

# Head-Driven Phrase Structure Grammar

The handbook

Edited by

Stefan Müller

Anne Abeillé

Robert D. Borsley

Jean-Pierre Koenig

Empirically Oriented Theoretical  
Morphology and Syntax

## Empirically Oriented Theoretical Morphology and Syntax

Chief Editor: Stefan Müller

Consulting Editors: Berthold Crysmann, Laura Kallmeyer

In this series:

1. Lichte, Timm. Syntax und Valenz: Zur Modellierung kohärenter und elliptischer Strukturen mit Baumadjunktionsgrammatiken
2. Bîlbîie, Gabriela. Grammaire des constructions elliptiques: Une étude comparative des phrases sans verbe en roumain et en français
3. Bowerman, Claire, Laurence Horn & Raffaella Zanuttini (eds.). On looking into words (and beyond): Structures, Relations, Analyses
4. Bonami, Olivier, Gilles Boyé, Georgette Dal, Hélène Giraudo & Fiammetta Namer. The lexeme in descriptive and theoretical morphology.
5. Guzmán Naranjo, Matías. Analogical classification in formal grammar.

# Head-Driven Phrase Structure Grammar

The handbook

Edited by

Stefan Müller

Anne Abeillé

Robert D. Borsley

Jean-Pierre Koenig

Müller, Stefan, Anne Abeillé, Robert D. Borsley & Jean-Pierre Koenig (eds.).  
2020. *Head-Driven Phrase Structure Grammar: The handbook* (Empirically  
Oriented Theoretical Morphology and Syntax). Berlin: Language Science Press.

This title can be downloaded at:

<http://langsci-press.org/catalog/book/000>

© 2020, the authors

Published under the Creative Commons Attribution 4.0 Licence (CC BY 4.0):

<http://creativecommons.org/licenses/by/4.0/> 

ISBN: 978-3-96110-255-6 (Digital)

no print ISBNs!

ISSN: 2366-3529

no DOI

ID not assigned!

Cover and concept of design: Ulrike Harbort

Typesetting: Stefan Müller, Elizabeth Pankratz

Proofreading: Elizabeth Pankratz

Fonts: Libertinus, Arimo, DejaVu Sans Mono

Typesetting software: Xe<sub>La</sub>TeX

Language Science Press

Khain

Grünberger Str. 16

10243 Berlin, Germany

[langsci-press.org](http://langsci-press.org)

Storage and cataloguing done by FU Berlin

# Contents

<b>Preface</b>	<b>v</b>
<b>I Introduction</b>	
<b>1 Basic properties and elements</b> Anne Abeillé & Robert D. Borsley	<b>3</b>
<b>2 The evolution of HPSG</b> Dan Flickinger, Carl Pollard & Tom Wasow	<b>47</b>
<b>3 Formal background</b> Frank Richter	<b>85</b>
<b>4 The nature and role of the lexicon in HPSG</b> Anthony Davis & Jean-Pierre Koenig	<b>121</b>
<b>5 HPSG in understudied languages</b> Douglas L. Ball	<b>171</b>
<b>II Syntactic phenomena</b>	
<b>6 Agreement</b> Stephen Wechsler	<b>209</b>
<b>7 Case</b> Adam Przepiórkowski	<b>233</b>
<b>8 Nominal structures</b> Frank Van Eynde	<b>263</b>

## *Contents*

<b>9</b>	<b>Argument structure and linking</b>	
	Stephen Wechsler, Jean-Pierre Koenig & Anthony Davis	<b>303</b>
<b>10</b>	<b>Constituent order</b>	
	Stefan Müller	<b>353</b>
<b>11</b>	<b>Complex predicates</b>	
	Danièle Godard & Pollet Samvelian	<b>399</b>
<b>12</b>	<b>Control and Raising</b>	
	Anne Abeillé	<b>467</b>
<b>13</b>	<b>Unbounded dependencies</b>	
	Robert D. Borsley & Berthold Crysmann	<b>511</b>
<b>14</b>	<b>Relative clauses in HPSG</b>	
	Doug Arnold & Danièle Godard	<b>569</b>
<b>15</b>	<b>Island phenomena and related matters</b>	
	Rui Chaves	<b>635</b>
<b>16</b>	<b>Coordination</b>	
	Anne Abeillé & Rui Chaves	<b>691</b>
<b>17</b>	<b>Idioms</b>	
	Manfred Sailer	<b>745</b>
<b>18</b>	<b>Negation</b>	
	Jong-Bok Kim	<b>779</b>
<b>19</b>	<b>Ellipsis</b>	
	Joanna Nykiel & Jong-Bok Kim	<b>815</b>
<b>20</b>	<b>Anaphoric Binding</b>	
	Stefan Müller & António Branco	<b>857</b>
 <b>III Other levels of description</b>		
<b>21</b>	<b>Morphology</b>	
	Berthold Crysmann	<b>909</b>

