

*A History of Psycholinguistics: The pre-Chomskyan era.* Willem J. M. Levelt. Oxford University Press, USA; 1 edition (September 1, 2012) ISBN-10: 0199653666

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Most psycholinguists mark the beginnings of their field with the birth of cognitive science in the 1950's. However, the central thesis of Willem Levelt's weighty volume is that serious psycholinguistic research began much earlier and that we are selling the discipline short with our ignorance of a far richer history. Remarkably, Levelt (2012:3) describes the landmark events of the 1950's as merely "a hinge in an old, well-established, and respectable science." His book provides a window into the earliest history of psycholinguistic research, from 1770 through the 1950's. Readers will learn how theoretical constructs rose, fell, and were reinvented again--the contributions from early scholars vulnerable to barriers of language, geography, politics, and time.

The book is an astounding compilation that reflects Levelt's painstaking reading of the source material, exploiting both his multilingualism and his long career in the field. (For those who may doubt Levelt's translations, he provides the original text in footnotes.) Throughout the book, I discovered connections (and often disconnections) among early scholars that I had not grasped before, and I felt as if I were privy to tidbits of old academic gossip. This is not to say that the book is an easy read, to be digested at bedtime while propped up by pillows. Levelt is nothing if not exhaustive in his approach. I found myself wanting to skim through some of the dreary details to get to the good parts. But in the end, this is a book that psycholinguists will want on their shelves or in their Kindles. It is an invaluable resource, both for those who want to look up the answer to a few historical questions and for those wishing a complete historical perspective on this fascinating discipline. Subject and author indexes, though not error-free, help one find targeted information without reading the entire book.

I have been teaching psycholinguistics for nearly 25 years and I regularly include a lecture or two on the history of the field. After reading Levelt's book, my history lectures will not change dramatically (as there is little time to go into greater detail), but all my lectures will be enriched by my increased understanding of the lengthy accumulation of psycholinguistic knowledge. For example, I discovered that Sigmund Exner (1894) speculated about a cohort theory of spoken word recognition 90-odd years before William Marslen-Wilson (1978) outlined his cohort theory. And I learned that associative priming experiments were conducted as early as 1897 by Walter Pillsbury, who would go on to become a professor at the University of Michigan and for whom my classroom this fall is named.

While Levelt's scholarly exhaustiveness makes the book a terrific resource, it also hampers the book's readability somewhat. Rather than focusing solely on the findings, hypotheses, and theories that still play a role in psycholinguistics today, Levelt takes us on a much broader tour, visiting the writing of scholars who played only minor roles in the development of the field. For example, in Chapter 2, we learn about the speculations of Johann Herder (1770), Dietrich Tiedemann (1772), and others on the origins of language, which bear little relation to the current debates on how language evolved. Likewise, in Chapter 7, the discussion of linguistic structuralists such as Henri Delacroix seemed peripheral. Those early writings are interesting for their own sake, and they helped to form a foundation on which psycholinguistics could emerge, but some sections of the book struck me as more pre-history than history of the field.

A strength of Levelt's book is the context he provides around scholars and their contributions. He notes numerous missed connections in which scholars fail to cite one another, often speculating as to why this happened. Occasionally, Levelt notes the extra obstacles faced by women scholars (e.g., Clara Stern, in Chapter 10), and throughout the book, Levelt includes "first woman to" milestones, such as Charlotte Malachowski, the first woman to write an experimental dissertation in psycholinguistics, in Germany in 1918. In most chapters, women scholars appear relatively infrequently, reflecting what was clearly a boys' club of scholars--especially in the early years and especially outside the domain of language acquisition.

The book is divided into four sections: a brief orientation (Chapter 1), establishing the discipline 1770-1900 (Chapters 2-6), early twentieth century psycholinguistics (Chapters 7-14), and psycholinguistics re-established (chapter 15). The third section contains the bulk of the book and is organized both by schools of thought (e.g., structuralism in Chapter 7, behaviorism in Chapter 8) and by topic (e.g., language acquisition in Chapter 10, language in the brain in Chapter 11). Important themes in this section are the theoretical divisions between American and European scholars, and in Chapter 14, the impact of anti-Semitism and World War II. Most chapters could stand alone as a class reading assignment. In the remainder of this review, I will provide brief glimpses of each chapter before closing with some comments about Levelt's central premise.

