

Finally, I have some more complaints about research neglected by the authors. There is no mention of the literature on National Innovation Systems.² The authors seem to have been fairly selective when referring to non-formal theory. However, the fact that empirical as well as some non-formal research is mentioned at all in a book written by top-level economic theorists is an encouraging sign. More surprising and harder to understand is that Nelson and Winter's³ well-known evolutionary theory of economic change and growth is nowhere mentioned in the book.

To sum up, I hope that the small selection of conclusions mentioned in this review has whetted some of this journal's readers appetite for the book. It discusses literally hundreds of models. However, it is fair to say that it leaves one with the impression that almost anything can be 'proven' in theory. There are still enormous gaps in our understanding of economic growth in the information age, and there is plenty of room for further important theoretical and empirical research, as well as non-formal research which might help us pin down the important factors and causal relationships. This book provides some of the pieces of the puzzle. There is a need to further integrate the separate analytical efforts discussed in different chapters in order to uncover some of the major missing pieces, and to integrate more insights from non-formal theory to widen the scope of formal analysis.

Notes and References

1. Marc Porat and Michael Rubin, *The Information Economy* (in nine volumes), Office of Telecommunications, Special Publication 77-12, US Department of Commerce, Government Printing Office, Washington, D.C., 1977.
2. See, for example, Richard Nelson (ed.), *National Innovation Systems: A Comparative Study*, Oxford University Press, Oxford, 1993.
3. Richard Nelson and Sidney Winter, *An Evolutionary Theory of Economic Change*, The Belknap Press of Harvard University Press, Cambridge, MA, 1982.

*Hans-Jürgen Engelbrecht
Massey University
Palmerston North, New Zealand*

Handbuch Recht und Praxis der Telekommunikation

Martin Geppert, Ernst-Olaf Ruhle and Fabian Schuster

Baden-Baden, Germany, Nomos, 1998, 712 pp., DM 98.00, ISBN 3-7890-5020-2

The *Handbook for Law and Practice in Telecommunications* by Geppert, Ruhle and Schuster was published in German in March 1998, 3 months after the full liberalisation of the German telecommunications market and some 20 months after the legal framework for a re-regulated market was laid down in a Law on Telecommunications (Telekommunikationsgesetz, TKG). This timing made it possible to take into consideration first experiences with the implementation of the TKG and the realisation of its main purpose, the establishment of competition in telecommunication markets. The German process of deregulation is characterised by a step-by-step approach. Over a period of almost 9 years many preliminary and temporary pieces of legislation were needed to realise the separation of private and public spheres in telecommunications, and the abolition of monopolies for all services and for the network infrastructure. This

procedure has been accompanied by debates that have been documented in a vast literature.

The *Handbook* marks the consolidation of these debates in a detailed analysis of the TKG and its implications. It provides a thorough account of the liberalisation and deregulation processes in Germany and of the laws in which they have been codified, and can thus be seen as the most comprehensive analysis of the legal framework that shapes the new German telecommunication market. The book faces the challenge to present a 'manual' for a legal and economic scenario which underlies continuous change. It is undoubtedly one of its many virtues that it combines the documentation of legal facts with a problem-oriented analysis of the phenomena to be regulated, and the discussion of the suitability of legal provisions in a historical and an analytical perspective. The more long-term oriented legal rules are clearly separated from the short-term issues of implementation and conflict resolution.

The book is divided into nine chapters:

1. Introduction: State of the liberalisation process
2. Market entrance
3. Regulation
4. Open Network Provision and Interconnection
5. Universal Service/Guaranteeing Sufficient Infrastructures
6. Administration of Telecommunication Services
7. Security
8. Organisation of Regulatory Procedures and Legal Rights
9. Fields of Conflict in the Transition to Competitive Markets

Each of the chapters contains a documentation of the legal framework in Germany with reference to its determinants at the European level. It presents the rationale of legislation by providing an outline of the regulatory problems that are answered in the legal settings from an economic and a political perspective. Finally it analyses practical experience with the implementation of the laws. A critical assessment of problems remaining after the first attempts to work with the new legal framework provides a useful basis for an improvement of the regulatory regime. Geppert, Ruhle and Schuster not only comment on the final formulation of the Laws, but they also explain the political process that led to certain solutions rather than to others.

The organisation of the enormous amount of material presented by the authors in nine chapters is not immediately evident, and causes a considerable amount of redundancy. However, some hints at the course of the arguments are given in the preface and the redundancies underline the book's character as a manual which provides comprehensive information. It is also suitable for readers who are only interested in specific aspects of telecommunication markets.

