

the labour force of advanced economies, are missing in action, so to speak, in the context of this book.

Firstly, a topical issue for many organisations and their managers is struggles with managing Gen Y – people in their 20s. I would have liked to see this issue addressed from the perspective of this book.

Secondly, and more importantly, a large, and rapidly growing section of the labour force in the KBE era are those who work, but actually are not on anyone's payroll. These are the self-employed, contractors, or franchisees. They appear in some of the examples, but there is not much discussion here on this topic.

Considering managers and the employee well-being consequences of their decisions, the authors observe in Chapter 10 that managers sometimes need to take the long-term, as opposed to the short-term view. This sits well with the ideas of Joseph Schumpeter and other evolutionary economists who emphasise long-term dynamic efficiency over short-term static efficiency. The latter, often obsessed with cost cutting, usually impedes the former, which is more about innovation.

Organisational changes that lead to increased employee happiness in the form of increased morale (Chapter 3) can improve effectiveness and profitability. Thus this reviewer would be inclined to agree with the authors' contention that issues of staff happiness/morale should be shifted up the organisation agenda.

Overall, there are plenty of ideas, based on systematic evidence, in this book for decision-makers who would like to build innovative/entrepreneurial organisations that actively engage their staff in a meaningful way. In today's difficult times, these are likely to be the main sorts of organisations, public or private, that will survive and thrive.

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Knowledge power: interdisciplinary education for a complex world, by Alan Wilson, London and New York, Routledge, 2010, 184 pp., ISBN 0415553113

Wilson loves to coin new phrases. Thus modern economies become knowledge economies and are regarded as post-service economies. It is somewhat difficult to see how knowledge economies differ from information economies and how knowledge as an economic commodity can be delivered as anything other than a service. To facilitate the change from the present to the desired future, Wilson calls for a revolution, particularly in education. But is the called-for revolution more than a game with words and slogans? The education of the future is unhelpfully characterised as '{R(T,C,A,L),S, P, Tech}' or, in words, '{Reform (Teacher quality, Curriculum, Accountability, Leadership), Skills, Pedagogy, Technology}'. The call is for teacher quality to be improved at all levels, but have we ever desired anything other than good teachers?

What is actually new in all this is hard to tell, except that modern education at all levels needs to try and keep abreast of the very rapid creation of new knowledge. Wilson thinks that the process of absorption of new knowledge needs to permeate schools, universities, all kinds of organisations, and even individuals. What is not

quite clear is whether the call for accountability and leadership should be interpreted as independence of teaching institutions from government, whether at central or local level, and thus a plea for independent schools.

The volume of knowledge is expanding dramatically – the knowledge explosion – and the nature of knowledge is changing so that it does not easily fit into the traditional packages. This implies the need for a reformed education system, offering both breadth and depth and with some repackaging.

The sub-title of the book says it all: the book is a declaration of Alan Wilson's faith in the power of science for the solution of social and human problems. If science is powerful, interdisciplinary science is more powerful because most real problems do not fall neatly into a domain of any classical discipline but pose interdisciplinary questions and hence require interdisciplinary answers. In a nutshell, the book is a plea for interdisciplinary research and interdisciplinary teaching and a confession of faith in the ability of science to contribute much to the solution of social or economic problems and to the betterment of society. Wilson appears to think that indeed all problems can be solved with the aid of science and does not mention once that political decisions are made not so much on the basis of scientific analysis but as a result of the rivalry and interplay of group interests. He appears to think that a proper analysis of a problem will lead to a proper solution, irrespective of interests involved. To be fair, Wilson acknowledges the existence of competitive forces in society but puts little emphasis on the role of group interests in decision making. In that sense it is an idealistic book; a plea for rationality and learning to replace power struggles.

An early chapter of the book is a tour-de-force through all modern developments in all the sciences. Each complex scientific discipline or method is described in a few words. Very apt words, no doubt, but wholly inadequate for any real understanding. Physics and chemistry are given seven pages between them, biology two, social sciences two and a half, humanities and creative arts one page between them. Apart from these ultra-brief basic descriptions, knowledge is also usefully described in relation to its practitioners. The extreme brevity of the descriptions is supported by the extensive use of abbreviations – a method that does not make reading any easier or understanding any clearer. I find the relentless use of abbreviations unhelpful and rather irritating. Having skated through the sciences at an alarming rate and thrown in a few new concepts and 'superconcepts', Wilson proceeds to discuss what he calls the 'knowledge space' and defines, *inter alia*, what policy is: 'Policy is concerned with the articulation of objectives – what the planning process aims to achieve; design is invention – problem solving; and analysis provides the underpinning knowledge core'. Somewhat idiosyncratic, but quite interesting.

What is helpful is the discussion of the possibility of defining knowledge by the professions associated with the various branches of knowledge. Thus different engineering practitioners each use their own brand of knowledge in their professional life and the same may be said about the practitioners of other professions, including those engaged on planning and providing for cities and regions, health, and even the performing and creative arts.

