

CODES OF ETHICS, BIOMECHANICS, AND CONFLICT OF INTEREST

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Biomechanical engineers working in a hospital (or other medical enterprise) are certainly engineers. They employ much the same method, skills, and knowledge other engineers do; and, like other engineers, they are concerned with developing, installing, and operating safe and useful devices. They are, however, not ordinary engineers. Most engineers work in organizations where engineering is a central concern. Even in a finance-dominated company like General Motors, engineering is the mother tongue, the language of most of those with whom most engineers must deal.

That, however, is not true of a hospital. Medicine is the mother tongue there. A biomechanical engineer working in a hospital may be the only engineer around. And even when he has a few colleagues, they will together form only a small part of the organization. Most of their dealings will be with physicians, nurses, medical administrators, and others to whom engineering is alien.

This alone suggests that the hospital may be an environment where ordinary engineering ethics is not appropriate. There are other reasons to think so. I will point out only one more here. Engineers generally agree that the safety, health, and welfare of the public comes first. Yet, for physicians, nurses, and other health care professionals, the safety, health, and welfare of the patient, not the public, is what comes first.

Such differences in environment between engineering generally and the engineering done in a hospital suggest questions like these: How, if at all, should the obligations

of engineers working in a hospital differ from those of other engineers? What, for example, should the paramount obligation of engineers in a hospital be?

Questions like these are not easy to answer. Indeed, in the time allowed me today, I could not answer even the two I have asked. I am also the wrong person to answer them. Deciding what you should profess is part of the profession in which you claim membership. I am a philosopher, not a biomechanical engineer. My job here is merely to help clarify the questions so that you, the members of the profession in question, will find them easier to answer.

But how can biomechanical engineers answer questions such as I have asked? You must work them out in much the way you work out other engineering standards, for example, those for safety or reliability. You must make educated guesses, test them, reassess them based on the tests, make such modifications as seem appropriate, test again, and so on.

I have been asked to explain the role of a code of ethics in biomechanical engineering. I shall do a bit less. I shall focus only on the role a code might have in defining the profession of clinical engineering, ignoring entirely similarities and differences between these engineers and other biomechanical engineers--rehabilitation and research engineers--who may work in the same hospital. I do this not to foreclose any questions about whether biomechanical engineering should be one profession or several. My narrow focus is a compromise with the clock, nothing more.

Let's begin with a relatively simple problem. Suppose you are in charge of clinical engineering at Big Bill Hospital. Your work there has introduced you to the products of Hi-Tec, Inc., mostly very expensive diagnostic

equipment. Hi-Tec is a relatively big company, with good service as well as good equipment. You have been impressed by everything of theirs you have seen. Indeed, after some bad experiences with Hi-Tec's competitors, you have recommended some purchases from Hi-Tec even when the competitor's price was significantly lower. When your stockbroker lists Hi-Tec's stock as a good buy, you consider buying a few hundred shares at \$14 each. Should you?

Some things are obvious. Big Bill's purchases are not large enough to affect the overall profitability of Hi-Tec. You will not be able to make money by giving business to Hi-Tec rather than to its competitors. You will not have what most people would think of as a straight-out conflict of interest. On the other hand, you will have a connection with Hi-Tec that could affect your professional judgment. Hi-Tec will, as it were, be a member of your financial family. While you are sure that that connection will not influence you, you recognize that others cannot be so sure. If they knew you owned Hi-Tec stock, they might wonder about your impartiality when you recommended a Hi-Tec product over some other. Your recommendation might carry less weight than it would otherwise.

Let us suppose that Big Bill does not require you to reveal ownership of publicly traded stock. So, you are not, as an employee, required to tell Big Bill if you buy the stock. Your employer has thus left you free to choose between at least these three options: 1) passing up the stock, 2) buying the stock and saying nothing, and 3) buying the stock and informing your employer. Which should you do?

A physician faced with such a question might profitably turn to sec. 8.06(1) of the AMA's Principles of Medical Ethics: "A physician should not be influenced in the prescribing of drugs, devices or appliances by a direct or indirect financial interest in a pharmaceutical firm or

other supplier." Physicians are, it seems, not forbidden to have financial interests that could influence their judgment in ways not in the best interest of their patient. They are only forbidden to be influenced by such interests. So, it seems, if you were a doctor rather than a clinical engineer, you could buy the stock.

But (as we are supposing) you are a clinical engineer, not a physician. Where then can you go for guidance when your profession has no code of ethics of its own? If you were trained as an electrical engineer, you might turn to the IEEE's code of ethics. Article III, Sec. 1 would tell you to "inform [your employer] of any circumstances that could lead to a conflict of interest." For an electrical engineer, the crucial question is not whether she will be influenced but whether she could be.

If, instead, you had been trained as a mechanical engineer, you might turn to ASME's ethical Guidelines. You would get much the same answer: "Engineers...shall promptly inform their employers or clients of any business association, interests, or circumstances which could influence their judgment or the quality of their services." (4.a.)

The American Association of Engineering Societies (AAES) sets an even higher standard. According to its Model Guide for Professional Conduct, "Engineers disclose to affected parties all known or potential conflicts of interest or circumstances which might influence--or appear to influence--judgment or impair fairness or quality of performance." Even if you were sure owning the stock could not affect your judgment, you would be obliged to inform the hospital because owning the stock might appear to influence it (if ever anyone there came to know of it).

