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COLLABORATING ON A CASE STUDY: DATA ANALYSIS- FOOR

The primary data for this paper was generated from a single interview of a multi-minority female engineering student at a predominantly white, four year institution of higher education. Inez's particular story was so evocative multiple team members were independently moved to seek an appropriate vehicle for others to hear her narrative.

The interviewer also was still shaken hours after her encounter with Inez. Months later, while reviewing the transcribed interview for accuracy, another team member was empowered to send a broadcast email imploring the remaining members to read the transcript with the urgent request, "We must get this story told." At roughly the same time, I was mining interviews looking for instances of students changing majors and was struck by the passages infused with pain, joy, frustration, pride, abandonment, anger, and ultimately resignation that coexisted in Inez's interview.

Inez's interview represented a single window into a particular culture of engineering. While engineers typically disregard outliers, social scientists - especially anthropologists- recognize that outliers often provide insightful and critical understandings of the workings of power from which outliers are excluded. We needed a way to examine the impact of institutional processes and engineering cultures on individual diversity without portraying Inez as a passive victim of structural forces. As the team member with a social science background, I was tasked with providing the theoretical framework we would use to inform the analysis of our data - a single interview. I presented my idea and without hesitation we agreed on a cultural construction framework.

A constructionist approaches collection and analysis of data from the standpoint that power and therefore inequality is interwoven into all aspects of social life (including the production of knowledge and knowledge claims). It is an approach that questions the naturalness of the social order (i.e. a belief that aspects of culture exist independent of human engineering) and looks for the underlying social motivation (power, ideology, maintenance of the status quo) and mechanisms (political, economic, language, symbols) that shape human social relations and institutions; furthermore, this approach considers the individual as an active agent in the process. More specifically, Bourdieu's cultural capital theory provided us the framework to analyze these data and to see **how** differences are produced and reproduced within the setting of engineering education, **how** power is acquired, enacted and maintained and yet, **how** people resist and negotiate life within that setting.[1]

We debated if the inclusion of a second or possibly a third voice might assuage the concerns of those who are more comfortable with large sample sizes. We considered following the example of Felder's work by combining Inez with another female student's similar experiences thereby presenting a composite picture of marginalized experience.[2] Although a composite would make participant identity easier to protect, in the end we felt Inez's narrative was more powerful on its own. Other discussions centered on the use of one or more comparator students and whether the inclusion of comparators would distract from Inez's experiences. We agreed to use the narratives of comparator students to highlight Inez's lack of capital, and just as importantly to bring light to the often unexamined advantages of privilege. We spent many hours considering which attributes of comparator students should be similar or dissimilar to Inez. Attributes such as institution, race-ethnicity, gender, socio-economic status, co-op/internship status, high school, and family background informed our decision of which comparator's experiences would be most relevant. We ultimately chose to use two comparators in order to address all of the points generated by Inez's counter experiences.

From the very beginning, this was a collaborative project. Each team member brought strengths to the analysis of the data and the writing of the paper. We began from a draft cobbled together in a fairly straightforward interpretation of Inez's life. The data from her interview transcript was augmented by historical and socio-economic data mined from federal, state and local government websites. The non-interview data allowed us to contextualize Inez's life within the political economy of her hometown, high school, institution of higher education and state and offer support for her claims and ours that the lack of social and cultural capital, not lack of brains or desire contributes to the dearth of individual diversity in engineering.

As we continued to mine Inez's interview for examples and experiences relevant to our framework, different team members were tasked with different threads to pursue. During these times, we would work in parallel. At appointed times we came together, usually over cold pizza, to exchange ideas, co-create sentences and word smith old and new passages. These collaborative times were generally productive, often stimulating and always congenial. Few difficulties, other than general time constraints, arose during the analysis of data. Obviously, we were not overwhelmed by the quantity of data to analyze. Of greater concern was the unorthodox use of a single life history as data in engineering education research.

I have always felt that any disciplinary or epistemological differences that existed among the three team members who collaborated on Inez were always subordinate to our desire for others in the engineering community to hear Inez's story. It was a deeply satisfying experience and one I hope you have the pleasure of experiencing.

[1] Bourdieu, P., *Cultural Reproduction and Social Reproduction*, "Power and Ideology in Education, Oxford, UK: Oxford University Press, 1977.

[2] Felder, R.M., "Meet Your Students: 1 Stan and Nathan," *Chemical Engineering Education*, Vol. 23, No. 2, 1989, pp. 68-69.

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