INTRODUCTION

This chapter will examine the role of the professional engineer in the labour process. In particular it will compare engineers’ perceptions of the relationship between technology and the organisation of work in two contrasting production environments: a mass production food company and a quality production aerospace company. It will assess the perspective engineers in the two settings have towards the division of labour and the role of technology in the work situation. In addition the chapter will examine how engineers’ own labour process is affected by technical change and their relationship with management. These latter questions will only be discussed in relationship to engineers in the aerospace company.

ENGINEERS AND LABOUR PROCESS THEORY

Within labour process analysis, white-collar engineers – those responsible for design and planning functions within the industrial firm – have been primarily identified as part of management’s technical cadre. Within this hierarchical position, engineers’ design production facilities within which other workers are subordinated. They are seen as part of mental labour, responsible for separating direct, production workers from any engagement with formally designing and managing their conditions of production. Engineers’ design decisions over the interface between workers and machinery are made without the involvement of the workers themselves, and are informed by criteria of economic efficiency, technological expediency or the needs of the powerful within the firm. Thus, according to Braverman (1974), the management hierarchy of monopoly capitalism possesses an implicit Taylorian ideology, developed by engineers, in which the
subordination and deskilling of labour, and fragmentation and control of work, are paramount. Noble (1979) also, following Braverman, views the engineer and engineering as embodying capitalist social relations of production:

the distrust of human beings by engineers is a manifestation of capital’s distrust of labour. The elimination of human error and uncertainty is the engineering expression of capital’s attempt to minimize its dependence on labour by increasing its control over production. The ideology of engineering, in short, mirrors the antagonistic social relations of capitalist production. (Noble, 1979, p. 30)

For Braverman (1974, pp. 403–8) white-collar engineering occupations are polarised into routine, proletarianised positions performed by technicians, and bourgeois managerial posts held by qualified senior engineers. For Noble, the professional engineer in monopoly capitalism performs the functions of capital in a non-contradictory way, unlike the 19th century engineering craftsman, and is fully integrated into the managerial apparatus of the firm. Both these views allow little room for ideological or political conflict between engineers and managers over the former’s role in perpetuating capitalist social relations. Moreover, within their analysis, differing historical circumstances, national settings or industrial sector conditions are subordinate to the structural or global forces of capitalist production which over-determine engineers’ place in the division of labour. Irrespective of context, professional engineers are tied to capital.

An alternative labour process perspective on the role of the engineer in capitalism is presented by the Cooley (1980). His work suggests that there are two competing work organisation ideologies within engineering, not a single capitalist one. These I would define as craft and professional–scientific perspectives on the division of labour. Cooley is not explicit about the basis of this categorisation, but it is possible to suggest that craft ideologies are a reflection of either of these factors: (i) the historical origins of engineering as a practical craft; (ii) the wage labour condition of engineers and their common bond with other workers and differentiation from management; (iii) the apprenticeship method of training, which supports a definition of engineering as a holistic, integrated labour process, with cooperative manual and mental components that are not easily divorced. Conversely, professional–scientific ideologies reflect: (i) the principles of Taylorism or scientific management pioneered by