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Engineering Managers and Sustainable Systems: The Need for and Challenges of Using an Ethical Framework for Transformative Leadership

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Abstract

Despite multiple efforts, achieving sustainable societies remains an elusive target that will require transformative change at all levels. While such change has to start at the top of an organization, its success depends on effective implementation. For technical organizations, sustainability implementation rests in a large part with the many engineering teams responsible for meeting client needs and organizational targets. Project and line managers have to influence those team members to adopt the moral characteristics necessary to engineer sustainable projects as part of everyday practice. To support their leadership efforts, we draw on care ethics and sustainability ethics in the form of an engineering ethic to propose a framework to orient and ground the reflective practices of those engineering managers. We discuss the challenges involved with internalizing this framework and suggest future empirical work needed before the framework can be operationalized. Embedding sustainability in daily engineering practice has to evolve at the professional level by formulating and propagating the relevant engineering codes, and evolve at the educational level by making sustainability part of the formal engineering curriculum.

Key words: sustainable systems, ethics of care, engineering, transformational leadership, engineering manager

1. Introduction

Despite the multiple definitions for sustainability that describe a range of actions, processes, services, and artifacts (e.g., Johnson 2012; Glavic and Lukman, 2007; Williams and Millington, 2004), and despite numerous concentrated efforts by both public and private sectors, sustainability as a practice across engineering remains an elusive goal. For this goal to be achieved, transformative change is needed that depends on governments, corporations, non-profit organizations, academia, and individuals embodying sustainable practices as part of what it means to “be”. In this inquiry, we try to bring together perspectives from the leadership, ethics, and sustainability literature to ask what is needed for such a transformation. In particular, we focus on what engineering managers need to do to bring this about with their teams.

While a shared vision toward sustainability has to include an organization’s executive leadership, its success rests on effective implementation, which has to start through changes across the system of practice. Project managers and line managers within manufacturing and

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