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Book Review

[Book Review of] Lydall, Harold : The Entrepreneurial factor in economic growth : Houndsmills, Basingstoke, MacMillan Acad. and Professional, 1992

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design of different countries in the triad region, which exhibit some remarkable differences, but which commonly aim at improving national technological competitiveness. This nationally-oriented scope of technology policy is labelled as "techno-nationalism".

On the basis of these developments, chapter 3 reviews several prominent trade conflicts in high-tech industries during the 1980s, such as the Boeing-Airbus dispute, the "voluntary" export restraints of Japanese car producers, the Semiconductor Trade Arrangement, and the Structural Impediments Initiative. Beyond doubt, much richer information on each of these conflicts is available in the literature. However, the basic contribution of Ostry and Nelson is to interpret the conflicts as the inevitable result of increasing tensions between techno-nationalism and techno-globalism.

As a logical consequence of the first three chapters, the final chapter sets out an agenda of essential topics for the further development of the world economic order in the GATT/WTO framework. If international frictions in high-tech industries are typical prisoner's dilemma situations, international cooperation is the most appropriate conflict resolution mechanism. On that account, Ostry and Nelson recommend to strengthen the attempts to harmonize upper limits for R&D subsidies and to establish international guidelines for research consortia and intellectual property rights. In addition, they speak for the harmonization of competition policies with a special emphasis on improving the enforcement of competition laws in Japan. Finally, they point out that globalization will encourage free-rider behaviour in basic and long-run research, because it is increasingly feasible to rely on spillovers from other countries in this area. Hence, international cooperation and a reorientation of national R&D policies towards basic research are requested.

The volume is concluded by a short comment by Henry Ergas, who argues that the decline in American technological leadership would appear less dramatic if software industries were included into the analysis. He questions the view of the United States as the diminishing giant and disputes that the clash between techno-nationalism and techno-globalism can really be regarded as *the* problem. Nevertheless, also Ergas would probably agree that this clash is *one* problem which deserves careful attention.

Henning Klodt

Lydall, Harold, *The Entrepreneurial Factor in Economic Growth.* Houndsmills, Basingstoke 1992. MacMillan Academic and Professional. VI, 277 pp.

Tassey, Gregory, *Technology Infrastructure and Competitive Position.* Norwell, Massachusetts 1992. Kluwer Academic Publishers. XXII, 306 pp.

Here are two books about economic growth with strikingly different conclusions about the right policies to enhance growth. These two books are not only interesting for the lessons they intend to teach, but also for representing an instructive pair of examples of how economists' different backgrounds and biographies may bear on their economic thinking. A comparison of the two authors' thinking is straightforward because both the Englishman Harold Lydall, Professor Emeritus at the University of East Anglia, and the American Gregory Tassey, an economist at the U.S. National Institute of Standards and Technology, choose to go beyond mere analysis in order to convey a message to the economic profession and to the public at large.

Lydall puts the blame for Britain's dismal growth record of recent decades on an endemic lack of entrepreneurship. Tassey, by contrast, singles out the lack of adequate infrastructure for technology-based competition as the bottleneck to U.S. productivity growth during the 1980s. Consequently, the authors differ in recommending remedies

to restore growth in their respective countries: Lydall calls for more private entrepreneurship, Tassey for more government planning of infrastructure development. Yet, both seem to agree that the economic profession bears much of the blame for the current public ignorance and inaction on these issues.

In Lydall's view, economists are unwilling to recognize the crucial role of the entrepreneur in combining capital and labour and in generating technical progress through innovation because entrepreneurship is incompatible with economists' standard framework of analysis, the model of perfect competition. Lydall laments that this model still holds the centre of economics in spite of being based on glaringly unrealistic assumptions and in spite of failing to predict many observed phenomena. Lydall proposes to replace the model of perfect competition by an entrepreneurial theory of competition. He argues that entrepreneurs in industrialized economies face imperfect competition in factor markets as well as in product markets. He sees entrepreneurs competing in markets with (at least temporally) fixed prices where firms, defined by their private technology, typically sell differentiated products.

Profits reward the entrepreneur for his willingness to bear risk, for his special knowledge about qualities and prices in factor and product markets and, above all, for his superior knowledge of the relevant technology. In fixprice competition, entrepreneurs concentrate their efforts on differentiating their products and on improving their private technology. Fixprice competition is thus more conducive to technical progress than perfect competition could be. In Lydall's theory, the supply of entrepreneurs is crucial for an economy's growth. But he sees a number of reasons why the supply of entrepreneurship has diminished in post-war Britain. Besides high taxes on profits, the disincentives of social security and the undermining influence of the educational system, Lydall blames economic theory for excessively concentrating on macroeconomics and for encouraging the belief in government as the ultimate economic saviour.

In Tassey's view, by contrast, technical progress has been slowed down in the U.S. during the 1980s not by a lack of entrepreneurship, but by insufficient investments in technology infrastructure, a public good whose provision requires an active involvement of government. Technology infrastructure is defined by Tassey as consisting of science, engineering and technical knowledge available to private industry. Technology infrastructure may be provided by both private and public institutions or by public-private combinations. It is often provided by organizations other than the firms ultimately using it. Institutions to promote technology transfer, government research laboratories and systems of funding private research are all part of a country's technology infrastructure.

Tassey develops a conceptual model of technology infrastructure which distinguishes between generic and proprietary technologies on the one hand and infratechnologies on the other. Successful new technologies pass through a generic and proprietary phase before being commercialized. Infratechnologies provide the tools used in this process; they comprise scientific and engineering data, and measurement and test methods for conducting R&D and controlling production, as well as practices and techniques for combining different elements of industrial technologies efficiently.

Tassey's main point is that the emergence of new and ever more complex, more 'systemic' technologies requires that technology infrastructure be adapted accordingly. He frequently cites Japan and Germany as examples of countries which have better understood today's challenges of technology-based competition than the public in the U.S. has. Tassey therefore calls for an expansion of technology infrastructure through government initiative, whose role is to be not only supplier, but primarily integrator of the various elements of technology infrastructure. Tassey believes that growth policy should include direct funding for firms, consortia and government laboratories working on generic technologies and for government laboratories working on infratechnologies;

assistence for education and training in private firms; assistence for technology transfer and market planning; the provision of intellectual property rights, standards and product testing facilities; and even joint industry-government planning. Tassey's book closes with a dire prediction for 'nations that persist in remaining attached to increasingly out-of-date economic philosophies'. The book predicts that 'a nation that does not do its planning well will have it done by others, and probably not to its liking.'

Michael Stolpe