

## MORPHOLOGICAL COMPLEXITY

Inflectional morphology plays a paradoxical role in language. On the one hand, it tells us useful things, for example that a noun is plural or a verb is in the past tense. On the other hand, many languages get along perfectly well without it, so the baroquely ornamented forms we sometimes find come across as a gratuitous over-elaboration. This is especially apparent where the morphological structures operate at cross-purposes to the general systems of meaning and function that govern a language, yielding inflection classes and arbitrarily configured paradigms. This is what we call *morphological complexity*. Manipulating the forms of words requires learning a whole new system of structures and relationships. This book confronts the typological challenge of characterizing the wildly diverse sorts of morphological complexity we find in the languages of the world, offering both a unified descriptive framework and quantitative measures that can be applied to such heterogeneous systems.

MATTHEW BAERMAN is Senior Research Fellow in the Surrey Morphology Group at the University of Surrey, whose work concentrates on the description, typology, and diachrony of morphology, in particular complex inflectional systems. He is the editor of the recent *Oxford Handbook of Inflection* (2015).

DUNSTAN BROWN is Professor and Head of the Department of Language and Linguistic Science, University of York, and a visiting professor in the Surrey Morphology Group. Recent publications include: *Network Morphology* (with Andrew Hippisley, 2012); and as co-editor, *Canonical Morphology and Syntax* (2012), *Understanding and Measuring Morphological Complexity* (2015) and *Archi: Complexities of Agreement in Cross-Theoretical Perspective* (2016).

GREVILLE G. CORBETT is Distinguished Professor of Linguistics, University of Surrey, where he leads the Surrey Morphology Group. He works on the typology of features, as in the previously published *Gender* (1991), *Number* (2000), *Agreement* (2006), and *Features* (2012), all with Cambridge University Press. He is a fellow of the British Academy and of the Academy of Social Sciences, a member of the Academia Europaea and an honorary member of the Linguistic Society of America.

*In this series*

116. GILLIAN CATRIONA RAMCHAND: *Verb Meaning and the Lexicon: A First Phase Syntax*
117. PIETER MUYSKEN: *Functional Categories*
118. JUAN URIAGEREKA: *Syntactic Anchors: On Semantic Structuring*
119. D. ROBERT LADD: *Intonational Phonology* (second edition)
120. LEONARD H. BABBY: *The Syntax of Argument Structure*
121. B. ELAN DRESHER: *The Contrastive Hierarchy in Phonology*
122. DAVID ADGER, DANIEL HARBOUR, and LAUREL J. WATKINS: *Mirrors and Microparameters: Phrase Structure beyond Free Word Order*
123. NIINA NING ZHANG: *Coordination in Syntax*
124. NEIL SMITH: *Acquiring Phonology*
125. NINA TOPINTZI: *Onsets: Suprasegmental and Prosodic Behaviour*
126. CEDRIC BOECKX, NORBERT HORNSTEIN and JAIRO NUNES: *Control as Movement*
127. MICHAEL ISRAEL: *The Grammar of Polarity: Pragmatics, Sensitivity, and the Logic of Scales*
128. M. RITA MANZINI and LEONARDO M. SAVOIA: *Grammatical Categories: Variation in Romance Languages*
129. BARBARA CITKO: *Symmetry in Syntax: Merge, Move and Labels*
130. RACHEL WALKER: *Vowel Patterns in Language*
131. MARY DALRYMPLE and IRINA NIKOLAEVA: *Objects and Information Structure*
132. JERROLD M. SADOCK: *The Modular Architecture of Grammar*
133. DUNSTAN BROWN and ANDREW HIPPLEY: *Network Morphology: A Defaults-Based Theory of Word Structure*
134. BETTELOU LOS, CORRIEN BLOM, GEERT BOOIJ, MARION ELENBAAS and ANS VAN KEMENADE: *Morphosyntactic Change: A Comparative Study of Particles and Prefixes*
135. STEPHEN CRAIN: *The Emergence of Meaning*
136. HUBERT HAIDER: *Symmetry Breaking in Syntax*
137. JOSÉ A. CAMACHO: *Null Subjects*
138. GREGORY STUMP and RAPHAEL A. FINKEL: *Morphological Typology: From Word to Paradigm*
139. BRUCE TESAR: *Output-Driven Phonology: Theory and Learning*
140. ASIER ALCÁZAR and MARIO SALTARELLI: *The Syntax of Imperatives*
141. MISHA BECKER: *The Acquisition of Syntactic Structure: Animacy and Thematic Alignment*
142. MARTINA WILTSCHKO: *The Universal Structure of Categories: Towards a Formal Typology*
143. FAHAD RASHED AL-MUTAIRI: *The Minimalist Program: The Nature and Plausibility of Chomsky's Bilingualism*
144. CEDRIC BOECKX: *Elementary Syntactic Structures: Prospects of a Feature-Free Syntax*
145. PHOEVOS PANAGIOTIDIS: *Categorial Features: A Generative Theory of Word Class Categories*
146. MARK BAKER: *Case: Its Principles and Its Parameters*
147. WILLIAM BENNETT: *The Phonology of Consonants: Dissimilation, Harmony, and Correspondence*
148. ANDREA SIMS: *Inflectional Defectiveness*
149. GREGORY STUMP: *Inflectional Paradigms: Content and Form at the Syntax-Morphology Interface*
150. ROCHELLE LIEBER: *English Nouns: The Ecology of Nominalization*
151. JOHN BOWERS: *Deriving Syntactic Relations:*
152. ANA TERESA PEREZ-LEROUX: *The Acquisition of Complex Noun Phrases*
153. MATTHEW BAERMAN, DUNSTAN BROWN, and GREVILLE G. CORBETT: *Morphological Complexity*

