

Engineering Design

Literature On Social Responsibility Versus Legal Liability

(ESSAY #4)

Introduction

Litigation associated with engineering design has escalated enormously over the last few decades. It has increased the intensity of debates over the question whether social responsibility or legal liability should have priority. Where does a design engineer and his/her company's responsibility end and the subcontractor's, manufacturer's and consumer's begin? The relationship between social responsibility and legal liability is complicated by the fact that laws are usually enacted only after a disaster. How can an engineering firm justify its actions based on current legal definitions? If a company's design has adverse affects on the public welfare, of necessity laws are enacted to ensure that appropriate safety standards are met. Or, at the very least, legal suits are filed so injured parties can be compensated and the culprits penalized. This phenomenon has become particularly critical regarding litigation involving engineering design and product liability.

The public has become increasingly aware that the benefits of industrial progress must be balanced against the growing need to protect the public from damages caused by some products and by-products of technology. Naturally, the spirited public debate puts engineers at the center of the controversy between product safety and social responsibility on the one hand and legal liability on the other.¹

How should we determine the engineer's and his/her company's social responsibility? Is it not their job to act as society's protector? Should social responsibility not precede any discussion of legal liability? And should a design engineer not take every precaution to ensure that his/her company's product is safe before it enters the market? Safety must be an essential design consideration, for as Christopher D. Stone notes in his **Where the Law Ends: The Social Control of Corporate Behavior**,

Even if we put aside the defects in the impact of the sanctions, there still remains the problem that law is primarily a reactive institution. Lawmakers have to appreciate and respond to problems that corporate engineers, chemists, and financiers were anticipating (or should have anticipated) long before that the drugs their corporations are about to produce can alter consciousness or damage the gene pool of the human race, that they are on the verge of multinational expansion that will endow them with the power to trigger worldwide financial crises in generally unforeseen ways, and so on. Even if laws could be passed to deal effectively with these dangers, until they are passed a great deal of damage some perhaps irreversible can be done. Thus, there is something grotesque and socially dangerous in encouraging corporate managers to believe that, until the law tells them otherwise, they have no responsibilities beyond the law and their impulses (whether their impulses spring from the id or from the balance sheet). We do not encourage human beings to suppose so. And the dangers to society seem all the more acute where corporations are concerned.²

Social Responsibility for Public Safety An Overview

With corporate decision-making structures as the focus, we find that many of the difficult ethical choices corporate managers and design engineers must make involve conflicts regarding who is responsible for a given activity. Managers and engineers alike have different obligations depending on their role within the corporation.

Thus, one of the obligations at issue is role morality, which is concerned with duties individuals have, based on the specific roles they have assumed within the corporation. For legal scholars, "Corporate role morality takes as given precisely what classical moral theory wishes to evaluate, the worthiness of the duties assigned by one's role."³ Unfortunately, one of the pressing problems in legal scholarship on corporate social morality involves the fact that as laws change, so do the roles within the corporate hierarchy. Thus, there is a need for individuals within corporations to take a more active interest in their obligations as professionals, as well as to protect society at large. In many instances, engineers will simply have to choose their social responsibility over the law.

An engineer must often place his/her social responsibility over the objectives of his/her employer. "Just as we must know the rules of baseball to know what to do with the ball, so we must know engineering ethics to know, for example, whether, *as engineers*, we should merely weigh safety against the wishes of our employer or instead give safety preference over those wishes."⁴ Sometimes a cost/benefit analysis is not enough, especially when lives are at stake.

In his "Explaining Wrongdoing," Michael Davis emphasizes the need for professionals to distance themselves from a "microscopic" way of looking at their role within the corporation, to look up from their given tasks and role obligations to see the larger implications of the work they perform for society. In essence, Davis argues that problems associated with professional ethics center on these fundamental questions of social obligation. Using the famous Challenger disaster as a case study, Davis shows that while no one broke the law, there was clearly wrongdoing on the part of Morton Thiokol's managers and engineers. "For an engineer, safety is the paramount consideration. The engineers could not say the launch would be safe. So, Lund should have delayed the launch. Seven people died, in part at least, because he did not do what, as an engineer, he was supposed to do."⁵ This is not simply limited to highly publicized disasters. In all fields of engineering, concern over safety, and the engineer's responsibility for ensuring it, is being emphasized. In his "Safetyman Important Responsibility," Carlton Robinson argues that safety is an especially critical factor for transport engineers and their managers. Given the volume of traffic on roads, safety must come before cost considerations in highway design and construction. Carlton argues that if, at present, increased safety is not the primary goal in engineering design and construction projects, it should be.⁶ Safety is a social, not primarily a legal obligation, and engineers and their managers must always keep their obligations to the public welfare at the forefront when making design and management decisions.

