

and because its principal supporters lost credibility.

An example of the opposite outcome – acceptance of an ambiguous result into the scientific canon – is provided by the story of Eddington's confirmation of Einstein's theory of general relativity by measuring the bending of starlight by the gravitational field of the sun. In 1918 two parties from Eddington's group set out to photograph stars during a complete solar eclipse, one from Sobral in Brazil, the other from the island of Principe off West Africa. When the data was analyzed it became apparent that the different measurements were ambiguous and contradictory. If the results were to be taken to support Einstein's theory, a large part of the data set would have to be regarded as 'anomalous' and be arbitrarily discarded. This, it seems, is exactly what was done: in 1919 Eddington announced that the observations had confirmed the theory of general relativity.

From examples such as these, Collins and Pinch propose the notion of the experimenter's regress: a good experiment is one which gives the right answer, but since one ordinarily does not know the right answer, one cannot know what is a good experiment. There are two ways of breaking out of this impasse; either one 'knows' the right answer (as in the case of Eddington), or else one extends the definition of what constitutes a good experiment to include, for instance, the credibility of the experimenter (as in the case of Ungar). Either way, experimental data alone is insufficient to establish the legitimacy of a scientific result.

Ask any scientist what he thinks of this, and he will quaver at the spectre of relativism that it invokes. Do not the case studies in this book describe contentious, underdeveloped fields that more experimentation will eventually remedy? Is not established science a massive, interlocking scaffold of mutually supportive results, beyond the reach of social contingency? Collins and Pinch offer little guidance on such questions, preferring instead to poke sticks at the collective Golem Science.

Given its professed goal of revealing some of the more bizarre features of science to the general public, *The Golem* succeeds admirably. Its crisply written and altogether fascinating case studies are alone worth the cost of the book. Whatever one makes of its conclusions, none can deny that they are provocative and, for a citizenship that needs to be interested in science before it can be informed, that is surely a good thing.

## NOTES AND REFERENCES

- 1 W. Gratzer, 'Grappling with the Golem', *Nature*, Vol. 364, 1994, pp.22-23.
- 2 J. Klein, 'Hegemony of mediocrity in contemporary sciences', *Lymphology*, Vol. 18, 1995, pp. 122-131.

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**Organisational Decision Making and Information** by Mairéad Browne (Ablex, Norwood, New Jersey, 1993), pp. xiii + 256, A\$61.95, ISBN 1-56750-017-X (paper), A\$125.95, ISBN 0-89391-870-9 (cloth).

The declared, and certainly ambitious, aim of this book is to bridge the gulf between managers who use information to make decisions in organizations and information providers. Of the theory by which this might be achieved there is ample consideration. Yet despite the analysis of

theory by list and its dissection into bullet points, and despite the author's guidance on which chapters managers may gainfully omit, it is doubtful whether practicing managers have the time or stomach for quite so much theory. But the book is also aimed at the improvement of information providers, and they may be of more reflective and philosophical bent. In addition, the book contains empirical evidence in the form of a single and detailed case study, intriguing in itself, and presented to test theory rather than to enlighten directly.

The case is a study of the experience of Kuring-gai College of Advanced Education between 1975 and 1980, a period when the institution faced the problem of having to retrench teaching staff. Kuring-gai is now a campus of the University of Technology Sydney; indeed, the author still works there and this book is a version of her Ph.D thesis, completed in 1989. Converting a thesis into a book is no easy task for what is written to satisfy the probing examiner may be less appropriate for the general reader and may be particularly indigestible fare for the stressed manager. There is a more subtle problem too, one that becomes acute when the author studies her own workplace; it is difficult to retain objectivity. The obsessive enthusiasm required for a thesis must be tempered for a book.

The theoretical orientation of Browne's book does much to hide its lack of objectivity. Chapter 2, on models of organizational decision making, is really a *tour de force* and wonderful reading for the information providers she has in mind. But her particular perspective on the theoretical does lead to some observations which readers who are not information providers might find just a little odd. For example, it is claimed that while information systems can be changed, the way people use information in the organisation cannot (p. 16), that problems have alternative courses of action rather than solutions (p. 10), and that decision makers, following a rational model, choose the alternative that will *maximise* effort (p. 20). This may say much about decision making in an academic institution, but it is an inappropriate foundation for the comprehensive model that Browne seeks for all managers (p. 71).