This similarity between the IEEE, ASME, and AAES codes suggests that engineers generally agree that they must be

held to a higher standard than physicians. That isn't necessarily so. If you are a Professional Engineer (P.E.), you might instead have turned to the NSPE's Code of Ethics. You would then have found that Art. III, Sec. 5 reads very much like the AMA's code: "Engineers should not be influenced in their professional duties by conflicting interests." There is nothing about disclosure of what merely "could" influence your judgment.

So, what are you, an ordinary clinical engineer, to do? You could, of course, hold yourself to the highest standard possible. But why do that if other engineers would not do the same and your doing so burdens you without benefit to your employer? Why should you not make a little extra money if you can do so properly?

Of course, the question is, What is proper here? Ordinarily, no matter what stock you bought, you would not want to notify your employer. Your investments are your own business. You have even more reason to keep any purchase of Hi-Tec from your employer. You want to avoid unjustified undermining of your professional authority. According to the NSPE, you can, it seems, properly keep that information confidential, so long as you don't allow ownership of Hi-Tec stock to influence your professional judgment. But, according to the IEEE, ASME, and AAES, if you own any Hi-Tec stock, you have a professional obligation to tell your employer. So what should you do?

You might call up other clinical engineers in the area and ask them what they would do. Engineers in specialized fields sometimes develop a consensus about certain ethical questions just as they do about the reliability of a certain instrument. If the question comes up enough, you may get a relatively clear answer. If, however, the question does not come up enough, you are likely to get a range of half-thought-through opinions which will leave you more or

less where you began. Let's suppose you find no consensus. What then?

The way I have set up the problem, the best you can do is muddle through. Without a standard governing clinical engineers as such, there are several morally permissible options. The choice among these is a personal, rather than a professional, matter. You can't know what you should do as a clinical engineer.

If, as I hope, you find this answer unsatisfying, you have one reason to want your profession to have its own code of ethics. A code can turn a morally indeterminate question like this into a question of professional ethics with a relatively determinate answer. A code of ethics does that by creating a convention for all members of the profession to follow. If generally following the convention will give all of you something you all want--whether freedom to make money on the side, the greater trust of employers, or some combination of these or other goods--each of you will have reason to want everyone else in the profession to follow the convention even if you must do so too. If the others generally do follow it, realizing the convention in practice, you will be morally obliged to do the same. You could not fairly take the benefits the convention creates without doing your fair share to maintain it.

So, a code of ethics is, as such, not mere good advice or a statement of aspiration. It is a standard of conduct which, if generally realized in the practice of a profession, imposes a moral obligation on each member of the profession to act accordingly. A profession's code of ethics necessarily sets a standard below which no member of the profession can properly fall.

A code of ethics will do that no matter how high the standard it sets if, but only if, the standard is realized in the practice of the profession. That is a good reason

for a profession not to make its code too demanding. If, for example, the code sets its standard so high that few could hope to survive in the profession if they generally adhered to it, either all but a few saints would avoid the profession, or most of those in the profession would ignore the standard. The code would either define a dying profession or serve as a mere statement of aspiration in a profession defined in other terms. A living code of ethics is always a compromise between ideal and reality.

So, one reason clinical engineers might want to have a code of ethics of their own is to tailor their professional obligations to the special realities of hospitals. This may mean setting their standards higher or lower than those of other engineers. What it must mean is setting their standard higher than those their employers have set. A code is useless where morality--for example, the morally permissible promise contained in the employment contract--leaves only one option. In this respect, living by a professional code is necessarily "public service", that is, serving others in ways ordinary morality does not require.

Adopting a realistic code is part of making an occupation a profession. But it is only part. Let me now briefly describe some others.

A codes of ethics cannot actually guide conduct unless those to be guided know the code. Since a code necessarily sets a standard higher than ordinary morality, even a morally decent person is not likely to do what the code requires unless she knows what in particular the code requires. The code must be learned in just the way other engineering standards are. The code can be taught as part of the profession's basic curriculum or its continuing education. It can also be taught in less formal ways, for example, by publishing articles on particular questions of ethics in the profession's journals.

Education is probably the primary means by which a profession puts its code into practice. But every profession needs something more, some means of enforcement. The minimum is the informal enforcement that comes from one member of a profession saying to another, "But that would be unethical." Such a rebuke is barely distinguishable from education. Beyond this minimum are group pressure, peer review, reputation in the profession, formal certification of various sorts, disciplinary committees with the power to censor, suspend, or expel from the profession, and state licensing with the power to bar from employment.

These educational and enforcement activities almost define profession in the public mind. They all presuppose a code of ethics of some sort, a minimum standard common to all members of the profession. The code need not be written, but the more that is in writing the easier it will be to teach the code, especially in a young profession.

Though there is much more to say about codes of ethics, I have now said all I can in the time allowed. Thank you.

FURTHER READINGS (available through CSEP as Publication #)

Davis, "Conflict of Interest", Business and Professional Ethics Journal 1 (Summer 1982): 17-27. #121.

Davis, "The Moral Authority of a Professional Code", NOMOS 29 (1987): 302-337. #112.

Davis, "Why Engineers Should Support Their Profession's Code". #119.

Davis, "20 Ways to Put Life into a Code of Ethics". #130.

Davis, "One Social Responsibility of Engineering Societies: Teaching Managers About Engineering Ethics", (ASME: New York, 1988). #144.

Davis, "The Ethics Boom: What and Why", Centennial Review 34 (Spring 1990): 163-186. #161.