

Ref ETOP108

How the Formation of One Company Led To Many Global Optics Clusters

Bob Breault

Abstract

I took a circuitous, but planned route from a childhood of building small rockets (pre-Sputnik) in a small rural town, influenced by one keystone book on astronomy, received a BS in mathematics, but not to become a “mathematician”, just to have it as a tool to do space based research. Then after graduation I planned on going into the Air Force as a fighter pilot, get to Luke Air Force base (the fighter pilot initial training school), Edwards Test Flight School, and Nellis Air Force Base as a “top gun” instructor. In this 1953 plan I would get a PhD from the University of Arizona at age 36 in astronomy designing and working on space-based satellites and become an astronaut.

Take out going to Edwards Test Flight School, change the PhD in astronomy at age 36 to a PhD in Optics at age 38 analyzing many space based telescopes, include some academic challenges all along the way, add an invitation/request by NASA, immediately after receiving my PhD, to reapply for the astronaut program (that I turned down by not re-applying), add the founding of Breault Research Organization, becoming a regional economic advisor to multiple regions in 29 countries and 18 states, and building 25 Optics Clusters around the world, and you have a synopsis of my life in bullet form. How, is the topic of the presentation?

ⁱ D. W. Johnson, R. T. Johnson, K. A. Smith, “Active Learning Cooperation in the College Classroom” Interaction Book Company, Edina, MN, 1991

ⁱⁱ -C. Poyatos, C. Allan, “The use of learning portfolios to develop generic skills: An evaluative case study with on-line Industrial Relations students”, ETL Conference, 2003, Queensland College of Art, Griffith University
-Classroom Assessment Techniques Portfolios. <http://www.flaguide.org/cat/portfolios/portfolios1.php>

ⁱⁱⁱ -Electronic Portfolios in Teacher Education. Carla Hagen Piper. <http://www.dchapman.edu/scs/faculty/piper/EPWeb/toc.html>

^{iv} - Queensland University of Technology. <http://www.studentportfolio.qut.edu.au/overview/>

-The Kalamazoo College Portfolio- <http://www.kzoo.edu/pfolio/>

-Dr. Helen Barrett, <http://electronicportfolios.org>

^v J. Walker, J. Briggs, A. Gibbons, G. Putnam, T. Nally, and B. Shoop, “Optics Education—A Blueprint for the 21st Century”, *Proceedings of the SPIE: Education and Training in Optics and Photonics*, T. Lim and A. Guenther, Editors, Vol. 4588, 2002.

^{vi} S. M. Pompea and I. Hawkins, “Increasing Science Literacy in Optics and Photonics through Science Centers, Museums, and Web-based Exhibits”, *Proceedings of the SPIE: Education and Training in Optics and Photonics*, T. Lim and A. Guenther, Editors, Vol. 4588, 2002.

^{vii} S. M. Pompea and T. K. Gek, “Optics in the Great Exploration in Math and Science (GEMS) Program: A Summary of Effective Pedagogical Approaches”, *Proceedings of the SPIE: Education and Training in Optics and Photonics*, T. Lim and A. Guenther, Editors, Vol. 4588, 2002

^{viii} M. Hall-Wallace, N. L. Regens, and S. M. Pompea, "Design of a Professional Development and Support Program for Future Photonics Industry Team Leaders", *Proceedings of the SPIE: Education and Training in Optics and Photonics*, T. Lim and A. Guenther, Editors, Vol. 4588, 2002.

^{ix} S. M. Pompea and Alan Gould, *Invisible Universe: The Electromagnetic Spectrum from Radio Waves to Gamma Rays*, Book in the Great Explorations in Math and Science (GEMS) Series, Lawrence Hall of Science, Berkeley, CA, 2003.