



## Geert-Jan Rutten: The Broca-Wernicke Doctrine: a historical and clinical perspective on localization of language functions

Springer International Publishing, 2017, (E-book ISBN 978-3-319-54633-9) eBook £83, Hardcover £104 78 black/white illustrations, 38 color illustrations

Adrien Thomas May<sup>1</sup> · Karl Schaller<sup>1</sup>

Received: 18 January 2018 / Accepted: 25 January 2018 / Published online: 17 February 2018  
© Springer-Verlag GmbH Austria, part of Springer Nature 2018

Geert-Jan Rutten's book *The Broca-Wernicke Doctrine* offers an extraordinary journey through language localization, symptomatology, and its history.

Aphasia and speech-related disorders are generally easily detectable pathologies, but classifying them, discussing them, and localizing the source of the problem remain a major point of discussion and research, especially in neurosurgery. Indeed, neurosurgeons are always facing situations where questions of operability, safe extent of resection, or prognostic of recuperation are addressed.

This is not a new discussion topic and all medical students and physicians have heard of the two most famous scientists who gave their name to language-related areas: Paul Broca and Carl Wernicke.

The reality beyond these two names is at the given time more sophisticated. Many theories and theorists were involved in intense debates. There was no or little consensus regarding the understanding of language pathology.

In this context, it clearly appears that much more has to be known and learnt about this fascinating subject.

Consisting of 306 pages, this book is organized in nine main chapters, each divided in subcategories: (1) "Broca and the Birth of Localization Theories," (2) "Wernicke and Connectionism," (3) "Aphasia or Agnosia?," (4) "The Diagram Makers and Their Critics," (5) "Naming and Numbering the Convolutions," (6) "Mapping and Lesioning the Living Brain," (7) "Neo-connectionism, Neurodynamics

and Large-Scale Networks," (8) "Functional MRI," (9) "Recovery from Brain Damage."

Original manuscripts, drawings, and images are suitably placed in the text and provide a unique experience of lecture, between text extracts written by the original historical authors and a summary by Rutten. Selected references to further study the subjects are placed at the end of each chapter.

The first chapters present the early localization theories with their supporters and detractors (Gall, Flourens, Bouillaud, Broca). The book continues with the « theory of connectionism » and Carl Wernicke. It further continues with Lissauer and Freund concepts. To catch the scientific atmosphere that was prevailing, Rutten always proposes opposed theories and opinions from that time in order to get a general feeling for the scientific debate.

After describing the path that led to naming and numbering the convolutions, the aphasia journey arrives to more modern themes with chapters concerning mapping and lesioning the living brain, and new concepts on connectionism.

The latter are substantiated through an explanation of contemporary techniques for language localization, i.e., by computer-assisted and functional MRI language localization.

The book concludes with the theme of recovery from brain damage.

After reading this book, the reader will have a broad panorama of *language* in neuroscience, maybe more specifically in neurosurgery, due to the author's sensibility to this field. And this is what we appreciated in Rutten's book: clear concepts exposed from a slightly neurosurgical point of view, but with original reference extracts thus giving a genuine impression of diving in the aphasia adventure.

A must read for each neurosurgeon interested in the field of aphasia and also in localization of brain function.

✉ Karl Schaller  
karl.schaller@hcuge.ch

<sup>1</sup> Department of Neurosurgery, Hopitaux Universitaires de Genève, Rue Gabrielle-Perret-Gentil 4, 1205 Geneva, Switzerland