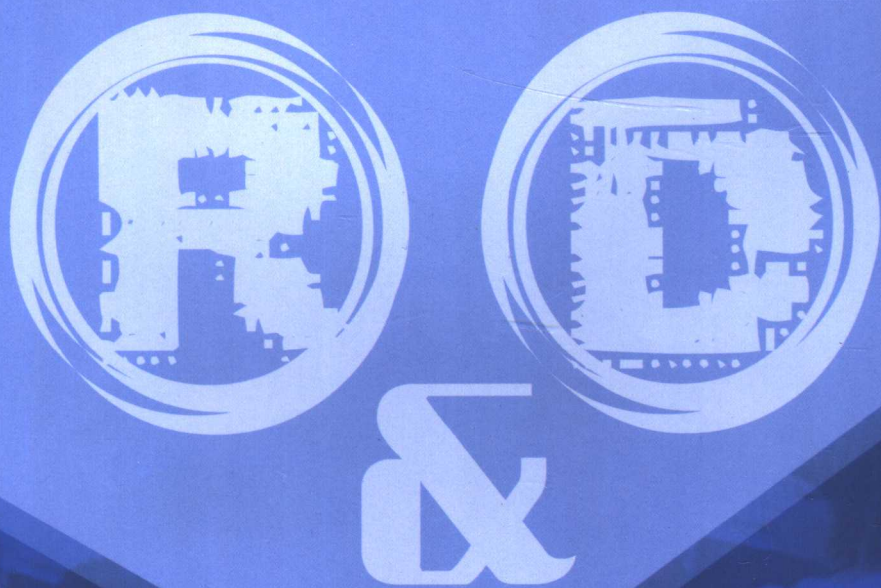



The Social Operation  
of the R&D Activities

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林慧岳 著

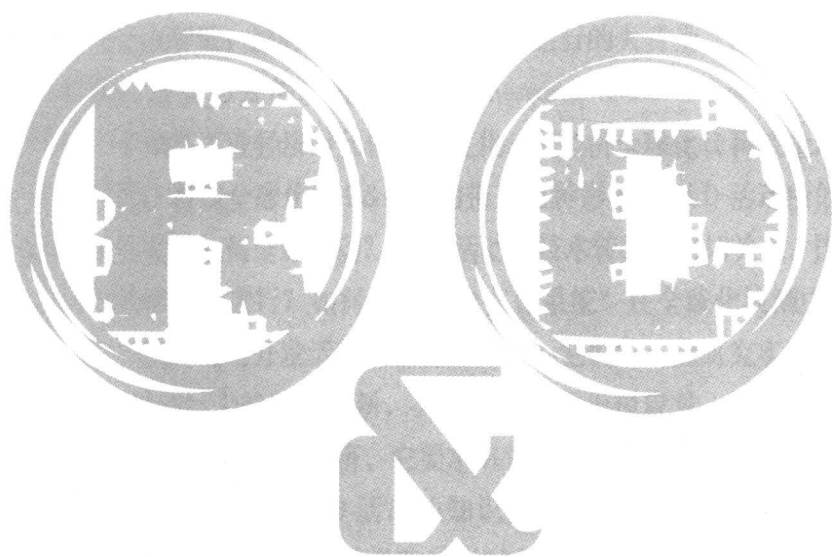



 湖南科学技术出版社

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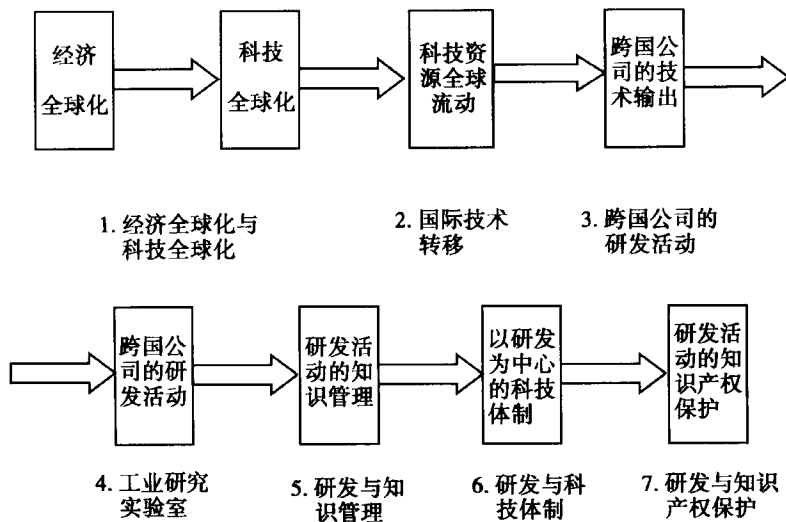
# 前 言

