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FOR ENGINEERING AND SCIENCE

## Responsibility

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### Description

Commentary and Part 7 of the Occidental Engineering Case Study by Michael McFarland, S.J.

### Body

## Occidental Engineering Case Study: Part 7

When Wayne in the Occidental case loses his argument with Deborah, his manager, he still faces an ethical dilemma. If he is still convinced that there is something wrong with certifying the defective software, he must decide whether he should go ahead and do it as ordered, refuse to cooperate, or actively oppose any such action. If he does nothing, and an accident does occur because of the flawed software, is it his fault? This raises the issue of responsibility.

In making an ethical judgement, it is not enough to decide what is right to do or what should have been done in a certain case. It is also necessary to decide to what extent one is or was responsible for doing what is right. It is certainly wrong for the

driver of a car to crash into another car parked by the side of the road; but if the driver had lost control of his car because he suffered a heart attack or if he didn't see the parked car, he cannot be blamed for the accident, unless he could have avoided the circumstances that led to it.

In the case of an individual act, assessing responsibility is relatively straightforward. To be held responsible, the agent must have *knowledge* of the act and its consequences and must have the *freedom* to choose or not choose the act. The driver who has a heart attack and loses control of his car is not in a position to choose whether or not to hit the parked car. The driver who comes around a corner driving at a safe speed in what he has every reason to believe is a clear travel lane and unexpectedly plows into a car that has been left in the road did not know and could not be expected to know that his actions would lead to a crash. In neither case would the driver be ethically responsible for the crash. In the first case he lacked the freedom, in the second the knowledge.

When a person acts in a social and institutional context, the problem of responsibility is much more complex. As part of a group, one may be asked to take part in, or at least not interfere with, actions with which one does not agree, as in Wayne's case. Or it may be clear that some action is called for, but not at all clear who should take that action. The Red Cross says the blood supply has fallen so low that there is a crisis for the hospitals. Someone ought to donate; but why should it be me?

Another problem is that institutions so constrain people's options and their ability to act that sometimes they cannot satisfy all the ethical demands on them. Prior to the disastrous flight of the space shuttle Challenger, engineer Roger Boisjoly of Thiokol, Inc., the maker of the rocket motor that failed and led to the crash, had serious doubts about the safety of the O-ring seals, especially at low temperatures. He made his misgivings known to his managers, but when they chose to ignore him, he went no further. To do more, he felt, would have been disloyal and disrespectful of the prerogatives of management. As he later told investigators, "I must emphasize, I had my say, and I never take [away] any management right to take the input of an engineer and then make a decision based upon that input, and I truly believe that....So there was no point in me doing anything any further."<sup>40</sup> Ben Powers of NASA was in the same position. Both were aware of an inordinate risk to the lives of the astronauts, and both wanted to act to protect them; but they were frustrated by both the personnel and the procedures of the organizations in which they worked. If

management had been more responsive, or if there had been alternative procedures for airing safety concerns, the tragedy might have been prevented. As it was, Boisjoly and Powers could not do anything effective without violating what they saw as their obligations to their employers. Ironically, even the loyalty they showed was not enough. Boisjoly was treated as a traitor at Thiokol and eventually put on permanent leave for speaking publicly about the company's part in the disaster. [41](#)

Incidents like this show the power of institutions to influence and shape our ethical decisions. But we must also acknowledge the power of our ethical decisions to shape institutions. Therefore there are two aspects of responsibility to consider in a social context: our responsibility *within* institutions and our responsibility *for* institutions.

## **Responsibility within Institutions**

In a social or institutional context, ethical responsibility can be so diffused that no one feels responsible, even when organizational roles are well-defined. This is especially true when positive action is required to bring about some good or avoid some harm. If it is wrong to lie, then it is wrong no matter how many people are involved. But who is required to step forward and tell the unpleasant truth? Beating someone with a baseball bat is wrong no matter whether one is alone or in a mob. But when is one required to step forward from a crowd of bystanders and stop such a beating, or, for that matter, to alert the public to the dangers of a particular technology? These questions become even more obscure and difficult when the people involved are bound together by institutional loyalties and contractual obligations.

In their study of corporate responsibility, [42](#)Simon, Powers and Gunnerman looked at these questions. They used as an analogy the case of Kitty Genovese, who was stabbed to death outside her apartment in Queens while at least thirty-eight of her neighbors looked on, none of whom even called the police, let alone intervened. She was attacked three different times by her assailant over a half hour, so there was time to save her. It is obvious enough that the failure of the neighbors to help was wrong, but more difficult to explain why and how. When is there an obligation to take positive action to prevent harm to another? The authors identified four conditions that must be met:

1. **Critical need.** Some fundamental good or right must be threatened.
2. **Proximity.** This is "largely a function of notice," but it also involves role relationships. "We do expect certain persons and perhaps institutions to look

harder for information about critical need. In this sense proximity has to do with the network of social relations that follow from notions of civic duty, duties to one's family, and so on." [43](#)

3. **Ability to help** without damage to self and without interference with important duties owed to others.
4. **Absence of other sources of help.**

Condition 2 says that those who are in the best position to know about a serious threat have the strongest obligation to act. In particular, when the threat comes from a certain piece of technology, the engineers who are most intimately involved with the technology and best understand its consequences have a special duty to protect the safety of the public. However, condition 3 qualifies that obligation: it only exists if action can be taken without any serious risk to the agent. This is a very conservative requirement. If the threat is serious enough, say the near-certain, catastrophic meltdown of a nuclear power plant, an engineer ought to be willing even to risk his or her job if there was a chance of preventing the disaster.

