Keith W. Hipel

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Biographical Sketch

Keith W. Hipel is *University Professor* of Systems Design Engineering at the University of Waterloo where he is *Coordinator* of the Conflict Analysis Group. He is *President* of the Academy of Science within the Royal Society of Canada, *Senior Fellow* of the Centre for International Governance Innovation, *Fellow* of the Balsillie School of International Affairs, and *Past-Chair* of the Board of Governors of Renison University College. Keith thoroughly enjoys mentoring students and is a recipient of the *Distinguished Teacher Award*, *Faculty of Engineering Teaching Excellence Award*, and the *Award of Excellence in Graduate Supervision* from the University of Waterloo, as well as the *2011 Outstanding Engineering Educator Award* from IEEE Canada. His major research interests are the development of conflict resolution, multiple criteria decision analysis, time series analysis and other decision-making methodologies for addressing challenging interdisciplinary system of systems engineering problems lying at the confluence of society, technology and the environment, with applications in water resources management, hydrology, environmental engineering, energy, and sustainable development. Keith is the author or co-author of 4 books, 12 edited books, more than 280 journal papers, as well as many conference and encyclopedia articles. In recognition of his academic and professional accomplishments, Keith has received 48 awards and honors including being elected *Fellow* of the Institute of Electrical and Electronics Engineers (*FIEEE*), Royal Society of Canada (*FRSC*), Canadian Academy of Engineering (*FCAE*), American Society of Civil Engineers (*FASCE*), American Water Resources Association (*FAWRA*), International Council on Systems Engineering (*FINCOSE*), and Engineering

Institute of Canada (*FEIC*). Keith is a recipient of the *Joseph G. Wohl Outstanding Career Award* from the IEEE Systems, Man and Cybernetics (SMC) Society, IEEE SMC *Norbert Wiener Award*, *Japan Society for the Promotion of Science (JSPS) Eminent Scientist Award*, and the *Sir John William Dawson Medal* from the RSC. He also received the designation of *Docteur Honoris Causa* from École Centrale de Lille, *Icko Iben Award* from AWRA,*Doctor Honoris Causa* from Obuda University, *Outstanding Contribution Award* from the IEEE SMC Society, *Most Active SMC Technical Committee Award*, *W.R. Boggess Award* from AWRA, and the *University of Waterloo Award for Excellence in Research*. Keith has held a *Canada Council Killam Research Fellowship*, Monbusho Kyoto University Visiting Professor Position, Stanley Vineberg Memorial Visiting Professorship, Centre National de la Récherche Scientifique (*CNRS*) Research Fellowship, and JSPS Fellowships. Moreover, he is a Professional Engineer (*PEng*), recipient of the *Engineering Medal for Research and Development* from Professional Engineers Ontario, and *Co-Chair* of the Council of Canadian Academies (CCA) Expert Panel on Energy Use and Climate Change: A Synthesis of the Latest Developments. He is *Honorary Diplomate, Water Resources Engineers (Hon.D.WRE)* in the American Academy of Water Resources Engineers (AAWRE), which is a subsidiary of the American Society of Civil Engineers (ASCE), and is *Member* of the Omega Alpha Association Systems Engineering Honor Society. In addition, Keith served for two terms as *Chair* of his Department and for many years was a *Member* of the Board of Governors and Senate at the University of Waterloo. He has been highly active in professional organizations such as the Royal Society of Canada, IEEE SMC Society, CAE, Group Decision and Negotiation, and AWRA; is the *Founder* of International Conference on Water Resources and Environment Research (ICWRER) and is *Chair* of its Steering Committee; and is an *Associate Editor* of many international journals including the IEEE Transactions on Systems, Man and Cybernetics: Systems; Group Decision and Negotiation; and Systems Engineering.

Seminar Presentations

Keith Hipel has been privileged to deliver stimulating seminars in many nations around the globe on thought-provoking topics which include:

Environmental Issues of General Interest

1. Tackling Climate Change: A System of Systems Engineering Perspective
2. Trade versus the Environment: Strategic Settlement from a Systems Engineering Perspective
3. Water Resources in Canada: A Strategic Viewpoint
4. Strategic Investigations of Water Conflicts in the Middle East

System of Systems Engineering

5. Competition and Cooperation in Societal and Technological Systems of Systems
6. Strategic Opportunities in Systems Engineering

System of Systems Governance

7. Responsible Governance in a Complex World: A System of Systems Engineering Design
8. Value-Focused Policy Design: A System of Systems Engineering Perspective
9. Risk Management of Extreme Events: A System of Systems Engineering Methodology

The Graph Model for Conflict Resolution

10. The Decision Support System GMCR II in Negotiations over Groundwater Contamination
11. Decision Support Systems in Water Resources and Environmental Management
12. A Systems Engineering Approach to Conflict Resolution (Cuban Missile Crisis Application)
13. Attitudes in the Graph Model for Conflict Resolution (War of 1812 Application)

Equitable Allocation of Water

14. Systems Thinking in Fair Water Resources Allocation (South Saskatchewan River Basin Application)

Environmetrics

15. Trend Analysis in Environmental Impact Assessment

Research, Education and Professional Engineering

16. Fulfillment and Success in Research (can complement other speeches)
17. How to Conduct Original Research in Graduate Studies (can complement other speeches)
18. Educational Innovations at the University of Waterloo: Cooperative Workterm Experience, International Exchange Programs, and Systems Design Engineering
19. The Internationalization of Engineering Education: A Tale of Two Countries
20. Accreditation of Engineering Programs and Licensing of Engineers in Canada