

At stake here are different notions of expertise, since experts are the primary agents in the politics of knowledge societies. In the United States, professional skills and credentials prevail over intangible qualities such as individual character. The path to expertise is open to anyone who is credentialized appropriately or bestowed with professional success. The defining element of expertise in Britain and Germany is experience, though it is of a different kind in the two contexts. British expertise is tied to the individual expert with knowledge and competence, with an additional demonstrated record of service to society. In Germany, such credentials must be backed by institutional support. The respect for institutions accompanies a horror of charisma. The latter derives from the memory of Nazi rule. Hence the legal and political processes are organized to ensure that the expert maps are correctly and accurately configured in public decision-making.

Sociologists of science have for the past decades been engaged with explaining the social character of scientific knowledge, the relation of scientific knowledge to the public, as well as to political practice. In their investigations they have developed a rich theoretical framework and conceptual tools that provide insight into the diversity of scientific practices that we are clued into thinking of in monolithic terms. In her book *Epistemic Cultures: How Sciences Make Knowledge* (Harvard, 1999, Karin-Knorr Cetina compared two cultures of high energy physics and molecular biology and argued that they really constituted two epistemic cultures or cultures of knowing embodying different understandings of the empirical and relationships among their objects of investigations. In a more recent work entitled *Science, Social Theory and Public Knowledge* (2003), Alan Irwin and Mike Michael introduced the concept of 'ethno-epistemic assemblages' to designate the hybrid entities that would further the exploration of the admixture of science and society. A concept such as this is supposed to overcome the inadequacies of 'doing' public understanding of science. We see then that several sociological attempts have been made to engage with this complex entity of science and society. The concept of civic epistemology could be seen as doing for the study of policy, what epistemic culture does for the different sciences, and ethno-assemblage does for science movements. *Designs on*

Nature is easily the most important engagement with the variety of cultures of biotechnology policy and the concept of civic epistemology serves as a theoretical tool to engage with the forms of knowledge and decision-making and validation in a variety of national contexts. The book opens up discussions to a new range of questions for students of biotechnology policy as much as for political theorists.

DHRUV RAINA

*Zakir Husain Centre for Educational Studies,
Jawaharlal Nehru University,
New Delhi 110 067, India
e-mail: d_raina@yahoo.com*



ICTs and Indian Economic Development: Economy, Work, Regulation. Ashwani Saith and M. Vijayabaskar (eds). Sage Publications India Pvt Ltd, B-42 Panchsheel Enclave, New Delhi 110 017. 2005. 474 pp. Price: Rs 850.

Living in a city like Bangalore, and seeing the billowing growth all around, one is often prompted to ponder whether all this will last, whether the growth is just a temporary splurge and whether Bangalore will soon return to its erstwhile retiree town pace. Economists phrase the same question, not only for Bangalore, but for the entire country's deep involvement with and investments in Information and Communication Technology (ICT), as to whether the ICT-led development is sustainable. Whether the unbelievable performance of software exports will last. Whether the diffusion of ICT in the country will prompt economic activity and lead to overall development. The answers to these questions raise a plethora of issues that are the substance of this book.

One putative reason for India's dramatic performance in the IT services arena worldwide is that of the government's non-interference. However, articles in the book, by Chandrasekhar, Kumar and Parthasarathy, in particular, point to the deep influence the government has had in setting policies, in creating incentive structures and in setting up regulatory bodies to promote India's ICT sector. More importantly, the authors point to the continuing role that the government has to play to ensure that India's promised growth rates are attained and there is widespread diffusion of ICT in the economy.

Another issue that concerns many authors in the book is that of labour availability for the software and services markets to grow. India's software exporters built their businesses on the easy availability of skilled engineers, who were being underutilized elsewhere, and who could be readily re-trained for software work given better salaries and more challenging working conditions. However, it is also true that Indian software companies occupy the lower end of the software services value chain, relying on coding, testing and maintenance jobs, where the high value-added tasks such as design and end-to-end consulting are cornered by the better-known international giants. A point that is made quite strongly in the book is that there is a need for sustained investment in training and education that will ensure the continued availability of good engineers as well as those who can participate in research and development, to move Indian companies towards higher value-added services.

One has to remember, of course, that currently Indian software engineers are not exactly 'cheap' anymore. With increasing wage rates in clusters such as Bangalore, engineers with deep skills are being sought at high rates. This dynamic will eventually play out with the highest payers taking up, and locking in, the best skills and with the rest of the industry having to scramble to find talent. Although the number of engineering college seats in India is growing at a significant rate (in the period 2001-02, for instance, enrollment in graduate engineering education increased by about 115,000 across India, a 20% increase for the year), the quality of the programmes is suspect and the availability of highly skilled engineers will be thin. Private participation in higher education, which has been more on the side of training for low-level technical

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skills, has to increase along with linkages with education and research institutions, something that has been tried successfully in the past¹.

