Book Reviews

The Economics of Communication and Information

Donald M. Lamberton (Ed.)

Cheltenham, UK, Edward Elgar, 1996, xxviii + 549 pp., £115, ISBN 1 85898 294 4

In 1971, Lamberton edited the *Economics of Information and Knowledge* in the Penguin Readings in Modern Economics series. Twenty-five years later, he was afforded the opportunity to update that seminal collection. Lamberton is a distinguished scholar of international repute, with wide experience in professorial and research posts in universities in Australia and elsewhere, and has served as consultant to numerous organizations, including the OECD and UNESCO, and as a member of Australian government committees of inquiry. His academic contributions and publications are extensive in the economics of information, communications and technology. An economist, he is currently serving as Visiting Fellow, Urban Research Program, Australian National University, Canberra, where he continues in his long and distinguished career as scholar, educator and consultant.

The 1971 volume consisted of 18 articles in 384 pages; the 1996 update, 31 articles in 549 pages. Have the intervening twenty-five years taken us any closer to Lamberton's goal of understanding the economic role of communication and information, or have they left us with both more literature and more questions?

That is, of course, not entirely a fair question, as both books are collections, not summations, of the wisdom available at the time. Although they cover a wide range of topics, by definition they are not comprehensive, nor do they automatically provide a synthesis. While they preserve key articles for future readers—a service of enormous value—this makes the identification of a central theme something of a challenge for the reviewer.

In the 'Introduction' to his 1971 volume, Lamberton asserted, 'So important would information and knowledge seem for economics that it must appear incredible that its study has been neglected.' Yet that was largely still the world of neo-classical economics, and the integration of information into economic theory was a new and troubling area because it raised serious doubts about the usefulness of the touchstone of perfect competition. From the vantage of 1971, Lamberton noted that information is not just an 'area of interest' but embedded in the fabric of economics itself.

The Introduction to the 1996 volume is entitled, 'Threatened Wreckage' or New Paradigm?' and in this, I believe Lamberton means to tell us something he believes is very important. The implication is that something quite fundamental is taking place, which is qualitatively different than what has gone before. Should we, he asks, modernize the neoclassical edifice, or look to a new 'Information Age' paradigm?

As he looks back at 1971 from 1996, he notes, 'I thought in terms of trying to see how far we could modify and extend economics to accommodate the role of information, a task I do not think we have finished largely because the work has taken us over many

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boundaries into other disciplines ... We are possibly well on the way to the next stage of creating a new discipline of information science which accommodates economic interactions.'

But even in 1996, the role of information proved an elusive target. In trying to summarize, he first fixes on the role of information in economics, noting the destructive consequences of information for central ideas like optimality and equilibrium. In economic theory, the economics of information, to many, deals with informational asymmetry. But this is not the only approach—others would identify information with game theory, or point to information sector studies; yet others would show that they have assimilated the economics of information into traditional cost analysis, or various sub-disciplines like regional or health economics. Some would add to the neoclassical theory's labor and capital another factor of production: information or knowledge.

There were also other approaches to linking information and economics, each with perceived difficulties. GNP-style studies, built upon an all-purpose definition of information as that which reduces uncertainty, focused on the aggregate of information activities. There was also the question of tacit knowledge—knowledge that requires personal contacts and is gained only through participation in ongoing activities. Infrastructure was often raised, but with important elements omitted from most discussions, such as information stocks and flows, human capital, and organizational capital. In the discussion of information as public good, he notes, equal supply for all consumers is emphasized, but insufficient attention has been given to inequality of demand. In sum, with respect to information, one gets the sense of leaping onto the horse of information economics and riding off madly in all directions.

By 1996, the idea of a role for information in economics was not new. What was missing, according to Lamberton, are the links, the interactions, between information and economic activity. Information must be operative, he says; there must be a capability of using information in purposeful ways. Lamberton says he has been increasingly persuaded that interdisciplinary effort is needed in tackling the role of information which, he says, calls for a new approach to a taxonomy of information.

He cautions against a 'unitary and all-purpose concept' of information. When we hear of electronic books and journals, databases, satellites, fiber and World-Wide Web, he asks, can we say that we understand their complementary relationships? Can we appraise the various sequences and lags imposed by modern information technology? The answer he gives is a resounding NO.

