From Neuropsychology to Mental Structure

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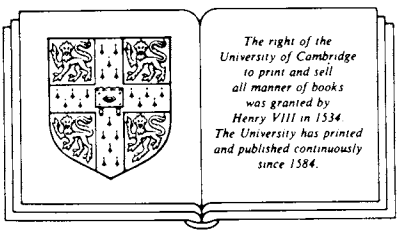

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To my mother

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Preface

Interest in neuropsychology has increased greatly over the past 20 years. This has mainly occurred for direct clinical reasons, such as the increase in the ability of neuropsychological investigations to assess the crippling problems in thought, memory, and language that can occur from brain damage. There is, though, a second reason for the increase of interest in the subject. The human brain is still the organ we understand least well, and the process by which its highest function – cognition – operates remains mysterious. The dramatic effects of brain damage appear to provide valuable evidence about how the systems underlying cognition operate. The aim of this book is to assess this evidence. Is neuropsychological evidence of any real value in understanding normal cognition? If so, what form or forms should this evidence take, and what substantive conclusions can be drawn?

The relevance of neuropsychological findings remains controversial because neuropsychology – in a somewhat parallel fashion to psychology – has rejected much of its former doctrines in virtually every generation. The approach that is the subject matter of this book, cognitive neuropsychology, is hardly a generation old. In many respects, cognitive neuropsychology seems very healthy. Interest in it is increasing rapidly, and surprising findings are frequently being made. Yet its practitioners use conflicting methodologies, each of which balances on a set of barely examined assumptions.

In the 1970s, I wrote two articles (Shallice, 1979a, 1979b) that assessed, in a positive fashion, a methodological approach then unfashionable within neuropsychology – the single-case study. Since then, this approach has become very popular and is now being claimed as the only way to carry out neuropsychological research relevant to normal function. Some years ago, I decided that the position I had earlier adopted was in certain respects glib and that a more thorough assessment would be appropriate. That assessment has grown into this book.

The book is addressed both to neuropsychologists and to those in neighbouring fields who may wish to draw on neuropsychological research findings. It is structured in terms of an overall argument on the relevance of neuropsychological findings and the types of methods used. I argue for an approach between the more traditional neuropsychological procedures, with their emphasis on group studies and the anatomical localisation of deficits, and the more fashionable 'ultra-cognitive' methods, which ignore anatomical and other neuroscience considerations and are

concerned only with the results of single-case studies. I have attempted to ground the argument in discussions of those topics where cognitive neuropsychology has been most successful. The somewhat idiosyncratic ordering of the topics arises from their place in the overall argument. No attempt has been made to provide complete coverage of the literature; the set of potentially relevant neuropsychological findings and theories of normal function to which they might relate is far too large. This has meant that certain important areas (e.g. agrammatism) are dealt with in less detail than they objectively deserve.

The selection of topics and their ordering in the overall argument has been strongly influenced by where I have worked. Although cognitive neuropsychology is now an approach that is used world-wide, many of its roots lie in research in Britain in the late 1960s and 1970s, and a number of the topics addressed are those that became current in that period. More specifically, in the late 1960s, as a cognitive psychologist at University College, London, I began to collaborate with Elizabeth Warrington at the National Hospital. In her department I had the very good fortune of working where the range of patients seen for clinical purposes and, more particularly, the variety of research problems encountered – both clinical and basic research – were to become as great as those in any neuropsychological centre in the world. Most of my empirical work has continued to be carried out there, and I remain convinced that the best environment for neuropsychological investigations is a clinical department where work on clinical and basic research problems can be mutually supportive. Mutually beneficial contacts between basic research workers and clinicians also reduce the ethical problems of studying a devastating illness for reasons other than the direct benefit of the patient. The particular approach I advocate here is strongly influenced by the methods used in the National Hospital.

The other strong influence on selection of topics has been the other part of my work environment – the Medical Research Council Applied Psychology Unit, Cambridge, where I have been based for the past 10 years. The type of cognitive psychology theorising with which cognitive neuropsychology methodology dovetails effectively is very well represented by the work of Alan Baddeley, John Morton, Tony Marcel, Karalyn Patterson, and my other colleagues. The extensive discussions that take place at the APU have kept focused the other half of the project – the understanding of normal function to which neuropsychological research relates.

A book of this length cannot be written without much help and support. During a period when the excellent research environment that British scientific institutions used to provide has become a part of our history rather than our current reality, I have been most fortunate to work for the Medical Research Council and their Applied Psychology Unit. Without the support of the MRC and the encouragement of Alan Baddeley, the director of the APU, this book could not have been written.

I am grateful to many people for their assistance. During the whole period of the development of the idea of the work, I was much helped by Deborah Hodgkin. Much of the first draft was written while I was on leave of absence as a visitor to Jacques Mehler's CNRS unit in Paris and as a visiting professor of the University of Padua. I very much appreciated the facilities provided and the warmth of the

welcome at both institutions. Elizabeth Warrington kindly read most of the first draft; she helped me to eliminate many errors and rococo meanders. Marie-France Beauvois, Jacqueline Derouesné, David Howard, John Morton, Don Norman, Karalyn Patterson, Eleanor Saffran, and Alan Wing all read chapters; I much appreciated their cogent comments. The book was produced with an antiquated technology – the biro; my secretary, Sharon Gamble, somehow managed to translate the obscure scrawls produced into a coherent text with remarkable speed and accuracy. I thank her very much and would also like to thank Carmen Frankl and Alan Copeman, who prepared many of the figures.

The work would never have been completed without the support of Maria, my wife, whose encouragement of the hours I spent on it never failed to astonish me. Finally, I would like to thank Susan Milmoe and the staff at Cambridge University Press, who produced the manuscript with much skill and speed.