considering, for example, the vexed question of the impact on productivity of Australia's large-scale import of hardware and software during the 1980s. However, this is not a major criticism: the authors do raise the key issues which need to be addressed, and invite students to explore these further, and they emphasise that the social and organisational context of IT is of primary significance. The sense of excitement generated by spectacular examples of applications is very appropriate in a textbook of this kind: students embarking on careers in IT-related areas should indeed be encouraged not to focus narrowly on technology but to have an outlook which encompasses social ends and benefits.

Much of the illustrative material throughout the book is Australian, such as the air traffic control system at Melbourne airport or the Imparja television channel owned and controlled by Aboriginal people, and transmitting via satellite from Alice Springs. Considering the dependency of Australia and other smaller nations on technical developments in the world's major economic centres, it should be gratifying and stimulating to Australian students and teachers to be able to study information technology in the Australian context.

Hans Lofgren
University of Melbourne

Price Caps and Incentive Regulation in Telecommunications *edited by M. Einhorn*
(Kluwer, Boston, 1991), pp. xi + 239, $US55.00, ISBN 0-7923-9113-6.

This collection of papers originated in a day seminar at the Columbia University Centre for Telecommunications and Information Studies in 1987. Four seminar papers were augmented by seven invited by the editor, plus the editor's introduction.

The papers cover a range of current issues in regulation. Three of the 11 are mildly econometric, one is pragmatic, another uses a satisficing principal-agent model, the other six are explorations of equilibrium properties of variations on the neoclassical theme, with certainty about exogenous factors up to a probability distribution. The book thus illustrates the claims of conventional welfare economics in the context of perceived market failure in telecommunications.

The authors are either academics (9), Bell research staff (5), regional Bell staff (2), or a consultant (whose paper is jointly authored by Bell staff). Two academics are or were recently members of regulatory bodies, and one academic is also a Bell staffer. Four of the 12 papers are Bell authored. The importance of Bell in financing the debate about regulation is obvious; not only from this collection. The regulatory-capture hypothesis may well be a useful one to have in mind when looking at this and other works on public regulation.

What can be called the mainstream of the debate is over the efficacy of price capping in the transition to unregulated contested markets. Brennan's paper concludes that price caps cannot be effective second best solutions unless they are merely that. The firm will behave strategically to frustrate the social planner. Nonetheless, Vogelsang continues to present further elegant elaborations of his

and Finsinger's price cap scheme to elicit Ramsey prices, in the absence of radical (Knightian) uncertainty and strategic gaming by the firm.[1] Baron erects an even more elaborate superstructure, using Bayesian analysis, but he comes to the same sort of conclusion as Brennan. The regulator cannot arrive at a full information second best, but may do better than unrestrained monopoly if the regulator can be restrained from the opportunism of ripping all the short run profits off the hapless monopolist.

Of the other theory papers, only Monson and Larson, of Southwestern Bell, are concerned with the central issue of the efficacy of price caps as second best to an unattainable competitive market. They use a conventional profit maximising model to show that the Vogelsang & Finsinger proposal will only result in Ramsey prices if quantity weights of the many outputs remain the same over time. Their distinctive contribution is to present in the price cap context the classic Chicago argument against predatory pricing. That is, it is more costly than the gains that are possible; that cross-subsidisation is not worthwhile in terms of profits. Far be it from a regional Bell operating company to engage in predatory pricing.

The less theoretical papers range in their institutional applicability from Sibley, Heyman and Taylor, whose piece is a defence of a proposal by the two east coast Bell operating companies, collectively known as NYNEX, for a tariff rejected by their regulator, to that of Kiss on productivity measures in price cap regulation. Other papers are by Kwoka and Noam.

Kwoka is a consultant to the Federal Communicatons Commission on their proposal to use price caps as a regulatory tool. His paper analyses the various measures of productivity available to regulators in the United States. The goal of the regulator is to maintain a relation between price and cost by anticipating total factor productivity growth. His conclusion is that there are many difficult measurement problems that none of the econometric studies have so far succeeded in solving fully. It is interesting to contrast this paper with the theory papers. Kwoka does not erect a fully articulated model of firm behaviour, nor does he ask difficult questions about regulatory behaviour. His only concession to the theorists is to comment that immediate adjustment of the price for cost saving "would diminish the firm's incentive to conserve on costs" (p. 82). But what he lacks, or rejects, in theoretical sophistication he gains in relevance to the practice of regulation.

