

**GLOBAL EDUCATION FOR ENGINEERS:
EMERGENCE, STRATEGIES, AND THE PROBLEM OF SCALE**

An NSF-sponsored workshop and writing project

hosted by the

**Center for the Advancement of Scholarship in Engineering Education,
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**Gary Downey, Brent Jesiek, and Juan Lucena, co-organizers and co-editors
Virginia Tech and Colorado School of Mines**

Project summary

The purpose of this project is to produce a book collection mapping the emergence and current state of global education for U.S. engineering students through the individual experiences of past and present visionaries and leaders. The core of the volume will consist of individual “personal geographies” written by project participants. These personal geographies will provide detailed accounts of the unique trajectories participants have followed in formulating and enacting visions for global engineering education. As a whole, the collection will document for readers the struggles, accomplishments, and continuing challenges that have constituted the emergence of global education for engineers to date as well as map the contemporary situation and possible future trajectories. The expected readers of the volume include educators, administrative officials, and students interested in global education for engineers, as well as engineering education researchers.

Project timeline (2008)

March 1: title and abstract due, summarizing proposed contribution (500 word *minimum*)

June 15: completed draft manuscript due (5,000-7,500 words, with flexibility)

July-August: participation in the online review of manuscripts (as members of review teams)

September 5-6: participate in the workshop editing and discussion sessions (early Friday AM—mid Saturday afternoon)

November 15: revised manuscript due (followed by subsequent iterations with editors)

Guidelines for writing a personal geography

What is a personal geography?

A personal geography is a narrative account, a story. Narrative accounts are one source of knowledge. Think, for example, of how we regularly rely on narrative accounts to introduce newcomers to a particular arena. In this case, you are introducing others to your experiences in global education for engineers.

We use the term personal geography rather than personal narrative in order to increase the chances that what emerges is a map of your trajectory rather than an autobiographical account of your steps. An autobiographical account of your steps would focus exclusively on the choices and decisions you made, the efforts and actions you undertook, and the outcomes of those efforts and actions. In other words, you are the main protagonist. It is entirely about you.

But the contributions you have made and are making to global education for engineers involve many agents, including individuals, organizations, groups, etc. Sometimes your actions have been responses to the initiatives of others, to opportunities that others have made available, or to barriers that others have raised or come to take for granted. In a personal geography, your travels are still the main thread holding the story together, but the narrative is more than an account of individual genius, heroism, or even stupidity and failure. It is about more than you.

Mapping perspectives: location, knowledge, and desire

Our main recommendation is to think about the personal geography as a sequence of encounters among distinct perspectives. This can be particularly challenging for people trained to define and solve engineering problems, where the focus is on defining the problem clearly so it can be solved properly. Perspectives are points of view occupied by people. Problems often mean different things in different perspectives. For one person to define the problem in a way that is clear in his or her terms just might not be clear in someone else's terms. Indeed, the very act of defining the problem clearly may very well assert one perspective at the expense of others. Thus, encounters among people holding distinct perspectives might be characterized by systematic ambiguities or misunderstandings. To call attention to distinct perspectives in a personal geography can have the effect of indicating that the choices and decisions you make are as much about the territory as they are about you. In a personal geography, you are moving through the territory, mapping the perspectives you encounter along the way.

To map a perspective, we recommend using the terminology of Location, Knowledge, and Desire. Consider, for example, a fictitious encounter between a young, female advocate of study abroad for engineers and a skeptical older male faculty member who teaches in the engineering sciences.

Location: Who is defining the problem? Where are they located or how are they positioned? What connections or relationships do they maintain? The faculty member in the engineering sciences likely stands in the core of the curriculum and may have a research career granting additional prestige. The advocate for study abroad may fall outside the faculty altogether or is a young faculty member dissatisfied with having experienced an exclusive focus on the engineering sciences or possibly elated at indeed having had one or more globally-oriented learning experiences. Also, it matters if they are working at a research university, undergraduate institute, or school with a religious affiliation.

As you map your own perspective, we strongly urge you to consider and map connections between dimensions of your professional identity and dimensions of your personal identity, to the extent you feel comfortable. While professional decisions and judgments must be judged in professional terms, it is always the case that professional judgments are made by people who also have non-professional identities. As people, we may feel challenged to achieve congruence between our professional and personal commitments, even while insuring that the

personal is not shaping or determining the professional. The achievement of congruence is not the same as causal determination.

Knowledge: What forms of knowledge do the representatives of each perspective have? How do they understand the issue at hand? From what sources did they gain their knowledge? So for example, what types of engineering sciences are at stake in this example, e.g., from mechanical engineering, which tend to be strongly linked to industrial practice or, say, from civil engineering, which may be linked more to forms of public service? What is the current status of such forms of knowledge, both in relation to engineering education generally and global engineering education specifically? Also, what kinds of knowledge and experiences are exhibited by the advocate for study abroad?