当前，我们正面临着经济全球化时代，这是社会生产系统所面临的一个大背景，同时也是科技系统社会运行的大背景。作为现代科技活动重要形式的研究与开发（Research & Development 简称 R&D）活动在工业经济时代便已制度化。在经济全球化（科技全球化）时代，科技全球化给 R&D 活动带来何种影响？R&D 活动所依赖的科技资源如何全球流动？R&D 活动与技术转移有密切关系，国际技术转移如何进行？如何影响社会文化系统？在全球化浪潮中，跨国公司的研究与开发活动起着重要作用，它们的工业研究实验室是 R&D 活动巨大的制度创新，我国企业必须积极应对。以知识为基础的经济形态是知识经济，它要求 R&D 活动不但要关注 R&D 活动的产品，也要关注 R&D 活动的知识；不但要关注知识的应用，也要关注知识的管理。在后学院科学时代，以 R&D 为中心的科技体制在宏观层面和微观层面都应进行调整，企业应有不同的 R&D 战略和活动模式选择。在经济全球化中，WTO 的有关条款，特别是《与贸易有关的知识产权协定》（TRIPS）对我国 R&D 活动将产生影响，我国企业的 R&D 活动应高度重视知识产权保护，R&D 活动

与知识产权战略应有有机地结合。

19 世纪末, R&D 活动开始在德国、美国等工业化国家兴起。20 世纪, R&D 活动得到迅猛发展, 成为各国科技活动的主要形式。R&D 活动的开展离不开社会环境, R&D 活动的社会运行是政府与企业、科技界与产业界共同关注的现实问题, 也是各国依靠科技进步推动经济发展的关键因素。

根据 R&D 活动的社会环境要素及其联结关系的发展变化, 本书的研究框架与逻辑体系如下图:



着眼于科技与经济的密切相关性并聚焦于经济全球化对科技的影响, 本书以科技全球化的主要特征——科技资源的全球流动和全球配置作为逻辑起点。

科技资源的全球流动需要一个载体或者说需要一种形式, 这就是最初的国际贸易。随着知识产权保护的制度化, 以专利、技术秘密 (know-how) 为主要内容的技术贸易所占比重越来越大。国际间的技术转移更多的是发达国家与发达国家之间的双向转移和发达国家向发展中国家的单向转移。对于后一种转移, 由于存在技术梯度及文化差异, 需要进行“技术转移设计”, 并构建基于技术接受方

的技术转移系统。

无论是以国际贸易形式出现的技术转移，还是单纯的技术转让，技术输送方往往是经济实力和科技实力强大的跨国公司。作为技术原创方的跨国公司的研发活动，是科技资源全球流动的主要源泉。研究跨国公司在不同环境（国际化、多国化、全球化、跨国化）的组织结构变化和 R&D 活动的不同特点，对于我国企业在加入 WTO 的背景下通过研发活动发展核心竞争力、加强与跨国公司的竞争地位有借鉴意义。

跨国公司之所以能成为科技全球化中的主要角色，是因为工业研究实验室是其 R&D 活动的主要组织形式和技术发源地。作为工业经济时代的 R&D，其主要目的是开发新产品和新工艺；作为知识经济时代的 R&D，其主要目的是企业保持技术领先的战略选择。R&D 活动的产出不仅是物质形态，更重要的是核心技术知识的形成。

由于 R&D 活动的知识生产特征越来越明显，对 R&D 活动的知识管理是提高 R&D 效率的必要手段。其中，知识转化、知识分享是比知识生产更重要的环节，构成知识管理的主要内容。

20 世纪 80 年代以后，我国 R&D 活动的社会环境发生了很大变化，需要建立一个面向市场经济和全球化环境的科技体制。由于我国现阶段正面临工业化和信息化的双重任务，在工业经济和信息经济的二元结构中，应该有两种不同的 R&D 战略：面向工业经济的 R&D 战略，以发展产品创新为主；面向知识经济的 R&D 战略，以发展知识创新为主。

在中国加入 WTO 以后，R&D 活动遇到的制度性约束最主要的是知识产权制度的影响。我国目前的知识产权制度与科技全球化之间存在差距，应该作制度上的建构和调整。R&D 活动是一个知识创造过程，通过建立知识空间的分析框架，对 R&D 过程知识流动状