Kiss' paper is in part a response to Kwoka, coming from Kiss' critique of the price cap proposals of the FCC. But it has broader applicability. In contrast to Kwoka, his concern is with incentive and efficiency. In contrast to the theory papers he is concerned with practical application by the FCC of their regulatory proposals. His proposals are for reasonable, flexible, regulatory contracts in which price and cost cannot stray too far from each other, but in which the firm will still find it worthwhile to minimise costs. The key to his scheme is the ability to predict productivity. This depends on having a good enough empirical model of firm costs over the relevant output range. He suggests a simple formula that comes from his work on Bell Canada. It assigns productivity gains to output growth (a Verdoorn effect or a scale effect, the two cannot be disentangled) and to exogenous technological change. He then gives a proportion of the gain to the firm, to ensure incentive, while the remainder is taken in price reductions. He regards the inflexibility of the CPI-X regimes of UK and Australia as allowing too much scope for windfall gains and losses. But even these schemes he sees as not too far from his ideal, given the relatively short contract period

of three to one years. The Kiss scheme obeys the vulgar acronym (Keep It Simple Stupid), unlike the relatively unfocussed ruminations of Kwoka.

Noam's paper on the regulation of quality is in this reviewer's view the most important and interesting of the collection. He sets out, with his own experience on the New York Board of Commissioners, to define a simple and comprehensive scheme of quality control for telecommunications. It involves construction of a quality index including as many dimensions as found to be important to customers, weighted by importance. Standards of quality are similarly defined by the regulator. Variance of performance is alo entered. The firm has to achieve a score of zero, i.e., underperformance on some measures is balanced by overperformance on others. Financial penalties are imposed for failure, in terms of prices, rate of return allowed or rebates to affected customers. Performance standards can be given a time trend for expected improvement. Noam intends this system to apply only to firms regulated by public policy, not to those in a market environment. I would suggest that this may not necessarily be appropriate in that services such as telecommunications are bedevilled by externalities of interworking. He himself mentions the problem of customers who choose a low level of quality and low price, thereby compromising the standards enjoyed by those who interface with that customer, and those who perforce use the same channels (p. 179). The old engineering cry of system integrity is often seen by economists as merely a self-serving demand for gold plating of services. But minimum standards will have always to be regulated. It is not a question of monopoly bottlenecks (p. 187) but of inextricable interdependencies between suppliers and users, as Noam's examples point out clearly (pp. 167-8,179).

In sum, this collection contains a number of mildly interesting papers, as well as a few that do not appear to make a real contribution. But none of the papers, except perhaps that of Noam, round on either the regulators or the regulated in analysis that suggests that we live in anything but a reasonably close approximation (not worse than third best) to the best of all possible worlds. Perhaps it's the truth.

REFERENCE

1. John Nightingale, 'Regulating telecommunications pricing: information requirements of the CPI-X rule', *Prometheus*, 8, 1, June 1990, pp. 80-95.

John Nightingale
University of New England

Serendipity City: Australia, Japan and the Multifunction Polis *by Walter Hamilton*
(ABC Publications, Sydney, 1991), pp. ix + 228, $29.95, ISBN 0-73330087-1.

The Clever City: Japan, Australia and the Multifunction Polis *by Ian Inkster*
(Sydney University Press, 1991), pp. xi + 180, $17.95, ISBN 0-42400182-9.

Bonsai Australia Banzai: Multifunctionpolis and the Making of a Special Relationship with Japan *edited by Gavan McCormack*
(Pluto Press, Sydney, 1991), pp. vii + 228, $16.95, ISBN 0-949138-64-9.

The somewhat vague and idealistic proposal by Japan in January 1987 to build a futuristic, international city in Australia may not have been embraced by the