Chapter 1 is a thrill ride through the year 1951, with juicy details about major figures in the field. For example, I discovered that John Bissell Carroll, who helped organize the "Interdisciplinary Summer Seminar in Psychology and Linguistics" in 1951, had been Whorf's teen-age research assistant, B. F. Skinner's first graduate student, and was later mentored by George Zipf. This succinct chapter provides a

great deal of insight into three landmark events of that year, Carroll's Seminar and two publications: George Miller's textbook, Language and Communication, and Karl Lashley's paper, The Problem of Serial Order in Behavior.

Chapter 2 describes the work of historical-comparative linguists, philosophers of language, and others (including Charles Darwin) in the Romanticism era, who laid a foundation upon which psycholinguistics could emerge. Compared with Chapter 1, this chapter is plodding and less directly relevant to the history of psycholinguistics as a discipline. There is little risk in skipping this chapter on the first go-round, because later chapters will point you back to the best bits.

Chapter 3 focuses on language in the brain and reflects a series of substantial developments that continue to influence current psycholinguistic and neurolinguistic research. In addition to an excellent section on Franz Gall's work on faculty psychology, the chapter includes the lesser-known but fascinating story of Marc Dax and his prescient claim that language was left-lateralized. I won't spoil the plot, but it involves hemiplegia, leeches, and a paper that was supposed to be presented in 1836 but didn't actually appear until 1865. The sections on Paul Broca and Carl Wernicke are engrossing and thorough.

Chapter 4 covers early diary-based research on child language acquisition. What begins as an engaging account of early efforts to document language development turns into an exhausting list of contributions by mid-chapter. Impatient readers can skip to the last major section of the chapter, "Issues and Controversies in Child Language." This highly readable section summarizes the stages of language acquisition, as understood at that time, and the theoretical controversies of the day, closing with a fascinating section on the rise and fall of signed languages.

Chapter 5 is a favorite of mine; I was riveted by descriptions of the equipment and methodology used in nineteenth century experimental research. Highlights included Franciscus Donders and Johan de Jaager's measurement of spoken reaction times using a phonautograph and a tuning fork in 1865, Wolfgang von Kempelen's 22-year project to complete the first speaking machine in 1791, the cylindrical device James McKeen Cattell (1885) used to first demonstrate the word superiority effect, and the first eye movement experiments performed in several different labs during the period 1878-1898. The science is further enlivened with personal details about the interactions between scholars and the challenging financial circumstances under which some of them lived. Likewise Chapter 6, which is

devoted to Wilhelm Wundt and is the final chapter of Part 2, provides rich detail, both in terms of Wundt's actual contributions and the context in which they were made.

Chapter 7 brings us into the 20<sup>th</sup> century, focusing on linguistic structuralism and the psychology of thinking during the early part of the century prior to World War I. I found the latter topic of more interest: With Karl Marbe's methodology for studying introspection, Otto Selz's computational approach to mental operations, and his incremental theory of sentence formulation, it is easy to see connections between these German scholars and modern psycholinguistics.

Chapter 8 focuses on American behaviorism. There are strong sections on the well-known figures, John Watson, Leonard Bloomfield, B. F. Skinner, and Charles Osgood, as well as lesser-known scholars such as Grace de Laguna and Charles Cofer. By comparing scholars, Levelt illustrates his point that there was no single dogma of behaviorism. Although Levelt notes that rigorous experimental design was a lasting impact of behaviorism—one that gave American psycholinguists an advantage—this chapter focuses more on theory than experimentation. Nonetheless, I was delighted by the description of a Russian semantic generalization experiment (Razran, 1939) that used salivation as the dependent measure. Chapter 8 also introduces us to Zellig Harris, founder of the first American linguistics department at the University of Pennsylvania in 1946 and supervisor of Chomsky's 1955 dissertation. Levelt (2012:260) writes "Generative grammar was conceived in a strictly behavioristic framework. There is no hint in Chomsky's dissertation that he would soon become the leader of the so-called 'cognitive revolution'."

Chapter 9 focuses primarily on European functionalists and covers an overlapping, but generally earlier time period compared to Chapter 8. A new emphasis is the role of the listener in sentence interpretation and in understanding speech acts. Levelt weaves together threads from different eras, to illustrate how the modern fields of sentence processing, pragmatics, and conversational analysis were influenced by early scholars. Even so, this chapter fails to build much excitement. Karl Buhler's theoretical contributions are discussed at most length.

