Mansell, Robin and Wehn, Uta (Eds.) *Knowledge Societies: Information Technology for Sustainable Development.* **Oxford: Oxford University Press, 1998, 323 pp., £15.99.**

This book expands upon UN Secretary-General Kofi Annan's confident assertion that, 'communications and information technology have enormous potential, especially for developing countries and in furthering sustainable development' (p. 6). It was prepared for the United Nations Commission on Science and Technology for Development (UNCSTD) and gathers together an impressive array of empirical data, theory and argument, generated by members of UNCSTD's Working Group on IT and development. The editors identify their target readership as, 'decision-makers and ICT producers and users, primarily in developing countries' (p. 1), but it will be of interest to a much broader constituency, including those concerned with international economic and business strategy, development studies and technology policy. (n.b. it is perhaps surprising, given the audience and subject matter, that *Knowledge Societies* has appeared in this 'conventional' guise; what of the web site, the hypertext version, the eBook?!)[*].

Robin Mansell and Uta Wehn, who are based at the University of Sussex's Science Policy Research Unit (SPRU)[*], have successfully combined rigour with readability; a rare achievement in the jargon-ridden world of information and communication technology (ICT). In format this is a densely-packed 'source book', best suited to selective reading rather than a continuous trawl. However, it is extremely well sign-posted throughout. Competent indexing, informative headings and a clear two-colour presentation of data and illustrative case material make it easy to navigate. The language is accessible to the non-specialist (NB: included in the appendices are a surprisingly short technical glossary and a rather longer list of acronyms, both technical and bureaucratic). There is also an extensive bibliography, in itself a useful resource.

Knowledge Societies is supported by a wealth of thought-provoking statistical data, though the authors emphasize the limitations, arguing for very careful interpretation of what is often ambiguous or incomplete evidence. For example, though the International Telecommunication Union (ITU) gathers fairly 'rich' data (e.g. number of main telephone lines per capita, international minutes of telephone connection), suitable indicators for other ICTs are much more difficult to acquire. Plotting phone line penetration against per capita GDP only serves to highlight the complex relationship between income and telecommunications infrastructure. The close correlation found in high income countries contrasts with a more dispersed picture for their middle-income and less developed counterparts. There may be obvious explanations for a relatively low investment in telecommunications (e.g. trade embargoes affecting investment in Iraq and Libya), but in some countries (e.g. Botswana) the economic indicator is seemingly 'better' than its telecommunications infrastructure would suggest. By contrast, former socialist countries and some island economies feature high infrastructure investment relative to income. As the authors suggest, the latter case may be explained in terms of previous government policy, or (in the case of islands) of supporting finance and tourism activity. A more fundamental problem, also identified by the authors, is that available statistics tell us little about the *actual use* of ICTs in developing countries. For example, what do those international call minutes constitute: 'productive' commercial transactions or conversations with relatives? In order to convert discrete indicators into practical guidance for policy, the authors introduce a useful graphing technique: 'INfrastructure, EXperience, SKills, Knowledge' (INEXSK). This is used to make various inter-country comparisons based on the very different ICT 'profiles' that are revealed.

As the title suggests, the authors take the view that knowledge creation and transfer are central to the analysis. They present three scenarios, derived from Lundvall's recent work on ICTs and the learning economy:

An optimistic scenario for developing countries in the face of the diffusion of ICTs envisages a massive transfer of tacit knowledge into information systems giving these countries access to new process technologies and products developed in the industrialised countries both rapidly and at low cost. In theory, this would lead to an acceleration of the catching-up process and a reduction in global inequalities. However there are two less optimistic scenarios (p. 51).

The primary obstacles to such diffusion are identified as the absence of relevant capabilities and the rapid learning required in order to harness these (primarily 'in-coming') technologies. The authors are careful to work through the implications of concepts such as tacit knowledge, intra- and inter-organizational learning in a variety of contexts. In one technology transfer case study, a Zimbabwean firm producing agricultural carts reportedly achieves as 35 per cent reduction in production costs following the introduction of Japanese organizational techniques. (n.b. this research suggests that factory throughput times were reduced from eight days to just 80 minutes and distance travelled by work-in-progress from 3.2 kilometres to 100 metres; quite an achievement!). How might others benefit from such radical transformations? The authors focus attention on the role of partnerships and other forms of alliance, reporting a number of recent studies on the key role of trust in the formation and implementation of such strategies. Noting the finding that a high proportion of developing country joint ventures are perceived – by the managers of multinational companies – as performing unsatisfactorily, they draw a significant conclusion which clearly merits further attention:

Joint ventures will not offer a particularly effective mechanism for technology transfer or a way of strengthening skills in developing countries unless their dynamics are better understood (p. 57).

