“Leadership as an Alienating Social Myth”: Disciplinary fissures as a catalyst to interdisciplinary understanding

Abstract
As an interdisciplinary field, engineering education involves regular interaction between people trained in the social sciences, humanities, and engineering. What happens when professors, staff, and students socialized in disciplines with distinct epistemic traditions come together to educate the next generation? In this paper, I reflect on my experience as a social science researcher working in engineering education, using five moments of disciplinary confusion to trace my steep learning curve. These five moments taught me about paradigm shifts, acceptable sources of research funding, research ethics, learning styles, and methodological credibility in engineering education. While engineering education may be interdisciplinary in name, I argue it that it remains a multidisciplinary field with transdisciplinary ambitions. I punctuate this analysis with implications for engineering education researchers interested in using disciplinary fissures as a catalyst for meaningful, interdisciplinary collaboration and understanding.

Background

In October 2012, I was interviewed for a job as a staff researcher at a Canadian engineering school. The interview was both playful and disorienting. After more than a decade of training in educational leadership, culminating in a tenure track position at a Canadian faculty of education, I had become deeply, and unconsciously, socialized into a field with familiar cultural norms. I learned that positivism was a straw man; that “rational technicism” signalled instrumental rather than transformative intentions; that leadership marked privileged status for the promotion of male teachers in a feminized profession [1-5]; and that private research funding was ethically questionable. From one month to the next, I entered a field where positivism was alive and well; rationality and “technical” work were the gold standards, leadership was marked by an inverted social hierarchy promoting women “up and out,”[6]; and industry partners functioned as a key source of research funding. I found myself on the other side of a disciplinary fissure, exchanging words like “transformation” for “intervention,” and “social justice” for “social impact.” I learned that educational research was deemed to be most credible when it was in service to classroom teaching and noticed that my critical theory perspective regularly and comedically collided with the “leadership as professional competency” perspective of my colleagues.

I had returned to Toronto for family reasons, believing I had come home, but suddenly found myself a world away from what I had learned to be true. I was working on the same university campus where I had completed three degrees, only two years earlier, but on the other side of a deep disciplinary fissure. I could not have articulated this at the time. I was looking for work, applied for everything I was remotely qualified for, and answered interview questions as I could, drawing on whatever resources I had at my disposal. Near the end of my interview, I was asked to define leadership. I had completed two graduate degrees in educational leadership without ever being asked to define the term. My mind was reeling as I recalled Toni Morrison’s anti-colonial quote “definitions belong to the definers, not the defined.”[7] (p.225) I fumbled with my words, trying to help my new audience understand the positivist and somewhat aggressive nature of their question, but they were a group of people who really seemed to like definitions. In a moment of reactionary defensiveness, I cited an article written by two critical scholars who characterized leadership as an “alienating social myth” [8]. I went home and laughed about my poor judgement with my partner, then opened my laptop to search for my next employment prospect. To my surprise, I was offered the job. Even more surprising, I really enjoyed it and eventually figured out how to communicate across cultural divides. 12 years later, I find myself

teaching leadership to engineering students, not ironically, as an "alienating social myth," but as a way to enhance their self-awareness in preparation for professional practice. In this paper, I trace my experience from critical educational researcher to dedicated engineering leadership educator using a truncated autoethnographic exploration of five disciplinary boundary crossing moments [9-14]. I conclude with insights and implications for interdisciplinary collaboration in engineering education. The primary question I address in this paper is: How can disciplinary confusion catalyze collaboration and understanding between social scientists and engineers in engineering education?

Methodology: Disciplinary confusion as a catalyst for interdisciplinary learning

We learn from the wisdom of many people, including that of our students. A doctoral student I am currently co-supervising, Dimpho Radebe, is conducting a critical autoethnography of engineering education culture from a Black, queer, feminist perspective [15]. She was influence by Professor James Holly Jr's doctoral thesis in engineering education—a critical autoethnography of a Black man teaching engineering to Black boys [12, 13, 16]. While my paper is more of a reflective journey than a critical autoethnography, I wish to acknowledge Dimpho who planted the seed for me and Professor Holly who planted the seed for her.