Another example of the importance of choosing social responsibility over the law involves the **Soldier of Fortune** guns-for-hire classified advertising cases. In his article, Don Tomlinson asks, What are we first: professionals or human beings? While placing guns-for-hire advertisements was not illegal, it was immoral, and people died because of the advertisements. **Soldier of Fortune** acted irresponsibly toward the public, and "Law cannot shield anyone from the most basic duty all human beings owe all other human beings: respect for life. Law and ethics are not one and the same. Further, using law as a justification for conduct which is socially irresponsible is socially irresponsible itself."⁷ The same duties apply to engineering design and management.

Quality engineering is an imperative. Thus, there is a need for responsible management of design projects, both in terms of ethical and creative engineering and corporate practice. The American Society of Civil Engineering Code of Ethics states that "engineers must hold the public safety, welfare, and health paramount and use our knowledge and skill for the enhancement of human welfare."⁸ When engineers, managers, and their companies' corporate owners, as well as contractors, subcontractors and inspectors, take pride in and responsibility for their designs, the entire engineering profession benefits. According to Charlton Moorman, ethical engineering practice positively affects engineering creativity, and the "engineering profession benefits when ethics are followed and

creativity is used by the engineer. When not followed, bad public relations are a possibility for the engineer, the company employing the engineer and the profession in general."⁹

As such, professional engineering societies play a significant role in ensuring that safety standards are maintained, and it is imperative that individual professional engineers adhere to what his/her society mandates. Michael Davis notes that in thinking like an engineer, one must remember the place of a code of ethics in the practice of his/her profession:

Engineers should not only do as their profession's code requires, but should also support it less directly by encouraging others to do as it requires and by criticizing, ostracizing, or otherwise calling to account those who do not. They should support their profession's code in these ways for at least four reasons: First, engineers should support their profession's code because supporting it will help protect them and those they care about from being injured by what other engineers do. Second, supporting the code will also help assure each engineer a working environment in which it will be easier than it would otherwise be to resist pressures to do much that the engineer would rather not do. Third, engineers should support their profession's code because supporting it helps make their profession a practice of which they need not feel morally justified embarrassment, shame, or guilt. And fourth, one has an obligation of fairness to do his part insofar as he claims to be an engineer and other engineers are doing their part in generating these benefits for all engineers.¹⁰

Sometimes, however, despite engineers' meeting their design obligations, failures still occur. What is the engineer's responsibility once the design is handed off to a contractor, subcontractor or the consumer? Is the designer liable for aiding others in the use of a product? What criteria can the engineer invoke? In his "Charity and the Duty to Rescue," John Whelan says, "there is not a duty to aid; however, many failures to aid deserve moral criticism; and some of them deserve very serious moral criticism."¹¹ He notes that one must distinguish between morally objectionable failures to aid and those which are merely failures of consideration. They are distinguishable by knowing what the obligations of the rescuer (or in this case, the engineer) are. "Knowledge (or any reasonable belief)...is relevant to any obligation. ...what matters[; however,] is whether you can do something about it."¹² In determining whether you are obligated to do something to prevent harm to others, two of his six rules apply directly to engineering design: 1) that there is sufficient professional reason to believe that you can prevent unreasonable danger at little cost to yourself; and 2) that you do not have sufficient reason to believe someone else can prevent harm if you do not.¹³ This raises serious questions about what constitutes safety and the concept of unreasonable danger as a design consideration.

One of the problems is that engineers are often not trained to look at notions of "unreasonably dangerous products" conceptually. D. Muster uses the analogy of medical health practitioners to encourage a forensic approach to engineering. "Some engineers tend to ignore design considerations that cannot be quantified easily for analysis or, at least, they consider them to be of less importance than others which lend themselves readily to being modeled and analyzed."¹⁴ For Muster, the real problem engineers face is that they are not properly educated in product liability law and the legal concept of an "unreasonably dangerous product," so they do not fully appreciate when they are ethically obligated to assist others in the product chain.

Strict liability for a defective product falls into three categories, and all three are significant in the chain: design, manufacturing, and marketing. In particular, Muster notes that "A marketing defect is synonymous with the failure of a manufacturer to give adequate warnings and instructions for the proper use of his product."¹⁵ This is also true for the designer. When looking at whether there was an "unreasonable" danger, courts test the product as to whether it was: 1.) state-of-the-art, 2.) an unavoidably unsafe product, 3.) misconduct by the user, or 4.)

misused with the foresee ability of the specific misuse at issue in the suit.