Consequently, he notes, thinking about the roles of communication and information is intertwined with some 'big questions' about interactions and innumerable intersecting forces. We must ask about individualism and collective behavior; about a market-based economics of information that explores both market phenomena and internal organization. His hope is that, by focusing on a taxonomy of information and relating it to infrastructure, further progress can be made.

Before commenting further on this approach, It is customary that the first duty of a book reviewer is to tell the reader what's in the book. In the face of 31 articles and 550 pages, plus a thoughtful introduction by the editor, this is somewhat daunting. The 1971 volume was 18 articles divided into seven sections: Two Surveys; Economic Organization; Information and Efficiency; Information Policy; International Aspects; Business Planning; and, Conclusion. Space permits only a listing of the 1996 contents.

Overview (3 articles)
Sandra Braman (1989), 'Defining information: an approach for policymakers'.

Axel Leijonhufvud (1989), 'Information costs and the division of labor'.
Robert Wright (1986), 'The information age: phantom of the factory'.

Information, Organization and Efficiency (4 articles)
Donald M. Lamberton (1984), 'The economics of information and organization'.
Richard R. Nelson (1981), 'Assessing private enterprise: an exegesis of tangled doctrine'.
Clifford Geertz (1978), 'The bazaar economy: information and search in peasant marketing'.
Stanley M. Besen (1986), 'Private copying, reproduction costs, and the supply of intellectual property'.

Macrorealities (4 articles)
Stephen S. Roach (1986), 'Macrorealities of the information economy'.
Reiner Staglin (1989), 'Toward an input-output subsystem for the information sector'.
Robert M. Townsend (1989), 'Currency and credit in a private information economy'.
Margaret Bray (1985), 'Rational expectations, information and asset markets: an introduction'.

Management and Technology (4 articles)
Herbert A. Simon (1971), 'Designing organizations for an information-rich world'.
Gunnar Eliasson (1990), 'The firm as a competent team'.
Kenneth J. Arrow (1962), 'Economic welfare and the allocation of resources for invention'.
Gerhard Rosegger (1991), 'Advances in information technology and the innovation strategies of firms'.

International Aspects (3 articles)
Beth Krevitt Eres (1989), 'International information issues'.
Lawrence S. Welch (1983), 'The technology transfer process in foreign licensing arrangements'.
Stuart Macdonald (1986), 'Controlling the flow of high-technology information from the United States to the Soviet Union: a labour of Sisyphus?'

Information Policy (4 articles)
Donald A. Dunn (1982), 'Developing information policy'.
Robert R. Alford and Edgar L. Feige (1989), 'Information distortions in social systems: the underground economy and other observer-subject-policymaker feedbacks'.
Aubrey Silberston (1967), 'The patent system'.
Patricia Glass Schuman (1982), 'Information justice'.

Selected Classics (3 articles)
Kenneth E. Boulding (1966), 'The economics of knowledge and the knowledge of economics'.
Jacob Marschak (1968), 'Economics of inquiring, communications, deciding'.
Friedrich August von Hayek (1975), 'The pretence of knowledge'.

New Directions (6 articles)
Kenneth J. Arrow (1985), 'Information structure of the firm'.
T.A. Marschak (1980), 'The best use of 'information budgets' in purposive organizations: a finite approach'.
Paul Milgrom and John Roberts (1990), 'The economics of modern manufacturing: technology, strategy, and organization'.
Eliakim Katz and Adrian Ziderman (1990), 'Investment in general training: the role of information and labour mobility'.
Nathaniel H. Leff (1984), 'Externalities, information costs, and social benefit-cost analysis for economic development: an example from telecommunications'.
Jacob Marschak (1965), 'Economics of language'.