*Earlier issues not listed are also available*

Cambridge University Press  
978-1-107-12064-8 – Morphological Complexity  
Matthew Baerman , Dunstan Brown , Greville G. Corbett  
Frontmatter  
[More Information](#)

---

CAMBRIDGE STUDIES IN LINGUISTICS

*General editors:* P. AUSTIN, J. BRESNAN, B. COMRIE,  
S. CRAIN, W. DRESSLER, C. J. EWEN, R. LASS,  
D. LIGHTFOOT, K. RICE, I. ROBERTS, S. ROMAINE,  
N. V. SMITH

---

*Morphological Complexity*

# MORPHOLOGICAL COMPLEXITY

MATTHEW BAERMAN

*University of Surrey*

DUNSTAN BROWN

*University of York*

GREVILLE G. CORBETT

*University of Surrey*



CAMBRIDGE  
UNIVERSITY PRESS

Cambridge University Press  
978-1-107-12064-8 — Morphological Complexity  
Matthew Baerman, Dunstan Brown, Greville G. Corbett  
Frontmatter  
[More Information](#)

---

## CAMBRIDGE UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

[www.cambridge.org](http://www.cambridge.org)

Information on this title: [www.cambridge.org/9781107120648](http://www.cambridge.org/9781107120648)

DOI: 10.1017/9781316343074

© Matthew Baerman, Dunstan Brown and Greville G. Corbett 2017

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2017

Printed in the United Kingdom by Clays, St Ives plc

*A catalogue record for this publication is available from the British Library.*

ISBN 978-1-107-12064-8 Hardback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party Internet Web sites referred to in this publication and does not guarantee that any content on such Web sites is, or will remain, accurate or appropriate.