As stated in the preface, the book is meant to serve the needs of 'users of new telecommunication services, employees of new telecommunication companies and their consultants'. The detailed and thorough presentation of historical facts and legal rules will certainly attract a much broader audience. The focus is clearly on legal issues—two of the authors have law degrees, one is an economist. However, the attempt to produce a user-friendly, comprehensible text which is easily accessible for the general public and not only for the legal profession, has been remarkably successful. This has been achieved by a clever presentation of examples and of references to practical implications of articles of the law, a well-structured account of the content of the law, combined with many pieces of advice for service providers, market entrants and service users. Examples, practical hints and checklists are clearly marked; and key concepts are printed at the

border of the main text. This underlines the handbook character and provides a good guide through the volume. The use of the text as a manual for daily information requirements is facilitated by a large index, which is thoroughly edited, but needs some practice and some intuition for the authors' legal inclination to be successfully adopted. The inclusion of the full text of the relevant laws in the Appendix further adds to the use value of the book.

The *Handbook* puts the German deregulation process in a context of European and international market liberalisation, but also clearly emphasises the German specificity. The German case shows various distinct features that explain the rationale behind regulatory solutions and the historical course of deregulation procedures:

- Germany is a relative latecomer in the deregulation of telecommunications.
- The German reform process is closely linked with regulation at the EU level.
- Federal governance structures and corporate systems in industrial relations provide a complex background for any reform attempts in telecommunications and broadcasting.

The first aspect is reflected in the *Handbook* by referring to experiences of other countries with earlier deregulation of telecommunication markets, which strongly influenced the liberalisation process in Germany. The *Handbook* documents histories of reforms for a whole list of countries and thus provides points of reference for the regulatory and legal framework which has been established in Germany. The implications of a reluctant liberalisation and deregulation process for Germany are being discussed, but it is also pointed out that differences in the approaches to regulation do not necessarily lead to better or worse market outcomes, and that further analysis will be needed to understand the impact of the various regulatory patterns on market structures and the functioning of competition.

The second aspect is covered in a detailed documentation of EU regulation and its harmonisation and liberalisation aims in the *Handbook*. The comparison of deregulation achievements in Germany with those in other EU countries shows the difficult balance between national and European regulation in telecommunication. On the one hand, the harmonisation of telecommunication policies pushes market liberalisation in all countries and will eventually lead to a fully integrated European market. On the other hand, the system of European directives which are to be transformed into national legislation, leaves a degree of freedom to national governments which may result in a diversified picture of national regulatory systems. The chapter on EU liberalisation shows to what extent the actual realisation of European rules in the individual Member States differs from country to country. The book points out the areas in which community regulation has not been satisfactorily translated into German regulation, such as the independence of the regulatory institution from political influence, licence fees or the transparency of cost accounting of the incumbent supplier. It analyses the impact of non-compliance on the development of the German telecommunication market. The delay in implementation is not presented as a lack of commitment to the Single European Market, but as an obstacle for the realisation of a functioning competitive telecommunication market.

The third aspect made it necessary to refer to the interests and arguments brought forward by the parties involved in the deregulation process. The reforms required a broad political consensus, since deregulation involved a change in the constitution: The Federal State's exclusive responsibility for the provision of telecommunication services laid down in a constitutional article had to be abolished before the privatisation process could be initiated.

The vast amount of information presented in the book's 600 pages makes it

impossible to do justice to all the issues raised or to discuss the main arguments of each chapter. Therefore, the following comments on the chapter entitled 'Open Network Provision (ONP) and Interconnection' will be presented as an example.

The chapter is divided into several paragraphs on the legal basis of ONP, the importance of interconnection for competition, the role of resale, access negotiations in Germany and access regulation in other countries. It thus follows the general principle of presenting legal frameworks, the analytical and theoretical background of regulatory measures, and the history of implementation, completing the discussion with a reflection of the German situation in an international perspective.

Starting from a detailed account of European ONP regulation and its aims, the German 'translation' of access regulation is explained. The realisation of the general principle of ONP in Germany is described by stating the rationale of the single rules and their expression in the form of articles of the German TKG and other laws and directives. This analysis gives a perfect illustration of the mechanisms of implementation of European regulation via national legislation. Although the chapter contains complex references to articles of the various laws that contribute to the ONP solution and therefore necessarily adopts legal language to a large extent, the content of the rules and the reasons for specific formulations and provisions remain transparent in every detail.