The reason for the reluctance to *require* an engineer to take on significant personal risks to help out is that it is unfair. The engineer did not cause the danger, at least not intentionally, so he or she should not have to pay so high a price for preventing it. Yet in many instances that is the only choice, because of the way the organization is structured. That is why whistle-blowing cases like Boisjoly's are often so tragic. [44](#) Either the engineer suffers unfairly or the public suffers even more unfairly. There is no choice that satisfies all the ethical demands of the situation.

That is why it is not enough in such cases to ask what the individual should do, that is, what is the ethical choice. The more important question is how to change the institutional context so that there is an ethical choice.

## **Responsibility for Institutions**

To return once more to our original case, the corporate structure and climate at Occidental Engineering was part of the reason why Deborah and Wayne faced such difficult ethical decisions and why the outcome was so unsatisfactory. If the company had had an uncompromising commitment to quality and safety, it would not have put itself and its engineers in the position of having to cut corners to satisfy its commitments; and when safety concerns arose, it would not have tried to suppress them. Furthermore if the company had had more respect for its engineers, especially those like Wayne who are ultimately responsible for safety, it would have

given them more input in formulating the bid, to make sure they could do what they promised, and it would have provided channels for concerned employees and managers like Wayne and Deborah to pursue concerns about safety and integrity without feeling they were endangering their jobs or those of their employees. As it was, Wayne and Deborah found themselves in a position where whatever they decided, they would violate some ethical obligation. This did not excuse them of the responsibility to do what was right under the circumstances, but it was unfair to them. Because of the institutional context, they were in a position where any choice they made would be hurtful in some way. A satisfactory resolution of this case, therefore, would have to include more than a prescription for how Wayne and Deborah should have acted. It must include an analysis of how the organizational context in which they operate should change to enable and support ethical action.

Robert N. Bellah and his associates, in *The Good Society*, [45](#) have written about the importance of institutions in our moral life:

It is tempting to think that the problems that we face today, from the homeless in our streets and poverty in the Third World to ozone depletion and the greenhouse effect, can be solved by technology or technical expertise alone. But even to begin to solve these daunting problems, let alone problems of emptiness and meaninglessness in our personal lives, requires that we greatly improve our capacity to think about our institutions. We need to understand how much of our lives is lived in and through institutions, and how better institutions are essential if we are to lead better lives....We Americans tend to think all we need are energetic individuals and a few impersonal rules to guarantee fairness; anything more is not only superfluous but dangerous—corrupt, oppressive, or both....It is hard for us to think of institutions as affording the necessary context within which we become individuals; of institutions as not just restraining but enabling us; of institutions not as an arena of hostility within which our character is tested but an indispensable source from which character is formed. [46](#)

Institutions embody and perpetuate the values of those who shape them. If those values are harmful, like carelessness and greed, the institution will be destructive, and will frustrate the efforts of those within and around it to do what is right. On the other hand, if those values are good, the institution by its normal operation will bring about much good, and will make it much easier for its members to be ethical.

Institutions do not just happen. They are the result of human choices. Ultimately we are responsible for them. Our ethical obligations are not just to act ethically in whatever situation we find ourselves, but to build ethical institutions. This means institutions that are fair, that respect human dignity and freedom, and whose purpose is to achieve some good in whatever domain they operate in. This may seem like an impossible task. The institutions are too large and powerful, and we have so little influence on them. That is true if we think ourselves only as isolated individuals. But that is where our thinking needs to change, as Bellah and his coauthors point out. Institutions are powerful because they can mobilize purposeful, organized, collective action. It takes purposeful, organized, collective action to change them. That is part of our ethical responsibility.

It is not always enough, then, for ethics to evaluate individual judgements and actions. It must also step back and examine the social and institutional context in which ethical issues arise, and to ask how that context needs to be changed to enable and support ethical behavior.

**Next "[Summary: Part 8](#)"**

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40. Trudy E. Bell and Karl Esch, "The Fatal Flaw in Flight 51-L," *IEEE Spectrum*, Vol. 24, No. 2, February, 1987, p. 49. [^](#)
41. *ibid*, p. 51. [^](#)
42. John G. Simon, Charles W. Powers, and Jon P. Gunnerman, *The Ethical Investory: Universities and Corporate Responsibility*, New York: Yale University Press, 1972. [^](#)
43. *Ibid*, p. 24. [^](#)
44. See, for example, Alan F. Westin (ed.), *Whistle-blowing: Loyalty and Dissent in the Corporation*, New York: McGraw-Hill, 1981. [^](#)
45. Robert N. Bellah, Richard Madsen, William M. Sullivan, Ann Swidler, Steven M. Tipton, *The Good Society*, New York: Alfred A. Knopf, 1991. [^](#)
46. *ibid*, pp. 5f. [^](#)

## Notes

Author: Michael McFarland, S.J., a computer scientist, is the former president of College of the Holy Cross and was a visiting scholar at the Markkula Ethics Center.

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