

# Chapter 1

## Engineers, Emotions, and Ethics

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### ABSTRACT

*This chapter tries to answer the question: What part, if any, should emotion have in making engineering decisions? The chapter is, in effect, a critical examination of the view, common even among engineers, that a good engineer is not only accurate, laconic, orderly, and practical but also free of emotion. The chapter has four parts. The first, the philosophical, provides a critical analysis of the term “emotion.” The second and third parts show how that analysis helps us understand the relation between emotion and engineering. It explicates what a reasonable emotion is. These two sections are organized around an ethical problem concerning management’s rejection of engineering judgment. The fourth part, the pedagogical, delineates how we should develop a curriculum for a course in engineering ethics. It suggests teachers of engineering ethics should take time in class to help students accept the fact that engineering has an emotional side, for example, that doing good engineering is likely to delight them and doing bad engineering to depress them.*

**Mr. Spock:** *Interesting. You Earth people glorify organized violence for 40 centuries, but you imprison those who employ it privately.*

**Dr. McCoy:** *And, of course, your people found an answer?*

**Mr. Spock:** *We [Vulcans] disposed of emotion, Doctor. Where there is no emotion, there is no motive for violence. —Star Trek (First Season), “Dagger of the Mind”, November 3, 1966*

Spock is probably an engineer (in today’s sense).<sup>1</sup> In addition to high rank in a graduating class of Starfleet Academy, there are at least two reasons

to think so. First, though he is nominally the USS Enterprise’s “Science Officer”, much of what Spock does looks like engineering rather than science. For example, he invents devices to order. Second, he is the opposite of the “mad scientist”. He is accurate, cool, laconic, orderly, and practical. He prefers fact to imagination, calculation to hope. Spock presents himself as an agent of reason in a world that emotion might otherwise overthrow. He embodies an ideal to which many of my engineering students, including many of the women, feel attracted. Indeed, most practicing engineers I know have stories in which they present themselves in just this way, for

example, when they have had to explain why the heat pump that Marketing promised a customer cannot be built: the specifications violate the first law of thermodynamics. The engineer had to say (something like), “Whatever Marketing would like, no amount of inspiration, team-building, incentivization, or even budget can make these specifications a reality.”

Yet, there are at least two reasons to doubt that Spock is the proper ideal for engineers. The first is that Spock is only half human, biology inexplicably allowing for a Vulcan father. He is an outsider among humans as well as Vulcans. Of course, the popular view of engineers as “nerds”, “dweebs”, or “geeks” suggests something similar. Nonetheless, all the engineers we have (or are likely to get any time soon) are human; they worry, hope, love, and otherwise have an emotional life much like the rest of us. They are not even half Vulcan.

Second, there is the question whether even full-blooded Vulcans could have (as Spock put it) “disposed of emotion”. How we answer that question must, of course, depend (at least in part) on what we mean by “emotion”. Much the same dependence exists when we ask about the place emotion should have in engineering. What I shall argue here is that, on the most defensible definition of “emotion”, emotion is unavoidable in engineering – and, indeed, in life generally – not as an evil, but as positive good. Even Vulcans must have emotions in this sense – and, on the whole, would be better for it. Although Spock may be right that “where there is no emotion, there is no motive for violence”, he can be right only if it is also true that where there is no emotion, there is no motive to do anything significant. Life without emotion is merely the mind’s algorithms or the body’s automatic functioning, hardly life at all. The problem for engineers, as for all humans and Vulcans, is not to do without emotions but to have the right emotions – at the right time, to the right degree, in the right way, and directed toward the

right object. Not only is this true of emotion in the most defensible sense but even in some popular but less defensible senses.

This chapter has four parts. The first, the philosophical, provides an analysis of emotion in sufficient detail for our purpose, sketching a defense of that analysis along the way. The second and third parts show how that analysis helps us understand the relation between emotion and engineering. The fourth, the pedagogical, briefly considers how the analysis might help to structure a course in engineering ethics.

I shall say nothing here about what is now often called “emotional intelligence”, that is, the ability to monitor one’s own and others’ emotions, to discriminate among them, and to use that information to guide one’s thinking and actions (Mayer, DiPaolo, & Salovey, 1990, p. 189). My subject is having emotions, not knowing about them. How important having emotions is to having the corresponding intelligence is another question I shall not address here.

I shall also try to say as little as possible about other psychological states, such as moods and intuitions. Whatever their interest to philosophers of mind, they are beyond the focus of this chapter.

## **I. DEFINING EMOTION**

What then is emotion? If we define emotion as “a strong feeling, such as anger, fear, joy, love, or revulsion” (as many dictionaries do), Spock may be right. We can imagine something like a human life without strong feelings – and so, perhaps, without violence.<sup>2</sup> There are nonetheless at least four objections to this popular way of defining emotion. The first is that it creates a problem of measurement. Even assuming we had an “emotion meter” (as we may soon have), we would still have the problem of deciding how strong a feeling like anger or fear must be before it is strong

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