Like the other authors, Muster argues that safety is an essential design consideration. Given all the educational programs and literature available to engineers, "no designer can claim the information on which to base a safe design is unavailable."¹⁶ He further notes, as Stone does, that most design changes are directly attributable to product liability litigation, and that safe products lead to good business practice. Thus, safety is deemed as the absence of unreasonable danger. Anything short of that can be considered morally unacceptable. Yet, morally unacceptable conduct continues apace, as the amount of litigation escalates. What are the consequences for the engineering profession?

Legal and Social Consequences for the Engineering Profession

As stated above, claims against design professionals and their companies are on the increase. Even if the professional engineer feels he/she has done everything to avoid "unreasonable" danger, accidents happen, and designers are increasingly held liable for construction and product mishaps. Engineers must, therefore, familiarize themselves with the legal doctrines of informed consent, novel tort remedies and reforms, third-party liability issues, liability insurance, and legislative lobbying techniques.

The legal doctrine of informed consent is based on tort law. In "A History and Theory of Informed Consent," a "tort" is defined as "a civil injury to one's person or property that is intentionally or negligently inflicted by another and that is measured in terms of, and compensated by, money damages."¹⁷ Any failure to obtain informed consent in situations where it is legally required is considered a "tort." While the book deals almost exclusively with medical ethics, the implications for engineering designers is clear.

In recent years, a novel theory of tort remedy, the "Hedonic tort," is gaining momentum, as litigation shows there is a widespread need both to do more than just cost-benefit analyses on products and to reevaluate corporate marketing strategies. The "Hedonic tort" remedy considers as its base the theory of individual happiness, and its attributes include "quality of life factors such as environmental standards, quality of education, weather, and the amounts of time spent pursuing vocations."¹⁸ According to Jack Karns, individual happiness is based on three factors: "a. degree of moral virtue, b. degree of good fortune with which the individual is blessed, and c. [and most important for the design engineer's consideration] whether a tragic choice is made based on circumstances beyond someone's control."¹⁹ Hedonic damage suits could conceivably ruin a professional's reputation, and her financial well being. Thus, this theory of tort remedy could have significant impacts on product design, incorporating additional safety features in order to minimize such damage claims.

One of the problems associated with tort reform, however, is the issue of insurance. Because claims have increased substantially, battles over reform have escalated since the early 1980's. As Dennis Schapker notes, many firms have responded to these increased claims by dropping their insurance coverage. As of 1990, 21% of all design firms were uninsured. This percentage of uninsured firms does not bode well for the engineering profession as a whole. Thus, he argues that design professionals must get involved in the debate over tort reform.²⁰ This call to action rises as designers are increasingly being held responsible for negligence in their work, including that of their subcontractor's, despite written contract disclaimers aimed at defending their interests. **Civil Engineering** notes that "the privity of contract defense is no longer an absolute shield that design professionals may use to protect themselves from liability to third parties."²¹ Thus, engineers must understand tort law and liability insurance as never before.

While insurance is not a remedy for unprofessional behavior, engineers must know more about it. In his case

study of an insurance carrier, Randall Horne notes that, "With the ever-increasing tendency toward litigation, clients have begun to view their design professional's liability insurance as a potential source of full reimbursement for any damages they may incur."²² This can be a paralyzing concept for the engineer, to say the very least. Claims against designers result not only in financial loss, but also a loss of prestige, good will among clients and future business. "Although it may be difficult to assign a monetary value to these losses, it is not difficult to imagine that they could be career or at least business threatening."²³

Thus, engineers must get involved, as must their societies. The nature of engineering in the United States means that each state can create unique laws governing the practice of engineering. This has resulted in a liability crisis of the first order. While most recognize the need for engineers to place their social responsibility over issues of legal liability, many petty law suits make practicing as a professional a risky venture. If engineers get involved in the debate over legal liability, perhaps they can spend more time policing themselves, and less time in the court room. Mark Friedlander, a liability attorney, argues that engineers and their societies must acquire the requisite knowledge about liability issues, and then lobby for legislation that will protect them from the ever-increasing litigation crisis. "Among the most costly and frivolous lawsuits are construction-site-accident claims. Engineers ordinarily have no responsibility for construction-site safety. Nevertheless, obtaining indemnity against these claims from the contractor, or defense under the contractor's general liability policy, is difficult. In my experience, such claims constitute the most frivolous malpractice claims filed against design professionals."²⁴

If engineers are better educated about the litigation process, perhaps they can better serve society at large. The courts are siding with contractors, which means that the public feels engineers should continue answering for their designs on site. And maybe they should take a more active role. The only way to know for sure that their design instructions are being adhered to is by getting involved, and by understanding both their social and legal responsibilities.