Recently, the Government of Karnataka, in particular, has begun an exercise of determining 'satellite' towns and cities that could be developed to address the growing needs of the IT industry. The central government also approves of this approach by the states and is supporting these efforts by providing grants for infrastructure development. A question that several chapters in the book address is whether such efforts by governments in targeted development of particular geographical zones is likely to succeed. The answers are complex. For one thing, small towns will find it hard to attract skilled labour to migrate there, as they lack the necessary city amenities like education, entertainment, etc. that enhance the quality of life. The towns will be limited by their access to markets, educational institutions and other firms, that firms locating there can cooperate with (until, of course, such multiplicity of firms is established). These are the classic factors by which clusters such as those in Silicon Valley emerged and those such as Nanjing, outside Shanghai, were unable to grow despite government efforts. However, the factors that could nourish such towns would be the growing use of ICT within government and industry that will result in up-skilling and create a class of technology-savvy people in the existing industrial sectors of these towns, the geographical diversity of engineering and other colleges across the states that will enable ICT industries to draw from local talent, and the increasing knowledge-base of management in using and deploying ICT. These factors, compounded with the overcrowding and choking of infrastructure, and the increasing wage rates in big cities such as Bangalore, will possibly enable these towns to flourish as large software companies, that anyway have their markets in North America or Europe, will want to further exploit the cost and infrastructure advantages of small towns.

Clearly, the issues are many and complex for those investigating the sustainability aspects of ICT for economic development in India. The dynamics of markets, institutions and government policies will drive India's future in this domain, but for researchers these are exciting times to observe and theorize about the developments.

Overall, I think this is an excellent book for those interested in the issues of ICT for development in India. A whole host of issues are covered and many arguments are put forth with conviction. The volume is well edited – the articles are succinctly written and the presentation is precise with adequate tables and figures.

1. Patibandla, M. and Petersen, B., *World Dev.*, 2002, **30**, 1561–1577.

RAHUL DE'

Quantitative Methods and Information Systems Area,
Indian Institute of Management,
Bannerghatta Road,
Bangalore 560 076, India
e-mail: rahul@iimb.ernet.in

Annual Review of Nuclear and Particle Science. Boris Kayser *et al.* Annual Reviews, 4139 El Camino Way, P.O. Box 10139, Palo Alto, California 94303-0139, USA. Vol. 55. 2005. 599 pp. Price: US \$50.

Physics research is increasingly becoming borderless and boundaries between nuclear and particle physics on the one hand, and astrophysics and nuclear/particle physics on the other are thinning. In fact, currently the interface areas between different branches are getting highlighted and the present volume of *Annual Review of Nuclear and Particle Science* has done full justice to this important aspect. The outstanding problems in these areas are addressed: Relativistic heavy ion collisions, nuclear equation of state and the behaviour of hadronic matter at high density, temperature and energy density; fundamental structure of matter and questions to be solved by future accelerators like electron-ion collider; small-x phenomena: from HERA to LHC and beyond; baryon asymmetry in nature and leptogenesis as the origin of matter; physics beyond standard model; yet to be observed Higgs particle, dark matter, etc; neutron as a microscopic laboratory to investigate fundamental symmetries, and ascertaining the core collapse supernova mechanism. Major-

ity of the articles are divided between nuclear, particle and interface areas. Few reviews are on astrophysics, cosmology and nuclear/particle physics borderline areas. It is an unenviable task to summarize in a few pages, the masterly written articles numbering 13 covering 588 pages. We have made an attempt to give details of some of the review articles.

The present volume starts with a lucid historical account by Perkins, of evolution of modern particle physics from the early cosmic ray-based research. The exciting developments in particle physics due to the exponential growth of accelerators of increasing energies and intensities resulting in our present-day understanding of quarks and leptons as constituents of matter are captured. The futile attempt on searching for proton decay which finally led to the unexpected observation of neutrino oscillations and neutrino mass and prospects of new physics beyond the standard model are part of history. His central message is to look for the unexpected or else it will be one of missed opportunities.

Experiments using slow/cold neutrons address a range of problems encompassing different branches, from nuclear physics to cosmology. The current world average value of neutron lifetime is 885.7 ± 0.8 s. Attempts are underway to extend these measurements with ultra cold neutrons (energy less than $0.2 \mu\text{eV}$) to achieve a precision of 0.1 s. The search for the neutron electric dipole moment addresses issues which lie at the heart of modern cosmology and particle physics. The current experimental bound on the electric dipole moment is $< 0.63 \times 10^{-25}$ e.cm. There are ambitious efforts underway to improve this limit by one to two orders of magnitude, again using ultra-cold neutrons. It is known that the weak interaction is responsible for neutron decay. In addition to the coupling of quarks to leptons that allows neutrons to decay, electro weak theory also predicts that there are weak interactions between the quarks in the neutrons. Nico and Snow have discussed at length the current attempts to determine experimentally the weak N–N interaction, in addition to the other aspects of neutron research.

According to the Big Bang model of creation of the universe, matter and the antimatter should be equal in proportion. But in nature we find more of matter. This is also expressed as baryon asymmetry and the dynamical theories ad-