Book Review

Rapp, B. (2000). *The handbook of cognitive neuropsychology. What deficits reveal about the human mind*. Hove, UK: Psychology Press. Pp. XV + 652. Cased, £55.00, Paper, £20.00

The intent of the *Handbook* edited by Brenda Rapp, to provide a comprehensive review of all major cognitive domains that benefit from the study of acquired deficits, is entirely fulfilled. Among the many merits of the volume, the variety of the treated topics and of the selected contributors is highly remarkable. In-depth chapters are dedicated not only to the most classic and well-known domains of cognitive neuropsychology, such as language processing and memory, but also to less familiar yet emerging topics such as numerical cognition, music and time perception, as well as to central and cross-domain issues such as consciousness. Even more noteworthy, each field is masterfully reviewed by distinguished and worldwide credited experts affiliated to a variety of universities around the world. The international collection of authors is well representative of the main concern of Brenda Rapp, to provide the reader with one of the best possible tutorial reviews of the field, no matter what it involves. In doing so, she has succeeded in guiding the contributors in producing focused by exhaustive summaries of the most significant findings in their area of research, avoiding any self-centred or idiosyncratic discussion of data and theories.

Reflecting a shared intention, each chapter reviews the evidence mainly, but not only, from the study of acquired deficits most relevant to the development of cognitive theories, and presents the current assumptions about representations and processes within each domain of knowledge. In doing so, the *Handbook* provides a critical review of data and theories in most domains of cognitive neuropsychology, with no intention to offer a complete reference book for all types of cognitive disorders. This purpose is readily apparent when looking through the contents list, where no direct reference to classic syndromes (e.g., frontal lobe syndrome, neglect) may be found.

Although the study of cognitive disorders represents the preferred source of data in drawing inferences about normal cognition, the value of bringing together different approaches is widely acknowledged by most of the contributors; the impact of their tutorials is enhanced by the effort to examine, whenever relevant to the development of cognitive theories, converging evidence from cognitive psychology, computational modelling, and neuroscience. Appropriate and up-to-date references to studies of unimpaired subjects are found throughout the text, with particular emphasis in the chapters on attention (Umiltà), semantic memory (Shelton & Caramazza), time perception (Mangels & Irvy), music perception (Peretz), numerical cognition (Noel), and spatiomotor aspect of action (Buxbaum & Coslett), and further to several chapters dedicated to word processing (Rapp, Folk, & Tainturier; Tainturier & Rapp; Nickels; Gollan & Kroll) and sentence processing (Martin, Berndt). The contribution of connectionist models in the evaluation...
and development of cognitive theories is specifically acknowledged in reading (Rapp, Folk, & Tainturier), spelling (Tainturier & Rapp), and in the semantic memory domain (Shelton & Caramazza).

The renewed interest of cognitive neuropsychology in anatomy is manifested in the recurring references to neurophysiological data, lesion-site studies, and functional imaging works (e.g., face perception, spatial representation, attention, time perception). In line with this attitude, the Handbook features (on pp. 619–621) five labelled diagrams of brain structures, including a lateral and medial view of the brain, a schematic representation of the limbic system, and a set of Brodmann areas. However simple, the diagrams, enriched by a glossary of anatomical terms compiled by Jennifer Shelton, offer to the naïve reader an essential and handy reference for basic neuroanatomy. Further to anatomical terms, such as lateral geniculate nucleus and neocortex, the Glossary (pp. 611–618) includes entries for many neuropsychological disorders (jargon aphasia, semantic dementia) and cognitive expressions (declarative memory, lexicon).

Keeping case-studies and acquired disorders as its core of attention, the Handbook of cognitive neuropsychology represents a well-timed reference book that bridges the gap between the strictly cognitive approach of the 1980s and the strictly neuroanatomical approach associated with the advent of new technologies in the late 1990s. In this regard, the Handbook offers an excellent and stimulating overview of past, present, and future issues in cognitive neuropsychology through the introductory section on Foundations (Part 1), by Max Coltheart and Ola Selnes, and the concluding section on Future direction (Part 9) by Michael McCloskey.

