

Thinking Like an Engineer: Studies in the Ethics of a Profession

Michael Davis

New York: Oxford University Press, 1998, x + 240 pp. \$49.95 hb. 0-19-512051-5

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Having already addressed the medical and legal professions in earlier works, Michael Davis turns his attention in this book to engineering, which he also treats as a profession. A profession being, according to Davis, an organized group of practitioners who circumscribe their activities by means of a code of ethics, he appraises engineering largely in terms of the codes of ethics that members of the various engineering specialties have drawn up for themselves. This approach, perhaps inevitably, leads to conflicting results. It generates wide-ranging research and thorough analyses of some important ethical problems involving engineers and their codes of conduct, and in so doing invites others who study engineering ethics to examine their assumptions and perhaps redesign their research projects. But it also exposes a fundamental flaw in the author's concept of engineering ethics, for he devotes as much attention to the inefficacy of engineers' codes of ethics as he does to their being the *sine qua non* of professionalism. This metaethical conundrum is certainly not unique to this book, but it makes the book of only limited use as a text for preprofessional students. I will accordingly focus on its usefulness for their instructors.

Davis's bottom-line thesis is that engineering ethics derives primarily if not entirely from, and remains a work-in-progress of, engineers organized collectively as a profession. In support of this thesis, he first examines engineering historically, then focuses on the Challenger disaster (three chapters each). He then uses a U.S. Supreme Court case involving conflict of interest as a catalyst to isolate the engineering judgment from its context (two chapters), and follows this with a report of findings that he and his colleagues arrived at by studying ten firms in and around Chicago that employ engineers (three chapters). In an epilogue he asks four basic questions about the nature of engineering, good answers to which he believes will help advance engineering ethics. At least tacitly, he seems to equate this advancement with engineers' achieving more professional autonomy in work environments that seldom facilitate this objective.

Davis articulates this agenda most straightforwardly when he says engineers need "a systematic way to protect members of their profession who act ethically when an employer or client wants something

else" (30). Some might read this as suggesting unionization. But he never goes beyond the concept of engineering as a profession and equates this with having a code of ethics that adequately defines engineers' accountability. This code criterion allows him to say that neither software engineers nor clinical engineers are truly engineers (chaps. 3 and 8). The former are not, in part, because they have a code of their own that deviates too much from engineers' codes (38–40). The latter, who are typically affiliated with a health-related institution, have no specific identity as engineers because they have no specialty-specific code of ethics. If they were to develop such a code, they would constitute a self-governing professional group, a code being the ethics of a group and not (contra John Ladd) a body of law.

Focusing as he does on engineers' code-defined responsibilities (see 59–60), Davis never addresses the possibility that an engineer might have moral responsibilities independently of any professional code as such. When discussing values and technology (chap. 1), for example, he says we should not blame engineers for disregarding the social consequences of labor-saving devices "about which they can only guess." For, these consequences, he says, are the responsibility of society at large, which must make political decisions with the help of social statistics (13). Thus would he sever engineers' ties to the broader society in which they are embedded. In keeping with this isolationist image of engineering ethics, he says codes are best viewed as a contract between professionals, not a paradigm or contract with society at large (49–51). This is well illustrated by his meticulous examination of what participating engineers did prior to the Challenger disaster and what applicable engineering codes required them to do (chaps. 4–5). Lest there be an idealist among his readers, though, he begins by telling them that "(I)n general, the various codes are not enforced by the organizations adopting them." There are, in any event, no expulsions for noncompliance (48).

Davis attributes the Challenger disaster to what he calls "microscopic vision," i.e., heightened information with regard to a small domain without compensating awareness of what lies beyond. This may be conventional or deliberate. Price fixing, for example, involves activities the perpetrators no longer consider improper, whereas those who engage in insider trading typically know that they are doing something wrong but hope not to be caught (68–70). To minimize the risk of such behavior, Davis advises, employers should raise employees' ethical awareness by means of codes, audits, and seminars (71 ff.). Similarly, he advises employers to avoid situations in which people have to resort to whistle blowing by utilizing informal channels, alliances, moral sensitivity, and rhetorical skills (chap. 6).

