

the difficulty of resolving that point because not enough is known about how ordinary mechanisms function under ordinary conditions to extrapolate to extraordinary conditions. McCloskey also neatly points out that the goal of interpreting flashbulb memories raises a wealth of difficult and unresolved questions about ordinary memory mechanisms.

In contrast to *Affect and Recall*, which focuses upon one single paradigm, *Human Memory: Paradigms and Paradoxes* by Robert Greene covers nine paradigms. In his preface, Greene uses the term 'paradigm' to 'refer to those tasks that form the core of research and knowledge in the field'. Whether or not this matches one of Kuhn's uses of the term is not critical in the context of Greene's reminder that cognitive psychology seems to some people to be more and more driven by a limited number of experimental tasks that have themselves become the chief concern of researchers, rather than the issues which motivated their original development. Although this situation might be disconcerting to some, Greene (perhaps being unduly flattering) sees such paradigms as fascinating puzzles that yield examples of the 'scientific method at its most sophisticated'.

He complains however that these paradigms are described incompletely, inaccurately and in outdated terms in most textbooks on memory and in many research papers, and the desire to remedy such complaints forms one of the main motives for his book. The book is shaped, too, by the author's sympathy with the proceduralist approach to memory, as described by Kolers and Roediger in 1984. This approach conceives of memory as the product of the mental procedures carried out at the time of encoding, and, because it seems to suggest that there are as many kinds of memory as there are mental procedures, Greene is happy to present a sequence of independent tutorials dealing with individual paradigms that are announced as 'the most classic and important ones'.

The first five chapters cover short-term memory paradigms: iconic memory and partial report; modality and suffix effects; recency effects in free recall; the Brown-Peterson task; and Sternberg's memory scanning task. The next three chapters on encoding, repetition and eye-witness testimony deal with long-term memory, while the ninth chapter on implicit memory is included to illustrate a paradigm that is not yet fully developed. Each paradigm is dealt with in detail and with effect, but, contrary to Greene's claim, there will be more than 'a little quibbling' about his choice of the 'most classic and important' paradigms in memory research. Why is working memory not included, or the great body of work on retrieval stemming from Tulving's work not directly dealt with? What of comprehension and remembering? Why not include autobiographical memory or even flashbulb memory? It seems something of a mystery why Greene should have been so unnecessarily contentious by insisting that he has selected *the* most important paradigms, rather than merely *some* of them.

And this claim seems likely to prime the reader for other contentious statements, of which there are more than a few. For example, on page 1 we find: 'There are perhaps three classic sources for the presence of limitations on information-processing capacity'. We are told that these are: Miller's 'seven, plus or minus two' in immediate recall; attention to several sources simultaneously; and the partial-report paradigm developed by Sperling. It is not difficult to think of others than those offered (such as Tulving's notion of retrieval limitations, or Watkins' notion of cue overload), and the impression begins to form that the author is determined to force the subject into a simplified schema for his own convenience.

Despite the adverse points, this book will be useful to anyone who wishes to study these particular topics in greater depth than might be obtained from their textbook and with greater convenience than going to a specialized volume or review article. But, as Greene makes clear, this is not a textbook. There is no integrating narrative, and the coverage of human memory research is deliberately restricted.

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Analytic Approaches to Human Cognition: In Honour of Professor Paul Bertelson. Edited by J. Alegria, D. Holender, J. Junça de Moraes & M. Radeau. Amsterdam: North-Holland. 1992. Pp. xv + 440. Cased, \$131.50.

In July 1991 a conference was held on the occasion of the retirement of Paul Bertelson, until then the Head of the Laboratory of Experimental Psychology at the Université Libre de Bruxelles, and one of the *éminences grises* of European cognitive psychology. Contributors to the conference included his

academic offspring in Brussels as well as congenial spirits from elsewhere in Europe and North America. *Analytic Approaches to Human Cognition* includes the majority of the papers that were presented at that conference. Both the conference and the book were planned to represent the most important facets of Bertelson's career. A book thus conceived will be as wide or as narrow in scope as the person to whom it pays tribute. Because Bertelson's interests cover a large part of the major research topics in cognitive psychology, the scope of the book is wide.

However, some themes stand out. Especially prominent are low-level speech perception and production and low-level processing in reading. Two of the six sections into which the editors have organized the 22 chapters of the main body of the text are exclusively devoted to these topics, and various aspects of speech processing and reading feature in the other four sections as well. The themes of the remaining sections are: the presumed modular nature of certain processing systems; cognitive functioning in individuals with particular neurological disorders; the use of response times as a means to disclose various aspects of human cognition; and Bertelson's interest in 'psychophilosophical issues'. The six sections are preceded by a contribution by Broadbent, who provides an overview of Bertelson's work as a cognitive psychologist and the context in which it took place. Generally, the papers are of a high quality and reflect the authors' expertise in the subject matter.