One of the main themes of this book is that, in developing the 'technical and social capabilities' to underpin the effective harnessing of ICTs, policy-makers must address the diversity (economic, political and socio-cultural), found in developing countries. Many illustrations are provided to support this argument. In Chapter 3, China's policy for the assimilation of ICTs and related knowledge ('Import, Digest, Develop and Create') is subjected to a detailed and insightful critical appraisal. A number of factors are identified to explain the sometimes problematic implementation of ICTs in China. One of these is, in Hofstede's terms, the high degree of 'power distance' in Chinese organizations which operate on a traditional family model. Increased transparency and information sharing arising from ICT systems cut across this ingrained cultural feature. More prosaically, the new requirement for employees to acquire computer skills tends to marginalize older and more senior people in the organization.

Though the book draws on the contributions of a number of authors, its theoretical position seems consistently grounded within what might be termed the 'diffusionist' camp. Throughout the book, the focal argument, on the effective 'harnessing' of ICTs in developing countries, is supported empirically and with insights from a number of disciplines. This is a sophisticated, contextualized analysis of the diffusion process, drawing on related concepts such as organizational learning, tacitness, the nature of inter-organizational trust and the implications of (technological) path dependency in the diffusion and use of ICTs:

Once a particular path of development of a software system, a telecommunication network or an ICT-based process technology has begun to gather momentum it can prove very resistant to radical changes in direction (p. 231).

In *Knowledge Societies*, the authors' explicit objectives are to inform policy rather than to further develop theory. Having said that, some readers may feel that its analysis – and hence its policy prescription – is in some respects constrained by the absence of other perspectives on technology, notably those emerging from 'critical' and 'social constructionist' schools. Ludvall's insights into the socially embodied nature of learning are stated at the outset, and the book contains an abundance of highly pertinent situated material (e.g. in relation to gender differences in ICT uptake). However,

some might feel that it lacks the kind of conceptual tools to fully address those underlying causal relationships relating to institutional and cultural context. Taking one conclusion on national policy objectives as an example, the objectives are beyond reproach, but, beyond a passing reference to the market, explanatory *mechanism* seems to be lacking; 'yes, indeed' you say to yourself, 'but *how* is it to be achieved':

> The goal of a national ICT strategy is to serve the consumer and citizen. What is good for them is good for everyone including the producers of the products and services. When competition is intense, investment should rise and prices should drop producing useful and desirable information … If national ICT decision-makers were to gear deliberations toward what people in these areas need each morning when they rise, cook, want medical attention, seek crop prices, need weather forecasts, and seek education and jobs for their children, their ICT strategies would be more balanced (p. 239).

This book should prove to be a valuable addition to the literature on development, strategy-making, information and communication technologies and the management of knowledge. The benefits of ICTs will only be secured through a thorough understanding of the needs of users, supported by a sustained investment in social and technical capabilities. If policy is to prove effective, decision-makers *also* need to address the complex social, political and economic dynamics that shape the design and application of these new technologies. *Knowledge Societies* is one important contribution to the longer-term task of making Kofi Annan's aspiration a reality.

Richard K. Blundel [*]

[*] **NOTES AND UPDATING**

The book is now available in a free online version at:
http://www.sussex.ac.uk/spru/research/ink/knowledgesocieties

In the published JMS version of this review, Robin Mansell and Ute When's research centre was incorrectly located; SPRU's long-established home is at the University of Sussex as indicated in this version. Professor Mansell is now based at the London School of Economics and Political Science: http://www2.lse.ac.uk/media@lse/whosWho/AcademicStaff/robinMansell.aspx
Dr Uta Wehn de Montalvo is a Senior Researcher and Programme Coordinator at the UNESCO-IHE Institute for Water Education: http://www.unesco-ihe.org/iu/staffmember/uwe

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