In advancing our own perspectives amidst other, we may be inclined to treat other perspectives as somehow irrational or otherwise mistaken. Yet, at the same time, we might be dealing with people who are highly trained, have degrees, and are thinking through issues very seriously. So what forms of knowledge do they have? What are their assumptions? How did this knowledge evolve?

In addition, in activities of international education, knowledge may sometimes be valued according to geographic origin, with people assigning higher value to knowledge coming from the so-called West or developing world. How we assign value to knowledge can shape our relationship to others, as when students believe they are bringing knowledge of higher value to other parts of the world or colleagues from abroad expect knowledge of higher value from their interactions with us. Do the perspectives you have encountered in your work assess the value of knowledge differently? How do such assessments show up in those perspectives?

Desire: What do the proponents of each perspective want? What are their goals and objectives? How did these desires develop? Where are they trying to go? Learn about the history of the issue at hand. Who might have gained or lost ground in previous encounters? How does each perspective view itself at present in relation to an imagined future? Thus, for example, is the engineering science faculty member fearful of decline in the engineering sciences? Is he/she worried about the decline of engineering in general through “distractions” such as study abroad? Will the foundations of engineering education be lost? On the other side, does the advocate of study abroad seek fundamental transformations in engineering education? Does he/she exhibit frustration at the dominance of the engineering sciences or the relative inflexibility of the curriculum?

As you reflect on your own perspective, we ask you to inquire into how features of your nonprofessional trajectory may have inflected features of your professional trajectory. Some candidate possibilities include: spiritual, religious, or moral commitments; class background; a sense of national or international needs, including in relation to some broad sense of citizenship; a sense of corporate needs, or in response to your own experiences working in or with corporations; distinctive educational experiences; distinctive experiences as an educator, working with students; distinctive life experiences or travels; other aspects of your personal background or upbringing.

Trace the emergence of your own perspective

As you identify and map encounters among different perspectives in the development of your trajectory, reflect on how you developed your own individual perspective. We invite you to do

so by mapping your relation to others, both within and beyond your own institution. For example, did the success of global programs at your institution require certain alliances, partnerships, resources, etc.? To what extent did developing a global program demand working with people, programs, and organizations outside of your own institution, including in other countries? Feel free to diagram or visually map these relationships and your trajectory.

Also, we encourage you to take risks in the first round of writing, to enable other participants to be able to ask informed questions and make informed suggestions during the actual editing process at the workshop. You will have ample opportunity to edit after the workshop, and the editing process is easier if you are cutting rather than groping for something to add. In the end, you will be able to decide what is included and what is not.

One danger in introducing and considering non-professional dimensions of your identity is that the narrative account can begin to degenerate into a straight-forward autobiography. Our view is that facing this danger is better than to never bring such issues out in the first place. In general, we expect the success of these accounts to be in proportion to the distance they achieve from the typical genre of papers presented at major engineering education conferences.

Identify and map key moments

Consider organizing your account as a sequence of key moments in the development of your work in global engineering education. Each section could become a map of an encounter among two or more different perspectives as you worked to understand the arenas in which you were functioning, the various perspectives that were operable there, and what you yourself hoped to achieve by working there.

What got you up in the morning and off to work to try again? Also, as you formulated and enacted strategies, what were the implications for those with whom you engaged? Did your resolutions fit other perspectives as well? In other words, did it fit their location(s)? Did it fit their knowledge? Did it fit their desires? Put in other terms, to what extent did you adapt your perspective to take account of other perspectives? Was there room for negotiation and compromise among contrasting perspectives?

Mapping key moments requires considerable effort, for it involves stepping outside of one's own world and attempting to see how one is positioned in other worlds. It means accepting the points of view of an outsider.

Be sure to consider how much background you need to provide about encounters among various perspectives prior to your arrival on the scene.

Address the issue of scale

Along the way, we would like you to address the issue of scale. At what scale(s) have you been attempting to work? Have you attempted to scale up what you do to an even higher scale? What is at stake in scaling up your approach to global education to still higher scales? What perspectives are at stake and who holds those perspectives? What might be getting in the way of efforts to scale up further?

Given the account you have produced of the current situation, inquire into what negotiation(s) among conflicting perspectives be possible that would allow your initiatives to scale up further.

Might you be able to envision any novel resolutions among contrasting perspectives that may have benefits for students' global education?

Note that your personal geography does not need to have a happy ending, or even an ending at all. Think of it as a snapshot of the larger trajectory of your life on the one hand and of the larger trajectory of global education for engineers on the other. For a while, these trajectories have overlapped, and your narrative account provides a window onto their connections.