## Contents

---

	<i>List of Figures</i>	page ix
	<i>List of Tables</i>	x
	<i>Acknowledgements</i>	xvii
	<i>List of Abbreviations</i>	xix
<b>1.</b>	<b>Introduction</b>	<b>1</b>
<b>2.</b>	<b>External Typology of Inflection Classes</b>	<b>8</b>
2.1	Affixes	8
2.2	Stem Alternations	14
2.3	Suprasegmentals	21
2.4	Uninflectedness	26
2.5	Words as Inflection Class	28
2.6	Conclusion	32
<b>3.</b>	<b>Features</b>	<b>34</b>
3.1	Case	34
3.2	Number	34
3.3	Person	39
3.4	Gender	41
3.5	Tense/Aspect/Mood	41
3.6	Conclusion	43
<b>4.</b>	<b>Motivation</b>	<b>44</b>
4.1	Phonology	45
4.2	Morphology	46
4.3	Semantics	47
4.4	Deponency	52
4.5	Paradigm Shape and Morphosyntactic Function	60
4.6	Conclusion	67

viii *Contents*

<b>5.</b>	<b>Conditions on Paradigms</b>	<b>68</b>
5.1	The Point: Conditions within Inflectional Morphology	69
5.2	A Clear Example: Count Nouns in Russian	71
5.3	A Similar but Contrasting Example: Animacy in Russian	74
5.4	Analysing Conditions	76
5.5	The Typology of Conditions	78
5.6	Observations on the Typology of Conditions	92
5.7	Complex Conditions: The Serbo-Croat Augment	93
5.8	Types of System	98
5.9	Conclusion	98
<b>6.</b>	<b>Paradigm Structure</b>	<b>100</b>
6.1	Allomorphic Classes	100
6.2	Distributional Classes	107
6.3	Mixed Patterns	115
6.4	Combining Systems	116
6.5	Conclusion	124
<b>7.</b>	<b>Lexicon and Grammar</b>	<b>125</b>
7.1	A Three-Dimensional Typology of Complexity	126
7.2	Measuring the Three Types of Complexity	132
7.3	Case Study: Tlapeuzco Chinantec	139
7.4	Conclusion	161
<b>8.</b>	<b>Morphological Complexity and Morphological Autonomy</b>	<b>163</b>
	<i>Appendix</i>	167
	<i>References</i>	169
	<i>Author Index</i>	181
	<i>Language Index</i>	184
	<i>Subject Index</i>	186

## *Figures*

---

4.1	Mapping of animacy type onto inflection class in Lealao Chinantec: unpaired transitives	<i>page 58</i>
4.2	Mapping of animacy type onto inflection class in Lealao Chinantec: paired transitives	59
5.1	Types of paradigm (compare Stump 2012)	77
7.1	Predicting the inflectional series for the first singular	145
7.2	Predicting the inflectional series for the first-person plural	147



## Tables

---

1.1	Aymara noun paradigms	<i>page</i> 2
1.2	Polish noun paradigms (singular forms)	2
1.3	Simplicity vs. complexity	3
2.1	Vowel-initial possessed nouns in Bororo	9
2.2	Somali suffix and prefix classes, past simple forms	11
2.3	Possessor marking by suffix in Dano	11
2.4	Other possessor marking types in Dano	12
2.5	Case-number inflection of possessed nouns in Dano	12
2.6	Acazulco Otomí	13
2.7	Tilapa Otomí	14
2.8	German n-stem nouns	14
2.9	Synopsis of the Wintu verbal paradigm	15
2.10	Wintu theme vowels as inflection classes	16
2.11	Varieties of present ~ aorist stem alternation strategies in Georgian	17
2.12	Macro-classes of the Georgian stem alternations in Table 2.11	17
2.13	Estonian strengthening stem alternation	18
2.14	Estonian weakening stem alternation	18
2.15	Estonian stem classes	19
2.16	Portuguese stem alternations	20
2.17	Romance stem patterns (partial)	21
2.18	Gulmancema tonal patterns	22
2.19	Rarámuri stress patterns	23
2.20	Ayutla Mixe verb classes	25
2.21	Key to alternation patterns in Table 2.20	26
2.22	Inflectional classes II and V in Russian	27
2.23	Polish ‘museum’	28
2.24	Three classes of clitic formative in Tilapa Otomí	30
2.25	Distribution of inflection classes by transitivity in Tilapa Otomí	31

