resources where Leo Beard did some of the key research for Bulletin 17. I am grateful that the University of Texas gave me the academic freedom to be the faculty member that I wanted to be, even if what I did was a bit unconventional at times. I have always been a connector, trying to survey a field as a whole and bring it together so that the whole is more than the sum of the parts, like putting together a jigsaw puzzle.

[Slide 5 with picture of ESRI]

For much of my career, I have been concerned with the role of information in hydrology, at first using statistical methods, then using spatial analysis with geographic information systems, and most recently helping to foster the nascent field of hydrologic information systems. My thinking on those subjects has been materially influenced by my

association with the Environmental Systems Research Institute, or ESRI, the makers of the ArcGIS geographic information system. Indeed, I have many happy memories of meeting in this conference center in Palm Springs, when it was the site of the ESRI User Conference during the 1990's. Somebody once asked me why I work with ESRI, and my response was "Because these people interest me". I feel an affinity with the way they think about the world.

[Comments on Arc Hydro and Arc Hydro Groundwater]

[Slide 6 with picture of National Academies Reports]

One of my main activities for the past ten years or so, has involved serving on Committees of the National Academy of Sciences, and I have been able through that means to address some hydrologic and water resources issues of national importance. I think it is quite remarkable that through the mechanism of National Academy reports, the United States government gives credence to science as a fundamental element in assessment of national policy, and thus enables university faculty members to play a role in forming that policy.

The evolution of methods of handling watershed and stream channel information in GIS during the 1990's turned out to be fundamentally important during the past decade when the emergence of the FEMA Flood Map Modernization program in 2003 created a new field, Automated Hydrology and Hydraulics, upon which more than \$1.5 billion has since been spent – this is said to be the largest civilian mapping program in the world.

[Comments on 2007 and 2009 NRC reports]

[Slide 7 with picture of LIDAR data]

Accurate flood mapping requires accurate base map information describing the land surface of the earth. The ubiquity of aerial image mapping, and the emergence of LIDAR for detailed measurement of land surface elevation, have together created an description with (x,y,z) coordinates of the earth's surface of a much greater level of detail than has ever existed before. Our capacity to describe the earth now far exceeds our capacity to model the movement of water upon it. This is a challenge for the next generation of hydrologic and hydraulic models to more faithfully reflect the detail of the spatial and temporal patterns of water movement on and within the earth's surface.

[Comments on FEMA Digital Elevation Report and LIDAR data]

The emergence of the internet has created new opportunities for the synthesis of water information....

[Slides 8-18 on CUAHSI Hydrologic Information Systems]

[Slide 19 – Thank you to America]

I want to conclude by thanking you as representatives of the people of America. When my daughter Amy was small, I used to put her to bed at night by singing “When you wish upon a star, it makes no difference who you are; when you wish upon a star, your dreams come true”. I came to this country nearly forty years ago as a young man who had a dream that he could do something significant in hydrologic engineering. I am very grateful that America gave me the opportunity to make my dream come true.

Thank you.