

Chapter 1

Rat Race Dynamics and Crazy Companies: The Diffusion of Technologies and Social Behavior

Jesse H. Ausubel

1.1 Introduction

How and why do technologies spread when and where they do? What are the implications and consequences for the structure, wealth, and management of human organizations? These expansive questions were the subject of the presentations and discussions of the International Conference on Diffusion of Technologies and Social Behavior, summarized in this chapter. The chapter is organized under the following headings: empirical regularities; theoretical issues; predictability; roles of time and space; definition of niche and innovation; selection dynamics; role of marketing; social aspects of diffusion; globalization of diffusion processes; and applications of diffusion. While the chapter treats some questions for policy in both the public and private sectors, it emphasizes research needs and opportunities in the diffusion field.

The conference represented a convergence and a maturation of studies of diffusion. A great range of disciplines was represented from both the social sciences and the natural sciences. There were geographers, historians, economists, sociologists, psychologists, and political scientists. There were physicists and mathematicians. Along with researchers, there were also practicing engineers and managers. The conference was made more special by the participation of several of the modern pioneers of the exploration of diffusion, including Torsten Hägerstrand, Harold Linstone, Cesare Marchetti, and Robert Pry, people who have facilitated diffusion research over the years and provided many of the ideas on which the conference was built.

The first point to address is why the group came together. The answer is the importance of diffusion as a key process in social and economic change, made powerfully evident by the growing and widespread recognition of regularities of diffusion processes.

1.2 Empirical Regularities

In a sense, the conference, like diffusion research itself, had an empirical origin and a phenomenological orientation. Each discipline, each group of researchers, discovered, somewhat independently, diffusion phenomena. One of the most satisfying aspects of the conference was the presentation of data on newly charted diffusion processes. There were examples of resins and plastics from Vladimir Falzman from the Soviet Union and examples in transport by Veniamin Livshits, also from the Soviet Union. There were two examples on AIDS. There were examples from Oskar Ullman from the Federal Republic of Germany in the solar energy area. There were examples on automated banking from the Netherlands (Paul Diederer and René Kemp), electronic mail from Sweden (Tomas Åstebro), chain-saws from Sweden (Johnny Hjelm), and Catholic saints from Italy (Marchetti). George Modelski presented the spread of democracy as a global diffusion process. The multitude of examples is most important. One of the significant features of the conference was the recognition that there is in fact now a large library of cases of diffusion, perhaps 3,000 cases that are well-documented and quantified.

One of the major tasks for diffusion research for the next years is the meta-analysis of ensembles of diffusion processes analyzed in the various disciplines. Can one undertake some meaningful taxonomy or classification of the many examples? There might be various criteria, for example, the time constant of diffusion processes (the so-called " Δt "). Other facets to