My data for this paper includes five critical incidents, moments of disciplinary confusion I experienced while orienting myself as a social scientist to engineering education. While my engineering colleagues and I were all using the English language to communicate, we would often use words like "critical" or "resistance" in different, ways. I became aware of this when colleagues called me out for using social science "jargon." Until that point, I had only noticed the engineering jargon they were using. For this paper, I use Maxine Greene's metaphor "teacher as stranger" [17] as an analytical entry point. Greene's argument, made more than 50 years ago, is that teachers are better prepared to support student learning and inquiry about their worlds if they approach their own work as that of a self-conscious stranger, a person who notices and makes explicit the cultural norms of the world they and their students inhabit. I found it difficult to adopt this mindset as a disciplinary insider in the field of educational administration but found it almost impossible to ignore when I entered the new (to me) field of engineering education. I did not need to "make strange" because I already was strange. My outsider status and regular run ins with disciplinary norms made them easier to spot. These interdisciplinary collisions along with my colleagues' follow up questions helped me become more aware of cultural norms in my own disciplinary training. For the remainder of this paper, I share five moments of situated [18-20] interdisciplinary learning anchored in my own confusion on the education side of an engineering/education fissure.[1]

Findings: Situated learning catalyzed by five interdisciplinary collisions

Over the past dozen years, I have learned a great deal about engineering and education through frequent collisions between these two applied multidisciplinary fields. I describe both engineering and education as applied because both involve the application of natural or social sciences to socially meaningful problems. I refer to them both as "multidisciplinary" because they are made up of many disciplines [21, 22]. Engineering is made up of civil, mechanical, electrical, chemical, industrial, biotechnical, mining, and other applied science disciplines, while education is made up of curriculum studies, educational sociology, higher education, applied

[1] I expect somebody will tell me I'm using the term "fissure" incorrectly.

psychology, adult education, educational leadership and policy studies, educational philosophy, and other applied social science and humanities disciplines. When the two intersect in engineering education, engineering tends to be reduced to "design" and education tends to be reduced to "curriculum," highlighting curricular interventions in undergraduate design classes. A closer look at the overlap between these two multidimensional fields, however, suggests a much wider range of inquiry topics. Collisions between engineering culture and social science paradigms function as the focal point of this paper. Please see table 1 for a summary of five interdisciplinary collisions that occurred between 2012 and 2024, illustrating aspects of engineering education that transcend the narrow focal point of curricular design.

Table 1: Situated learning catalyzed by disciplinary fissures

Learning catalyst	Disciplinary fissure(s)		Lessons learned about Eng Ed	So what?
	Education	Engineering		
Define Leadership	Leadership is a phenomenon to study.	Leadership is a professional competency.	Defining terms is a measure of understanding.	Have an explicit conversation about the ontological nature of leadership.
Seminar	Positivism as straw man. Literature as contextualized wisdom.	Positivism as dominant paradigm. Reading is an arduous and inefficient form of knowledge transfer.	Positivism is alive and well in engineering, but not universal. Alternative paradigms remain on the margins of credibility.	Introduce explicit lessons on paradigms to individuals from multiple disciplines drawing on engineering education literature.
Industry relations	"Community of Practice" is a key concept in Lave and Wenger's situated learning theory.	"Community of Practice" is the name of a network of industry partners who fund our research.	Industry partners enable us to break new ground in engineering education research, but their interests shape what we can study.	Supplement industry funding with social science research grants, especially for EDI related studies. Social justice in engineering education requires internal funding.
Collaborative data analysis	Slow, iterative coding of interview transcripts drawing on participant narratives in relation to theory.	Rapid-fire team coding of transcripts in relation to the day to day realities of professional practice.	Spontaneous, fast-paced coding privileges experts over novices, and practice over theory.	Team coding should include simultaneous and independent analysis, with pauses to allow novice members to share insights.
Reading group	We learn to do qualitative research by practicing qualitative research. Each instance teaches us something new.	We learn to do qualitative research by applying rules and standards to new problems. It is a tool in our inquiry belt	Qualitative research learned in relation to a more dominant quantitative referent is an important tool in engineers' inquiry belt.	Offer qualitative methods courses & RA opportunities. This is not something anybody can learn in an hour or through a voluntary reading group.

