ABSTRACT
(for Dr. Marcia Gumpertz—4-20-2016)

DISSEPTION MENT ORING FELLOWS PROJECT

This project abstract reports on progress to date on a study of equity in the Ph.D. experience of women and minorities in the United States, with an emphasis on the prospects for the successful mentorship of these groups in the discipline of Engineering. This preliminary portion of what is to be a larger study shows minor to modest progress in a disciplinary area that literally holds the future of the country in its hands.

Every part of society requires basic and hopefully advanced infrastructure to survive. This is true from those parts of infrastructure essential for daily life (pipes that deliver potable water) to more advanced forms such as roadways that aid the delivery of goods for food for caloric consumption to citizens, to occupations that undergird the economy, to wire lines that permit the communication for social essentials to news of impending disasters.

The American Society of Civil Engineers grades the overall infrastructure of the US at the level of “D+.” Grades range from D and D- on dams and levees, to C and C+ on ports and railways to a high of B+ on the handling of solid waste. Our international statistical rank is 11th, just behind Taiwan and Korea.

We are fortunate at North Carolina State University to have the largest College of Engineering in the United States we are ranked 12th overall in Engineering among all universities in the United States and to in 12th position in total Ph.D.s conferred (although these numbers change year-to-year.). Unfortunately we are not in the top 20 in the nation in research expenditures to Engineering Ph.D. recipients. Fortunately we are 9th in the number of tenure track/tenured female faculty with 48, and 7th in the nation in tenure track/tenured African American faculty. Regrettably these top statistics do not carry over to other minority groupings. As well our high marks do not carry over to the percentage of Engineering Doctoral degrees earned by women. An hypothesis of this study was that mentorship would carry over from faculty to Ph.D. students. It doesn’t, in numbers like these. Of course monetary concerns may enter here insofar as resource constraints may attenuate the number of students of all types at all levels.

The statistics just summarized suggested it would be worthwhile to examine the national scene. In so doing it was found that about half of all Engineering degrees nationally are awarded to men. Women comprise 14% of all tenure-track/tenured faculty currently, when there were just 9% of the pool in 2001. Of course, an increase such as this can be viewed either with optimism or pessimism. Of the modern pool 8.7% are full professors, 15.8% are associates and 22% are assistants. These may reflect normal attrition data, or may be accelerated. More research is necessary to determine this.

2.7% of Engineering faculty are African American and 3.0 % are Hispanic. It is noteworthy that a full 25% are Asian with nearly 30% of those assistant professors.
What do women select as their specialty within Engineering? The national report emphasizes the nation’s crumbling infrastructure. Women choose Environmental Engineering and Biomedical Engineering. These specialties are not unimportant. They simply are not the choice of those who place national priorities infrastructural areas. This would make a comparison of relative salaries at entry interesting.

Finally, what universities and Colleges hire the most tenure-track and tenured professors? They are Michigan (74), Illinois (69), Georgia Institute of Technology (68) the Massachusetts Institute, and (6) Purdue (62).

Which hire the most African Americans? North Carolina A&T (26), Georgia Institute of Technology (17), Florida State University (16), Prairie View (16), and Michigan (14)

Which hire the most Hispanics? University of Puerto Rico (151), Polytechnic University of Puerto Rico (56), Texas A&M (25) and Virginia tech. (7)

Which hire the most Engineering doctorates (women)? Illinois at Chicago (385), Delaware (35%), Duke (32), Wash. State (30.6) and William March (30%).

Which hire the most Engineering doctorates (All ethnic)? No Names Given (4.10%), (4.7%)