

# Chapter 1

## Introduction

An excerpt from a book on the logic of a planned economy illustrates how the author, Pawel Dembinski, interestingly formulates the perception of the average man in the street in a centrally planned economy:

There's no unemployment, and yet nobody works.  
Nobody works, and yet the plan gets fulfilled.  
The plan gets fulfilled, and yet there's never anything in the shops.  
There's never anything in the shops, and yet every fridge is full.  
Every fridge is full, and yet everyone complains.  
Everyone complains, and yet the same people keep getting elected.  
[Dembinski, 1991, p. xiii]

This statement has become more than just an anecdote; particularly toward the end of the Soviet-style of government, it became indicative of the system's functioning and finally synonymous with the definition of the system. The problems described in this quote became systematic, actually rooted in the politico-economic structure of the Soviet system. No sector of the economy was spared, including research and development (R&D). The management, organization, and motivations of the R&D sector led to a confusing situation with its very own logic. The same quality scientific resources that launched *Sputnik* satellites into space were simultaneously incapable of incorporating sufficient technological potential into the production process in order to progressively improve consumer welfare.

Such paradoxes combined with other more basic issues such as linguistic problems inhibiting personal contacts and knowledge of foreign scientific literature have led Western experts to perceive certain gaps in the Soviet R&D or the more general scientific and technological system. Despite these gaps, Westerners often underestimated Soviet scientific performance in specific fields.

Indeed, today little doubt remains that the size of the scientific community in the former Soviet Union was enormous. The size was a function of the resources devoted to its development based on the status of science perceived by members of society and politicians. The incredible and consistent ideological commitment over the decades, since the birth of the Soviet Union, gave the region potential beyond that recognized by foreign analysts. Although this sector has been inbred with the customary problems associated with Soviet Communist economics, and the resolution of some of these problems may prove painful, the R&D sector is much more a blessing than a burden in the transition to a future market economy in the successor republics of the former USSR.

Reforms introduced to realize the transition to a market economy have opened the door to bring the largest successor republic, the Russian Federation, back onto the world stage as a major player in science and technology. In order to be in a position to best consider the alternatives, a thorough analysis of the Soviet R&D sector is required. This book undertakes to show how the Soviet model of scientific and technological development serves as a case study of the influence of the management of R&D on past and future economic and social factors of the region.

## 1.1 The Topic

### 1.1.1 Research and development

Over time, *research and development* has become an almost superficial description that appears to indicate a single activity. It is, of course, much more. In fact, these words represent complex processes that are the basis of technological change, which is, in turn, essential for an improvement in our well-being. Investment in and management of research and development are crucial factors in determining the style of economic growth and development a nation will follow.

Although the elements of research and development support one another, some fundamental characteristics are different between them: namely, the objectives, the relationship to the needs of society, and the viewpoint and intellectual characteristics of the practitioners (O'Brien, 1964, p. 659). Even in a planned economy, where the policies concerning the R&D sector originate almost solely in state priorities, the distinctions are upheld.

In this study, the often imprecise terms of science, research, engineering, development, and technology conform to the following generally accepted definitions: