

## Chapter 2

# Engineering as Normative Practice: Ethical Reflections on Tasks and Responsibilities

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### ABSTRACT

*The concept of social practice was introduced by Alisdair Macintyre as a means for ethical reflections for professional situations. This concept has been extended by Hoogland and Jochemsen to include different types of norms. The term “normative practice” indicates that practices are determined by the norms by which they are defined. Engineering is such a normative practice, one that is part of a more complex situation of technological developments, in which other normative practices are also involved (e.g., a government practice, a business practice, a consumer practice). The norms in a normative practice are not only ethical norms but also include task descriptions. In this chapter, the role of both non-ethical and ethical norms in engineering as normative practices is analyzed. This is illustrated by two case studies: one from military ethics (with a specific focus on the role of technology) and one from synthetic biology.*

### INTRODUCTION

Engineering is an increasingly complex activity in which many actors are involved. One of the challenges in engineering ethics is the “many hands” problem: the complex interactions between different actors make it difficult to decide who is responsible for failures of the products of engineering. The famous Challenger case, which can be found in many textbooks for engineering ethics, is a classic illustration of that. Engineering, however,

is not entirely unique for that. In the ethics of care a similar situation occurs. Patients, specialists, hospitals, insurance companies, governments and suppliers of medical equipment and medicines, to mention some of the major players, all interact in this field of activities. In the ethics of care, an analytical tool has been developed that can also be useful for engineering.

This tool builds upon the concept of social practices that was introduced by Alisdair Macintyre (MacIntyre, 1984). Macintyre developed

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this concept in the context of his virtue-ethical approach and refers to Aristotle's suggestion that ethical behavior can only be learnt in the practice of life. Macintyre goes on by pointing out that one needs to differentiate between different professional practices. What a "good human" would do, should be specified for a "good doctor", a "good teacher", a "good butcher", etc. What is a morally "good" rule in one practice may be not acceptable in a different practice (for instance, the butcher and the surgeon both cut meat, but the situations are morally quite different, so what is morally "good" in one case, may be unacceptable in the other). Macintyre's concept of social practice does not yet contain a typology of different norms. This was introduced by Hoogland and Jochemsen. They combined Macintyre's concept of social practices with some concepts that had been developed by Herman Dooyeweerd, a Dutch philosopher who was one of the founding fathers of the so-called reformational philosophy school, in which Hoogland and Jochemsen also can be situated. Their first domain of application was the ethics of care. In this chapter, their approach will be applied to the social practice of engineering. By looking at different types of norms, the concept of practices also is extended beyond the limitations of a virtue approach in ethics, as the norms can also be more Kantian in nature (duties) or refer to the need to avoid or strive towards certain consequences. For that reason, the Hoogland–Jochemsen approach to practices can be better characterized by the term "responsibility". It combines different ethical approaches by incorporating different types of norms. Also, it combines ethical and non-ethical (e.g., functional) norms and thus gives a wider perspective on the dilemmas with which actors in the practice are confronted. In the next section, the concept of "normative practices" will be described. In the sections following that, it will be applied to engineering.

## **THE CONCEPT OF NORMATIVE PRACTICES**

In his analysis of social practices (although the term as such did not yet exist in his time), the Dutch philosopher Herman Dooyeweerd distinguished between the structure and the direction of that practice (Dooyeweerd, 1953). The difference between these two concepts can be illustrated by examining how a business corporation operates. The structure of the company indicates the various departments or divisions within such a company, each of which has certain tasks and responsibilities. In the well-known electronics company of Philips, for instance, there is a Board of Managers, a corporate laboratory (Philips Research; de Vries, 2005b) and a number of Product Divisions (one for medical equipment, one for audio and video consumer products, etc.), each of which has its own division laboratory and factories for production. Each of these components in the corporation has its own tasks and responsibilities and in the history of this company, a lot of debates have been ongoing about these. Decisions on how tasks and responsibilities are divided over the various departments defines the "structure" of the company. The direction has to do with the deeper values the company holds. These should be distinguished from the goals in the structure. Each Product Division has a task in bringing profit to the company, but this is more related to the fact that we are dealing with a company that can only exist when profit is made. This is not a choice, it is a necessary element in the structure of the company. Companies can, however, decide on deeper values. One company may, for instance, decide that pleasing the shareholders will be the ultimate value that directs all activities towards this ultimate concern. A different company may decide that the customer's values should be the primary concern for the company. "Customer

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