The fallibility of a professional code of ethics is also illustrated by a U.S. Supreme Court decision that upheld a massive award of damages against the American Society of Mechanical Engineers (ASME): *ASME v. Hydrolevel*, 456 US 556 (1982). At issue in this case: ASME's Board of Ethical Review enabled an established company to drive a competitor out of business by adopting code language regarding boiler safety recommended by an engineer with ties to the established company. In examining this case, Davis sees the ethical issue as one of disclosure, then analyzes disclosure to determine what is "professional" (92–8). He tries to move beyond relativism by insisting that disclosure be to the client and that the client be identified ultimately with the general public. But in this case he equates the general public with and only with the entire membership of ASME, not with society at large (105).

Under the heading of empirical research (part 4), Davis offers the reader some ideas about how to prevent conflicts between engineers and management by negotiation or, better, achieving consensus (135–6). He reports that engineers at companies studied were not conscious of codes but did stress safety and quality (143), and that communication between engineers and management is generally good except with regard to financial information. He adds nine recommendations about ways to improve communications/sharing of responsibilities (155–6). In the concluding chapter he argues for a more refined concept of professional autonomy, to be derived in part from philosophical work on personal and professional autonomy but especially from sociological studies of autonomy in the workplace.

These detailed considerations focus on distinguishing the engineer's professional decision making from that of management personnel. This clear objective is clouded, however, by complicating factors. As Davis acknowledges, there are many engineering specialties, each of which with few exceptions has its own code, and there is no code (other than what a society at large imposes in its laws) that applies to them all. In his account, moreover, management's preferences are given more weight than any abstract ethical norms as such or even extracorporate or extragovernmental public well-being. This perspective would offer engineers and their codes an implicit excuse for not transcending the institutional setting that defines their professional autonomy (e.g., with regard to whistle blowing). Its key weakness, I believe, lies in its unstated but fallacious assumption that the ethical constraints on an individual engaged in a profession are exhausted by the demands clearly placed on that individual by his or her professional organization. Thus Davis's approach to an ethics of engineering ultimately fails because no member of an organized profession can, in final analysis, be only selectively linked

to the institutional and societal expectations in light of which he or she must operate.

Another problem endemic to a professionalized ethic is, typically, its indifference to epistemological issues. Davis makes a feeble effort to transcend this difficulty by saying that engineering is tied to science rather than to mere technical skills (27), but elsewhere (16) he distinguishes engineering from science because its objective is not the true (knowledge) but the good (human welfare). As he puts it in the epilogue, contrary to Carl Mitcham's position in his *Thinking Through Technology* (1994), engineering is about getting things done and not about thinking thoughts. But one can hardly decide if something ought to be done at all without thinking—whence the profound ambiguity of this book's title.

Besides Mitcham's book (Chicago: University of Chicago Press, 1994) and others Davis cites in his bibliography, one may find additional perspectives on these matters in the following: P. T. Durbin, ed., *Critical Perspectives on Nonacademic Science and Engineering* (Bethlehem, PA: Lehigh University Press, 1991); J. Kultgen, *Ethics and Professionalism* (Philadelphia, PA: University of Pennsylvania Press, 1988); R. Perrucci and J. E. Gerstl, *Professions Without Community: Engineers in American Society* (New York: Random House, 1969); and works that address the idea of a corporate ethical climate, e.g., in *The Journal of Business Ethics*. Finally, in many of my writings I espouse a broader concept of professional responsibility, including in particular "Labor-Saving Devices: Evidence of Responsibility?" in *From Artifact to Habitat*, ed. G. L. Ormiston (Bethlehem, PA: Lehigh University Press, 1989), 132–54.

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