

Notes and References

1. G. C. Winston, *The Timing of Economic Activities—Firms, Households, and Markets in Time Specific Analysis*, Cambridge University Press, Cambridge, 1982.
2. R. H. Coase, 'The nature of the firm', *Economica*, 4 November 1937, pp. 125–52.
3. For a brief (and incomplete) sample of work that may offer alternatives to market mechanisms, see, Antonio Etzioni, *The Moral Dimension: Towards a New Economics*, The Free Press, New York, 1988; Robert Putnam, *Making Democracy Work: Civic Traditions in Modern Italy*, Princeton University Press, New Jersey, 1993; W. Barnet Pearce *Interpersonal Communication: Making Social Worlds*, Harper Collins, New York, 1994; and Janine Nahapiet and Sumantra Ghoshal, 'Social capital, intellectual capital, and the organisational advantage', *The Academy of Management Review*, 23, 2, 1998, pp. 242–66.

David Rooney
The University of Queensland
Ipswich, Australia

Digital Cash

Alan L. Tyree

Sydney, Butterworths, 1997, xv + 183 pp., AU\$53.00, ISBN 0 409 31316 5

Digital Cash is about the, primarily Australian, legal and policy issues raised by the emergence of new payment systems that facilitate commerce over the Internet. As Landerer Professor of Information Technology and Law at the University of Sydney, Alan Tyree, BSc, MSc, PhD, LLB(Hons), is ideally qualified to contribute to this topic.

The book starts with a brief history of the Internet, World Wide Web, indexing the Web, and the rapid development of the commercial use of the Internet. This leads naturally to the need to offer low cost items to a huge but low-density market. Cash, cheque, credit and debit cards each have limitations—new solutions are needed. This necessity has mothered the invention of new payment methods for low-value items over this sparse electronic market space.

Chapter two introduces cryptography as a tool to provide analogous features to those available with signed paper documents; features such as certainty of origin and non-repudiation, the challenge of forgery, original documents, alterations, and control over reuse. Symmetric (private key), asymmetric cryptography (public key), hash functions and digital signatures are covered in layman's terms with helpful examples.

After a brief history of payment systems, to again set the requirements for a digital analog for paper-based systems, chapter three describes the application of cryptography to payment systems to secure and authenticate credit card, stored value (digital cash), digital cheques, and debit systems. This chapter also introduces the smart card as an electronic purse for stored value and touches on experimental and emerging systems that use password hashing instead of public key cryptography.

With the basic technology introduced, the book moves into the practical and legal problems of security and control. Chapter four discusses the issues of money creation and issue, counterfeiting, clearing house functions, seigniorage, and unclaimed money. Criminal activity and money laundering is also discussed. Chapter five deals with the legal nature of digital cash, including the legal status of digital signatures and jurisdictional problems. While paper currency is accepted as legal tender, digital cash does not yet enjoy such a status. Buyers and sellers must be able to rely on the acceptability of digital payment methods before such methods can flourish. Paper currency serves the function of a promise to pay. The issuer of digital value must be recognised by law as the promisor. Interesting contract issues arise: is a merchant making an offer via a

mouse-clickable button? Is a buyer accepting the offer by clicking on that graphic image? Is payment absolute or conditional? That is, if a buyer pays a merchant with digital cash, but the issuer of the cash fails before the merchant can receive the credit, can the merchant pursue the buyer? Jurisdictional issues are raised with an imaginative example of buying from Georgia (Russia) with Mongolian digital coins purchased with Cook Islands coins paid for by EFT from Australia. The difficulties of collecting transaction taxes (credit, debit, and sales taxes) on Internet purchases is covered and a restructuring of taxation is suggested.

Can consumers expect the same level of protection when using the new payment systems? Chapter six begins this topic by looking at codes of practice, such as the EFT code of conduct, and the banking, credit union and building societies' codes of practice. Evidence suggests that consumers use digital cash more like credit than they do paper currency, that is they spend significantly more on average. Over-commitment can become a problem. So can unauthorised use of the payment instrument. Further, irksome fees might follow the widespread adoption of smart-cards and other digital payment systems: issue, monthly and transaction fees, for example. Commercial pressure might also marginalise those who are unable to obtain digital cash. Tyree cites a study indicating that two-thirds of non-English speaking low-income people have no access to EFT or chequing, and thus are almost entirely dependent on cash for purchases—problems not covered in the codes of conduct.

As competing systems emerge and compete we notice varying degrees of privacy in transactions. Some systems offer complete anonymity, even from the merchant, others provide a transaction history like a credit or store card: information that could be used in ways abhorrent to some consumers. Yet privacy is usually traded off against a need for government control of illegal activity and taxation revenue. Tyree examines existing privacy regulation in some depth: international, Australian and New Zealand legislation and codes of practice and conduct are discussed. Tyree also describes a 'key escrow' model which has been proposed by the Australian Attorney General's department which would permit government access to 'weakly' encrypted consumer traffic. The discussion shows clearly that such models are useless at preventing criminal use of encryption because 'strong' encryption is readily available.

Digital Cash is not a technical book for computing and network staff. Rather, it is a précis of the technical detail in order to demonstrate the legal and policy problems for bankers, lawyers and technology policy-makers. Some knowledge of legal terminology is assumed. The book addresses the Australian and New Zealand legal environments, thus it provides an alternative to the North American and European treatments available elsewhere.

Mark Dixon
Murdoch University
Perth, Australia

Higher Education or Education for Hire?: Language and Values in Australian Universities

Ian Reid

Rockhampton, Queensland, Central Queensland University Press, 1996, v + 171 pp., AU\$19.95, ISBN 1 875998 13 6

The author of this book is a senior university administrator at Curtin University of Technology in Perth, Western Australia. It has a provocative title and is a thoroughly