1 Perspectives of R&D Organization

1.1 Four structures for managing international R&D organization

Many companies struggle with obsolete R&D structures when attempting to draw on the potential of global R&D. Traditional R&D organization proves to be insufficient for many new challenges: R&D managers must learn to manage an additional organizational level in order to ensure global R&D efficiency.

For our study of global R&D management and organization we therefore suggest four levels of structure in organization (Fig. 1.4.1). *Functions and hierarchies*, i.e. organizational charts, reporting structures and specialized research departments (Structure II), are important to maintain a status quo and improve highly routinized tasks, but they are inappropriate for mastering the dynamics of global innovation. In particular, the *geographical distribution* of R&D (Structure I) exerts a significant influence on the company's overlaying organization structures. The regional and hierarchical structures are the bases for transnational organizations and, at the same time, responsible for many barriers in global R&D management (Fig. I.4.2).

In our research sample we have found promising approaches to organizing industrial R&D in technology-intensive companies on a global scale. These approaches were not restricted to special R&D offices or new management functions. The companies which we studied were found to address global R&D management in an exceptional way and were more concerned with the way projects are carried out, processes are designed, personal networks are established and informal links are maintained. We discerned their approaches along the two principal objectives of increasing *R&D effectiveness* and improving *R&D communication*. They constitute Structures III and IV (Fig. I.4.1). These two overlaying structures can help to overcome the barriers introduced by geography and rigid functional organization (Structures I and II).
1.2 The project / process and informal links / network structures

The project and process structure is defined as the sum of all corporate mechanisms and procedures that do not fit into the general hierarchical line structure. In international R&D, elements of this structure address the increasing demands on flexibility and dynamics in corporate innovation. This structure also affects the creation and sustainability of an informal network structure encompassing relations both within and outside the company. Since this informal network structure powerfully transcends the entire organization, we expect great potential to be exploited by managing this network structure more deliberately. Constituents of overlaying structures as described in more detail in this chapter all affect informal structures.

The idea of viewing an organization as a set of interlinked structures is not new. Our model is related to the hypertext organization of Nonaka and Takeuchi (1995: 166-171), which is based on a Japanese publication by Nonaka and Konno in 1993. They point out that there are two types of knowledge, explicit and tacit. Knowledge creation demands a new organizational structure called ‘hypertext organization’. This organization consists of a project-team layer, a business-system layer, and a knowledge-base layer. The key characteristic of the hypertext organization is the ability of its members to shift contexts.

Schoonhoven and Jelinek (1990) distinguish between formal, quasi-formal, and informal structures. Formal structure is captured in the organization charts as sub-units, positions, and reporting relationships; and informal structure consists of the