况进行分析, 加强 R&D 过程和 R&D 成果两个方面的知识产权保护, 将 R&D 活动与知识产权战略结合起来, 是 R&D 活动社会运行的法律环境要求。

# Preface

Nowadays we are faced with an era of economic globalization, which is the general background of both the social production system and the scientific & technical system. The research and development (R&D) activities, as the important form of modern scientific and technological activities, have been institutionalized since the era of industrial economy. In the era of economic globalization, what's the impact of scientific and technological globalization to R&D activities? How do the scientific and technological resources on which the R&D activities depend flux globally? Because R&D activities connect closely with technology transfer, how is the international technology transfer happening? And how does it influence the social culture system? In the waves of globalization, the Transnational Corporation's R&D activities have played an important role. Their industrial research lab is a large institutional innovation of R&D activities. Chinese enterprises must adopt vigorous measures. The form of economy based on knowledge is the knowledge economy. It requires that the R&D activity should not only pay attention to the products but also the knowledge from R&D activity, not only the knowledge application but also the knowledge management. In the era of post-academic science, the



scientific and technological system focusing on R&D should be adapted at both the macro level and the micro level, and the enterprises will have different choices on the R&D strategies and modes. In the economic globalization, some provisions of WTO, TRIPS in particular will bring great influence on Chinese R&D activities. Therefore Chinese enterprises should pay great attention to the intellectual property protection and make the R&D activities be integrated with intellectual property strategy.

At the end of 19th century, R&D activities began to boom in some industrial countries such as German, American etc. In the 20th century R&D activities have been developed greatly and become the major form of scientific and technological research in all countries. The R&D activities can't be separated with the social environment. The social operation of R&D activities is the real issue concentrated on by the government and enterprises, the science & technology field and the industrial field, which is also the key factor for all countries relying on technology progress to promote economic development.

According to the actors of social environment of R&D activities and the change of development of relationship connecting with those, the framework of research and logical system of this book is as follows:

Economic globalization→Scientific and technological globalization→Scientific and technological resources flux globally→Output of technology of Transnational Corporations→R&D activities of Transnational Corporations→Knowledge management in the R&D activities→Scientific technological system taking R&D as a center→Intellectual property protection of R&D activities.

The chapters of this book are just set up according to the logical system which be described above.

This book pays attention to the close interdependency between technology and economy and focuses on the influence of economic globalization to science and technology. It begins logically with the global fluxion

and allocation of scientific and technological resources which is the main characteristics of scientific and technological globalization.

The global fluxion of scientific and technological resources needs a carrier or a form, which is the original international trade. Along with the institutionalization of intellectual property protection, the proportion of technological trade which mainly containing patents and know-how will become more and more heavy. Usually the international technology transfer is the transfer among developed countries each other and the unilateral transfer from developed countries to developing countries. As to the latter, because of the technological grades and cultural differences, we should do it called design of technology transfer and establish the technology transfer system based on transferee.

Regardless of the technology transfer taking the form of international trade or pure technology transfer, the transferor always are the Transnational Corporations that have great economic and technological strength. As the technological originator, R&D activities of Transnational Corporations are the major source of the fluxion of scientific and technological resources. Studying the organizational and structural change of Transnational Corporations and their different characteristics of R&D activities in different environment (internationalization, multinationalization, globalization and transnationalization) is of great importance for Chinese enterprises to develop core competition capability and upgrade their competition status appointed Transnational Corporations through their R&D activities under the background joining WTO.

Transnational Corporations become the leading participator in the scientific and technological globalization because their industrial research labs are the primary way of organization and technological sources of R&D activities. In the era of industrial economic, the primary purpose of R&D activities is to develop new products and new technique; while in the era of knowledge economic, the purpose of R&D activities is strategic choice

to make the enterprises keep technological leading. The output of R&D activities is not only the material form but more importantly also shaping nuclear technological knowledge.

Because the knowledge produce character of R&D activities becomes more and more obvious, the knowledge management to R&D activities is the necessary means to improve the efficient of R&D activities. The knowledge transformation and knowledge shared, which are more important than knowledge producing, constitute the main contents of knowledge management.

Since the 1980's, the social environment of R&D activities in China has taken place great changes, but we should establish the scientific and technological system facing market economy and globalization environment. Because China are undertaking the double tasks of industrialization and informationization, there should have two different strategies of R&D in the dualistic structure of industrial economy and knowledge economy: one is industrial-economy-oriented and primarily develops products innovation; the other is knowledge-economy-oriented and mainly develops knowledge innovation.

After China entered WTO, the institutional limitation to R&D activities is the influence of intellectual property system. There are certain gaps between the current intellectual property system in China and the requirement of scientific and technological globalization, and the intellectual property system should be reestablished and adapted. R&D activities are a process of creating knowledge. The condition of knowledge fluxion in the R&D process may be analyzed through setting up the framework of knowledge space. The legal environment for the social operation of R&D activities requires that the intellectual property protection to both the process and the results of R&D activities should be strengthened and R&D activities should be integrated with the strategy of intellectual property.

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