The next three chapters are more empirically oriented, but continue to provide rich details about the most influential scholars of the era. Chapter 10 covers language acquisition from the 1900s through the first half of the century; the last 22 pages efficiently summarize the European and American research from this productive period. Chapter 11 covers language in the brain, focusing on (mostly European) aphasia research and lively debates over functional localization. Here, I was particularly struck by Pierre Marie's (1922) anticipation of computational models of distributed processing: In his crusade against

localization, he suggested that each nerve cell participates in many different psychological processes via different vibratory patterns.

Chapter 12 returns to adult psycholinguistics, although research in language production and language comprehension was meager during the first half of the twentieth century. The German scholarly tradition dwindled under two world wars, while American scholars were too deeply entrenched in behaviorism to focus on the mental processes. The most productive domains were speech processing (leading up to, and including, George Miller's well-known intelligibility experiments), word association studies, statistical analyses of text, and the measurement of eye movements during reading. Within these limited domains, we see increasing methodological sophistication. The discussion of Zipf's law and associated controversies is especially interesting. John Ridley Stroop's famous experiments are described and we learn why Stroop published no other experiments of note. There is also a somewhat bewildering section on phonetic symbolism; apparently, there was much interest in direct mapping from sounds to meaning, using nonsense syllables or unknown foreign words (e.g., Sapir, 1929a).

Chapter 13 focuses on linguistic relativity, with substantial sections on the early theoretical claims of Edward Sapir and Benjamin Whorf. Both professed an egalitarian "horizontal" view of the world's languages, in contrast to the vertical assessments of Wundt and others, who put Latin at the top and signed languages at the bottom with other "primitive" languages. The empirical research on linguistic relativity that followed a few decades later, in the 1950's, is toward the end of the chapter. In between, is a section on language purification movements, which Levelt describes as "a colorful chapter in folk psycholinguistics" and which gave rise to Neuro-Linguistic Programming, which is still around. Some of these linguistic activists were motivated by Whorf's work, but Whorf dismissed them as linguistically unsophisticated.

Chapter 14 considers the great decline of German psycholinguistic research and the personal suffering of numerous scholars, primarily in Germany and Austria, during Germany's Third Reich. The chapter opens with the dramatic history of the German Psychology Society and the pivotal 1933 session of its biennial Congress. The Congress was originally scheduled for April, but soon after Hitler was sworn in as German chancellor in January, there was a political movement to dismiss Jewish and foreign-born professors. Four of seven board members resigned and a new Psychology Society board (of party loyalists) was formed; the Congress was moved to October under new leadership. The resulting "real

German Psychology” contributed little to psycholinguistics. A particularly grim section of this chapter concerns the forced sterilization and then large-scale euthanasia of psychiatric patients and other persons judged to be defective. Throughout, Levelt points to well-known scholars who toed the line as well as some who protested vigorously. Even so, Levelt warns us against assuming that we ourselves would have been among the heroes.

Chapter 15, the lone chapter in Part 4, overlaps chronologically with Chapter 1, and ends on a positive note. While scientific progress had been hampered by World War II in many European countries, British and American scientists made great wartime progress in electronic signal processing and cryptography, and machine translation was rapidly becoming plausible. Crucially, these advances involved engineers and mathematicians who had no interest in behaviorism and were thus free to develop mentalistic models—a nice illustration of the value of interdisciplinary research. Furthermore, there were many brain-damaged veterans needing speech and language therapy. As Levelt notes, “Linguistics was in for serious funding” (2012:549)!

In closing, I return to Levelt’s central thesis: that psycholinguistics began, not with the cognitive revolution, but as early as the late 18<sup>th</sup> century. The degree to which this claim will resonate with the reader may depend upon his or her research specialty. Substantial progress was clearly made in the domains of speech perception and production, word recognition, aphasia, and language acquisition. In contrast, there was no serious psycholinguistic research on syntactic processes, in either language production or language comprehension, during the pre-Chomskyan era, and precious little on syntactic development during language acquisition. Nonetheless, many of the theoretical and methodological tools used in modern parsing experiments were first introduced during the period covered by this book.

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