Special Session - New Engineering Stories: How Feminist Thinking Can Impact Engineering Ethics and Practice

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Abstract – The goal of this special session is to examine the way we as engineers frame stories about engineers and engineering, and to ask: do we need to embrace new stories? We will explore traditional stories about engineers and engineering ethics and ask, how might these stories, and the kind of engineering practice and education they inspire, change if framed from a feminist perspective? The outcomes of this session are to build a greater community interested in social engagement, engineering ethics, and feminist methodologies as they apply to engineering.

Index Terms – feminism, engineering ethics, social justice, engineering narratives

INTRODUCTION

How would engineering look if practiced from a feminist perspective? There has been much focus in recent years on the low numbers of women and other groups within engineering departments and among practicing engineers. However, this focus on underrepresentation has not led to markedly increased numbers of women in engineering. The authors propose that without a fundamental re-examining of engineering and the questions it asks, the communities it serves, and the stories it tells, little transformation of engineering as open to diverse viewpoints can occur. As a result, we invite the engineering education community to ask ourselves what are the stories we tell about engineers and engineering? How are these stories inclusive or exclusive of different ideas and people? How can we recenter the marginalized stories that are already being lived and told? Ethical dilemmas are often places where such stories are able to surface. One of the authors is engaged in exploring engineering stories [1], and we will use the framework of narratives and storytelling through focusing on ethics as a way to examine engineering, and reconceptualize it from feminist perspectives.

Identities of engineers and engineering ways of being are explored through narratives of the engineer as “the maverick,” “the expert,” and the “non-communicator” [2]. Other narratives may include that of the engineer as problem-solver [3], as good at math [4], as unbiased decision-maker, or as “moral hero” [5]. In the case of the Challenger disaster, the individual engineers who stood up to the pressures of the corporate machine to suggest that the shuttle launch be postponed, despite the costs to the organization, were cast as the moral heroes of the disaster because of their individual acts of courage. Some have argued this individual structure of responsibility marks a masculinized corporate structure of the space industry [6,7]. However, such acts are regularly celebrated in engineering ethics. Broome and Pierce have suggested that the idea of the moral hero in engineering can be used as an archetype to encourage ethical behavior in engineering undergraduates [8]. Similar ideas are expressed through the engineer’s role as a “whistleblower” [9].

Engineering ethics stories often include tales of “conflicts of interest” and divided loyalties to one’s employer, client, and the general public [9]. These stories illustrate the utilitarian attempts to weigh interests of competing groups independently and individually.

Some contrasts to these individualism-focused narratives can be found within feminist scholarship, such as through the “ethic of care” branch of feminist ethics. Scholars making use of the framework of ethic of care emphasize the importance of emotion, connectedness, and community-based perspectives when making ethical decisions [10]-[11]. Critiqued by some for reinscribing gender roles [12], some proponents counter that the traits of caring are not tied to femininity but to the experience of the oppressed [13]. Another feminist alternative narrative is that of the Sibyl, the wise woman whose prophecies must be interpreted and heeded [6]. The Sibyl emphasizes thoughtfulness before action, as well as the need for careful interpretation of evidence, which implies a different model for ethical action than the independent and single-minded hero model.

Just as some feminist bioethicists have told the stories of “healers” in hopes of critiquing the dominant paternalistic doctor image [14], the authors argue a similar transformation in engineering storytelling must occur. This shift in focus is beginning to be accepted in the context of Western engineers designing products and solutions to problems in developing countries - engineers are beginning to recognize the need to resist constructing technological solutions that are not grounded in the needs and values of the communities they serve. This particular shift suggests the importance of alternative stories of engineers as “collaborators” rather than as “experts.”

Rethinking engineering ethics as a more collective and holistic process can also be conceived as a move from an exclusive focus on microethics, or individual decision-making.
making of professionals, to macroethics, which seeks to consider the collective action of engineers and of society as a whole [15]. This can be thought of as ethical thinking not only within engineering, but also about engineering [16]. Science and Technology Studies scholars Johnson and Wetmore call for a similar broadening of engineering ethics, because considering the complex interactions between technology and society provides a very different perspective on the responsibilities of engineers – both increasing and decreasing responsibility in different areas [17]. One of the authors has called for a re-framing of engineering ethics as a self-organizing, emergent system that is characterized by synthesis rather than analysis [18]. Thus, a feminist re-visioning of engineering ethics may include a greater focus on care and relationships, and a holistic rather than individualist framing of engineering practice.

GOALS

The goal of this session is to re-imagine engineering stories and ethics through a feminist lens. Questions to be examined will include:

- What are the stories of engineering or ethical behavior in engineering that we explicitly or implicitly tell to engineering students? How might they be gendered?
- What are some new, alternative “engineering stories” that could be told from feminist perspectives?
- Who do (or should) engineers serve, and do our stories reflect these obligations? How could they do otherwise?
- Is the process of engineering and engineering design constrained by the stories we tell? If so, how is the process of engineering defined by these narratives?

One purpose of this session is to illustrate how connected all these goals and efforts are, so this session should be an opportunity to unite communities who are often fragmented. A primary goal of this session will be to energize and empower the group that attends this session to take action on the ideas expressed in the session. A distribution list and online community will be established before the session to allow these collaborations to grow naturally from the discussions that are started.

SESSION DESCRIPTION

Using creativity exercises, a participatory framework, and movement exercises, we will facilitate an environment to allow exploration of the narratives we have told and wish to tell about engineering practice, engineering teaching, and engineering ethics.

AGENDA

The session will include:

- A brief introduction to ethics and storytelling as ways to foreground the values of engineering design and decision-making; a similarly brief introduction to feminist alternative perspectives;
- Movement-oriented exercise to explore the existing engineering narratives, and then the construction of new feminist engineering narratives and how they relate to engineering ethics;
- Small group work to discuss and explore new stories;
- Reporting session based on the small-group work, with ideas for moving forward in establishing new collaborations and, potentially, new feminist engineering frameworks.

ANTICIPATED AUDIENCE

We hope that by linking themes of feminist perspectives, diversity issues, engineering ethics, and social justice, we will attract a fairly broad audience consisting of individuals willing to re-consider traditional engineering frameworks. We anticipate the return of a core group of participants who have attended FIE special sessions in recent years related to feminism perspectives in engineering [19]-[24].

We will avoid an exhaustive review of feminist theory as it relates to engineering and technology. Using an interactive format, we plan instead to spend time as a group asking new questions or provide new frameworks to imagine how engineering ethics and engineering stories could be and are re-imagined from a feminist perspective.

OUTCOMES AND FUTURE WORK

This session will be an opportunity to continue to examine how engineering would look if practiced from a feminist perspective, with a particular focus on engineering stories and engineering ethics. Through the pre-existing online community, we hope to promote creative thinking and initiate a dialogue that will lead to future collaborations.

CONCLUSION

Much of feminist thinking seeks to recognize connections between different forms of oppression as well as the different experiences of groups that are marginalized. Using the feminist perspective as a lens, we seek to connect different threads of engineering thinking and practice, such as engineering ethics, engineering epistemologies expressed through narratives, and engineering for social justice and peace. The session will examine the ways in which engineering practices and experiences are framed by stories, and we will ask how these stories might look from a feminist perspective. Because these stories frame the way engineers conceive of ethics, we will then apply this perspective to re-imagine engineering ethics.

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