As across the six sections, the topics dealt with within them are diverse. 'Language perception and production' contains a chapter by Dupoux and Mehler on the relation between the awareness that different groups of language users (literate vs. illiterate; users of languages with different orthographies) have of the various segments in the speech input (e.g. syllables or phonemes), on the one hand, and their performance in on-line segment-detection tasks, on the other hand. A second chapter in this section by Serniclaes and Wajskop contrasts a 'phonetic' hypothesis and an 'acoustic' hypothesis concerning the mechanisms that generate the contextual variations that occur in the perception of phonetic features. The third chapter by Brédart discusses the question of how names are put to faces. Assuming that face naming is simply a particular case of speech production, the author attempts to integrate Bruce and Young's model of face recognition with Levelt's model of speech production.

The fourth chapter by Alegria and colleagues discusses the intriguing question of how deaf people develop the phonological representations that, like normally hearing subjects, they turn out to possess and use in many cognitive activities (for example, in reading or spelling or in activities that exploit short-term memory). The answer seems to be that lip reading and so-called cued speech (a system of manual aid to lip reading) underlie the development of these representations. The last chapter in the section by Kolinski investigates the effect of high-level contextual knowledge and schooling on the occurrence of conjunction errors in the recognition of written words presented in rapid succession (e.g. reading the words 'line' and 'lace' as 'lane') and in speech perception (e.g. hearing 'black' when 'lack' is presented to one ear and 'back' to the other).

The second section (on 'Reading') begins with a chapter by Baddeley and Gathercole that investigates the role of the phonological loop (one of the components of the working-memory model developed by Baddeley and Hitch) in learning to read. One of the authors' conclusions is that the relation between the workings of the phonological loop and reading performance is not a straightforward and simple one. They concur with Bertelson's view that reading skill is multifaceted and to understand how it is acquired demands acknowledgement of its complexity and richness. An educationally interesting suggestion with clear practical implications also emerges from this study: that, during the early stages of learning to read, group teaching may be more effective than individual tuition. The chapter by Byrne takes literacy acquisition as a case study to show what experimental research, performed under carefully controlled circumstances, can tell us about reading under more natural circumstances. It echoes the conclusion of Baddeley and Gathercole that reading failure can have many causes, but it highlights a deficient phonological awareness as one of these causes.

This relation between reading skill and phonological awareness is the central issue in a further chapter by Morais and Mousty in this section (and indeed is a recurrent theme throughout this volume). Previous studies by Morais were instrumental in qualifying the widespread view that phonemic awareness was merely the precursor of reading acquisition. Instead, the Morais studies demonstrated that phonemic awareness is not only a cause but also an effect of reading skill. The chapter by Segui and Grainger attempts to disentangle the effects of neighbourhood frequency and word frequency in various word-processing tasks. The starting point is the consideration that the recognition of low-frequency words may simply be harder than that of high-frequency words because low-frequency words

are likely to have neighbours of a higher frequency and not because of their lower frequency *per se*. If true, then word recognition latencies should not be affected by printed word frequency when manipulated independently of neighbourhood frequency. The final paper in this section by Content and Peereman contrasts the single-route and dual-route models of word naming. If distinct routes are used in recognizing printed words (e.g. a lexical look-up procedure and a prelexical phoneme-assembly process), then the authors argue that it should be possible to create circumstances which sometimes favour one route and at other times favour the other. The data of two experiments show that this can be done, and the authors conclude that print-to-speech conversion is effected by two separable processes.

The third section on 'Modular systems' contains three chapters on a number of research topics where the underlying cognitive processes are all candidates for modular organization (although other sections also contain chapters where modularity is a key notion). Each is concerned with early perceptual processes which are thought by Fodor (amongst others) to lend themselves best to a modular organization. The chapter by Held discusses the development of binocular vision in infants and relates this process to structural changes in the visual cortex. A chapter by Radeau investigates whether a (false) verbal instruction affects the pairing of two sensory signals, one auditory and one visual. Any effect of the instruction would suggest a conceptual influence on the pairing and, hence, non-modularity of the underlying pairing system. The data suggest cognitive impenetrability (and hence modularity) of this system. The third chapter in this section by Liberman contrasts a 'vertical' view that speech perception is carried out by a specialized phonetic module with a 'horizontal' view which holds that speech perception is no different from the perception of other sounds. On the basis of plausibility and parsimony arguments, the author opts for the (less conventional) vertical view.

In the fourth section on 'Neuropsychology', Shallice and Plaut discuss a connectionist network based upon four critical assumptions. They show that lesioning the model produces the complex of symptoms characteristic of deep dyslexia. The focus of the chapter by Patterson and Marcel is on phonological alexia, which is characterized by an impaired ability to read aloud novel letter strings. The authors' goal is to find out whether this disorder is specific to reading or results from a general disturbance of phonological processing both in reading and in other tasks. The tasks in question are based on those which the Brussels group has used with various non-patient populations. A third paper by Campbell reports on the ability of neuropsychological patients to lip read. The author's aim is to find out how lip reading 'cuts across the cognitive space'. Since it involves both vision and language processing, an interesting question is whether it goes with visual skills, with language skills or with both. In this study the dissociations between lip reading and many other cognitive skills are mapped out. Finally, the chapter by Seron and Noël deals with the relation between acalculia (a deficit in calculation and number processing) and language processing at different levels (lexical and syntactic). Here, comparing performance on number-processing and language-processing tasks provides the data to substantiate or reject the view that calculation is accomplished by a cognitive module specialized for number processing.