<b>22 Semantics</b>	
Jean-Pierre Koenig & Frank Richter	<b>963</b>
<b>23 Information structure</b>	
Kordula De Kuthy	<b>1005■</b>
<b>IV Other areas of linguistics</b>	
<b>24 Processing</b>	
Tom Wasow	<b>1045■</b>
<b>25 Computational linguistics and grammar engineering</b>	
Emily M. Bender & Guy Emerson	<b>1069■</b>
<b>26 Grammar in dialogue</b>	
Andy Lücking, Jonathan Ginzburg & Robin Cooper	<b>1115■</b>
<b>27 Sign languages</b>	
Markus Steinbach & Anke Holler	<b>1161■</b>
<b>28 Gesture</b>	
Andy Lücking	<b>1163■</b>
<b>V The broader picture</b>	
<b>29 HPSG and Minimalism</b>	
Robert D. Borsley & Stefan Müller	<b>1215■</b>
<b>30 HPSG and Categorical Grammar</b>	
Yusuke Kubota	<b>1289■</b>
<b>31 HPSG and Lexical Functional Grammar</b>	
Stephen Wechsler & Ash Asudeh	<b>1351■</b>
<b>32 HPSG and Dependency Grammar</b>	
Richard Hudson	<b>1403■</b>
<b>33 HPSG and Construction Grammar</b>	
Stefan Müller	<b>1449■</b>

*Contents*

**Indexes**

**1503■**



# Preface

Head-driven Phrase Structure Grammar (HPSG) is a declarative (or, as is often said, constraint-based) monostratal approach to grammar which dates back to early 1985, when Carl Pollard presented his Lectures on HPSG. It was developed initially in joint work by Pollard and Ivan Sag, but many other people have made important contributions to its development over the decades. It provides a framework for the formulation and implementation of natural language grammars which are (i) linguistically motivated, (ii) formally explicit, and (iii) computationally tractable. From the very beginning it has involved both theoretical and computational work seeking both to address the theoretical concerns of linguists and the practical issues involved in building a useful natural language processing system.

HPSG is an eclectic framework which has drawn ideas from the earlier Generalized Phrase Structure Grammar (GPSG, [Gazdar et al. 1985](#)), Categorical Grammar ([Ajdukiewicz 1935](#)), and Lexical-Functional Grammar (LFG, [Bresnan 1982](#)), among others. It has naturally evolved over the decades. Thus, the construction-based version of HPSG, which emerged in the mid-1990s ([Sag 1997](#); [Ginzburg & Sag 2000](#)), differs from earlier work ([Pollard & Sag 1987](#); [1994](#)) in employing complex hierarchies of phrase types or constructions. Similarly, the more recent Sign-Based Construction Grammar approach differs from earlier versions of HPSG in making a distinction between signs and constructions and using it to make a number of simplifications ([Sag 2012](#)).

Over the years, there have been groups of HPSG researchers in many locations engaged in both descriptive and theoretical work and often in building HPSG-based computational systems. There have also been various research and teaching networks, and an annual conference since 1993. The result of this work is a rich and varied body of research focusing on a variety of languages and offering a variety of insights. The present volume seeks to provide a picture of where HPSG is today. It begins with a number of introductory chapters dealing with various general issues. These are followed by chapters outlining HPSG ideas about some of the most important syntactic phenomena. Next are a series of chapters on other levels of description, and then chapters on other areas of

linguistics. A final group of chapters considers the relation between HPSG and other theoretical frameworks.

