

Daniel A. Vallero, P. Arne Vesilind, *Socially Responsible Engineering: Justice in Risk Management*

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Society depends on engineers to produce sound structures and innovative technologies. Engineering education adequately prepares them to do this by focusing on technical design considerations. However, this is only part of what should be required of the profession. Indeed, as the authors of this book, Daniel Vallero and P. Arne Vesilind, note, “no project is complete unless matters of justice are incorporated” (p. 38). They state further that “the major premise of this book is that [engineers] must be active in ensuring socially responsible designs and projects” (p. 334). Socially responsible engineering requires “the engineer [to] help that segment of the public least able to look out for themselves” (p. 57) by asking questions familiar to the environmental justice community. Who lives near the structure? Who benefits and who absorbs the costs? How does this change over time? How can we ensure that public health and environmental quality are equally protected across society?

This is therefore an ambitious work, requiring the incorporation of knowledge and insights from the social sciences and humanities into engineering practice. Oftentimes, such attempts are met with disdain from other engineers. Even in the university, the rigid separation of engineering from other departments is generally accepted. Thankfully, the authors are two veteran professors of environmental engineering and engineering ethics with substantial intellectual capital who are in a position to challenge traditional ideas about what should be included in an engineering text. The publication of this book should help those engineers just beginning their careers and hoping to practice engineering that looks beyond technical issues.

This book’s readability makes it appropriate for an undergraduate engineering class in professional ethics attempting to tackle issues of environmental justice. The main text is interspersed with real world case studies of engineering projects that

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confronted issues of environmental justice and/or professional ethics, and required thoughtful consideration to resolve. This is one of the text's strengths: it is steeped in the real world of engineering decision making. Additionally, short biographies of important individuals within the environmental justice movement and professional engineering are included, although the links of some of the featured engineers to themes of justice are tenuous at best. The inclusion of several biographies of women and people of color is refreshing.

The seven chapters can be divided into two categories: those that discuss aspects of environmental justice, morality, professional ethics, and sustainability (Chaps. 1–3, 6–7), and those that discuss the technical analysis of exposure and risk and explore the science of environmental problems (Chaps. 4–5). The technical principles discussed are no doubt necessary for an engineer attempting to analyze a particular case of environmental injustice, but the book does not contain sufficient guidance for that engineer looking to ensure that the distributive, disaggregate analyses of impacts called for by the environmental justice movement are incorporated into engineering projects (and paid for by the client), and by extension into larger rulemaking processes. The experiences of legislative analysts, policy-makers, and environmental justice advocates attempting to incorporate notions of the distribution of both impacts and benefits into California's landmark climate change legislation (known as AB 32) indicate that this is far from simple, and an area where much work needs to be done.

This is the most substantial shortcoming of the book—it lacks substantive discussion of how engineers might facilitate just outcomes through their day-to-day work. Instead, issues on this theme are raised but not adequately explored. For example, the authors correctly assert that the environmental impact statement (EIS) under the National Environmental Policy Act (NEPA) makes it possible to “incorporate environmental justice into project design” (p. 240) through input from affected communities and analysis of impacts and alternatives. They also recognize that the solicitation of community input is problematic because it requires one to have a “voice.” Indeed, “if a certain group of people has had little or no voice in the past, they are likely to feel and be disenfranchised” (p. 6). However, the book's proposed solutions begin *after* professionals vision the project. “After conceiving the project, the first thing a project designer or engineer should do is to learn what people, all people, think of the proposed project” (p. 323). By this time it is often too late. For a community to truly have a voice, they must be allowed to speak for themselves *before* a project is conceived.

Additionally, the authors do not investigate the historical performance of EIS/NEPA with a thorough review of past experiences. For example, the Nuclear Regulatory Commission's environmental justice policy is cited as a model for addressing disproportionate impacts under NEPA, while in reality, the policy was only arrived at after substantial pressure from a concerned public. The shortcomings of the EIS/NEPA process are not discussed, and alternative approaches are not developed. This leaves the would-be socially responsible engineer with no new tools to effect just outcomes.

Perhaps the authors intended only to explain how to achieve the most just outcomes using existing legal channels and engineering practices. They succeed at

this, while failing to articulate a vision of how engineers might consistently achieve just outcomes from “the perspective of those with the least power to change things” (p. 57) which undoubtedly requires actions that do not emerge from current practice. The book is still valuable as an example of how to cross disciplinary boundaries in an engineering text, and its existence is a testament to how far the profession has come. Pushing engineers to think just outside of our technical boxes is only the first step in the right direction, however. Teaching engineers to engage in thoughtful and productive criticism of the underlying systems that give rise to unjust outcomes—with the goal of subverting them—is the next step.

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