Lesson 1: Defining terms as a measure of understanding

My first interdisciplinary learning catalyst was the inspiration for this paper. I applied for a job as a staff researcher at a leadership institute in an engineering school and was asked to define leadership. I froze. I was not in the habit of defining things. I could share theories about leadership in educational contexts or describe how I had come to understand the term, but I had never been asked to definitively say what it was. Fortunately, this question came near the end of

the interview. By that point, I had learned that my reluctance to define leadership would be read as ignorance of the phenomenon I had spent the previous decade studying, so I knew I needed to provide a response. I also learned, a few minutes into my interview, that I was expected to answer questions succinctly, ideally without narrative context. The only way I could answer succinctly and provide a definition, without invalidating my critical paradigm was to quote the title of a much longer article on leadership as an "alienating social myth" [8]. This short form response allowed me to concisely articulate one of many definitions of leadership without losing my way. In the article, Gemmill and Oakley argue that "leadership" is a "psychic prison" (p. 114) that gains currency in difficult times:[8]

> *When pain is coupled with an inordinate, widespread, and pervasive sense of helplessness, social myths about the need for great leaders and magical leadership emerge from the primarily unconscious collective feeling that it would take a miracle or messiah to alleviate or ameliorate this painful form of existence. (p.115)*

Translated into corporate speak, leadership is an especially useful idea in a VUCA (volatile, uncertain, complex, and ambiguous) world because it comforts people who feel out of control. The myth goes as follows—agentic individuals, often located at the top of a corporate or national hierarchy, have the power to restore equilibrium in a VUCA world. Building on the idea of ambiguous or troubling social contexts, Gemmill and Oakley argue that much of the leadership literature offers "ideological support for the existing social order." (p. 115) That is, instead of characterizing social unrest as a sign that things need to change, the mythology of leadership promises us that things will be ok, as long as we learn how to restore order. My graduate education did not prepare me to be a leader, it prepared me to study leadership in educational contexts. When I saw a job for a staff researcher at an engineering leadership institute, I figured the program director wanted to understand how leadership landed in engineering, but I soon found out he wished to identify the best way to help students embody the mythic status of leader.

This experience taught me a number of things about myself and my future employers. The most salient of which was a clear distinction in our ontological perspectives. While I characterized leadership as a socially constructed lens through which to examine engineering culture, my interviewers characterized it as "real," a thing that could be observed, defined, optimized, and learned independent of context. Leadership, from this ontological perspective was not an idea, but a social good, a competency to be added to students' toolboxes. After several collisions, I learned that while nobody at my institute viewed leadership as an alienating social myth, their work did not seem dangerous. They were not simply docile sheep aiding the work of oppressive forces. In fact, in many ways, they used leadership development opportunities to challenge dominant norms in the profession that artificially separated technical from social problems [23, 24]. Over the years, I have come to see leadership as neither a psychic prison nor a liberatory competency, but rather as a playground for interdisciplinary communication, sensemaking, and practice. Now that I understand what they are trying to achieve, I have become better at listening to my colleagues. I can balance my own need to integrate philosophical conversations and critical questions into my teaching, with their need to support the professional development of our students.

Lesson 2: Positivism is alive and well but not universal

One year into my position as a staff researcher, I was invited to lead an engineering education seminar. We did not yet have an engineering education unit in our faculty, but we did have a

group of engineering professors, staff and students interested in engineering education research. We met monthly to discuss topics of interest. As a regular attendee, I was invited to lead a seminar on social science methodology. By the time of this invitation, I was used to being introduced as the "social scientist," which was comical to me as a math and science teacher who had been regularly introduced in my teacher education program as the "mathematician." I said I would be happy to lead a seminar but was not sure I could do "social science methodologies" justice in just one hour. To add insult to injury, I was asked to do this with minimal pre-reading. I agreed to facilitate the seminar but was unsure how to proceed. I had taken eight discrete courses on research methods during my graduate education, with approximately 50-100 pages of reading each week in each course. I had read ~6000 pages of literature on a range of social science research methodologies, practiced using them through course assignments, and solidified these practices through research assistantships on six federally funded projects led by five different professors. I had learned how to do qualitative research by practicing it and by being exposed to many different professors who did this work. While the tools for experimental research tend to be external to the individual researcher, qualitative research depends on the researcher as analyst to make decisions based on decades of reading and experience. I was unsure how to condense several years of situated learning into a digestible nugget. This problem was compounded by my discomfort performing "sage on the stage" knowledge-transfer type teaching.

I tried my best and ended up leading a seminar on paradigms, focusing on positivism, social constructivism, and critical theory [25]. I created a chart to help my colleagues make sense of each paradigm in relation to their ontology, epistemology, and axiology. Surprisingly, the lesson only took one hour and was completed without additional reading. I learned several things while facilitating the seminar, chief among them, the centrality of positivism, or as they were quick to point out, post-positivism, in my colleagues' conception of credible research. I had been taught to see positivism as vestigial artefact of the scientific revolution, a problematic epistemological perspective since human beings cannot actually be neutral when studying the social world. Given this academic socialization, I was surprised to learn that the majority of my colleagues identified as positivist. Not only was there no stigma attached to this paradigm, but there was widespread acceptance, so much so that participants who resonated with other paradigms found themselves on the margins of credible inquiry in engineering education. My one-hour seminar was not only clarifying to me, but it also helped validate the small number of students and faculty members who viewed the social world through critical or constructivist perspectives.