2.26	Object-marking classes in Selepet	32
2.27	Object verbs in Selepet	32
3.1	Bauzi case inflection	35
3.2	Number marking in Nuuhchahnulth nouns	35
3.3	Number marking in Lavukaleve nouns	35
3.4	Number marking in !Xoon nouns	36
3.5	Number marking in Arabela nouns	37
3.6	‘Marked singular’ and ‘marked plural’ in Murle	37
3.7	Plural allomorphy in nouns and verbs (singular event forms) in Seri	38
3.8	Allomorphy of event plurality marking in Seri	39
3.9	Subject person marking in Jamul Tiipay	39
3.10	Possessor person marking in Karajá	40
3.11	Possessor person marking on kinterms in Kobon	40
3.12	Possessor person marking in Golin	41
3.13	Aspect-mood prefixation Zenzontepec Chatino	42
3.14	Tonal marking of aspect-mood in Zenzontepec Chatino	42
4.1	Arbitrarily assigned inflection classes in Nez Perce	45
4.2	Phonologically assigned inflection classes in Sobei	45
4.3	Aspect and inflection class in Russian	46
4.4	Plural suffixation in Nuer	47
4.5	Inflection classes of nouns in Mali	48
4.6	Inflection classes of nouns in Diyari	49
4.7	Eegima singular~plural noun patterns	50
4.8	Inflection class – gender mapping in Eegima	50
4.9	Fragment of the Rotokas subject-marking paradigm, habitual present forms	51
4.10	Inflection class distinctions in inanimate nouns in Latvian	53
4.11	Inflection class and sex distinctions in human referent nouns in Latvian	53
4.12	Short form (indefinite) adjective ‘big’ in Latvian	54
4.13	Partial paradigm of ‘normal’ and deponent transitive verbs in Latin	55
4.14	The major inflection classes of Latin verbs, active forms	55
4.15	The major inflection classes of Latin verbs, passive forms	56
4.16	Animate versus inanimate verbs in Lealao Chinantec	57
4.17	The three major inflection classes of Lealao Chinantec verbs	57

xii *Tables*

4.18	Inflection class selection correlated with tone in Lealao Chinantec	59
4.19	Santa Ana Keres verbal prefixes	60
4.20	Inflection classes of verbs in Takelma	61
4.21	Chipaya declarative subject agreement enclitic	62
4.22	Tucano ‘do’	62
4.23	Krongo ‘saw’	63
4.24	Archi ‘be.PRS’	64
4.25	Orejón present-future suffixes	64
4.26	Orejón past suffixes	65
4.27	Tucano nominal forms	65
4.28	Tucano present progressive paradigm (gerundive + auxiliary) ‘is washing’	66
4.29	Carapana non-past conjectural ‘work’	66
5.1	Verbal forms in Burmeso	70
5.2	Sample nouns in Russian	72
5.3	The animacy condition in Russian	75
5.4	Theoretically possible condition types	79
5.5	Diyari <i>pirta</i> ‘stick, tree’ and <i>wirrawartanhi</i> ‘Farina’	79
5.6	Consonant alternations in Polish	81
5.7	Morphology of Basque proper names	81
5.8	Agreeing lexical items in the Archi dictionary	83
5.9	An agreeing adverb in Archi: <i>k’ellej&lt;t’&gt;u</i> ‘entirely’	83
5.10	The Archi adjective <i>hakdu-t</i> ‘real, reliable’	84
5.11	Partial paradigm of a regular Latin verb ( <i>amāre</i> ‘love’)	85
5.12	Part of the paradigm of a deponent Latin verb ( <i>mīror</i> ‘admire’)	85
5.13	The Archi verb <i>acu</i> ‘milk’ (prefixal agreement)	86
5.14	The Archi verb <i>caxu</i> ‘throw’ (infixal agreement)	86
5.15	The Archi verb <i>aklu</i> ‘put through’ (mixed prefixal and infixal agreement)	87
5.16	Verb forms of Võro with stems ending in a short vowel	88
5.17	Czech <i>jeħně</i> ‘lamb’	89
5.18	Conditions on the instrumental plural in Slovak	91
5.19	The Serbo-Croat augment	93
5.20	The rise of the long plural in monosyllabic nouns	96
6.1	Canonical inflection classes in Czech verbs	101
6.2	Cross-classifying affixes in Seri	101
6.3	Grid system	102

