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FORUM**PROFESSIONAL ETHICS IN ENGINEERING:
THE CHALLENGER AND CORPORATE CULTURE**

Joseph G. Ferrante

INTRODUCTION

Ethics in engineering is an important issue that affects the daily lives of almost everyone in the world. Because engineers and related scientists design, develop, and manufacture the many products that the public-at-large uses or consumes on a daily basis, it is in the best interest of all concerned that engineers be held to high ethical standards. This paper will reflect on the corporate culture issues involved in ethics in engineering, and specifically how corporate culture can affect ethical engineering and how it did in the case of the Challenger disaster.

GENERAL DISCUSSION

While it is important to understand the events surrounding the Challenger disaster, and particularly the recollection of the engineer involved, Roger Boisjoly, the events will not be recounted here, as most of the events have become common knowledge in the aviation/aerospace communities. However, there is a more important question at hand to discuss: what role does corporate culture play in engineering ethics?

According to a leading researcher in the field of ethics in engineering, engineers have a responsibility that goes far beyond the building of machines and systems. This researcher observes that this cannot be left to the technical illiterates, or even to literate and overloaded technical administrators to decide what is safe and for the public good (McDonald 10).

As all of us as professionals know, we must tell what we know, first through normal administrative channels, but when these fail, through whatever avenues we can find. Many claim that it is disloyal to protest. Sometimes the penalty disapproval, loss of status, even vilification—can be severe. The fact that people are in a hierarchy tends to amplify misperceptions. A low-level person has a fear that something might happen and

reports it to a higher level. As it goes up the hierarchy, information gets distorted, usually to reflect the interests of the managers (Bell and Esch 50).

By their very natures, corporate cultures tend to try to ignore the unpleasant, a situation that can only be

counterbalanced by deliberately creating a culture that encourages people to bring up unpleasant information. One such philosophy, developed by The Boeing Company, is called “Working Together.” Working together is an idea that evaporates if you think too hard about it, but it seems to have a fierce power that can inspire men and women.

Working Together is a point of conflict to begin with. An engineer with pride tends to want to find solutions to his problems. And it’s against nature to go out publicly and explore the particular problems that an engineer faces (Sabbagh 66). Working Together embodies that very notion that goes against the in-grained nature of engineering. Working Together teaches engineers that attention can be given to a particular problem, by making it all right to express your problems. The belief that no one person can find a solution as easily as a large group is the cornerstone principle of “Working Together.”

In a group trying to move ahead with a decision, you find that those people that have anything negative to say are unpopular, so a manager deliberately has to encourage people taking the devil’s advocate position. In a crisis situation, such as the Challenger case, somebody has got to think about the possibility of something going wrong, and to use a worst-case scenario approach, as Roger Boisjoly did in predicting that there would be loss of life on the launch pad.

Corporate cultures that do not embrace close working relationships such as Boeing’s, tend to “kill the messenger” bearing the bad news rather than punish those

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directly responsible for a consequence. And while it is generally thought that this culture is the result of managers, it becomes apparent that it is all too often the result of line workers. In these types of situations, people who “hang tough” with their organization tend to do very well, in the fundamental belief that not protesting is highly valued and that the very organization they may have doubts about will always protect them.

Unfortunately, these same people tend not to use acceptable risk analysis in determining what is right and what is wrong. And in engineering, this can be a deadly combination. As Roger Boisjoly himself stated, “More than 20 years ago I received some superb advice from a QA (quality assurance) manager that I have applied throughout my career. He told me to ask myself the following question when faced with a tough question of whether a product was acceptable: ‘Would you allow your wife or children to use this product without any reservations?’ If I could not answer that question with an unqualified, ‘Yes,’ he said, I should not sign off on the product for others to use. That is what ethical analysis of acceptable risk should be,” (Boisjoly 11).

Yet, it is this very, correct belief that ended Roger Boisjoly’s career with his employer, Morton-Thiokol, in the wake of the Challenger disaster. As a result of his testimony before Congress regarding problems with Challenger’s design, Roger Boisjoly was isolated from the rest of his colleagues in the belief that his very testimony was causing more harm than good to Morton-Thiokol, a belief championed by none other than the Chief Executive Officer of Morton-Thiokol himself.

This brings up an interesting notion commonly believed in the corporate world, that company culture stems from top management and “fans out” to the rank and file below. It must be noted, however, that even with a culture stemming from the top, it is often hard to change the minds of workers on the line, who might be used to the “old-way” of doing things. However, with quality such an important issue in any business, it seems as if that trend is changing. Many people want to work in a non-hostile, open environment. The more people that get involved with that

type of attitude, the easier it becomes to break down the barriers of the few that dismiss “new age” working environments (Sabbagh 66).

The author of this paper, himself a Chief Executive Officer, considers this such an important item, that employees are considered a “strategic asset” with his company, and as such are included in the strategic plan, which indicates that his company wishes to “attract energetic, dedicated, and good-spirited employees and compensate them above industry standards,” (Jet Development Group, Inc.). While this does not expressly address the notion of corporate culture, the inference drawn is that employees are the most important assets that any company has, and as such those employees have a right to share in the management and direction the company takes.

And while the corporate culture put in place by Boeing and others has had tremendous effect, especially in the engineering world, it is of interesting note what the corporate culture of Morton-Thiokol has gained: nothing. The fate of Morton-Thiokol? They are out of business.

CONCLUSION

The research on the subject of whistleblowers leads to two conclusions. First, that whistleblowers tend to achieve problem resolution through their organizational chain of command. And second, in almost every case they are punished by the organization after whistleblowing outside of the organization. Nowhere was this more evident than in the Challenger disaster and the Morton-Thiokol engineer, Roger Boisjoly.

Today we need more critical pronouncements and declarations by engineers in high professional responsibilities. In some instances, such criticism must be severe if we are properly to serve mankind and preserve our freedom. Hence it is of the utmost importance that we maintain our freedom of communication in the engineering profession and to the public. Perhaps if the engineering community had followed this advice fifteen years ago, Challenger and her seven crew-members might still be flying, exploring the unknown space beyond our surly bonds of Earth. Instead, little remains but ashes. □

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