



ENVIRONMENTAL AND ECOLOGICAL ENGINEERING

EEE Seminar

DATE: Wednesday, April 20, 2016

TIME: 3:30 P.M.

LOCATION: Potter 234, Fu Room

Prof. Bert Bras

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“FROM CARS TO ECOSYSTEMS-SYSTEMS THINKING IN SUSTAINABLE DESIGN AND MANUFACTURING”

Abstract

The environmental impacts from our current products and manufacturing processes are probably not solvable by a “silver bullet” technology. Rather, systems-based solutions are needed that require a comprehensive systems approach in which multiple stakeholders from various disciplines like engineering, environmental science, management, economics, and policy all work together.

In this presentation, we emphasize the need for considering sustainable design of products and processes from a systems perspective. In the first part of the talk, we will show that proper systems modeling and life-cycle assessments are especially needed in order to avoid unintended consequences, also because products are starting to become much more part of larger product systems. For example, an electric vehicle now shares the electrical energy infrastructure with a house and connects to telecommunication products and systems. Cars and their embedded sensors are becoming part of larger mobility systems. We will show some examples of how proper design of products as parts of larger product systems for consumers may lead to larger “game-changing” sustainability gains than designing each product separately. In the second part of the talk, we will present ongoing research in biologically inspired design aimed at identifying recurring principles in Nature that could provide fundamentally new design principles for achieving sustainable systems. The focus will be on applying principles found in natural ecosystems to manufacturing systems.

BIO

Dr. Bert Bras is a Professor at the George W. Woodruff School of Mechanical Engineering at the Georgia Institute of Technology since September 1992. His research focus is on sustainable design and manufacturing, including design for recycling and remanufacture, bio-inspired design, and life-cycle analyses with applications in energy and mobility systems. His work has been funded by the National Science Foundation, Ford Motor Company, General Motors, Boeing, among others. Some of the work done with Ford was featured at the 2013, 2014, and 2015 Consumer Electronics Shows (CES). He was named the 1996 Engineer of the Year in Education by the Georgia Society of Professional Engineers, received a Society of Automotive Engineers’ Ralph R. Teetor Award in 1999, and the 2007 Georgia Tech Outstanding Interdisciplinary Activities Award. From 2001 to 2004, he served as the Director of Georgia Tech’s Institute for Sustainable Technology and Development. In 2014, he was named a Brook Byers Professor of Sustainability.

Dr. Bras has Master of Science (“Ingenieur”) degree in Mechanical Engineering from the University of Twente (The Netherlands) and a PhD in Operations Research from the University of Houston. Prior to his PhD, he worked at the Maritime Research Institute Netherlands (MARIN).