

Competition for Technology Leadership: EU Policy for High Technology, by Johan Lembke. Cheltenham, UK and Northampton, MA: Edward Elgar, 2002. xiv + 313 pp. \$100.00 cloth. ISBN 1-84064-792-2.

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This is an informative book about the making of industrial policies for high-technology industries in the European Union (EU) in the late 1990s. Lembke chooses three cases for detailed analysis: the GALILEO satellite navigation system, Universal Mobile Telecommunication System (UMTS) wireless systems, and Digital Audio Broadcasting (DAB) digital radio. The author demonstrates that no industrial policies are likely to be forthcoming for industries, like digital radio, with low lobbying strength and low potential payoffs for political entrepreneurs (Table 8.5 on p. 280). In contrast, GALILEO satellite navigation benefited from the desire of industry representatives and political actors to have a European alternative to the American geographical positioning system (GPS), while UMTS benefited from the desire of Europeans to build on the success of the earlier Global System for Mobile Communications (GSM) cellular phone systems without ruining their chances for marketing third generation phones in the rest of the world, particularly in Asia.

European solidarity was helped by the dominance of the United States in GPS systems and by the U.S. company Qualcomm in CDMA (code division multiple access) telephone technology. European solidarity was hindered by the existence of a competing European standard for digital audio that came out of the digital video broadcasting (DVB) effort after 1993 and the desire of EU officials to avoid another disaster like the one that occurred in the early 1990s with HD-MAC (the Europeans' first and failed attempt to institute a standard for high-definition television).

I was struck by the importance of military/strategic considerations in Lembke's account of the support for the GALILEO system and of the creation of an anti-United States coalition of European and Japanese forces in UMTS phone systems. Regional pride over the success of GSM played an important role not just in the UMTS debate but

in the rejection of more parochial approaches such as that represented by the advocates of DAB.

The Europeans clearly changed their approach to industrial policy in the 1990s. As Lembke argues correctly (p. 282), there is "a new form of critical industry support in the 'information age' which contrasts with the subsidy-based industry support promulgated by the first wave of strategic trade theorists in the 1980s and 1990s" This new support tended to focus on global standards-setting processes based on consensus building among scientists and engineers (including some non-Europeans) on key technological questions, instead of the imposition of regional standards to insulate regional firms from international competition.

As I read the DAB case, I had the impression the EU had made the right decision in not imposing a standard and in not backing the technology that came out of the Eureka research program. Here the opponents made a good case for the need not to foreclose innovation by prematurely imposing a regional standard. The claim by supporters that DAB would help to revive consumer electronics in Europe was not credible.

Overall, I found the author's descriptions to be interesting and accurate and his explanations for outcomes to be convincing. The subject matter is complex. It is impossible to describe what is in the book without using a lot of acronyms. There are many alternative technologies, numerous and diverse social actors, and the usual complications introduced by the interventions of individuals. For example, in one of the cases (DAB), a change in the composition of European commissioners was a crucial determinant of the outcome. This was sometimes a difficult book to read, and it would have benefited from better copyediting, but it is strong on details and reports many important and original findings based on interviews with key players.