Designing innovative organizations
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One of the earliest books to appear under the title *The Management of Innovation* was written more than 40 years ago by Burns and Stalker.[4] Not surprisingly, it does not deal with all the issues and techniques discussed in handbooks on the same subject today. It does not contain discussions of research and development, stage-gate processes, multi-disciplinary teams, project management and all the other practices associated with modern innovation management. Instead, it deals with the relationship between organizations and their environment. For Burns and Stalker, management of innovation was concerned with survival in a turbulent environment. Basically, they argued that if changes are frequent and unpredictable, the organization needs to be structured in such a way that it can react quickly and creatively to whatever comes up. In their empirical

[3] Dankbaar, B. (ed) (2003), *Innovation Management in the Knowledge Economy*, London: Imperial College Press.
[4] Burns, T. and Stalker, G.M. (1961), *The Management of Innovation*, London: Tavistock.

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work, they had found that organizations operating in a changing environment had what they called "organic" structures, characterized by loosely defined tasks and responsibilities, horizontal rather than vertical communication and considerable latitude for employees to guide and direct their own work. These structural characteristics enabled organizations to react and adapt to challenges in the environment.

More recent studies tend to define innovation management in a more proactive fashion. Innovation management today involves the implementation of strategies for the more or less continuous renewal of the product portfolio of companies and of the underlying production processes. This is more than reacting to changes in the environment; it also aims actively to change and indeed create the environment in which the firm wants to survive. Are the insights offered by Burns and Stalker still useful today? Later research has shown that successful innovative organizations are not necessarily characterized by loosely defined tasks and responsibilities and other features identified by Burns and Stalker. And indeed, these features seem to be more appropriate for small organizations or for research laboratories than for big corporations. But the comparison of organizations with organisms is still useful to understand the design requirements for innovative organizations. Burns and Stalker showed that the traditional "mechanistic" design of organizations was inadequate in a rapidly changing environment. They argued that organizations had to be perceived as open systems, just like organizms that survive in constant interaction (breathing, digesting) with their environment.

Being organic, then, implies the ability to perceive disturbances, changes and chances in the environment and to act upon these perceptions in a timely fashion. Over the past 40 years, researchers have uncovered various ways in which companies can be organic in this particular sense. We now know that innovative organizations have to incorporate the following elements:

1 a decentralized system for the generation and identification of ideas for new and improved products and processes, including ideas coming from outside the organization;

2 a well-structured system for the selection and further development (or sale) of the most promising ideas, including a set of criteria based on a long-term vision for the company;

3 efficient structures for the production and delivery of (new and existing) products and services;

4 a well-organized system to register feedback from customers and react to it.