The ‘‘Assumptions and methods’’ chapter by Coltheart starts up neatly by defining the very central topics of the Handbook: that is, by answering the apparently trivial question ‘‘What is Cognitive Neuropsychology?’’. In doing so, the author provides a refreshing outline of the main theoretical and methodological issues, among which are functional modularity and deficit dissociations, dealing with common misunderstandings and concerns regarding the cognitive neuropsychological approach. The attempt to learn about the mind–brain relationship from acquired disorders dates back to ancient times, and it is the purpose of the chapter by Selnes to give an overview of the early contributions to neuropsychology. Over the centuries, progress in this domain largely depended on increasing accuracy of measurements and observations, and the alternate attention to the functional and anatomical correlates of human behaviour somehow reflected the introduction of novel behavioural and/or neuroanatomical methods of investigations.

For decades the task dissociation approach in the study of acquired disorders has led cognitive neuropsychologists to draw inferences on the functional organisation of the cognitive system (Shallice, 1988) and, more recently, the burst of functional imaging techniques has allowed them to attempt a more precise brain localisation of these functions (Frackowiack, Friston, Frith, Dolan, & Mazziotta, 1997). No one can doubt the benefits of both these approaches but, as sharply argued by McCloskey in the concluding chapter, the time has come for neuropsychologists to broaden the conception of their field of research. On the one hand, he raises the need for more sophisticated analyses of impaired performances that go beyond the dissociation arguments in order to draw fine-grained conclusions about cognitive processes and representations (yet examples of these studies may well be found throughout
Rapp’s *Handbook*). On the other hand, despite the undeniable value of functional neuroimaging techniques in probing brain localisation of cognitive functions, McCloskey reminds us of the greater advantage of combining these methods with the classic “lesion-deficit approach”, given that, as neatly highlighted in his arguments and contrary to what is commonly believed, neither avoids limitations and is superior to the other.

The *Handbook* includes seven more major sections (objects and space; attention and consciousness; words; sentences, memory; music, numbers and time; actions and plans) which are in turn divided in 21 chapters, each chapter followed by its own reference list.

The “Objects and space” section (Part 2) includes individual chapters on object recognition (Riddoch & Humphreys), mainly focused on visual agnosia, face perception and recognition (De Hann), and spatial representation (McCloskey). In the latter, McCloskey explores, through discussion of selected studies, two central concepts relevant to spatial cognition, i.e., the multiple sense of the term “spatial” in defining a spatial representation, and the question of reference frame.

In the following section (Part 3), the accurate and exhaustive chapter on the mechanisms of attention (Umiltà) is coupled with a stimulating chapter on consciousness (Farah). Here, one of the most fascinating and difficult aspects of human cognition is dealt with by discussing the perceptual-awareness dissociation in six different neuropsychological syndromes.

Language-related issues on word and sentence processing constitute the central part of the book, including 8 out of the 24 chapters. Research and theories about word processing (Part 4) are appropriately fractionated in accurate and clear chapters focused respectively on lexical mechanisms (Hillis), morphology (Allen & Badecker), reading (Rapp, Folk, & Tainturier), spelling (Tainturier, Rapp), spoken word production (Nickels), and bilingual lexical access (Gollan, Kroll). Similarly, findings and issues on sentence comprehension (Martin) and sentence production (Berndt) are the object of attentive reviews (Part 5).

The section on memory (Part 6) features a chapter on structure and mechanisms of memory (Parkin), mostly devoted to amnesia, one on the organisation of semantic memory (Shelthom, Caramazza), and a contribution on memory distortion (Dodson & Shacter). Besides the general clarity and accuracy in dealing with the respective topics, the section appears to lack an appropriate space for theories and findings on short-term memory and related disorders (e.g., Vallar & Shallice, 1990), an odd omission among the many pluses of the *Handbook*.

The music (Peretz), number (Noel), and time (Mangels & Ivry) section (Part 7) is certainly one of the most innovative parts of the *Handbook*. The three chapters are all clear and up-to-date, and offer to the reader the opportunity to familiarise with commonly overlooked but fascinating aspects of human cognition here presented in an accessible and enjoyable way. One final section (Part 8) is dedicated to different aspects of actions, whether spatiomotor aspects of isolated actions (Buxbaum & Coslett) and to planning and execution of everyday multi-step routines (Humphreys, Ford, & Riddoch).

Overall, the *Handbook* meets all the criteria for a state-of-the-art reference and resource book covering almost all cognitive domains enriched by neuropsychological methods and evidence. It offers beginners, whether students or researchers in a different field, an exhaustive overview of major contributions of cognitive neuropsychology. On the other hand,
experienced scientists will treasure the *Handbook* for providing easy access to an up-to-date review of domains that may be unfamiliar, as well as for offering valuable indications of unresolved issues and future directions of research.

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