It should be noted that for various reasons not all areas of HPSG research are covered in the handbook (e.g., phonology). So, the fact that a particular topic is not addressed in the handbook should not be interpreted as an absence of research on the topic. Readers interested in such topics can refer to the HPSG online bibliography maintained at the Humboldt Universität zu Berlin.<sup>1</sup>

All chapters were reviewed by one author and at least one of the editors. All chapters were reviewed by Stefan Müller. Jean-Pierre Koenig and Stefan Müller did a final round of reading all papers and checked for consistency and cross-linking between the chapters.

## Open access

Many authors of this handbook have previously been involved in several other handbook projects (some that cover various aspects of HPSG), and by now there are at least five handbook articles on HPSG available. But the editors felt that writing one authoritative resource describing the framework and being available free of charge to everybody was an important service to the linguistic community. We hence decided to publish the book open access with Language Science Press.

## Acknowledgements

We thank all the authors for their great contributions to the book, and for reviewing chapters and chapter outlines of the other authors. We thank Frank Richter, Bob Levine, and Roland Schäfer for discussion of points related to the handbook, and Elizabeth Pankratz for extremely careful proofreading and help with typesetting issues. We also thank Elisabeth Eberle and Luisa Kalvelage for doing bibliographies and typesetting trees of several chapters and for converting a complicated chapter from Word into  $\text{\LaTeX}$ .

We thank Sebastian Nordhoff and Felix Kopecky for constant support regarding  $\text{\LaTeX}$  issues, both for the book project overall and for individual authors. Felix implemented a new  $\text{\LaTeX}$  class for typesetting AVMs, `langsci-avm`, which was used for typesetting this book. It is compatible with more modern font management systems and with the `forest` package, which is used for most of the trees in this book.

---

<sup>1</sup><https://hpsg.hu-berlin.de/HPSG-Bib/>, 2020-03-18.

We thank Sašo Živanović for writing and maintaining the forest package and for help specifying particular styles with very advanced features. His package turned typesetting trees from a nightmare into pure fun! To make the handling of this large book possible, Stefan Müller asked Sašo for help with externalization of forest trees, which led to the development of the memoize package. The HPSG handbook and other book projects by Stefan were an ideal testing ground for externalization of `tikz` pictures. Stefan wants to thank Sašo for the intense collaboration that led to a package of great value for everybody living in the woods.

The code of the book is available on GitHub, and we hope that it may serve as a role model for future publications of HPSG papers.

## References

- Ajdukiewicz, Kazimierz. 1935. Die syntaktische Konnexität. *Studia Philosophica* 1. 1–27.
- Bresnan, Joan (ed.). 1982. *The mental representation of grammatical relations* (MIT Press Series on Cognitive Theory and Mental Representation). Cambridge, MA: MIT Press.
- Gazdar, Gerald, Ewan Klein, Geoffrey K. Pullum & Ivan A. Sag. 1985. *Generalized Phrase Structure Grammar*. Cambridge, MA: Harvard University Press.
- Ginzburg, Jonathan & Ivan A. Sag. 2000. *Interrogative investigations: The form, meaning, and use of English interrogatives* (CSLI Lecture Notes 123). Stanford, CA: CSLI Publications.
- Pollard, Carl & Ivan A. Sag. 1987. *Information-based syntax and semantics* (CSLI Lecture Notes 13). Stanford, CA: CSLI Publications.
- Pollard, Carl & Ivan A. Sag. 1994. *Head-Driven Phrase Structure Grammar* (Studies in Contemporary Linguistics). Chicago: The University of Chicago Press.
- Sag, Ivan A. 1997. English relative clause constructions. *Journal of Linguistics* 33(2). 431–484. DOI: [10.1017/S002222679700652X](https://doi.org/10.1017/S002222679700652X).
- Sag, Ivan A. 2012. Sign-Based Construction Grammar: An informal synopsis. In Hans C. Boas & Ivan A. Sag (eds.), *Sign-Based Construction Grammar* (CSLI Lecture Notes 193), 69–202. Stanford, CA: CSLI Publications.



## **Part I**

# **Introduction**