Lesson 3: Industry partners are legitimate members of our community of practice

When I was first hired as a staff researcher, I believed the position was funded by the department like other unionized staff positions at the university. I soon learned that I was heavily funded by industry partners who believed in the vision of engineering leadership. This made me uneasy because I viewed corporate funding of research as unethical. Five years earlier, I had been involved in a protest at a faculty council meeting at our education school. The meeting was interrupted by a vigil to mourn a decision made by one institute director to accept research funds from an aerospace manufacturing corporation with military clients. Professors, students, and staff came together in large numbers to protest the ethical consequences of accepting capitalist dollars linked to the military for educational research. I had been part of this protest. I also recalled the drug trial scandal in the mid 90s at a local children's hospital that had illustrated the dangers of accepting pharmaceutical dollars for medical research [26]. As someone whose job security

depended on industry funding, I felt ethically compromised. I raised this concern with my director and offered to apply for other kinds of research funding, but we were never able to raise enough money to fund my position with federal grants. Over time, I began to appreciate his entrepreneurial spirit. I also got to know our industry partners and learned that they did not have as much of a stake in our findings as a pharmaceutical company had in a drug trial. I had learned to be more subtle in my understanding of research ethics and began paying attention to the differences in teachers' and engineers' professional practice contexts. Graduates of teacher education programs primarily find work in the public sector, while graduates of engineering programs primarily find work in the private sector. This distinction in professional practice contexts means that it is easier to call out capitalism in education than in engineering, not because engineers as a whole eschew social justice, but because many of them work in large, profit-driven corporations that constrain their efforts.

While I no longer think of all industry funding as ethically corrupt, I have noticed that some topics are easier to fund than others. For example, our engineering leadership community of practice made it much easier to study leadership than to study EDI (equity, diversity & inclusion). Instead of refusing to work in a position funded by corporate partners, I have learned to supplement industry funding with smaller social science research grants. This compromise is both pragmatic and unsustainable. Social science grants are considerably smaller than those in engineering, even without industry funding. This makes it difficult to build a research group that centres engineering culture as a topic of inquiry. If we really care about equity and social justice in engineering, we need to identify institutional strategies to fill the resource gap without depending on corporate fundraising by individual faculty members.

Lesson 4: Rapid-fire collective coding privileges experts over novices and practice over theory
In 2019, I led a team of engineers and social scientists through the analysis of 29 career history interviews. After reading all 29 interviews and sorting them into career path subgroups, I distributed transcripts to each member of our team including two social science researchers, two engineering professors with industry experience, one recent engineering graduate involved in industry outreach, and one undergraduate student research assistant. We had different levels of experience with engineering education, professional practice, and qualitative methodologies and different priorities in engineering education.

We began by training on a shared transcript, reading it over individually, documenting initial impressions, and sharing these impressions with one another. I noticed a clear distinction at this time between the focal points of social science and engineering analysts that have come up in every training session since. The two social scientists focused on social structure (eg. supports and constraints to leadership), while the four engineers focused on human agency (eg. intentions, motivations, and achievements). Our entering paradigms also differed, with the social scientists embodying a critical perspective, and the engineers embodying either social constructivist or positivist perspectives. After training on the shared transcript, we spent two weeks coding the interviews in our assigned career path subgroup and came together twice a month to complete a cross case comparison for each line of analysis. In addition to the paradigmatic differences, I noticed distinctions in our coding habits at these bi-monthly meetings. The two social scientists' preferred to code slowly, moving back and forth between our conceptual framework and participant narratives, while the two senior engineers favoured fast-paced discussion of interview