The theoretical chapter differentiates between technical and economic aspects of interconnection and provides a convincing explanation for the existence and complexity of interconnection regulation. The thorough presentation of the arguments that govern debates and economic theories on conditions of access and interconnection, the obligations of dominant network suppliers, unbundling, co-location, interconnection pricing and cost accounting helps the reader to interpret the course of access negotiations in Germany which follows in the next chapter.

The field of ONP and interconnection provides many examples for the tentative nature of telecommunication regulation in Germany. The respective chapter thus does not only tell the history of a decisive step towards market liberalisation, but also offers an interesting analysis of the hurdles in the implementation of ONP in Germany. The lack of a standard interconnection contract at the end of 1997, for example, was in clear contrast to EU requirements and delayed market entrance for new suppliers. Insecurity with respect to definite legal settings and controversial interpretations of their exact meaning led to three main areas of conflict: (1) conflicts about the number of interconnection points to be established by the incumbent operator; (2) conflicts about the right degree of unbundling; and (3) conflicts about interconnection prices. Although the authors are careful not to express hasty judgements, it is quite clear that on the basis of the existing legal framework the actual realisation of interconnection requires regulatory intervention which itself is controversial because of the methods used in decision making. This has led to a situation in which often neither the contracting partners nor the regulator will decide about the conditions of interconnection, but judges in the courtroom.

The history of interconnection negotiations told in the *Handbook* is of more than historical value, since it points out the shortcomings of the regulatory framework and underlines the need for better concepts. The course of events is extremely well presented. The hectic activity which characterised the telecommunication scene in the first half of 1998 becomes transparent in the documentation of strategic steps, a detailed description of the underlying technical and economic facts and the importance of cost and price formula details, as well as in the analysis of the various interests involved.

In summary, the *Handbook* has to be considered an extremely valuable source of

information on *legal* aspects of telecommunication regulation in Germany. However, readers interested in the *economic* arguments that have led to the current regulatory framework will also find a useful presentation of the basic principles and arguments. The complexity of the topic has been mastered by a transparent structure and by many editorial details which make the book user-friendly. For an academic reader a more accessible list of references (they are located almost randomly behind chapters) would be helpful, and some redundancies might have been avoided. However, these shortcomings are negligible in view of the huge task that has been successfully completed in the *Handbook*.

Brigitte Preissl
German Institute for Economic Research (DIW)
Berlin, Germany

Parchment, Printing, and Hypermedia: Communication in World Order Transformation

Ronald J. Deibert

New York, Columbia University Press, 1997, xi + 329 pp., US\$20.00 (pbk), ISBN 0-231-10713-7 (pbk)

Ronald Deibert is professor of political science at the University of Toronto, where Harold Innes and Marshall McLuhan once taught. In this book Deibert adopts 'medium theory', (developed by the 'Toronto School of Communications' and made famous by McLuhan) and uses an elaborated version in his analysis of the effect of new communications technologies on the distribution of power within society. Deibert attempts to return to the fundamentals of a theory that has, he grants, been 'reduced to a few well-worn clichés'. This modified version, which he describes as 'nonreductive evolutionary medium theory', addresses problems with traditional medium theory associated with causality. To avoid a charge of technological determinism, Deibert adopts an evolutionary analogy in which advances in communications technology are represented as an 'environment' that favours certain ideas and social forces over others, rather than being seen as the single cause of change in a reductionist model. After identifying a significant gap in the research undertaken in the field of international relations in relation to medium theory, Deibert undertakes an historical analysis of the impact of earlier communications revolutions before turning to what he describes as the 'hypermedia' of our age.

In Part 1 'Printing and the Medieval to Modern World Order Transformation', Deibert examines the influence that the introduction of the printing press had upon the transformation of political authority from the medieval to the modern sovereign state system. The Roman Catholic Church's monopoly over written communication on parchment underpinned its authority. This control over the written word was combined with a 'multimedia' experience for the illiterate masses in the form of religious art and imposing church architecture which reinforced the message of power. A change in the communications environment, Deibert argues, disadvantaged the Church and facilitated the rise of other social forces and ideas. A gradual rise in secular literacy from the end of the twelfth century, the replacement of heavy expensive parchment with lighter cheaper paper, and the arrival of the printing press in the mid-fifteenth century provided