

to them. It is worth reading by anyone who appreciates fresh perspectives on sometimes well worn material.

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The Unpredictable Certainty: Information Infrastructure Through 2000 Computer Science and Telecommunications Board, National Research Council, 1996, National Academy Press, Washington DC, 281 pp. \$24.95

This very conventional work examining how the national (i.e. US) information infrastructure (NII) might evolve by early next century, is a committee product, “an effort to explore the limits of consensus on a broad array of fast-changing issues”. It examines the requirements of business and of the household in the role as consumer, and considers several different models for the financing of technological investment. It looks at the spectrum of technologies, their current deployment and makes some forecasts. A final chapter deals with public policy and private action. Based on contributions from workshops, a forum of over two hundred experts and about seventy written submissions, one must admire the effort though the result is dull.

Confined within its conventional attitudes, this result was inevitable. To start with, it treats the NII as a technical issue, a complex, dynamic collection of public and private information services both facilities- and content-based. Thus technical-push is the inevitable direction to its thinking. However, they do admit to one speaker remarking: “I didn’t hear the word ‘user’, and I didn’t hear, ‘What does the user want?’ I heard, ‘This is what we’re going to give you ...’ but only assure us that we want continuous, secure, two-way wide-band, real-time access anywhere any time through familiar devices like the phone, TV and PC”.

This, technical response amounts to a clear admission of research myopia in the US, and therefore probably elsewhere. Technical devices can only store and distribute meaningless, purposeless signals with mere physical properties, whereas information (central to their brief), to have any value must have meaning, be used intentionally and produce social effects. An NII must surely be more than an N-IT-I. This is vaguely recognised when the report admits the comparative ease of deploying networks of cables, fibres, satellites and so on, compared with complex software-intensive applications. Research on the information (the wine) rather than IT (the bottle) could yield huge improvements in the costs of implementing useful systems on the technical foundations. Moreover, to turn technology-push into user-pull, we also need to understand information in human rather than technical terms.

Another conventional attitude (American rather than European) is that whatever infrastructure may arise should be shaped by business goals, rather than societal goals. It is taken for granted that

those who have gained control over information channels and other resources will be forced by some, as yet unknown, hidden hand of the market to use them benignly. Moreover government's role should be limited to removing barriers to the market, acting as an exemplary customer of the private suppliers of the NII and negotiating international agreements on behalf of these infrastructure suppliers. These assumptions treat information resources either as instruments for the more efficient conduct of traditional industrial activity or as another commodity to exploit – an outdated, industrial frame of reference.

These tacit assumptions prevent our seeing an NII, above all, as enabling post-industrial development. For example, we could increase or at least secure our material wealth by using information to rescue our already damaged ecosphere. In this case, information for cutting production and distribution costs and for “selling more soap” would receive less priority than for understanding ecological dangers, finding solutions and enabling communities to adjust to less damaging ways of living. For another example in the no less important domain of increasing our non-material wealth, we should examine how to build an NII to foster the growth of a healthy civil society. This issue receives almost no attention beyond a cursory mention that everyone including the poor should have access to the technology.

It is ridiculous to address the problems of a national information infrastructure only in technological terms. The provision of content, its quality, who owns it, who controls access, what impacts there may be on the distribution of power in a society with a new NII, are questions of prior importance whose answers should ensure that the technology will serve the greater interests of society, rather than only the interests of industry. Perhaps the European Union can make a contribution with another commission also on the *information* infrastructure but determined to address that problem rather than the *information technology* infrastructure, which has been the sole concern of this United States enquiry.

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***Decisions about Re-engineering* Bart O'Brien. Chapman and Hall, London, 195, 266 pages, \$24.95**

Don't be put off, as I was initially, by some stylistic features (e.g. chapters being called “Briefings”) or the confusing abstract Briefing 1. The book provides many useful insights and a valuable structuring of the material written on re-engineering of organisations.

However, it is not a book for beginners but one for those who have read enough of the literature to reach the point of being confused by its lack of consistency and irritated by bombastic