transcripts, drawing on their own professional practice experiences to identify resonant quotes. Finally, the two novice members of the team were most tentative about imposing any kind of interpretation on the words of participants, favouring inductive analysis over theoretical or practical referents. Disciplinary distinctions aside, rapid-fire coding favoured the three of us with the most institutional power in the group, making it difficult for others to gather or vocalize their thoughts. This was problematic for several reasons. The process was somewhat inaccessible to our junior colleagues whose learning I was not adequately scaffolding. It also had consequences for our findings since each participant was solely responsible for analyzing all transcripts in their respective career path subgroups. All of us had powerful and important insights. We simply needed to pause and provide space for the more tentative, novice members to share theirs. On the other end of the pacing spectrum, my periodic use of independent turn taking as a facilitation strategy caused senior members of the team to lose interest in the process. As facilitator, I had to take in the wide eyes or yawning mouths of my team and moderate our pace to avoid losing anybody. Moving forward, I intend to facilitate interdisciplinary coding sessions involving senior and novice team members in a more deliberate manner, blending full group and independent analysis into our process, allotting time and space for inductive, practical, and theoretical insights.

Lesson 5: Qualitative research as a tool to add to the inquiry belt

The final scenario is ongoing as I write this paper. It involves a group of engineering professors and graduate students affiliated with our engineering education program who come together weekly to discuss chapters of a book on qualitative reporting standards [27]. The group includes individuals trained in engineering, education, drama, and English, all of us interested in engineering education research. Those of us trained in the social sciences seem to dive into methodological critique, those trained in engineering spend time distilling standards, and those trained in the humanities share holistic, discursive insights about the book. In terms of referents, the social scientists and communication professors tend to draw on previous instances of qualitative research in practice, while the engineers seem to be searching for strategies or rules to apply each methodological tool to one of their studies. I genuinely enjoy these weekly conversations about qualitative research, learning from the observations of my colleagues without feeling defensive about their inquiries. It has taken twelve years, but I no longer feel like a gadfly in engineering education. This may be partly about my own personal growth, partly about the growth of the field, and partly about the growth of my colleagues. We have learned to communicate across disciplinary fissures through relationship building, mutual respect, and practice, making each collision less arresting and more generative. Personal and collective development aside, the reading group model has allowed us to grapple with one another's sense-making strategies over time as we participate in this "community of practice" [19].

Discussion: Catalyzing a shift from multidisciplinary to interdisciplinary collaboration

One way to conclude this paper on disciplinary fissures as situated learning catalysts, is to examine the differences between three forms of disciplinary collaboration—multi-, inter-, and transdisciplinarity. Stock and Burton reviewed these three forms of disciplinary integration, implicitly advocating for the third as the best way to address global sustainability challenges [22]. They characterize "multidisciplinary" as the least integrated and most attainable form of collaboration, with researchers from different disciplines "co-existing in context" (p. 1095). Imagine people sitting around a table asking one another what they understand about leadership,

listening to one another without trying on new theoretical perspectives or methodologies. Moving along the integration continuum, Stock and Burton define "interdisciplinary" as the co-creation of knowledge rooted in distinct scholarly traditions, often addressing "real world" problems in ways that require a bridging of the natural and social sciences (p.1097). This involves an additional layer of collaboration, with members of a team rooted in their own disciplines but trying to integrate the scholarly traditions, theories, and methodological approaches of the others. Imagine a team studying a shared text together, weaving together insights rooted in each disciplinary tradition. Finally, the authors characterize "transdisciplinary" as the most integrated and most desirable, but least attainable of the three (p.1098). This form of integration involves moving beyond disciplinary traditions with academic and non-academic partners sitting around a table, not only connecting theories and methodologies emerging from different disciplines, but also transcending them.

I first came across this article when I learned that the new engineering education department of which I was a member had adopted "transdisciplinary" as part of our name. I asked what we meant by transdisciplinary but was unable to understand the answer. As a result, I did what I usually do when I am confused. I scanned the literature for articles with "transdisciplinary" in the title. I had only ever heard of "trans" as a term used to describe nonbinary or genderqueer identity [28], a poststructural blurring of gender binaries [29]. I soon learned from Stock and Burton, that transdisciplinarity was more about lifting members of a team above the disciplinary silos in which we were trained to facilitate collaboration. This definition seemed close to what my colleagues were aspiring to do in our new engineering education department, to teach the next generation of engineering education students a set of professional competencies that would transcend the many disciplines in engineering, the humanities, and the social sciences. This approach has been theorized by Giri as a way of overcoming "disciplinary chauvinism" [30] in collaborative projects. In contrast to the "trans" in transgender which is about queering dualistic thinking about constraining gender binaries, the "trans" in transdisciplinary involves lifting students above disciplinary traditions, expecting professors to leave our early academic socialization behind in favour of a new field.