The section on 'Mental chronometry' once again presents a variety of topics, but all reflect Bertelson's early interest in analysing subjects' performance in tasks that involve relatively simple human behaviour and in which performance is timed. Rabbit's paper reviews the literature on the repetition effect, discovered by Bertelson over 30 years ago: in serial choice-reaction-time tasks, responding is faster when the stimuli and the responses on successive trials are identical (repetitions) than when they differ. Rabbit relates this effect to the priming effect that occurs in 'discrete-trial' tasks in which a pair of stimuli is presented within a single trial and the influence of the first on processing the second is measured. This priming effect is also discussed in a chapter by Holender, who challenges its usual interpretation in terms of spreading activation. He argues that the effect may in fact be a congruity effect that arises when an irrelevant aspect of the experimental situation evokes a response congruent or incongruent with the required response. The third paper in this section by Umiltà and Nicoletti puts forward a model of the spatial stimulus-response-compatibility effect, which is the phenomenon that in choice-reaction-time paradigms latencies are shorter when stimulus and response correspond in space than when they do not.

Finally, in the section on 'Psychophilosophical issues', de Gelder discusses the place of the idea of consciousness in cognitive psychology, while Joffe Falmagne poses the question of how complex kinds

of learning (such as concept learning, language acquisition and the acquisition of knowledge) are realized.

To sum up, many different themes pass the reader who studies the 440 pages of this volume. Furthermore, the treatment of a particular subject is often highly specialized. These two facts combined make the book hard going, both for readers who are specialists themselves but in just one of the content areas covered in this book and also for those who know or want to know about many different research areas in cognitive psychology, but only superficially. Given these features, one appeals to the editors for guidance, perhaps in the form of an introductory chapter that precludes and relates to the different topics. Unfortunately, the editors provide only a brief preface in which they do little more than express their gratitude to the authors for their contributions. The book would also have gained if the editors had been more prescriptive. This volume actually contains detailed reports in the conventional format of journal articles of as yet unpublished experiments on the one hand, and review chapters on the other. Given the multitude of topics covered, it would have been more appropriate to include only review chapters. Moreover, a ridiculously expensive book such as this should not only offer quality in the individual contributions (which, on the whole, it does), but also uniformity of style and approach as well as some 'glue' between the contributions (which it does not).

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New Directions in Psychological Anthropology. Publications of the Society for Psychological Anthropology, No. 3. *Edited by* Theodore Schwartz, Geoffrey M. White & Catherine A. Lutz. Cambridge: Cambridge University Press. 1992. Pp. x + 352. Cased, £35.00; paper, £12.95.

This book has its origins in some of the papers presented to sessions on psychological anthropology at the American Anthropological Association's meetings in 1986 and 1987. The collection reveals a subject that has come of age and has a maturity which leads it no longer to dismiss out of hand (as much anthropology once did) the results and methods of conventional psychology. I would suggest that it equally behoves psychology to take anthropology seriously, and this collection may well be a good place to start for teacher or student alike. That said, one warning must be given: the contributors all teach in North America, and there is a very American focus to the discussions. The few references to non-American authors are predictable: Freud, Foucault, Lacan and Levi-Strauss. Sperber, the only European to be mentioned who works in psychological anthropology, gains only a passing mention. None of the British or European figures in the field is discussed.

As the introduction makes clear, the contributors were asked not so much to provide detailed surveys of the subject as to provide position statements. Inevitably, explaining where we are and what we want to achieve involves some discussion of where we have been. The collection thus provides a useful introduction, and the prose is more lively than would otherwise have been the case. The book is divided into sections of papers on connected themes, and together these cover a wide field. These include cognition (including schemas) and the self, issues arising from development and what we may term 'embodiment', before coming to psychiatry and finally (inevitably?) to psychoanalysis. There are too many good papers to mention them all. Two may stand for the rest, for they well summarize the general theme of the book, that (in the closing words) 'psychological anthropology can insist to our colleagues in psychology, whose object of research we share, that what we have learned of culture is not to be ignored — it is as essential a constituent of human nature as the human brain and body' (p. 346). This position is the basis for the claim with which I began, that psychological anthropology has come of age.

The general thesis of the authors is summarized in Schwartz's final essay. What he terms the 'incompleteness thesis' is that human nature contains a physical aspect (physiology), a mental aspect (psychology) and a social aspect (anthropology). We ignore any of these at our peril. Some of the papers included here demonstrate how the mutual interactions of these different aspects are such that they cannot and should not be 'factored out'. To do so is to reduce the subject matter to make it less interesting because, critically, it is no longer fully human. Schwartz adds a further twist, arguing not only that these aspects are inextricably interconnected, but also that the contents of belief, language and