



Memorial Tribute to

JOHN WARREN SENDERS

Professor Emeritus

Department of Mechanical and Industrial Engineering

April 11, 2019

Be it resolved –

THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on February 12, 2019 of Professor Emeritus John Warren Senders.

John Warren Senders, a highly respected pioneer in the field of human factors engineering, passed away due to complications of pneumonia at St. Joseph's Hospital in Toronto, surrounded by members of his loving family, on February 12, 2019, two weeks before his 99th birthday.

Born to Russian immigrant parents on February 26, 1920 in Cambridge, Massachusetts, John was the youngest child, with four older sisters. He grew up in a household of high achievers, where the emphasis was on eclectic intellectual pursuits, fierce family competitions and proper English. (His favourite reading material as a child was the Encyclopaedia Britannica and Popular Science!) With such an origin it is no surprise that his illustrious seven decade long career was consistent in the sense that it was unconventional in almost every way.

With regards to his formal education, John boasted often about having been thrown out of Antioch, a liberal arts college in Ohio, at the end of his first year, purportedly for being "rebellious" (after he refused to take their prescribed math course because he claimed that he already knew the material!). He nevertheless managed to immediately secure employment, first as a test engineer for aircraft generators and then as a production engineer for naval equipment. It was at the latter job that he carried out his first human engineering experiment, in the late 1940's. After marrying his first wife, Virginia Loftus, he was persuaded to enrol in Harvard University (apparently with the third highest grade ever recorded for Harvard's entrance exam), which led to an AB degree in Experimental Psychology in 1948. Fast forwarding 35 years to September 1983 would find John, a full professor in the University of Toronto Department of Industrial Engineering, proudly standing on the podium to defend his Ph.D. dissertation at the University of Tilburg in the Netherlands. That notable event predated his official retirement from UofT two years later!

John Senders' ground-breaking achievements easily earned him his recognition as a pioneer in the then nascent human factors discipline, which was valiantly struggling to cope with the multitude of problems that were arising as rapid advances in technology failed to take into account its human users. A short list of just some of those early career accomplishments includes his work for the US Air Force (in Ohio) on the visual perception of velocity, on displays and controls, and on pilot eye movements, which in turn led to his research in the Arctic on the effects of low pressure and

vibration. This was followed by a period at Honeywell (in Minneapolis), where he worked on control and stabilisation issues for aircraft, and eventually for space flight, most notably for the Mercury space programme. His subsequent work at Bolt, Beranek and Newman (in Cambridge, MA) included, among other things, research on information storage and retrieval and digital libraries. His research at that time also led to his seminal application of information theory to visual sampling behaviour, most notably as it pertains to the design of (aircraft) instrument panels and to the task of driving an automobile. The latter eventually led to the visual occlusion paradigm for investigating the attentional demand of visually intensive tasks, an idea that ultimately led to John's being awarded a prestigious Ig Nobel Prize in 2011.

Perhaps inevitably, John Senders finally decided, in his mid-40's, to transition to (more or less) full-time academe. Following seven years of teaching experimental psychology and statistics at Brandeis University, John joined the UofT Department of Industrial Engineering in 1974, where he remained until his formal retirement in 1985. One of the most impactful legacies of that period was John's innovative research on human error, a topic that eventually led to the founding of Canada's Institute for Safe Medication Practices (ISMP), and arguably to the saving of thousands of people in Canada from the adverse effects of medical errors.

In the 34 years since his retirement from UofT, John Senders at various times taught psychology and engineering at the University of Maine, as well as intellectual property law and cognitive science at the Osgoode Hall Law School at York University. (It is not for naught that John was known to many as "professor of everything.") He has also acted as a consultant, on several occasions as an expert witness, as well as an entrepreneur – the latter including his initiative at one point to build a low-head hydroelectric dam on his property in Maine and start a power company!

John Senders' professional achievements are clearly abundant; however, nothing was as important to him as his interactions with the people around him, most importantly his family. He met his wife, Ann Crichton-Harris in 1974, shortly after moving to Toronto, whereupon the two became constant companions for 45 blissful years. John is also survived by five children – Warren, Stefan, Daniel, Abigail and Adam – as well as nine grandchildren.

As a final legacy, and an indication of how much John Senders valued education and respected the students with whom he surrounded himself for most of his life, he was instrumental in 2010 in establishing the John W. Senders Award for an Innovative Medical Device within the Faculty of Applied Science and Engineering.

Be it further resolved –

THAT this tribute to John Warren Senders be inscribed in the minutes of this Council meeting, and that copies be sent to his family as an expression of the respect and gratitude of the members of this Council.

Prepared and read by Professor Paul Milgram