While I appreciate this perspective, I worry about the melting pot effect of fully overcoming our disciplinary socialization. I am concerned about training a new generation of engineering education researchers in ways that either remain at a polite distance from (multidisciplinary) or eliminate (transdisciplinary) scholarly traditions with rich histories. My observation, from joining multiple divisions at the American Society for Engineering Education (ASEE), and special interest groups at the Canadian Engineering Education Association (CEEA), is that engineering education is currently multidisciplinary, with transdisciplinary aspirations. How did we skip over interdisciplinary collaboration? I believe we do our students a disservice by failing to educate them in any disciplinary tradition. They will inevitably learn professionally meaningful skills and competencies, but only by detaching themselves from the firmly rooted wisdom of disciplinary ancestors. We need to find another way forward that embraces interdisciplinary theories and deeply contextualized practices. Over the past twelve years, I have learned so much from my engineering colleagues and believe they have learned as much from me. This rich situated learning experience catalyzed by five, unintended disciplinary collisions may be a useful model for formalized training in engineering education.

We can move toward interdisciplinary inquiry in our graduate programs by preparing our students to dive deeply into more than one body of knowledge as they build their own bridges between theory and practice. We can help them by designing graduate engineering education that builds on the richness of multiple disciplines using a range of experiential catalysts. This is not simply the wish of a social scientist trying to elbow her way into the engineering curriculum. Socio-technical bridging is an empirically confirmed engineering phenomenon. Our career history research in engineering workplaces demonstrated that one of the most powerful leadership development paths was carved by "boundary spanners" [31], engineers with deep experience in multiple divisions, departments, and organizational communities who learned to blend their technical training with iterative social development. These engineers were fantastic leaders, not only because they had mastered the transdisciplinary competencies of clear communication or conflict resolution, but because they had deep roots in technical disciplines and situated experience working across sectors with non-engineers. They understood the native tongue spoken by engineers and others working across departmental units because they had absorbed the norms, language, and culture as departmental insiders along the way. While it is possible for a subset of engineering graduates to learn this sort of thing on the job over the course of three or four decades, many will not be tapped for a boundary spanning career path. As engineering educators, it behoves us to help our students connect their undergraduate training in engineering with deep disciplinary dives into the humanities and social sciences, helping them foster meaningful interdisciplinary relationships over the course of their careers. Interdisciplinary collaboration adds value to any problem, enhancing the professional development of participants while enabling teams to foster social and organizational impact over the course of their careers.

Concluding thoughts

Over the past twelve years I have worked as a social science researcher in the faculty of applied science and engineering at the University of Toronto. Throughout this time, I have learned to sit in the discomfort of disciplinary collisions and fissures, iteratively participating in individual and collective sense-making. Along the way, I have learned five key lessons about engineering culture: that defining terms is a measure of understanding, that positivism is the dominant paradigm, that industry partners may function as a source of research funding, that human agency is easier to spot than social structure, and that qualitative research methods are analytic tools. I am curious what my engineering colleagues learned about educational culture from these interactions. In each of these moments, I shifted from disbelief, confusion, and frustration to a deep and genuine appreciation for my colleagues' sense making practices. I believe we are all better researchers as a result. The two key ingredients for this learning were disciplinary collisions and reciprocally nurtured relationships with people on either side of the resulting fissure. The professional relationships I have enjoyed have depended on my own risky leap into a new discipline combined with the generosity of engineering colleagues who have invited many of us trained in other disciplines into their world, paying for and recognizing our expertise. By working together over time, we are slowly eroding the "disciplinary chauvinism" [30] Giri warned us about, but we have not yet built a program rooted in interdisciplinary collaboration. It is not too late to do this work. In addition to teaching transdisciplinary competencies, we can and should scaffold our students' learning in a variety of ways—through projects collaboratively led by researchers trained in different disciplines, through interdisciplinary reading groups, through guided reflection on professional practice, and through active collaboration within communities of practice involving theorists, educators, and practitioners. So long as we honour our own

disciplinary training while respecting that of our colleagues, we can weave together new insights that will enable us to transcend barriers we have faced in the past. Returning to the title of this paper, interdisciplinary collaboration may help us calm our anxiety about leadership as a psychic prison while helping us resist being seduced by the myth of leadership as a solution to complexity. Both of these strategies, in their own ways, leave the current socio-political context intact. Instead, we can take a more dexterous polyglot approach to engineering education, learning to collaborate meaningfully with academics and practitioners across disciplinary roots.

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