

# **What is Global Engineering Education For?**

**The Making of International Educators**

**Part III**

# Synthesis Lectures on Global Engineering

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The Global Engineering Series challenges engineering students and working engineers to cross the borders of countries, and it follows those who do. Engineers and engineering have grown up within countries. The visions engineers have had of themselves, their knowledge, and their service have varied dramatically over time and across territorial spaces. Engineers now follow diasporas of industrial corporations, NGOs, and other transnational employers across the planet. To what extent do engineers carry their countries with them? What are key sites of encounters among engineers and non-engineers across the borders of countries? What is at stake when engineers encounter others who understand their knowledge, objectives, work, and identities differently? What is engineering now for? What are engineers now for? The Series invites short manuscripts making visible the experiences of engineers and engineering students across the borders of countries. Possible topics include engineers in and out of countries, physical mobility and travel, virtual mobility and travel, geo-spatial distributions of work, international education, international work environments, transnational identities and identity issues, transnational organizations, research collaborations, global normativities, and encounters among engineers and non-engineers across country borders. The Series juxtaposes contributions from distinct disciplinary, analytical, and geographical perspectives to encourage readers to look beyond familiar intellectual and geographical boundaries for insight and guidance. Holding paramount the goal of high-quality scholarship, it offers learning resources to engineering students and working engineers crossing the borders of countries. Its commitment is to help them improve engineering work through critical self-analysis and listening.

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Gary Lee Downey and Kacey Beddoes

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Gary Lee Downey and Kacey Beddoes  
Virginia Tech

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## ABSTRACT

Global engineering offers the seductive image of engineers figuring out how to optimize work through collaboration and mobility. Its biggest challenge to engineers, however, is more fundamental and difficult: to better understand what they know and value *qua* engineers and why. This volume reports an experimental effort to help sixteen engineering educators produce “personal geographies” describing what led them to make risky career commitments to international and global engineering education. The contents of their diverse trajectories stand out in extending far beyond the narrower image of producing globally-competent engineers. Their personal geographies repeatedly highlight experiences of incongruence beyond home countries that provoked them to see themselves and understand their knowledge differently. The experiences were sufficiently profound to motivate them to design educational experiences that could provoke engineering students in similar ways.

For nine engineers, gaining new international knowledge challenged assumptions that engineering work and life are limited to purely technical practices, compelling explicit attention to broader value commitments. For five non-engineers and two hybrids, gaining new international knowledge fueled ambitions to help engineering students better recognize and critically examine the broader value commitments in their work.

A background chapter examines the historical emergence of international engineering education in the United States, and an epilogue explores what it might take to integrate practices of critical self-analysis more systematically in the education and training of engineers. Two appendices and two online supplements describe the unique research process that generated these personal geographies, especially the workshop at the U.S. National Academy of Engineering in which authors were prohibited from participating in discussions of their manuscripts.

## KEYWORDS

engineering education, global engineering (education), international engineering (education), study abroad, international service learning, international co-op, international internship, work abroad, Peace Corps, ABET, EC 2000, globalization

*For my students, who give my work meaning*

*Gary Downey*

*For my mentors, who have given me more than they know*

*Kacey Beddoes*

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