Lamberton is certainly well qualified to select these particular articles as worth memorializing. Rather than quibble about whether some articles that were included shouldn't have been, or some that weren't should have been, I suggest that it really doesn't matter—in the sense that a substitution of other equally important articles would be unlikely to change Lamberton's larger thesis—that addressing 'information' in 'economics' clearly means a multitude of different things in different contexts. It is easy to multiply examples just from the readings. One could choose to focus on:

- the role of information in economic theory
- sectoral studies of telecommunications, computer and software industries
- investment in information infrastructure to support certain levels of specified industrial performance, based on input-output tables
- the externalities of communications networks, e.g., social benefits, efficiencies
- information as commodity (intellectual property)
- information as embedded in organizational knowledge
- tacit knowledge
- flawless transport of signals (Shannon's information theory)
- aggregation of consolidated information activity statistics (e.g., national information accounts)
- information as a constitutive force in society (culture and politics)

In the face of this anarchic array, he does an apparently sensible thing—he calls for a 'new taxonomy of information', some sort of classification system like phylum, genus, species. Perhaps we could start with 'wisdom', 'knowledge', 'facts', 'information', 'data', etc. Unfortunately, the case for this seems unpersuasive, or at least premature. An electronic binary digit, a market asymmetry, and calling my Mum to wish her happy birthday simply do not have enough in common, or at least, if they do, we don't yet know how to formulate what it is.

Just as the world 'culture' means one thing to a medical lab technician, and something entirely different to an anthropologist, it is likewise (but worse) with 'information'. There is an aura of fuzzy thinking around information economics caused by the misleading nature of the word 'information'. Because it is a single word, it leads people to think it must represent a single 'thing', a good example of a case where 'common sense' misleads. It is respectfully suggested that there is no meaningful way to reconcile all the different meanings. However, it is understandable that it is difficult (and perhaps painful) to confront and accept the consequences of the heterogeneity of 'information' in different contexts.

It is simply not meaningful to talk about a single abstract thing called 'information'. What we mean by 'information' in a given case is defined by the questions we choose

to ask. This implies not a need for a new taxonomy, but a demand for a greater precision in articulation, and self-consciousness of the problem, among scholars in this field. Some questions can be put in neo-classical theoretical terms. Others will clearly engage us in the kind of interdisciplinary dialogues Lamberton anticipates, incorporating, for example, cultural, social and psychological factors. Others may lead us into the realm of linguistics, politics and philosophy.

If that is so, where does it leave 'information economics'? Is it a hollow phrase? An impossible quest? Far from it—indeed it is increasingly a critical undertaking for anyone who has a sense that we are moving into an 'information economy'. But before setting out to develop a taxonomy in which nearly every example may be a 'species' unto itself, perhaps information economists might undertake a short-term approach which asks, with as much precision as possible, what, exactly, are the questions information economics is trying to answer?

That should more sharply delineate what 'information' means in a particular context, and correspondingly exclude other areas. Such an approach still provides ample scope for economic questions of critical importance. Perhaps someday there will be a 'grand unified theory' of information, but the readings in Lamberton's latest volume suggest we are not a great deal closer to that than we were in 1971.

The author of this review, a non-economist, wishes to express his appreciation to Yale Braustein, an economist, who assisted by commenting on a draft.

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Forbidden Fruit. An Analysis of Bootlegging, Uncertainty and Learning in Corporate R&D

Peter Augsdorfer

Aldershot, UK, Avebury, 1996, xi + 225 pp., UK £35.00, ISBN 1 85972 333 0

Augsdorfer defines bootlegging as research carried out in companies by motivated individuals without the authorisation of responsible management and without the formal allocation of resources. In its purest form, bootlegging remains undetected by management; more commonly management is at least half aware that bootlegging is going on and chooses not to intervene. Perhaps this is because bootlegging is quite distinct from moonlighting in that it is performed for the good of the company rather than just that of the individual. In the jargon of R&D, this is Friday afternoon work, under the counter work, work behind the fume cupboard, long accepted as part of corporate R&D culture, with little concern shown by either managers or those who study R&D for its prevalence, its importance or its motivation. Augsdorfer is concerned and provides a fascinating glimpse of just what is going on.

One of the many failings of those who investigate how organisations work is that they are prone to concentrate instead on how organisations should work. If they enter organisations at all, it is to ask managers about corporate success and about how clever they have been at achieving it. To elicit information from managers about corporate failure and particularly about their own limitations is much more difficult. Yet this is precisely what Augsdorfer has done: in dozens of interviews in 57 companies in France, Germany and the UK, he has interrogated both R&D personnel and their managers