6.4	Hierarchical system	102
6.5	Cross-classifying system	102
6.6	Maximal hierarchical system	103
6.7	Maximal cross-classifying system	103
6.8	Subject prefix classes in Santa Ana Keres	105
6.9	Constituent grid systems within the subject prefix classes of Santa Ana Keres	106
6.10	Constituent hierarchical system within the subject prefix classes of Santa Ana Keres	106
6.11	Constituent cross-classifying system within the subject prefix classes of Santa Ana Keres	106
6.12	Nouns of inflection classes I and II in Latvian	107
6.13	The three classes in Table 6.12, broken down into two sets of hierarchical classes	107
6.14	Distributional classes in a grid system	108
6.15	Distributional classes in a hierarchical system	108
6.16	Distributional classes in a cross-classifying system	108
6.17	Distributional classes in a maximal cross-classifying system	108
6.18	Distributional classes: basic systems compared	110
6.19	Distributional classes: expanded hierarchical system	110
6.20	Distributional classes: hierarchical and grid systems combined	110
6.21	Eastern Armenian inanimate ~ animate contrast	111
6.22	Ingush nouns	111
6.23	Otomí varieties compared	112
6.24	Hypothetical intermediate system between Tilapa and Acazulco Otomí	113
6.25	Distributional classes in Seri; third person dependent realis forms	114
6.26	Summary of plural suffix patterns in Table 6.25	115
6.27	Gulmancema allomorphic-cum-distributional classes	116
6.28	Gulmancema dedicated imperfective suffix	116
6.29	Prefix and suffix allomorphy in Ayoreo	116
6.30	Different prefixes with same suffixes in Ayoreo	117
6.31	Different suffixes with same prefixes in Ayoreo	117
6.32	Estonian strengthening stem alternation; repeated from Table 2.13	118
6.33	Estonian weakening stem alternation; repeated from Table 2.14	118

xiv *Tables*

6.34	Estonian suffix class opposition	119
6.35	Paradigm of ‘search’	119
6.36	Examples of class A verbs in Tlatepuzco Chinantec	120
6.37	Examples of class B verbs in Tlatepuzco Chinantec	121
6.38	Examples of class C verbs in Tlatepuzco Chinantec	121
6.39.	Simple stem alternations	122
6.40	Compound stem alternations	122
6.41	Distribution of lexemes in Merrifield & Anderson (2007)	123
6.42	Orthogonal systems in a class C verb	123
6.43	Orthogonal systems in a class B verb	124
7.1	Grid system	128
7.2	Cross-classifying (minimal)	128
7.3	Cross-classifying (maximal)	129
7.4	The elements of Table 7.3 fleshed out exhaustively	129
7.5	Hierarchical system	130
7.6	Hierarchical system (maximal)	130
7.7	Organization in the abstract types	131
7.8	Interim summary: organization	133
7.9	Interim summary: organization and emergent complexity	134
7.10	Dynamic Principal Parts	135
7.11	Measures for the abstract types	137
7.12	Summary: organization, emergent complexity, and central-system complexity	138
7.13	Representative Tlatepuzco Chinantec verb paradigms	139
7.14	Tlatepuzco’s position	141
7.15	Competing analytic choices	142
7.16	Tlatepuzco Chinantec ‘covet’	143
7.17	Tlatepuzco Chinantec ‘receive’	143
7.18	Tlatepuzco Chinantec ‘defecate’	143
7.19	Tlatepuzco Chinantec ‘disappear’	143
7.20	Hierarchical structure for inflectional series 5	144
7.21	Tlatepuzco Chinantec ‘fall out’	144
7.22	Tlatepuzco Chinantec ‘covet’	144
7.23	Tlatepuzco Chinantec ‘stammer’	144
7.24	Hierarchical structure for inflectional series D	145
7.25	The feature-value combination that is the most predictive	149
7.26	The predictive tones for <i>?ien</i> <sup>12</sup> ‘receive’	150
7.27	Inflectional series for first-person singular predicted by tone 12 in the first-person singular	150

