



KU LEUVEN



European Society for Engineering Education
Europäische Gesellschaft für Ingenieur-Ausbildung
Société Européenne pour la Formation des Ingénieurs

11th European Convention for Engineering Deans

*Challenges in university-business cooperation in
engineering education: Crossing Borders*

Closing

developing our *Leuven Lessons*

Mike Murphy

ECED 2019 – Sincere thanks and gratitude

› KU Leuven and the 3 Faculties of Engineering

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- › MathWorks
- › Siemens

› SEFI Secretariat

- › Mrs Françoise Côme
- › Ms Klara Ferdova

› Dr. Calvin Rans

Crossing Borders

- › Crossing Borders is an effective metaphor, rather than ‘barrier’ or ‘silo’
- › Our focus was on the University-Business border (UB)
- › Reminiscences – “remember the good old days”
 - › Industry accepted our graduates
 - › Our graduates got a job for life
 - › Industry accepted responsibility for continuing their education
- › Today’s university is far more complicated
 - › Diverse expectations of our stakeholders:
 - › Funding agencies; industry; students; our Faculty (academic staff)

Crossing Borders ... models & complications

- › Complications of language:
 - › Engineering students are not homogeneous
 - › Engineering education Has different models
 - › Industry SME, Multi-national, Services, Technology,
 - › E.g., What is the definition of a meaningful student experience?
- › Multiple models of UB collaboration (Luc Sels gave us 6 models)
 - › How many should a Dean encourage and/or write policy for?
 - › How to scale?
 - › How to support?
 - › How to quality assure?

Crossing Borders – the UB spectrum

- › Barriers and Motivators and Facilitators (Todd Davey)
 - › Excellent insights and practical tips
 - › “Trusted relationships is the key”
 - › Faculty mobility observations from seasoned professionals such as Christoph Huygens
 - › How many of us would be comfortable with his career path? Or defending his career path to university HR police?
 - › Zigging and zagging between the U and the B is not easy
- › Mrs Saskia Van Uffelen both encouraged me and worried me!
 - › How agile are we, really?
 - › What is our intrinsic value as a university?

Crossing Borders – the border is evolving

- › (Older) hard border:
 - › Hire our graduates
- › (Newer) Multi-interface border:
 - › Advisory Boards > Contract research
 - › Guest lecturers
 - › Accreditation Panels
 - › Student competitions / end of year student shows
- › Permeable membrane:
 - › Curriculum co-creation; co-teaching
 - › Dual appointments
 - › The university without walls but embedded within the community

Is Solving the UB challenge a
foothill, or a peak scaled?

Crossing Borders ... an evolving dialogue

- › “The material welfare of the community is unreservedly bound up with the due working of this industrial system, and therefore with its unreserved control by the engineers, who alone are competent to manage it,” (Thorstein Veblen 1921)
- › Veblen argued that it was solely the engineers who could optimize and maximize the output of the industrial system (and therefore for the benefit of society)

Crossing Borders ... an evolving dialogue

- › “Technology is a queer thing. It brings you gifts with one hand, and stabs you in the back with the other.” – CP Snow (1959)
- › The intellectual life of the whole of western society is split into two cultures – the sciences and the humanities – which is a major hindrance to solving the world's problems

Crossing Borders ... an evolving dialogue

- › Carl Mitcham argues that “neither engineers nor politicians deliberate seriously on the role of engineering in transforming our world. Instead, they limit themselves to celebratory clichés about economic benefit, national defense, and innovation” (Mitcham 2014).
- › Mitcham’s argument in a nutshell is that there is too much use and not enough learning in the typical undergraduate engineering program.
- › The engineer should seek self-knowledge through reflection and self-examination

Method to classify Engineering Programmes

	Justification	Description	Effect
1	No justification	Engineers transform the world because they can	Engineering education is through the core disciplines of engineering
2	Instrumental justification	Engineers transform the world and they can communicate it clearly	Social Sciences courses can improve the communications skills of engineers
3	Enhanced Instrumental justification	Engineers transform the world and they can justify it rationally and contextually	Social Sciences courses can locate engineering projects within their broader social context
4	Intrinsic Value justification	Engineers transform the world and they can reflect on what it means for all of us	Social Sciences courses enable critical self-reflection on the meaning of life in a progressively engineered world

Towards the Leuven Lessons

- › What are our key takeaways?

- › SEFI Annual Conference (www.sefi2019.eu)
 - › Budapest University of Technology & Economics (BME)
 - › 16-19 September 2019
 - › *Complexity is the New Normality*

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