One of Wilson's favourite leanings is the use of extravagant new word-creations. Thus particularly widely applicable concepts or bundles of concepts are called 'superconcepts'. Various aspects of knowledge are accommodated in 'knowledge space'. I fail to see the utility of a concept that involves no more than the listing of various branches of knowledge and their combinations. What I do find useful is Wilson's defi-

inition of 'requisite knowledge'. In a world that consists of organisations, each organisation requires a certain package of knowledge in order to function, and is required to ensure that this core knowledge grows and adapts as new knowledge is created within or without the organisation.

The description and discussion of urban and regional problems and their analysis is truly interesting and illuminating. We might call this chapter 'in praise of systems analysis', as this is the preferred method of tackling the interdisciplinary problems arising in the analysis of the life of cities and regions. The concept of systems is well explained and the virtues of this approach are well illustrated by its utility in dealing with many interdisciplinary problems arising in the study of cities, smaller communities and regions. Systems analysis can help in town planning, in transport planning, and in analysing needs for the provision of health and education services. For the non-expert it is amazing how many questions relating to cities and regions can be asked and answered.

In a chapter called Knowledge Development the author speculates on the future of all sciences and engineering. The wider application of mathematical modelling and advanced computing will, so Wilson believes, lead to more advanced applications and better solutions for complex problems. It is unfortunate that the chapter is not much more than a catalogue of plausible developments, without any depth of explanations. The main thrust of the chapter is a plea for breadth of analysis of societal problems, such as the siting of airports or other facilities. If we wish to pursue evidence-based policies, as undoubtedly we should, we need to make sure that all relevant evidence is taken into account.

One chapter is devoted to the universities. Essentially Wilson argues that universities ought to devote more effort to the development of new 'products and services', particularly in interdisciplinary areas. The big problem of universities is their relation to large and powerful, often commercial, research organisations. Can and should they compete or should they develop new cooperative models? The thorny question arises of whether universities should strive to be 'relevant' in the sense of researching and teaching in ways that are of current interest in the wider world, or should they stick to fundamentals and leave relevance to more commercial organisations. Wilson believes that some universities might well add to their structure a College of Lifelong Learning, a College of Corporate Learning and a Consulting Company. Many similar developments have indeed been pursued in the recent past at different scales and with varying success.

An obvious problem caused by rapidly expanding knowledge is how to keep abreast of developments. This is true for individuals as well as for organisations. Wilson goes into some detail how different types of organisations are affected and what measures they can take to apply new knowledge relevant to their business.

In view of the perceived widespread phobia of mathematics, the author relegates mathematics to an appendix. In this he describes how a mathematical abstraction can be used to solve a problem of flows of goods or people between two centres. The example chosen is the flow between a residential area to a retail shopping centre. We can run a model calculation on a computer and obtain, for example, the total cash-flow into the shopping centre under various conditions and assumptions. This is an extremely useful tool for planning purposes.

Finally, Wilson describes what is needed to obtain a sea change in the application and development of science. Obviously education plays a major role in achieving this sea change and new teaching methods play a large role in the discussion. All in all,

however, there is little novelty in the discussion of what is needed and even less discussion on why it is needed.

This is a book by an author of great experience and distinction at the highest levels of academic life, with much involvement in academic and educational politics. Perhaps it is an attempt to draw conclusions for the future on the basis of his life-long extensive experience. In my view, a more anecdotal approach, rather than the formal approach, would have been more useful to the reader.

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The technology imperative, by Gregory Tasse, Cheltenham, Edward Elgar, 2007, 329 + xiv pp., £75, ISBN 978 1 84542 912 6

There is by now a long series of books by Americans warning Americans that their leading position in the world in general, and in the world economy in particular, is under threat. This parallels the long series of books by Europeans enjoining other Europeans to pay more attention to the superior arrangements of the Americans. The latter series can be described as generally market-friendly, and it has enjoyed rather a surge since the 'Reagan reforms', followed by the New Economy boom, offered a narrative of market-driven American resurgence. But on both sides of the Atlantic there have been contrary voices raised:

Look at what the Americans do, not at what their textbooks say: for example, how could their free enterprise heroes have forged ahead in high technology industries if the Department of Defense and the National Institutes of Health had not paid huge sums of money for the basic and not-so-basic research on which the high technology was built?

Tasse is of this persuasion, and he goes on to warn (on p. 40) that, even more than in the past, 'the successful economy will be based on a "complementary-asset" growth model in that both the public and private sectors have essential and complementary roles'. 'The dynamic character of global markets ... means that competition among national governments is also occurring.' He notes the vigorous policies of (among others) China and Singapore. As he argues in Chapter 2, the 'complementarity' is the greater because there is an increasing emphasis in the private sector on relatively short-term investment in innovation – shown by the much greater rise in industry-funded spending on development as opposed to applied and (above all) basic research (Figure 2.5).

What are governments competing on, then? On education, for one thing: and in Chapter 2, Tasse outlines the poor relative performance of the United States in primary, secondary and tertiary education – particularly with regard to science, technology and mathematics. In Chapter 3, he shows that it is also lagging in investment on IT infrastructure and thus in access to advanced broadband. In Chapter 4, he puts forward detailed arguments as to what the public sector needs to spend money on under the general label of 'technology'. The *science base* is generally understood to be a public responsibility, but Tasse argues that *infratechnologies* and *generic technologies* also demand heavy public investment – alongside private – and are getting too