7.28	Inflectional series for first-person plural predicted by tone 13 in the first-person plural	151
7.29	Inflectional series for second person predicted by tone 1 in the second-person completive	151
7.30	Inflectional series for third person predicted by tone 1 in the third-person future	151
7.31	Series 1 hierarchical structure facilitates inference	152
7.32	Default assignment of class for $\text{?ien}^{12}$ in the absence of observed tones	156
7.33	First-person singular present	157
7.34	First-person plural future	157
7.35	Second-person completive	158
7.36	Combination sufficient to predict the whole paradigm	158
7.37	Assignment of class for $\text{?ien}^{12}$ using four values	159
7.38	Proportion of the Tlatepuzco lexicon accounted for by a combination of default assignment and implicative relations associated with inflectional class	159
7.39	Performance of four cells in predicting the rest of the paradigm	160

## *Acknowledgements*

---

For helpful comments at different stages of the development of this book we are grateful to: Olivier Bonami, Oliver Bond, Gilles Boyé, Wayles Browne, Patrica Cabredo Hofherr, Marina Chumakina, Scott Collier, Roger Evans, Sebastian Fedden, Tim Feist, Jürg Fleischer, Alexander Krasovitsky, Michele Loporcario, Steve Marlett, Irina Monich, Enrique Palancar, Ingo Plag, Ljubomir Popović, Bert Remijsen, David Robinson, Serge Sagna, Benoît Sagot, Andrew Spencer, and Anna Thornton. Versions of parts of this research have been presented by each of us at different conferences and seminars: we greatly appreciate all the suggestions offered there. The Nuer examples in Chapter 4 were kindly provided by John Gai, Yak Wichok, and Lam Muang. We would also like to thank Penny Everson for assistance in the preparation of the manuscript.

This work has been funded by various research councils, whose support is gratefully acknowledged: the European Research Council (ERC-2008-AdG-230268: MORPHOLOGY “Morphological Complexity”), Arts and Humanities Research Council (AH/I027193/1: “From Competing Theories to Fieldwork: The Challenge of an Extreme Agreement System”), Economic and Social Research Council & Arts and Humanities Research Council (ES/I029621/1: “Endangered Complexity: Inflectional Classes in Oto-Manguean Languages”), and the Arts and Humanities Research Council (AH/L011824/1: “Morphological Complexity in Nuer” and AH/N006887/1: “Lexical splits: a novel perspective on the structure of words”).

## *Abbreviations*

---

1	first person
2	second person
3	third person
ABL	ablative
ABS	absolute
ACC	accusative
ADV	adverbial
ALL	allative
AOR	aorist
COM	comitative
COND	conditional
CONT	continuous
COREF	coreferential
CPL	completive
CSN	comparison
DAT	dative
DEP	dependent
DO	direct object
DPP	dynamic principal parts ratio
DU	dual
DUB	dubitative
ERG	ergative
EXCL	exclusive
F	feminine
FUT	future
GEN	genitive
GER	gerund
HAB	habitual
HORT	hortative
IMP	imperative



xx *Abbreviations*

IMPRF	imperfect
INCL	inclusive
INCPL	incompletive
IND	indicative
INF	infinitive
INS	instrumental
IPFV	imperfective
IRR	irrealis
JUSS	jussive
La	Latin
LAT	lative
LOC	locative
M	masculine
N	neuter
NEG	negative
NOM	nominative
NPST	non-past
PART	partitive
PFV	perfective
PL	plural
POT	potential
PPRF	pluperfect
PRF	perfect
PROG	progressive
PROSP	prospective
PRS	present
PST	past
REAL	realis
RECIP	recipient
RPRO	resumptive pronoun
SBJ	subject
SBJV	subjunctive
SG	singular
SIMUL	simultaneous
Skr	Sanskrit
TAM	tense-aspect-mood
TR	transitive
VOC	vocative