Despite the evidence from her own case study, Browne favours a bounded rationality, structural model of decision making over a political, garbage can model. From this preference she constructs a hybrid designed to reflect decision making as a process driven by delay and unanticipated problems, a process in which there are no sequential phases and in which change occurs throughout. And yet, eschew as she might the concept that solutions search for problems, Browne's own concentration on finding an appropriate model to fit her empirical observations is itself analogous to a garbage can approach. There is no attempt here to use models to understand the real world: the real world is used simply to test the models.

But how much of the real world does the case study reveal? Browne's main evidence is drawn from the minutes of Council meetings, "some 714 pages of A4 paper (about 11 3/4 by 8 1/2 inches). The minutes averaged 10.3 pages per meeting, single-spaced" (p. 92). Augmenting this riveting reading were 454 written reports and 100 oral reports presented to Council. Obviously the Council was not short of information, yet even this mountain does not justify Browne's tacit assumption that Council members had no more information about the problem than they received through the Council. Browne chooses to ignore the reality that the Council consisted of individuals who might just have procured - and used - information on their own account. But there is much more striking evidence of unworldliness: after nearly six years of grinding deliberation during which the Council seems to have made no decision, it gave up even trying to make one. The State government had decided that no retrenchments would be required after all.

From beyond the perspective available from the Kuring-gai campus, it seems that the case is not one of decision making at all, but of how to avoid making decisions (though perhaps with maximum effort) until the need to make them goes away. While many managers are thoroughly familiar with this practice, they might be less familiar with the theory to support it. Your reviewer presented this somewhat cynical view to a conference recently, only to find

managers and consultants alike taking it very seriously indeed. Their anxiety to contribute to Professor Browne's royalties suggests that decision making is not necessarily about making decisions and that your reviewer may be quite wrong.

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**Wire & Wireless. A History of Telecommunications in New Zealand 1860-1987** by A. C. Wilson (The Dunmore Press, Palmerston North, 1994) pp. 235, A\$29.95 ISBN 0-86469-210-2

This book provides a comprehensive account of developments in New Zealand telecommunications from the beginnings of the government-owned telegraph in the Canterbury Province in the early 1860s to the break-up and deregulation of the national postal and telecommunication services in 1987. In his brief acknowledgements and introduction the New Zealand author, who holds a PhD in the History of Ideas from the Australian National University, reveals that his study was ten years in the making, having its origins in 1984 when, as an employee of the New Zealand Post Office Museum and Archives, he set out to update Howard Robinson's *A History of the Post Office in New Zealand* (1964). After the splitting up of New Zealand Post and Telecom in April 1987, his earlier institutional and administrative bias gave way to a broader account of the history of telecommunications in New Zealand during the 'Post Office era': that is, when these services were run as a government monopoly by a department of state. Although giving credit to staff of the New Zealand Post Office and Telecom for providing information and assistance, his study was not commissioned by either of these enterprises. Much of the work was completed while he was a resident fellow at Victoria University's Stout Research Centre. He thus writes as both an insider and an outsider to the telecommunications organisations that are central to this historical study.

It is somewhat anachronistic to apply the term 'telecommunications' to describe the history of postal, telegraphic and telephonic services over the first generations covered in this story, since the word began to be used officially only in the early 1930s. However, this contemporary concept serves a useful purpose in this context because of its comprehensiveness.

In his introduction the author highlights four broad themes running through his history: firstly, 'the international context', secondly, the specifically 'domestic factors' which shaped New Zealand's telecommunications; thirdly, 'the impact of specific politicians...and senior department staff'; and fourthly, the 'imperatives generated by the equipment and technologies'. In his very useful opening chapter on overseas antecedents, and in his subsequent chapters (ten in all, apart from the introduction and conclusion), he regularly returns to the theme of the importation and adaptation from overseas of new communication technologies into the New Zealand environment. Indeed, he generally succeeds in alluding to his broad themes throughout the narrative chapters, which follow successive chronological periods.

The book is grounded on a wide reading of official archival sources, notably in the